

RADIO

and
Television

RETAILING

JUNE • 1940

Special NEW SEASON Number

McGraw-Hill Publishing Company, Inc. • Price 25 Cents

ON

1

ANNING
the Future

SECTION

2

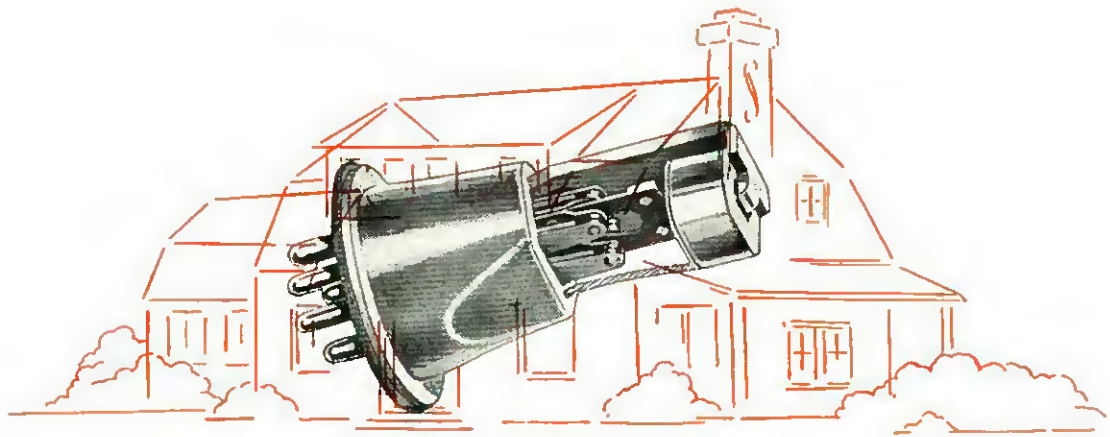
MERCHANDISE
to Buy and Sell

SECTION

3

SERVICING
Tomorrow's Circuits





P. R. MALLORY & CO. Inc.

MALLORY VIBRATORS

Could Afford to Live in Glass Houses

It's the Unseen Factors that Have Won MALLORY Leadership

The actual performance of millions of Mallory Vibrators used as original equipment . . . and in replacement . . . has written its own indelible record of superiority. The reasons for this superiority are not readily visible to the eye . . . but they are tangible and definite.

Let us point out to you at least a few of them.

CONTACT MATERIALS: Specially developed by the Metallurgical Division of P. R. Mallory & Co., Inc., which supplies 85% of the automotive ignition contacts used in the United States.

VIBRATOR SPRINGS: Another exclusive Mallory development. These springs or reeds must withstand a vibration rate that makes and breaks contact 12,000 times per minute.

OTHER CHARACTERISTICS: Heavy, corrosion-resisting cadmium plating on frame. Unbreakable wire leads. Complete, sponge-rubber sound insulation.

Yes, Mallory Vibrators could afford to live in glass houses. They are your certain clue to customer satisfaction. Depend on Mallory Replacement Vibrators. Remember . . . they cost no more.



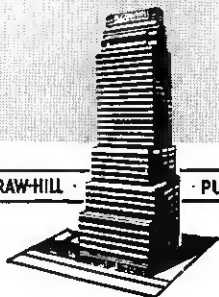
Thousands have pronounced this Replacement Vibrator Guide indispensable. If you didn't get a copy your distributor may still be able to supply you. Ask for it.

IT'S FREE!



<p>Use</p> <p>P. R. MALLORY & CO. Inc.</p> <h1 style="margin: 0;">MALLORY</h1> <p style="margin: 0;">APPROVED PRECISION PRODUCTS</p>	<p>P. R. MALLORY & CO., Inc.</p> <p>INDIANAPOLIS INDIANA</p> <p>Cable Address—PELMALLO</p>
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RADIO *and Television* RETAILING



A McGRAW-HILL

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JUNE 1940

Special NEW SEASON Number

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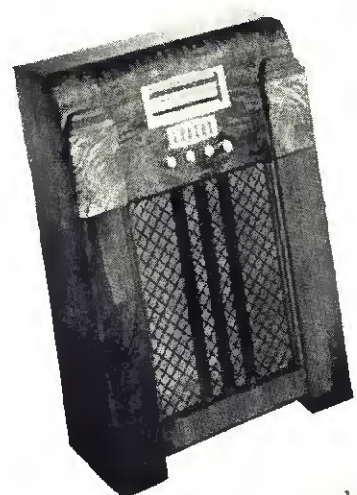
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LEADING STORE

New For '41

What Customers

...A New Volume Line Packed with Sales Appeal —Priced to Move at Real Profit to You!

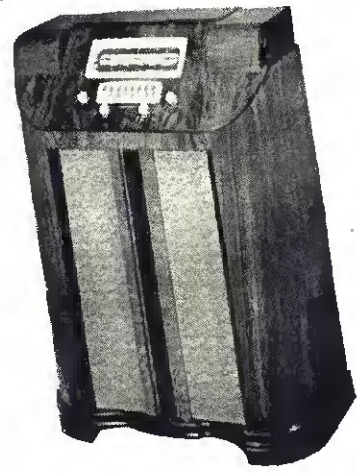


Consoles start at \$39.95! Are spaced in price and features to provide step-ups that make sense! Are record values in every price bracket. Here is one of the two super-value 6-tube models with Magic Keyboard Automatic Tuning, Magic Antenna, record-player connection, AVC, and many other quality features.

EVERYTHING that's real selling news to prospects—priced to make buying painless and profits sure! That's what makes this new 1941 Stewart-Warner line the hottest thing Stewart-Warner has ever offered.

It's complete! Plastics, smart wood table models, wireless record player, combinations, radio-phono-recorder combinations, lovely period tables and commodes, AC-DC-Battery portable and battery table and console models, conventional and period consoles, and television. Frequency modulation receivers, too . . . to cover the new F. M. band assignments!

And priced to move at a profit to you! Match them price for price, discount for discount, and value for value and you'll agree that again Stewart-Warner offers radio's biggest dollar value . . . to make sales sure . . . without penalizing you on profits. You'll be money ahead to get the whole story now!



One of 3 outstanding 9-tube values! All three consoles have genuine quality and sales appeal in every detail—cabinets of rich-grained hand-selected woods—Magic Keyboard Automatic Tuning—built-in Magic Antenna—3-band Magic Dial—record-player and television connections and all important improvements.



19 red-hot values are available in 1941 Stewart-Warner table model radios—in plastic and wood cabinets—5 and 6-tubes—AC and AC-DC superheterodyne circuits—with and without automatic tuning—in one, two and three-band versions—all with built-in Magic Antenna and other important features. They'll meet every preference of small-set buyers.



Six superb period tables and commodes answer the demands of those who want radio that matches other furnishings. And for the Hep-nerwhite, Chippendale, Sheraton, Chinese, Chippendale and Swedish Modern designs, matching companion pieces with regular drawers instead of radio are available at little cost! Louis XV model illustrated.



New Professional Model Microphono portable includes recorder and microphone—makes really fine recordings from mike or off the air—in addition to regular service as 6-tube radio-phono combination. Three fine standard combinations, priced from \$29.95 also are available, as well as a high-quality wireless record player.

STEWART-WARNER

Radios — Combinations — Recorders — Wireless Record Players — Television — F. M.

MANAGERS HELPED US CREATE

Are Asking For!"

... Gorgeous New Concert Grands
That Combine
Superb Tone and Authentic Period Design



"Our customers want design that really belongs with their other furnishings, and tone quality to match. I know this line will meet their demands, at prices we can get," says big New York buyer.

"This combination of superb tone and true period design, at such prices, is a sure-fire proposition. They open a market we haven't been able to supply before," says buyer for leading West Coast store!

"At last, here are instruments with appeal to buyers with taste, and prices they can pay. We'll move plenty of them!" says famous Mid-West dealer.

Stunning, authentic period design—plus finer tone—plus sensational value! Here at last are really fine instruments for the home where taste rules—priced right into the heart of the popular market! They're instruments you can sell—because a dozen leading dealers advised us on design and features and told us this is what they can sell in volume.

Authentic period designs, in choice of walnut, mahogany and bleached mahogany, are offered in nine cabinet and chassis combinations. Each is a true period piece, at home among costliest furnishings.

And with finest design we have combined the finest in tone—ample power to handle deep bass and the full power of a symphony—dual controls giving command of tone balance new in this price class—a new curvilinear speaker for true reproduction throughout the full tone range—and other important advancements.

Each model includes a much improved automatic record changer and, of course, each is the last word in radio reception.



BACKED BY 35,000,000 NATIONAL ADVERTISEMENTS! A continuous, hard-selling national campaign in "Saturday Evening Post," "Life," "Time" and "Better Homes & Gardens"—the most intensive campaign put behind a quality line in years—will break at least one hard-biting advertisement every week through the selling season and send Concert Grand customers in to you already sold!

STEWART-WARNER

Concert Grand



The thrilling new Microphono recorder, complete with microphone, enables the recording of anything from the voices of family and guests to high spots in your favorite radio programs... with tone fidelity that compares well with that of the better commercial recordings! Available in portable, table, console and Concert Grand models at attractively low cost!

Another Stewart-Warner Product. Also makers of Dual-Temp Refrigerators and Scotch Maid Electric Ranges

• FARNSWORTH gives you



... the heart of Farnsworth's superb 1941 radio-phonograph line ... the changer the whole industry is talking about ... the one that sets an entirely new standard for the medium-price field.

• • •

The new Capehart-Farnsworth changer plays up to 14 records automatically ... is extremely simple to load and unload. It handles any standard-size record ... without chipping, cutting or scratching ... unfailingly plays each record to the end of the selection, then softly, gently feeds the next record into position. Rubber-cushioning insulation and opposed spring-mounting make it

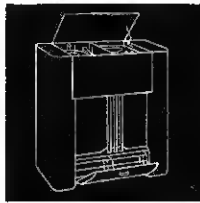
one of the quietest changers ever built, and its simple, fool-proof mechanism eliminates service problems.

This truly marvelous changer is one of the many big features of the 1941 Farnsworth radio-phonograph line ... made to fit every price-bracket competitively ... backed by powerful advertising in *The Saturday Evening Post*, *Life*, *Collier's* and through a national spot-radio broadcast campaign, as well as a complete program of merchandising helps ... *clinched* by the well-known Farnsworth policies designed to protect *your* profit-interests. Farnsworth Television & Radio Corporation, Fort Wayne and Marion, Indiana.

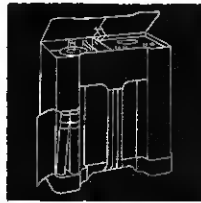
every style of combination

A QUICK LOOK AT FARNSWORTH CABINET TYPES

The sketches on this page will give you a slight impression of the tremendous Farnsworth strength and position in the combination field . . . one of the broadest, most complete lines in the industry . . . with a type of cabinet to suit *every one of your prospects*. Don't wait! See your Farnsworth distributor and get the *whole* story on this great profit-making line.



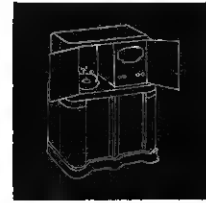
One-piece
Lift-lid Types



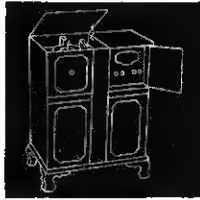
Divided
Lift-lid Types



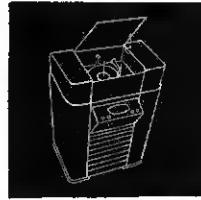
Front-opening
(Single
Compartment) Types



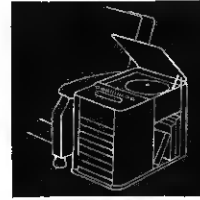
Front-opening
(Double
Compartment) Types



Half-top and Front
opening (Single
Compartment) Types



Tip-Top-Tuning
Type



Chair-side Type

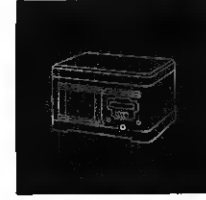
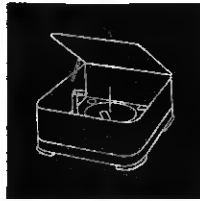
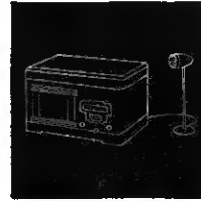


Table-model Type



Automatic Record
Player Attachment



Home Recorder



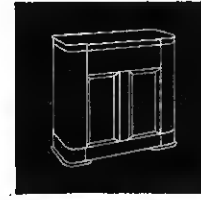
High-boy Types



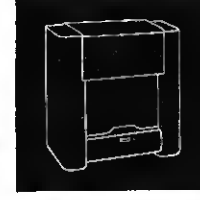
Low-boy Types



Period Types



Conventional Types

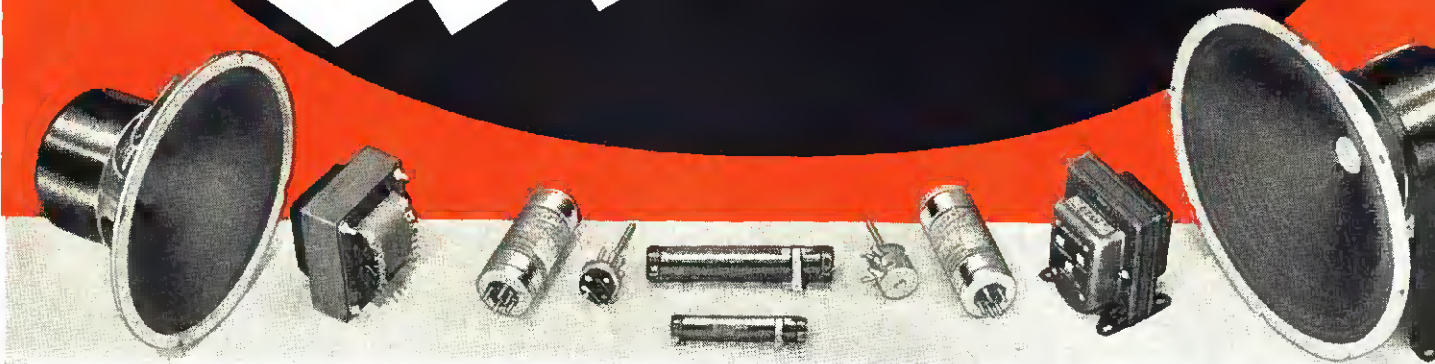


Modern Types

There's an equally startling line of 1941 radios in the Farnsworth picture for '40. Don't overlook it . . . a few minutes spent in visiting your distributor now may save you many months wishing you had.

FARNSWORTH . . . MAKERS OF RADIO AND TELEVISION TRANSMITTERS AND RECEIVERS
THE CAPEHART, THE CAPEHART-PANAMUSE AND FARNSWORTH PHONOGRAPH-RADIO COMBINATIONS

Utah



WHY THE NAME BEHIND THESE



You can use or sell the products backed by the Utah trademark with full assurance that they will give satisfactory performance. Competent designing, which keeps pace with *all* industry developments; careful engineering, which provides maximum efficiency; and precision manufacturing, which

affords maximum economy, have won preference and acceptance throughout the radio and sound equipment industries.

Service men, dealers, jobbers and manufacturers selected 5,963,621 Utah transformers, vibrators, Carter parts and speakers during the last year alone. You, too, can benefit by

insisting on these products which for over 18 years have been recognized for their uniformity and high quality. They can help you meet your requirements successfully and profitably.

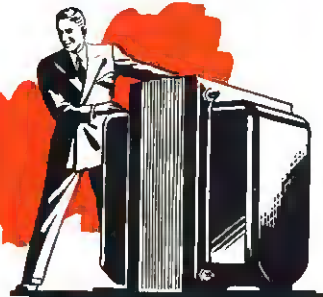
Utah products are distributed nationally—by recognized jobbers only. Look for the Utah trademark on the part or carton.



"Do you know why I've standardized on Utah Transformers?"

"I certainly do. They have a non-corrosive, protective film of cellulose acetate which provides absolute insulation—prevents breaking down even under extremely high humidity and severe atmospheric conditions. They're fully guaranteed. And the high safety factor of their insulation is proved by the extra hours of satisfactory performance they give."

SEE THE UTAH CATALOG FOR DETAILS

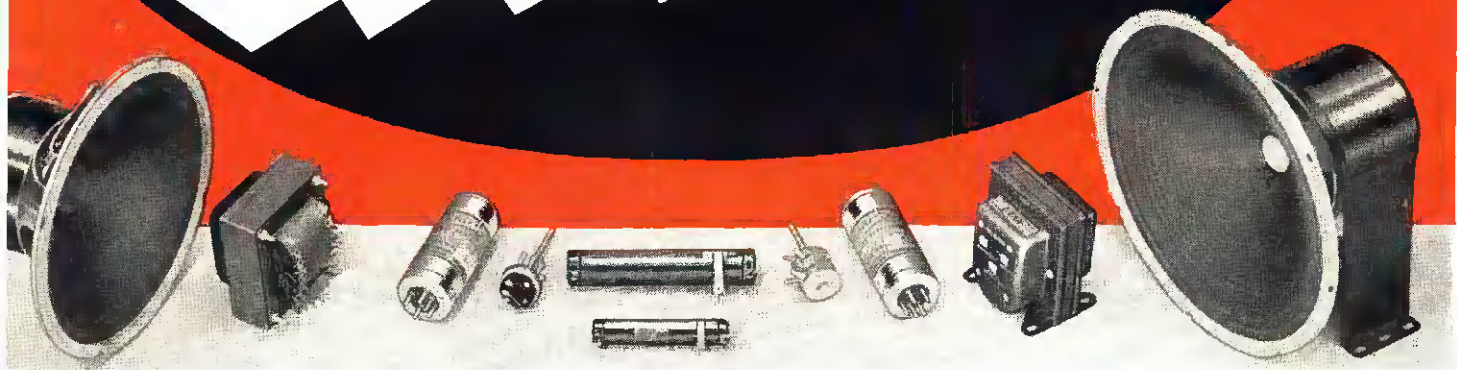


UTAH TRANSFORMERS

are standard equipment in millions of receivers, all over the world. And there is a complete line of Utah replacement transformers.

SPEAKERS • VIBRATORS • TRANSFORMERS • UTAH-CARTER PARTS

Utah



PRODUCTS IS IMPORTANT TO YOU

UTAH VIBRATORS'
 outstanding design and advanced engineering have maintained their leadership.



"Do you know the demand for Utah Vibrators increased 63% last year?"

...ure, there are 5 main reasons: 1. Complete exact replacements can be made with the Utah line, 2. Absolute dependability is assured by Utah's rugged, time-proved construction, 3. Finest materials available are used in the manufacture of Utah Vibrators. "Life Tested" in Utah's laboratory—the industry's best equipped, and 5. They have a 2 months' guarantee."



FOR DETAILS SEE THE UTAH CATALOG

UTAH-CARTER PARTS,
 including vitreous enamel resistors, volume controls, potentiometers, rheostats, plugs, "T" and "L" pads, long and short jacks, imp jacks, jack switches, push-button switches, plug-in type D.C. relays.



"Do you know why I always insist on Utah-Carter parts?"

"That's easy. You've found they save time and money. Experience has taught you that satisfactory performance is assured at every Utah-point in the circuit."



DETAILS ARE IN THE UTAH CATALOG

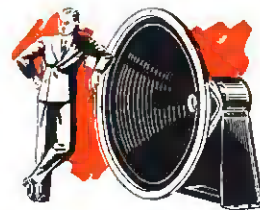
UTAH SPEAKERS

ninety-three different models to meet practically every radio receiver and sound equipment need in these industries.



"How many Utah Speakers were used by the radio and sound equipment industries last year?"

"1,676,622—the preference for Utah Speakers is continuing to rise rapidly. They have a balanced line and ruggedness and adequate power handling capacity are built-in characteristics."



COMPLETE INFORMATION IN UTAH CATALOG

If you don't have a copy of the latest Utah catalog, ask your jobber for one—or write us direct.

UTAH RADIO PRODUCTS COMPANY, 810 Orleans Street, Chicago, Ill.
 Canada: 560 King Street West, Toronto • Cable Address: UTARADIO, Chicago
 In the Argentine: Ucoa Radio Products Company, S.R.L. Buenos Aires.

New 1941 RCA Victor Models Acclaime

"THE HOTTEST LINE



Presidential Model Will Win a Big Profit Vote!

Leader of the greatest quality-value line RCA Victor has ever built, this outstanding new radio is made to order for your increased profits! Features Overseas Dial, Stabilized Electric Tuning, Speech Clarifier, 10 RCA Victor Preferred Type Tubes, 2 built-in Antennas — one for foreign and one for domestic programs, Parallel Push-Pull Audio System, 12-inch Electro-dynamic Speaker a stage of radio frequency amplification and several other features that will win sales for you! It's Model 110K.

For finer radio performance, RCA Victor Radio Tubes. Trademark "RCA Victor" Registered. U. S. Pat. Off. by RCA Mfg. Co., Inc.

Postal Telegraph
 TO SER=OG NEWYORK NY 24 1259A
 H C BONFIG= 1940 MAY 24 PM 12 34
 RCA MFG CO INC=
 YOUR NEW LINE OF 1941 RCA VICTOR RADIOS RINGS THE GONG STOP THE OVER SEAS DIAL STORY MAKES THE BEST ADVERTISING FEATURE WEVE SEEN IN A LONG TIME STOP YOUR GOING TO SEE A LOT OF IT IN VIM COPY= AL HIRSCH VIM STORES.

BY DIRECT WIRE FROM
WESTERN UNION
 CLASS OF SERVICE: This is a Direct Wire Service...
 P215 15=WUX PHILADELPHIA PENN MAY 25 428P
 RAYMOND ROSEN AND CO=AL SLAP
 HAVE JUST SEEN YOUR NEW 1941 RCA VICTOR LINE THINK IT HOT
 LIT BROTHERS LEO LERNER.
 CONGRATULATIONS=

Postal Telegraph
 STANDARD TIME INDICATED
 CAMDEN, N. J.: 311 FEDERAL ST. TEL. 328-2257
 P20 25 SER=OG NEWYORK NY 24 1158A 1940 MAY 24 PM 12 34
 H C BONFIG=
 RCA MANUFACTURING CO INC=
 CONGRATULATIONS ON YOUR SPLENDID NEW 1941 RCA VICTOR RADIO LINE STOP YOUR CONSOLES MERIT SPECIAL COMMENDATION STOP THEY ARE IDEAL FOR FURNITURE MERCHANDISING= WALTER ENDEL MICHAELS BROTHERS.

RCA
 RADIOGRAM
 RCA COMMUNICATIONS, INC.

RECEIVED AT 218 COOPER ST., CAMDEN, N. J., AT 11:49 AM 25 VIA RCA= PI CHICAGO ILL 22 4940P
 H EDGAR
 RCA MFG CO CAMDEN NJ=
 CONGRATULATIONS ON WHAT WE CAN REALLY CALL A DEALERS LINE NEW RCA VICTOR MODELS HAVE EVERYTHING WE NEED TO MAKE SALES PROFITS AND SATISFIED CUSTOMERS= JACK TUNNIS TUNNIS BROTHERS.



RCA
 RADIOGRAM
 RCA COMMUNICATIONS, INC.

RECEIVED AT 218 COOPER ST., CAMDEN, N. J., AT 11:50 AM 27 VIA RCA= PI CHICAGO ILL 22 4940P
 HERB EDGAR
 RCA MFG CO CAMDEN NJ=
 NEVER SAW MERCHANDISE THAT HAD SUCH EYE APPEAL EAR APPEAL AND PURSE APPEAL NEW 1941 RCA VICTORS WILL BE MY HEAVY ARTILLERY IN THE BATTLE FOR PROFIT= JAS EARLE WOODLAWN RADIO AND MUSIC CO.

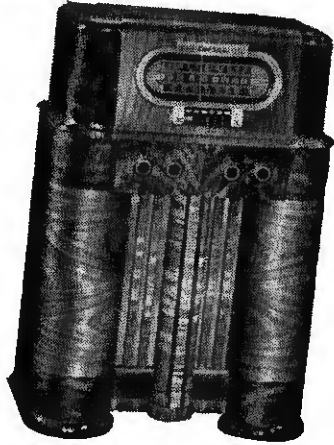


FOR MORE SALES AND PROFITS VOTE

Dealers as...

N HISTORY!!!

Complete line of new instruments in console, table, farm and Pick-Me-Up models receive rousing welcome! New extra quality features, new low prices win enthusiastic praise from coast to coast!



Here's Your "Biggest Buy in Town" Candidate!

RCA Victor Model 19K—and you've never seen anything like it—for quality, performance, for beauty — at so low price! Has 9 RCA Victor Preferred Type Tubes, new stabilized Electric Tuning, American and improved foreign reception, Built-in Rotatable Loop Antenna, large 3-band Edge-lighted dial, a stage of radio frequency amplification, 4-point tone control, 12-inch Electro-dynamic Speaker, Push-Pull Radio System, and other extra quality features.

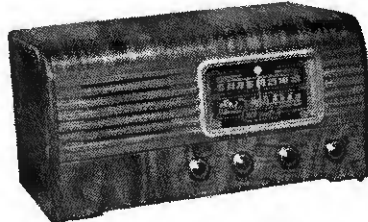
Exhibit of all RCA services . . . including television . . . at RCA Building, New York City's Fair — and Golden Gate Exposition, San Francisco.

**New Pick-Me-Ups—
For a Landslide of Sales!**



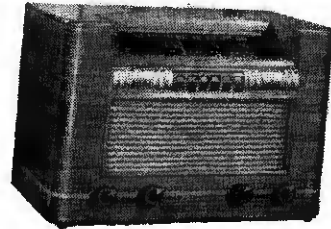
Available in 6 different finishes to cover every type of taste, these new easy-to-carry sets play outdoors and in, operate 3 ways — on self-contained battery, on AC current, on DC current. All are superheterodynes, have 5 RCA Victor Preferred Type Tubes (2 of them double purpose, to provide 7-tube performance), permanent magnet dynamic speaker, built-in Loop Antenna, easy reading, clock-type dial in four colors, automatic volume control, and other proofs of quality and value. Model illustrated is 15BP-2 in brown airplane luggage finish.

Also available in gray airplane luggage . . . brown leatherette . . . brown lizard grain leatherette . . . bakelite . . . solid mahogany and mahogany veneer. Long-wearing zipper type carrying case. Available for Models 15BP-1 and 15BP-6.



**The Farmer's Choice...
This Unmatched Battery Value**

Here's eye appeal, ear appeal, purse appeal! Model 15-BT has 5 RCA Victor Low drain tubes, American-foreign, Police and Amateur reception, economy blinker and battery saver switch, a tuned stage of radio frequency amplification, 5-inch speaker, moisture proof coils, automatic volume control. Is convertible to 110-volt AC operation. Cabinet provides ample space for batteries.



**A Super Value
Your Customers will Cheer for!**

RCA Victor Model 18T has a cabinet of walnut and walnut-and-maple veneers that is new in design and beautiful to look at. This set features superb American, Police and foreign reception, efficient built-in Magic Loop Antenna, a stage of tuned radio frequency, Electric Tuning, continental-type slanted type, Electro-dynamic Speaker, automatic tone compensation, and other fine features.



RCA Victor

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



CROSLEY-ON THE MARCH!



with the
greatest line of radios
the industry has ever
known...

The Sensational New 1941 Line of

CROSLEY

GLAMOR-TONE

RADIOS

35 COMPLETELY NEW MODELS



Here they are...Crosley 1941

NEVER BEFORE IN 20 YEARS OF BUILDING HOUSEHOLD RADIO SETS HAS CROSLEY ANNOUNCED A LINE LIKE THIS

AMAZING NEW TONE AND ALL-AROUND PERFORMANCE

We have tried fifty ways of describing GLAMOR-TONE and its performance and have found only one—HEAR IT! That's why we are telling the nation—"COMPARE the radio you own with CROSLEY and its GLAMOR-TONE."

UNEXCELLED PROFIT OPPORTUNITY IN NEW MERCHANDISING PLANS

GLAMOR-TONE is definitely "store-minded" because as you step up in price, you step up in eye-appeal, features, performance and PROFIT! Ask your CROSLEY distributor for the New Crosley Merchandising Chart—and cash in on this great plan.

STRIKING NEW BEAUTY IN NEWLY-STYLED CABINETS

To every expert who has seen these GLAMOR-TONE Receivers, the beautifully styled cabinets of completely new design have been a source of wonder and excitement. Yes, the cabinets have glamor, too!

GREATEST NATIONAL AND LOCAL ADVERTISING IN CROSLEY HISTORY

Aggressive, powerful national magazine and newspaper advertising all year long. Striking full-color pages—exciting black and white pages and fractional pages—dominating space in newspapers (even some of *that* is in full color!) will create the GREATEST CONSUMER DEMAND FOR THE NEW LINE IN CROSLEY HISTORY!

35 GREATER-THAN-EVER VALUES beginning at \$7.95 for Model 10AA all the way up to \$149.95 for Model 31BF



MODEL 33BG A 6-tube combination radio-phonograph and recording unit, complete with table microphone. Has public address system, a method of fading voice with radio or recording. Broadcast. INTERNATIONAL SHORTWAVE

and image police bands; 8-inch super-dynamic speaker, variable tone control, bass compensation and Heliscope loop aerial.

PRICE \$69.95*

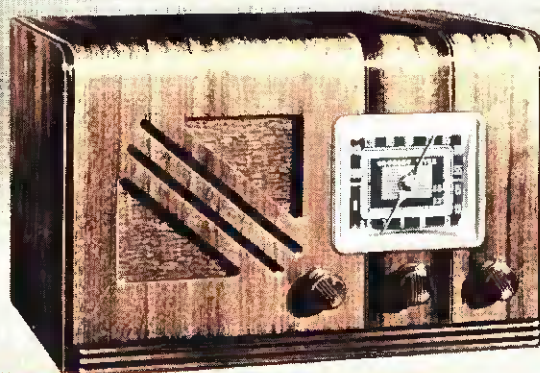
MODEL 24AJ A 7-tube AC with 3 complete bands, 550 to 18,000 Kc. 3-gang condenser, push-pull audio, 8-inch super field speaker, variable tone control, bass compensation. A massive, table-model cabinet, hand-rubbed finish.

PRICE \$29.95*



MODEL 20AP Famous CROSLEY "Fiver." A 5-tube power transformer AC set that made radio history. Two complete bands plus image police, 6-inch speaker, bass compensation, Heliscope, loop aerial. Hand-rubbed walnut finish.

PRICE \$19.99*



AND OF COURSE CROSLEY HAS FREQUENCY MODULATION SETS

*Prices slightly higher in the far west and south

CROSLEY

GLAMOR-TONE Radios!

MAKE NO PLANS UNTIL YOU INVESTIGATE THE PROFIT POSSIBILITIES IN THIS GREAT CROSLEY LINE



MODEL 30BC A 7-tube radio-phonograph combination with automatic record changer. Plays fourteen 10-inch and ten 7-inch records. Chassis features include: 3 bands, variable condenser, push-button audio, 10-inch speaker, tone control, rotating Heliscope loop aerial and mass compensation.

PRICE \$79.95*

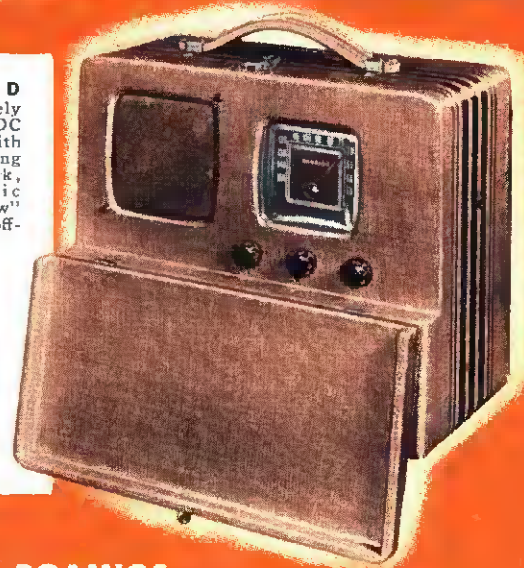


MODEL 13AE A 5-tube AC-DC superheterodyne with 2 bands—broadcast and INTERNATIONAL SHORT WAVE, Heliscope loop aerial, illuminated "gold-glow" dial, in mottled brown bakelite cabinet.

PRICE \$12.95*

MODEL 27BD A 3-way completely self-contained AC-DC battery portable with CROSLEY extra long life battery block, 5½" P.M. dynamic speaker, "gold-glow" dial, semaphore "off-on" indicator. Hinged, front cover for protection of set. Airplane luggage style weather-proof case.

PRICE COMPLETE \$19.95*



CROSLEY ROAMIOS— 5 AUTO MODELS FROM \$14.99 TO \$34.95



PRICE \$149.95*

MODEL 31BF The radio that has everything. A 9-tube, AC radio combination with phonograph and automatic record changer, recording unit with table-type microphone, public address system, method of fading

voice with recordings or radio, 8 electric push buttons, 12-inch concert speaker, rotating Heliscope loop aerial and many other Crosley engineering refinements. Deluxe period-type cabinet.

EVERY HOUSEHOLD MODEL IN 1941 CROSLEY LINE INCLUDES THESE FEATURES

- ✓ Jewel-case Protector
- ✓ Heliscope Loop Aerial*
- ✓ Antenna Booster Coil*
- ✓ Automatic Volume Control*
- ✓ Illuminated "Gold-Glow" Dial*
- ✓ Dual-Purpose Tubes

*in every set over \$7.95

Important to Every Radio Dealer
The entire Crosley Household Radio Line uses only 15 tubes.

IS ON THE MARCH!

WIRE PHONE OR WRITE TODAY FOR FURTHER INFORMATION... AND LOOK →

Greatest National Advertising Program in CROSLEY History Already Under Way!



Greatest in space—greatest in power—lots of color—45 separate advertisements in 7 of the most influential mass-circulation magazines read by American families, telling the GLAMOR-TONE story, urging readers to "Compare the radio you own with CROSLEY and its GLAMOR-TONE."

IN NATIONAL MAGAZINES

The Saturday Evening Post, Collier's, Life, Look, Liberty, Time and the New Yorker, between the 22nd of June and December 31, will appear 45 separate insertions—averaging better than two a week!

IN KEY CITY NEWSPAPERS

CROSLEY will blanket the country with large, powerful newspaper advertisements in key cities with which CROSLEY dealers can tie in with cooperative newspaper advertising. Complete mats for cooperative advertising are available in wide variety. Every sort of a sales help is ready—Store Displays, Window Displays, Pennants, Banners, Outdoor Posters, Car Cards, Folders, Broadsides and PROMOTIONS.

WRITE, WIRE or—better still!—PHONE for a complete presentation of the GLAMOR-TONE line and sales-program.

Big Space—Lots of color—45 Individual National Magazine Advertisements to 13,370,000 Families That Are Crosley Prospects 7 Times.

THE CROSLEY CORPORATION

The home of WLW, the Nation's Station, 70 on your dial

POWEL CROSLEY, Jr., Pres.

CINCINNATI, OHIO

Visit the Crosley Building at the New York World's Fair

INDUSTRY ORGANIZES

For National Defense

ALERT to what is happening in Europe, the American people are setting out to strengthen their defenses against aggression from any quarter. Already the government has laid down an initial program to that end.

The surest defense against aggression is the ability to resist it. If we are known to be well prepared we may avert attack. If we cannot avert it we shall be armed against it. But preparedness against war means preparedness to wage war.

And modern war is an industry. Like every other industry, it is a matter of men, materials and machines. Fighting men must be skilled workers, trained to use an arsenal of special tools and equipment that are just as diversified and just as essential to success as those of any other industry.

The plant, supplies and personnel of war must rival in efficiency those of any peacetime industry. For the stakes of success or failure in war are not paid in money profits or losses: they are paid in the lives and property of the people, in the security — perhaps the survival — of a nation.

* * *

Sound national defense calls first for a comprehensive program, carefully planned to back up a clear-cut policy as to what we expect to defend. Next comes the appropriation of funds to realize that program. These first steps are vital: they are up to government.

Then program and appropriations must be translated into performance. Native raw materials must be produced, processed and stored. Our meager supplies of strategic materials of foreign origin must be built up until we have accumulated ample stockpiles against the use and wastage of active war. And most urgent, because it is most complicated, raw materials must be manufactured into the innumerable items required to equip the modern army.

We of McGraw-Hill, living with American industry as we do, are keenly aware of the effort that will be required to produce the materials and equipment now needed to modernize our national armament.

Tanks and anti-tank guns, airplanes and anti-aircraft guns, machine guns and automatic rifles, trucks and tractors, destroyers and supply ships — these are but a few items from the endless inventory of military and naval equipment that we must produce by scores, hundreds and thousands, even to arm an Initial Protective Force, behind which we might rally our national resources for decisive effort.

Obviously the army and navy must count on American industry for an ample and continuous supply of this equipment, and industry must organize to produce it in vast quantities. This means the construction and adaptation of manufacturing, transportation and storage facilities, the organization of competent executive and technical staffs, the training of skilled craftsmen in numbers adequate to maintain exacting production schedules. All this, in itself, is an industrial organization problem of the first magnitude, but upon it is imposed still another and vital specification — *sustained speed*.

For time is the all-essential ingredient of modern war. It cannot be bought with any appropriation, however great; once lost, it cannot be recaptured; we must make effective use of it while we still have it. And at this juncture we have none to waste in fumbling, jockeying or experiment.

* * *

Two courses are open to carry out such a program.

1. We might adopt the totalitarian plan of nationalizing industry, conscripting the wealth and labor of all, and suppressing the normal incentives and management of industry in favor of the authority and control of government officials.

2. Or we can stick to the American way of achieving national unity and efficiency by intelligent cooperation between industry, labor and government.

There are those to whom the first will appeal as being the more direct. But I am convinced that most Americans will insist that the job be done in the American way. And in this preference the President, speaking for government, already has indicated his concurrence.

But effective cooperation in so complex and unfamiliar a task demands the utmost of mutual understanding and confidence from all concerned. Confusion of purpose and conflict of opinion are bound to arise—have, indeed, already arisen. Needs and capacities in many fields must be reconciled, relative priorities for various products must be determined, specific parts of the whole program must be allocated, supervised and coordinated with other parts. Government officials, smarting under the whip of urgency, must render quick decisions on highly technical matters, while industrial executives, masters of their own operating technique, must adapt themselves to arbitrary and unfamiliar requirements.

Under such conditions, many problems will arise that must be worked out between the men of industry and those of government. Some of them will be the more acute because of the restrictions under which industry has had to work during recent years—restrictions that have curbed not only the expansion of plant capacity, but also the development of improved processes and the supply of skilled workers. Now, from this sag in our industrial growth, many departments of industry must undertake an overnight expansion of capacity to meet the exacting time schedules of national defense. So industry must look to government for the cooperation that will enable it to expand its facilities promptly and yet write off in reasonable time its heavy emergency investments.

* * *

If we are to deal wisely with these situations, and many more we cannot now foresee, everyone engaged in any part of the defense effort must be willing and able at all times to get a fair understanding of the problems of the others. To help maintain such an understanding McGraw-Hill is peculiarly fitted.

1. By the organized exchange of views and information among our 24 papers, we can help to coordinate the thinking and practice of the 1,000,000 executives, technicians and operating men who are their readers, in matters that have to do with their part in the defense project.

2. Through constant contact with government agencies and the men of industry, our papers can interpret to industry the needs and policies of government and to government the problems and requirements of industry.

3. For the men of industry, each of our papers will expand its regular service as a clearing house of technical and operating data, with special reference to the needs of plants that are producing defense materials and equipment.

To forward these objectives we have set up within our

company a National Defense Editorial Board. It is composed of the chief editors of our publications that serve the functions and industries that are of key importance to the defense effort. Made up of men intimately familiar with the personnel and practice of their industries, this board will stimulate and supervise the activities of McGraw-Hill papers insofar as they can contribute to the defense effort. It will outline basic editorial themes, directed to the forwarding of that project, to be adapted by each paper to the special needs of its specific field.

The board will keep close touch with industrial executives and technicians so as to keep abreast of new problems as they arise. It will maintain contact also with government defense agencies and keep our editors posted as to government objectives, plans and problems. Thus it will function as a link between the several governmental defense agencies and the McGraw-Hill editorial organization, and so help each editorial staff to develop a program best suited to the special problems of its industry.

* * *

In thus undertaking our part in an extraordinary industrial effort, we shall not neglect the normal concerns of American industry. So far as may be consistent with the paramount needs of national defense, production and distribution of the goods and services normally consumed by the American people must go on. The effort to mobilize industry for the national defense must be, in large measure, an additional job and an added burden.

That burden is within the capacity of the American people. But it will not be light. And if industry is to carry successfully its heavy share of that burden, it needs the full cooperation of every industrial function.

For more than seventy-five years, through peace and war, McGraw-Hill publications have served to interpret between the various departments of industry and between industry and the American people. Today, as we face these new problems, there is a new and urgent need for interpretation between the industries we serve and the government to which we all bear allegiance. It is fitting that McGraw-Hill should undertake this effort. To it I pledge every resource of our organization.



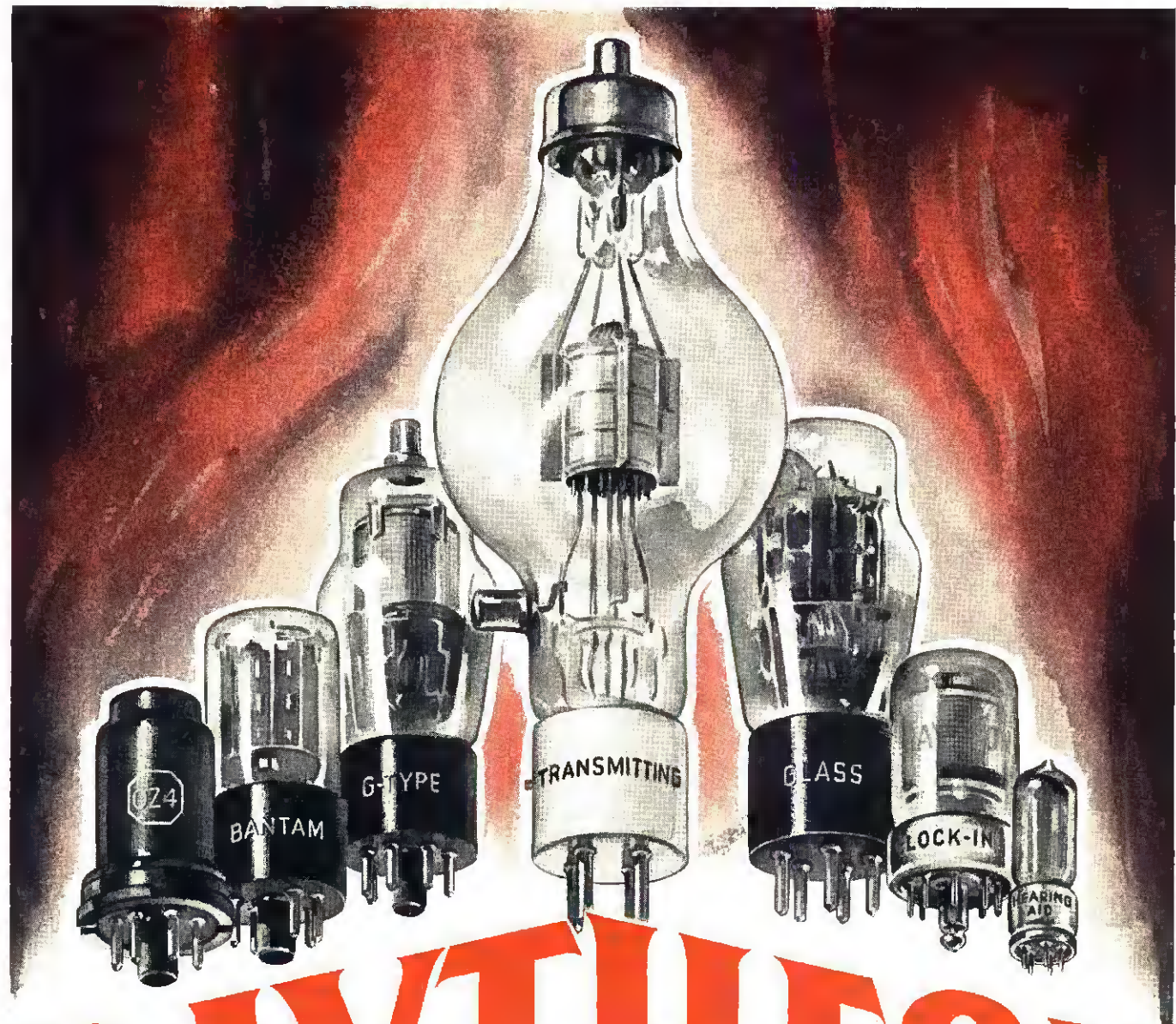
President, McGraw-Hill Publishing Company, Inc.

This message is appearing in all McGraw-Hill industrial and business publications, reaching over a million readers.

On June 10th, in Chicago, your Philco distributor hears the story of the sensational new radio and radio-phonograph inventions Philco engineers have produced for 1941.

Within a few short days, he'll be home with the news that will be your major source of profits for the coming season.

Watch for the date of his meeting. Be prepared . . . and ready to cash in with Philco . . . when the sensational news is out!



RAYTHEON

MAKES

THEM ALL



All the vast RAYTHEON engineering resources are exclusively devoted to anticipating fast moving radio circuit developments and pioneering in tube design to meet these developments *in advance*.

That is why there is a replacement RAYTHEON for every socket.

That is why thousands of the best *businessmen* in service work depend exclusively upon RAYTHEONS. That is why RAYTHEONS are used as standard

equipment in leading important receiving sets, auto radios, sound systems, coin operated phonographs, commercial communications receivers, amateur equipment and hearing aids.

The presence of RAYTHEONS is your guarantee that the equipment was engineered around the best of materials.

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

WORLD'S LARGEST EXCLUSIVE RADIO TUBE MANUFACTURERS

RAYTHEON PRODUCTION CORP. • New York • Chicago • Newton, Mass. • San Francisco • Atlanta

HERE'S **THREE** GREAT NEW NUMBERS

by **Andrea**

**FOR QUICK PROFITS THESE
ANDREA ITEMS ARE SIZZLING**

FIRST . . . There's a model G-40 portable electric phonograph in cabinet of luggage type covered in luxurious simulated alligator leather. Features self-starting constant speed 78 RPM motor—high fidelity crystal pick-up and balanced tone arm for low record wear—6½" permanent magnet speaker with special Alnico magnet for better tone and volume—self-contained power amplifier plays 10" or 12" records with cover closed.

SECOND . . . Is the big brother combination Model RG30 Portable Recorder-Phonograph designed for professional quality recording and full tone reproduction. Note these plus features:

1. More compact, balanced weight
2. Wide range microphone and stand included
3. Finest tone on the market
4. Simplified operation
5. Visual recording level indicator
6. Beautiful simulated alligator leather cabinet covering.

* All accessories housed in storage compartment inside of cabinet, entirely eliminating interference with player while in use.

AND CLIMAX . . . The great Andrea six tube, three way portable model 6G61A*:

1. AC-DC or batteries
2. 7¾ oz. Al-Ni-Co Speaker Mag.
3. Balanced loop
4. Sensitivity plus
5. Amazing fidelity of tone
6. Streamlined for beauty.

All products of Andrea Radio Corporation. All made to exacting Andrea Standards. All models finished in the highest grade quality of simulated alligator. Portable Model 6G61 is available in brown striped airplane luggage fabric, Model 6G61A.

Andrea

**RADIO CORPORATION
WOODSIDE, LONG ISLAND**

ATTENTION: Jobber franchise now being allotted. Write or wire at once to find if your territory is available.



NEW Jensen *Peri-Dynamic* PROJECTOR



PERMANENT MAGNET
15-25 WATT
HEAVY CAST BULKHEAD
SHEET STEEL BELL
BAYONET PLUG
CAST METAL STAND
24" BELL DIAMETER

FOR GENERAL PURPOSE PUBLIC ADDRESS WORK

This new type "S" Projector employs an especially designed, highly efficient, 8" Permanent Magnet loud speaker *sealed into an enclosure*, taking full advantage of the JENSEN *Peri-Dynamic* PRINCIPLE. The result is sharp improvement in middle frequency response and in that quality of crispness and intelligibility so essential to the reproduction of sound in public address applications. In addition, feedback troubles are substantially reduced by practically eliminating back side

radiation. And of course, the loud speaker becomes thoroughly protected from weather.

The Projector is rigidly constructed of cast aluminum and sheet steel; mechanical modes likely to generate objectionable resonance are thoroughly subdued. Electrical access to the loud speaker is gained by a strong bayonet type separate plug and socket assembly.

Dealer's price, (No. SPH-81) complete with PM speaker, only..... **\$31.20** NET

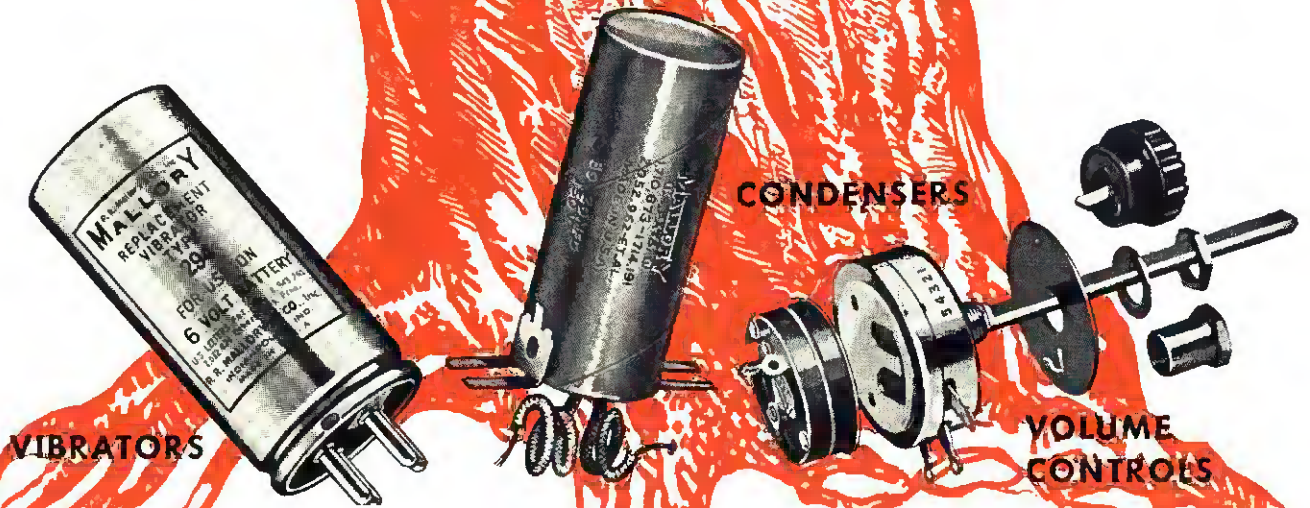
Mounting standard extra.

Jensen
6601 S. LARAMIE AVE. CHICAGO

P.R. MALLORY & CO., Inc.

MALLORY

Roots You Deeply Into the Soil of Profits



Mallory Replacement Vibrators, Condensers, Volume Controls and other replacement parts enjoy a long-standing reputation for trouble-free operation and long life that has been won in actual service.

Mallory's leadership begins with the set manufacturers who use Mallory products for original equipment. They are the "who's who" of the radio industry and their specification of Mallory products is a tribute of which any parts manufacturer could be proud.

In the replacement field, Mallory's leadership is equally wide

because radio service engineers have learned that they can depend upon Mallory for complete customer satisfaction.

Mallory has brought standardization to many items that has immeasurably simplified installation. This has led directly to lower inventory investment with faster turnover . . . and to faster, easier, more profitable service work. Follow the formula of thousands of successful service men. Insist on the best . . . it costs no more . . . Mallory's nation-wide, selected distributor setup is equipped to give you tops in service.

Use

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

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

Cable Address—PELMALLO

Automatic

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 oilless bearings in each post. Play-Meter control 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 on Play-Meter knob rejects record.

Record

SEEBURG RECORD-O-MATIC

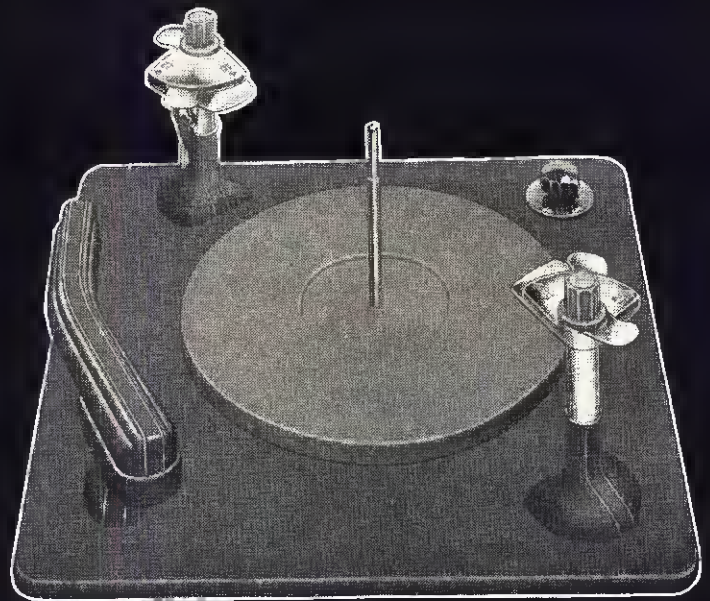
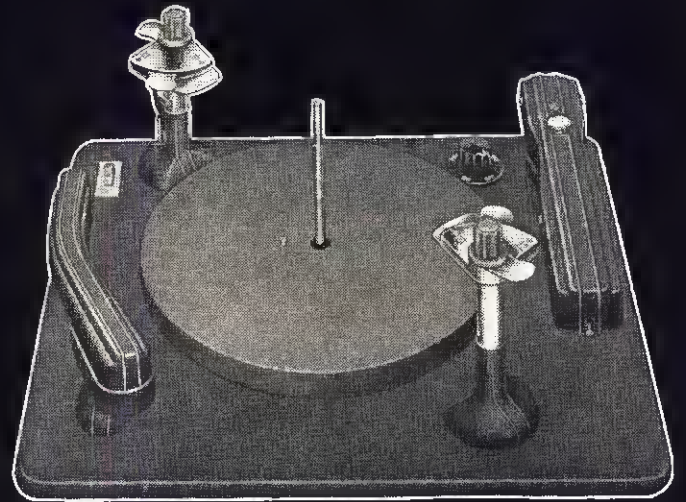
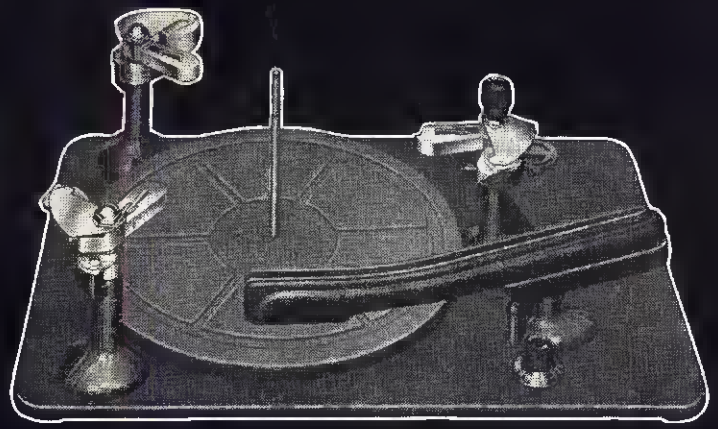
Has all advantages of Model "J" Changer. In addition: Cutting head assembly contains no steel stampings—all parts cast for rigidity; hardened cone bearings at all essential points; lead screw has support bearings at each end; larger main bearing and ball thrust to carry weighted turntable; 1 3/4 oz. 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.

Changers

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, 2 1/2 oz. Handles warped records and all commercial thickness variations. Tone Arm, held in outward position by latch under panel, automatically released by starting switch.

and Recorders



PRECISION MADE

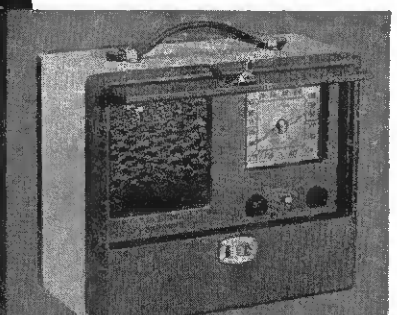


by Seeburg

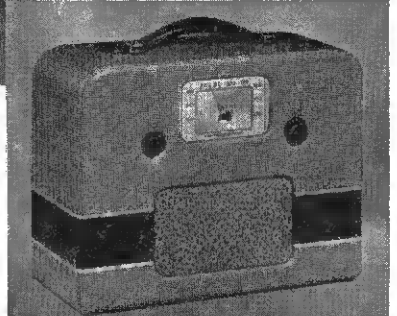
J. P. SEEBURG CORPORATION
1500 DAYTON STREET · CHICAGO, ILLINOIS



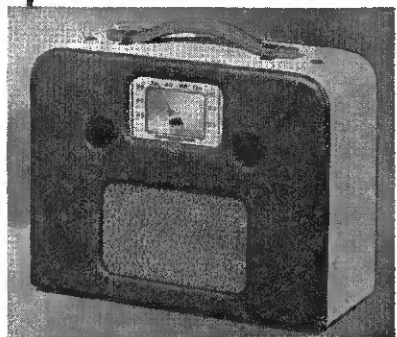
SURE, I'M CHEERING!
SO WILL YOU WHEN YOU BACK
THIS YEAR'S CELEBRATION LINE—
WESTINGHOUSE
21st BIRTHDAY RADIOS



LOCK-me-up portable. Model WR-680. Brown pigskin leatherette, contrasting white band. Lock and key. Operates on batteries, AC or DC. 4 batteries—6 tubes.



READY-to-go portable. Model WR-678. Covered with durable airplane linen. White and brown check, dark brown band. Batteries, AC or DC. 3 batteries—5 tubes.



TAKE-me-anywhere portable. Model WR-679. Brown leatherette with oyster white saddle-stripe. Batteries, AC or DC current. 3 batteries—5 tubes.

HE SAID BLUNTLY—

"I'm in business to make money"

So are you! And here is a real profit-making opportunity . . . a chance to sell *more* radios of a fast-moving line in its celebration year and make your full profit on every set.

"All right, let's hear about it"

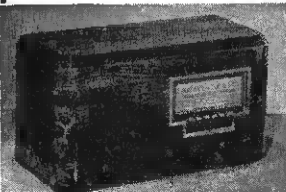
Your profit story for *this year* starts back in 1920 . . . the year Westinghouse made history by offering the public the first commercially built radio . . . the year Westinghouse transmitted the first radio broadcast from KDKA. These two outstanding contributions to the radio industry are being impressively celebrated by KDKA and this year's Westinghouse radio line . . . *the 21st Birthday Series*. You cash in!

"Sure, but how do I . . ."

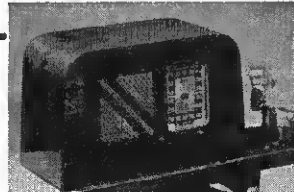
For faster sales and bigger profits—ride with this winning celebration line! The line with instant eye appeal. Styling by America's foremost radio designers. Exquisitely grained cabinets. Mechanical and tone performance second to none. And prices (with profit margins) that sure will make you cheer.

"Want to get action?"

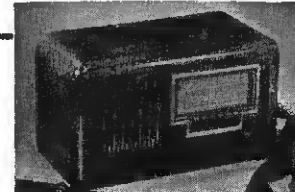
Phone your Westinghouse Distributor, now.



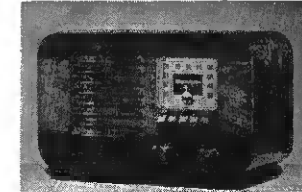
MODEL WR-184. Walnut cabinet. 6 down-push buttons. AC-DC. Underwriters Listed.



MODEL WR-177. Modern richly grained walnut cabinet. Built-in loop antenna. AC-DC.



MODEL WR-186. Hand rubbed walnut. 6 down-push buttons. AC-DC. Underwriters Listed.



MODEL WR-179. Hit-of-the-season design—contrasting walnut. 5 down-push buttons. AC or DC.

Westinghouse *Precision* **RADIO**

The Next Two Years

By W. MacDONALD*

AMERICAN RADIO BUSINESS is clearly once again entering more prosperous years. Even now it should be apparent that by comparison with many merchants in similar fields we already occupy the "better 'ole."

There are at least three good reasons why radiomen need not be envious of other retailers:

-1- Consumer listening is reaching the highest peak in history, with war news constituting the greatest single interest of the average man and presidential campaign broadcasts coming up to boost it still higher.

-2- Combining of companion entertainment mechanism with many new sets imparts to our merchandise long overdue major change, needed for a renewed attack on the replacement market as well as upper-bracket holdouts, and

-3- Radically new services already launched on an experimental basis show immediate promise as a means of securing plus business and, what is more important, virtually guarantee that in the near future new doors to initial business will once again open, perhaps as wide as they did back in 1923.

Skeptics may with good effect ask themselves these questions:

What product sold for use in the home is as directly benefitted as radio by skyrocketing interest in news?

What specialty can boast more important changes in design and general usefulness than new radios with their companion entertainment mechanism?

And what other business offers anything like the future promise of

* Editor

radio's two coming services?

We are still in an expanding, major field.

Probable Trends

The next two years will see more blood pumped into the veins of the manufacturing branch of the industry.

We think unit sales will continue to rise. 12,000,000 sets manufactured is considered a conservative 1940 estimate. First quarter production this year was up nearly 30 per cent.

We think, and this is more important, that average dollar value will rise too. Not much, but enough to furnish new red corpuscles for many operations that have been functioning for some time on their nerve. Manufacturers will continue to market receiver types below \$10 for competitive reasons but their own advertising and discount schedules already show signs of favoring models up a dollar or two.

We think that while the average manufacturer's understandable fear of losing volume, achieved in recent seasons largely through successive price reductions, will militate against any bold rush to better sets combination models of several kinds will be pushed with less timidity in a growing desire of factories to put radio back in the major specialty class.

We think that most manufacturers are at last really trying to encourage a general price backswing.

Home Entertainment Expanding

The next two years should similarly see amelioration of much chronic anaemia in the distributing and retailing branches of the radio business for the health of both de-



SECTION

1

PLANNING
for the Future

Streamlining...STORE...SELLING
...ADVERTISING... MANAGEMENT

pends to a large extent upon trans- fusion of sell-up ideas and policies from the veins of factory salesman- agers.

Hand - to - mouth buying will scarcely cease entirely because this lesson has been learned, perhaps too well, in recent years. But we be- lieve more dealers will find it finan- cially possible and economically de- sirable to trend back toward pur- chases in reasonable quantity as larger units replenish their war- chests.

Home specialties other than en- tertainment devices will continue to play an important part in the aver- age retail radio operation but we believe the often-discussed possibil- ity that such devices might finally relegate radio to second place is now definitely averted by the promise of new entertainment services and continued growth of old ones.

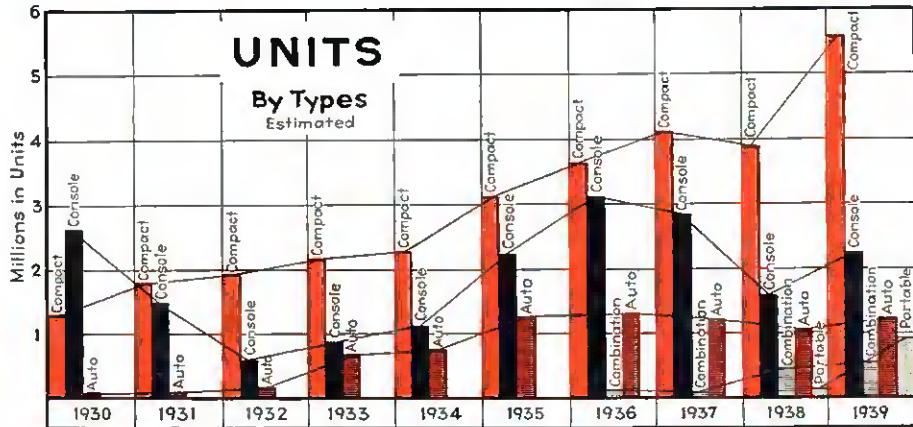
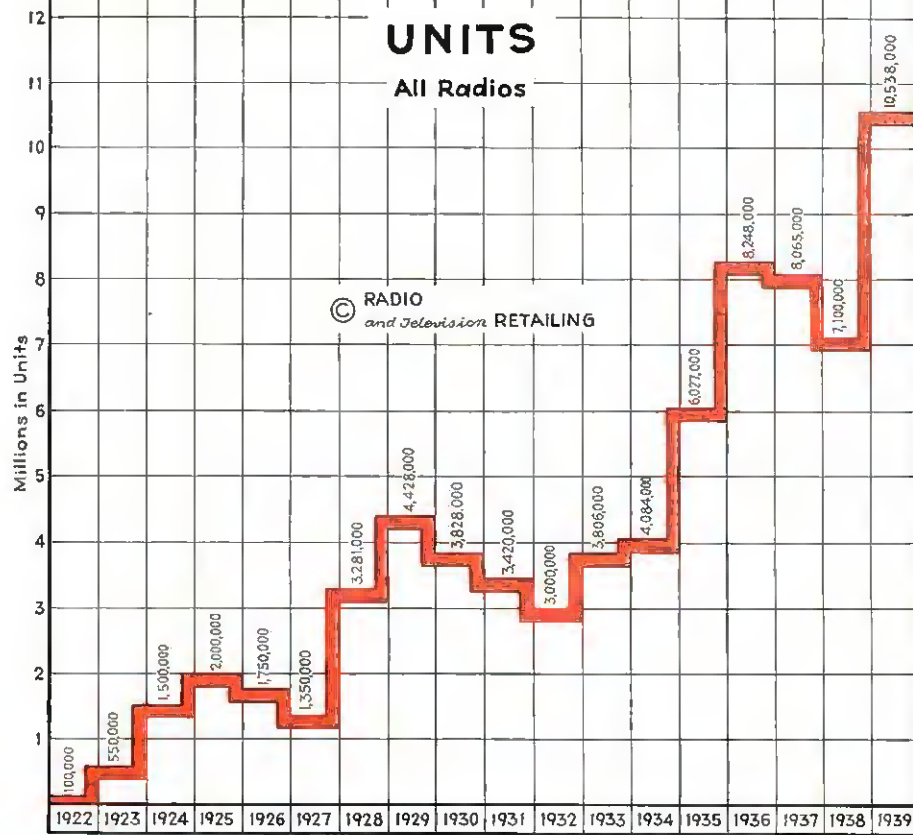
Outside selling of radio, we be- lieve, will once again become fea- sible for retailers so inclined, higher unit price of combination instru- ments of various kinds plus instru- ments designed for new services providing sufficient margin to sup- port such activity.

Closer Sales-Service Alliance

Service and sales will, in our estimation, become even more closely allied in the average opera- tion. Those few merchandisers at present farming it out will gradu- ally return to this phase of the business as the entertainment equipment field once again expands and operations hitherto confining themselves chiefly to repairs will one by one climb aboard the new merchandise bandwagon as fast as they can find funds.

We believe that while it would require considerable temerity to pre- dict that the radio industry's days of price-cutting and dumping are entirely behind it there is little dan- ger in forecasting that the worst is in the growing-pain past. Most operators have now learned through bitter experience that this medicine is worse than the disease it attempts to hold in check. In too many cases the remedy works nicely, but the patient dies.

We believe, and this may well be a trend to be watched closest of all, that radio business of the future is likely to spread much more evenly over the entire twelve months, with



Picture of the Past

more of it in the so-called off-months and less startling sales at the old familiar peak periods. Spreading of new line introductions over a wider span of months plus steady development of merchandise most saleable in summer already points that way and should radically influ- ence the industry's promotional thinking. (Second - quarter sales have so far been disappointing, per- haps because the first quarter spurt already reported led the industry to expect too much, too quickly).

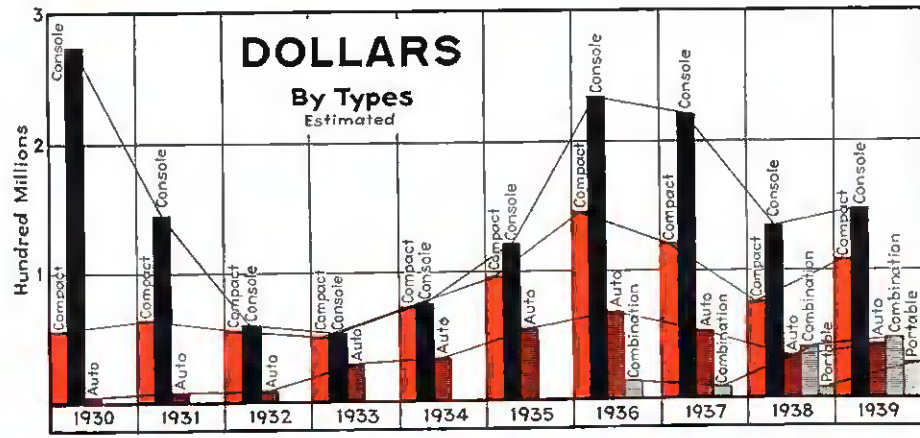
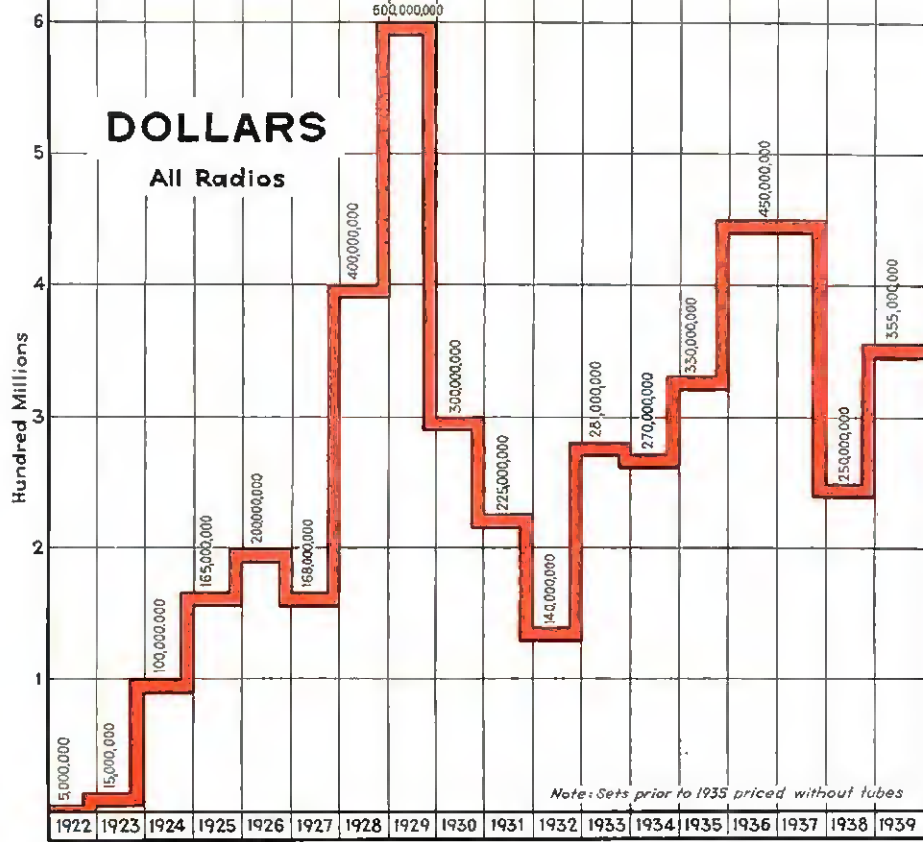
Products With Promise

There's many a slip 'twixt cup and lip but the following speculation about products seems reasonable:

Recorders, and particularly those built in combination with radios,

will probably overshadow most other innovations from the standpoint of actual sale, at least between now and the fall of this year. Chief virtue of such devices from a broad industry standpoint is the fact that they provide a major sell-up ap- proach for big consoles and there is some danger that while the market is a nice one it may be over-played with resultant price concessions. Here is one golden-goose it would be a pity to kill.

Phonograph Combinations will undoubtedly continue to increase in importance, more because of in- creased promotional pressure from both manufacturer and dealer, per- haps, than because of any design improvement. Provision for home recording will help. Increased use



Eighteen Years of Retail Radio Business

of automatic changers will help. And increased activity by record makers themselves will give this product still an additional boost.

Backbone Still Broadcast Radio

Portables will probably achieve their all-time peak in 1940, with sales at about the same level in 1941 and substantial repeat business thereafter. While much of the portable business will unquestionably fall in the summer months it appears certain that three and four-way types will spread sales out somewhat wider than during the introductory period, when straight battery models were the rule rather than the exception.

Auto-Radios will probably continue selling at about their present

rate. Future developments which might tend to either boost or drop sales cannot at this moment be envisioned.

Compacts and Consoles, at least in the two year period ahead, will in our estimation easily continue to constitute the backbone of the radio business despite introduction of any and all innovations. We think compacts of the immediate future will be about the same size as at present, certainly no smaller on the average, and that they will sell at slightly higher prices. We think straight consoles, without companion mechanisms, will be somewhat smaller in size and will sell for about what they do today. Both compacts and consoles, we expect, will be better constructed.

Battery Sets are destined for a face-lifting. The trend in this direction is already apparent and it augers well for the rural markets.

Television, and here the potential is obviously tremendous but speculation regarding progress in the specific period under discussion extremely difficult, will probably start going to town. We do not think that in the next two years national television sales will be comparable with radio sales but we will gamble that they may be very substantial in many large cities. Judging from what we see already in and around New York, we would guess that televisions using tubes with screens 9-inches in diameter or larger will be the rule rather than the exception. We would also guess that models including good broadcast radio tuners will be best-sellers. It may even be within this period that we will see some combination of television and frequency-modulation within the same cabinet. In many ways such combination seems logical and we wonder why we have not already seen it.

Frequency-Modulation receivers, obviously not so revolutionary as television, are yet of major importance in their own right. Sales potential may not be as great but development is likely to proceed faster. Here again it seems to us that combination with standard broadcast receivers within the same cabinet is the way the wind blows.

Second Big Sales Cycle

Any way you look at it this is an imposing list of radio and companion entertainment products. Throw in such things as separate Record-Players, Portable Combinations using batteries to run the radio and a spring to run the turntable, Remote-Control Devices, Functional Furniture Radios, Period Types, Records and a wealth of Accessories to round out the home entertainment line. And keep in mind the fact that there are certain to be more within the next two years.

There may even be some important ones "under wraps" for 1940 introduction as we write, probably are.

We've all waited a long time for the radio business to pull out of the doldrums and enter its second big sales cycle.

The next two years, we think, is "it."

Planning The



purchasers of parts and kits and did a whale of a business at fancy prices.

In those days there was no such thing as a real service shop. The majority of radio fans rolled their own and only when stuck sought the advice of the so-called radio doctor of that period.

Plans For Future

First radical changes in store appearance were due to "packaging" of complete radios and, within the last few years, recognition of the natural sales tie-in between radio, records and certain home appliances

to know if the future store will be styled after the city drug emporium, selling everything from radio to china dolls.

Will radios be relegated to the back of the store with records to the front? Television and frequency-modulation receivers, when they come, sharing top honors for placement with home recording? These and other related questions are uppermost in any dealer's mind, especially the owner who is contemplating a face-lifting for his store.

To know the answers to these questions you would have to be an "A No. 1," crystal gazer. How-



EXTERIOR—Will more dealers use specially designed buildings like this for displaying new entertainment services?

IF TODAY'S radio and appliance dealer could board H. G. Wells' mythical "Time Machine" and whisk back over the years to 1925 he would be amazed at the changes that have occurred in the appearance of stores over this 15-year period.

The veteran dealer, however, needs no "Time Machine" to retrace these years and can recall how the store of the twenties sizzled with sales promotion for the latest box-like set of that day, replete with separate speaker et. al.; how radios were literally sold over the counter; how dealers catered primarily to

** Assistant Editor*

such as refrigerators, washers and air-conditioners.

Any review of yesterday's stores provides the dealer of today with plenty of puzzlers. Why the delayed effort to take advantage of record business revival? Why the apparent lack of foresight in coupling radio selling with certain appliances? But that's another story. The alert operator of today plans ahead, has no time for retrospect, is more concerned with the store of tomorrow.

Will the store of tomorrow be on the main street or will it be located a few blocks away from the main stem of business? He would like



SIDELINES—Will photographic equipment, and similar sidelines, claim more space in tomorrow's store?

ever, it is no hair off anybody's lip if we do a little speculating as to the future. If the dealer's thoughts are in the same groove, and he plans his store in accordance with tomorrow's trend, he will naturally be that much ahead of his competitor.

Over the next two years it would appear that the average shop will still be a combination radio and

STORE of Tomorrow *By* CARL DORF*

home appliance store. However, the trend now indicated, is featuring receivers of several types, home-recorders, records and sound equipment. We doubt if there will be much more diversification beyond electrical appliances.

Trend and Location

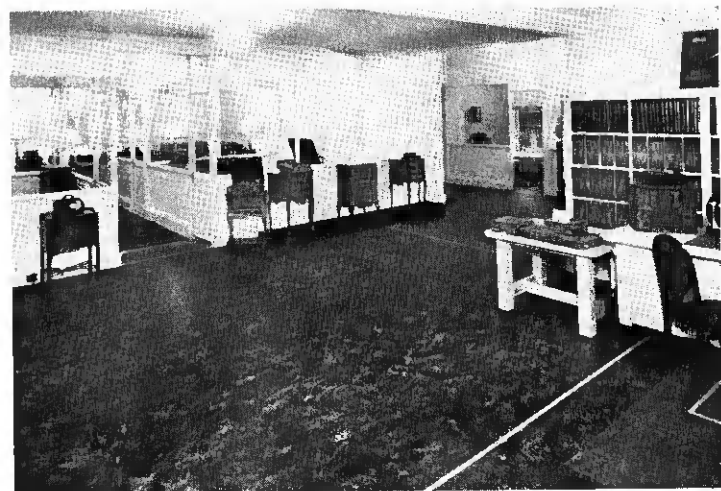
Its location will depend, as now, upon the particular type of clientele. Some stores will continue to be located in the main business center, others in smaller neighborhood communities; the first drawing on transit trade and the second on the local.

factor in both store and window lighting. Stores that have already installed fluorescent fixtures, claim greater diffused illumination, and increased store traffic. They do, however, caution against flamboyant use.

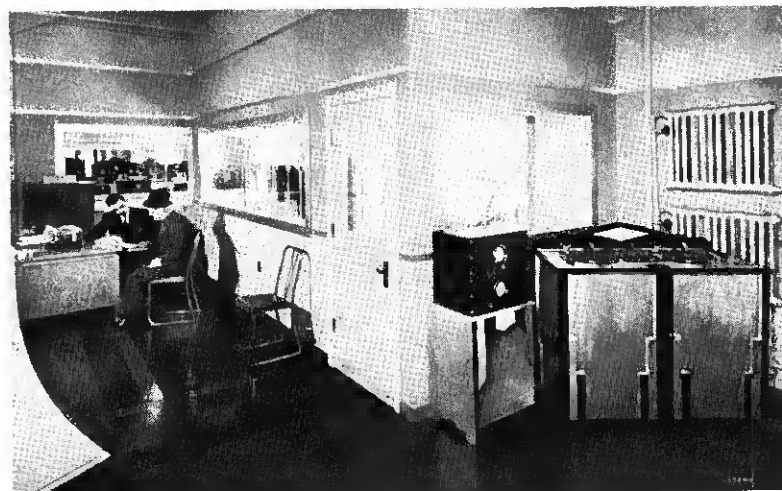
When broadcasting companies receive the green light to commercialize the video art, the television set will demand separate space for proper demonstration. Rooms, not little booths, will probably house the tele receiver. Such rooms will be appointed in home surroundings with an easy chair, a shaded lamp and ash tray at hand. These are

most practical and profitable arrangement for all stores of tomorrow. A great deal depends on the products, the location and the store. Some dealers advance the opinion that records will have greeting space in the front, others say this department should be in the rear or center so the record purchaser has to pass other merchandise. Store owners will pay more attention to the proper grouping of sets. Also to the display of seasonal radios, like portables and auto units for spring and summer.

With larger unit sales still pointing upward, and with tele and F-M



INTERIOR—Will visible audition booths for radios, records and television be used as a model for future layouts?



SERVICE—Will this be tomorrow's layout trend for semi-technical merchandise and service operations?

Tomorrow's store will take greater advantage of dealer helps and displays. The small town store will duplicate the city shop more closely and use more attractive window displays, also indoor arrangements for showing wares with more effective sales promotion constantly in mind.

Tomorrow's shop owner will employ more dramatic sales appeal in the front of the store. Devices for actuating a chime or for starting a display in the window. More attention will be given to proper window lighting. Operators will employ concealed lighting extensively. Fluorescent illumination will prove a big

all silent aids to sales and will not be overlooked. No alcove or rear floor space for this unit will be fitting or proper.

Large consoles and phono-radio-recording combinations will also rate separate audition rooms for demonstration. The small booth generally used for record playback will have better acoustic treatment or will give way to the larger room. All of which indicates a definite trend to the increasing use of separate demonstration booths. In the small store, where space is at a premium, there will be the semi-enclosed listening stands.

It is not possible to visualize the

sets in the offing, the trend will be for a closer link between sales and service.

Modern test instruments were made to be seen as well as used. This is particularly true of the tube checker, and the tube testing department will have a more prominent spot in the store layout. The service section in the retailer's store, will be spotted to the rear, but will be visible to the customer through a glass partition, or other similar arrangement. There is good sales ammunition in displaying service facilities and tube testers. The modern owner will not overlook these bets.

Trends In *Home Specialty* SELLING

By CASWELL ODEN*

THE EDITOR ASKED ME to tell you kind and patient readers what I think the immediate future will bring to salesmen and retail selling methods in the Home Specialty field. What I think will happen, and what I think should happen. He said I should just lay my opinions on the line.

I mention this so you will understand the reason for the prophecy, forgive the omniscient point of view, and take without salt only that portion of this article where I obviously revert to my usual practice of reporting and interpreting facts learned from experience.

Less Discount House Competition

What do I think should happen? I suppose there is a lot of room for improvement just as there usually is with everything else but it is a waste of time to talk about things which should happen but won't. However, there is one thing I think should happen—and very easily could—so it is worth mentioning.

It is enough that employees of manufacturers and wholesalers can get a discount on merchandise they want for their own use. When they also do it for everybody they know, they are competing with salesmen. This is unfair competition.

It is unfair because they have jobs and are not salesmen. But let's forget what is fair or unfair, and look at the matter from the viewpoint of the manufacturer or wholesaler. Perhaps he doesn't realize that he would benefit *himself* by eliminating such competition. But he would, and here is the reason:

(1) When an employee of, say,

a manufacturer gets a discount for a friend of his, the manufacturer gets his money. Does he get more? No. (2) If a salesman made the sale, the manufacturer would still get his money. Would he get more? Yes.

He would get more because by eliminating the unfair competition he would make the specialty salesman's job a better job; and he should be *interested* in that (especially since he would lose nothing by bettering the job) because it is the salesman who *plugs* his merchandise, actually *sells* it (forgetting the people who buy without being coaxed); and the better a job is, the more men there are who want it; and the more salesmen there are working, the more merchandise there is sold.

Home Demonstration Resumed

What do I think the immediate future will bring? When television is on the market, being sold door to door, I think we will see not any change in working methods but greatly increased activity. When we have a practical entertainment device to sell for about \$200 or less, I think a lot of salesmen, semi-salesmen, and men who never sold anything before, will be very busy taking orders for television receivers.

What a time that will be I think it will be radio all over again. And we won't have to sell them. All we'll have to do is demonstrate them and get the contracts.

Five Outside Sales Systems

I have already covered the most effective use of outside sales manpower. But because the method by which we get it is far in the minor-

2-The CANVASSER



1-The COLLECTOR

ity, perhaps a brief review of all the methods being employed will be helpful. We can't very well consider every type of dealer, but for our purpose here let's consider a furniture dealer, one who carries a full line of appliances. He could conceivably employ every method. How many different types of "salesman" could he have working for him?

(a) *Collectors.*

(b) *Canvassers.* (Men who open up new accounts with small items).

(c) *Salesmen.* (Men who canvass every day and close their own sales).

(d) *Salesmen.* (Men who don't canvass; handle nothing but store leads and/or contact active or paid out accounts).

(e) *A Sales Force.* (One or more crews of canvassers or semi-salesmen, each crew directed by a supervisor or good salesman).

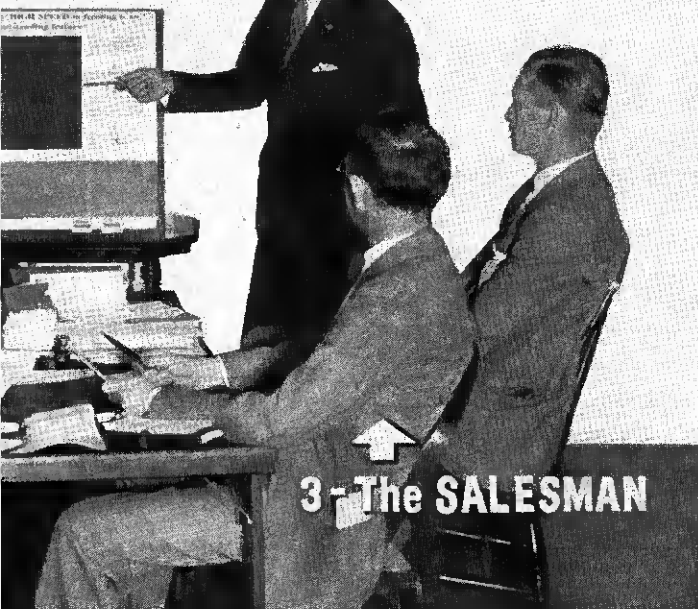
There, roughly, are the different methods used to produce Home Specialty business today. Since (e) is the best way to use manpower, why do the other methods exist?

(a) Whether they sell much or little, the dealer must have them to collect his accounts.

(b) A dealer usually employs this method because he doesn't have,

* Salesman

4 - The SUPERVISOR



3 - The SALESMAN

← 5 - The CREW

Outdoor MANPOWER:

1. The COLLECTOR . . .
2. The CANVASSER . . .
3. The SALESMAN . . .
4. The SUPERVISOR .
5. The CREW . . .

ALL FIVE Have a Place in the Future

and doesn't seem able to get, (c) or (e), and can't get, or doesn't have sufficient work for, (d). But whether this is the case or *not*, it is a splendid method of building or preserving collectors' routes and *laying the foundation* for subsequent major appliance or furniture sales.

New Compensation Methods

These men are easier to get than salesmen. And in the absence of salesmen, or even with them, a dealer cannot go wrong in hiring them. But they could be still easier to get. The trouble with this method is that it is, ordinarily, far more splendid for the dealer and the collectors than it is for the canvasser.

A fairly good canvasser working this way can earn from three to six dollars a day at, say, \$1 an order, whether it is for a \$5 item or \$10 item. And that isn't so bad for a man who, quite often, isn't just the type to sell a \$200 item anyway. But the man would be *still* better off if he had a supervisor to close the prospects he uncovers or could uncover for major business—and as it stands he receives nothing on the major merchandise the collectors add on to the accounts he opens.

I think this job could be and

should be made a better one. A new account is worth something to a dealer; more than just the net profit on the opening wedge. And it is worth more to the collector than just his collection commission on that one small item. It is a *foundation* for big business, and I think the man who lays it should get more than he ordinarily does.

(c) These men have the toughest job of all. The only reason they canvass is that they don't *have* anybody to dig up prospects for them. They could often work to far better advantage in conjunction with (b), or men like (b), which of course would give us (e).

More Effective Manpower

(d) These men are fortunate—if they actually *do* have enough prospects to keep them busy. Of course, if they spend a lot of time hanging around the store, that is a different thing. Then they should have canvassers.

Assuming the prospects are there in quantity and quality, they are on the same footing with supervisors: they spend all their time selling. And they do it at commission instead of override, which may or may not give them a better job than that of a supervisor, de-

pending upon the commission, the leads, and the man.

Ordinarily, though, the supervisor has the advantage: his leads are *fresher* (than paid out accounts, if not store leads); he gets his override also on the sales his *men* close (when they develop from canvassers into semi-salesmen); and he also has personal sales.

(e) Here, of course, we have the most effective use of outside sales man-power—experienced or inexperienced. Into it could in many cases be drawn (b)—to advantage. And (c), to advantage. And (d)—if they are not occupied at all times, and profitably so.

Better Organization

So there is a brief resume of the outside selling methods being used today. I do not think the trend is away from any one of them toward another, but I think the trend *should* be toward (e).

In such an organization, functioning properly, salesmen sell and inexperienced men don't break their hearts trying. Into it can be taken any man who is willing to work, regardless of experience or sales ability, and he can immediately start to earn money *without* it—and this to the *advantage* of the men who *can* sell.

I think *that* is something for every dealer in the United States to think about. Every dealer with (c), under-worked (d), and under-exploited (b) . . . except by the collectors, who are often too *busy* to do any exploiting. For such thought turned into action would not only sell more Home Specialties; it would put a lot of idle men to work. And if there is anything more important than that, I don't know what it is.

You'll Spend More for ADVERTISING . . .

By ROBERT CORENTHAL*



TWO YEARS FROM NOW advertising will be an even more important "salesman" for the radio retailer.

Look back two years—see what percentage of your gross sales you spent for advertising. Also, see what your advertising cost was this past year. Then look forward to an increased advertising budget two years hence.

Do not be alarmed. Advertising is one of the best forms of "sales insurance" and a real business-getter—providing you choose your advertising media with the same cool deliberation you exercise when you buy the merchandise you expect to sell profitably.

Retail radio advertising media, listed in what I consider order of importance, are: 1) Satisfied customers 2) Window and interior

display 3) Direct mail 4) Community support 5) Newspapers 6) Broadcasting.

"Word-of-Mouth" Advertising

The slogan "a satisfied customer is our best advertisement" is not new, and while literally stale, should never be forgotten. Without satisfied customers to "back him up," no radio dealer can expect successful advertising results. It is the least costly of all advertising to please a customer and the friends he will recommend to you. To quote Aesop—"A bird in the hand is worth two in the bush."

For example, a neat set installation and prompt response to a servicing call helps. The writer does not recommend that you advertise small favors included in your repair or check-up service for then it will be looked upon as a "paid service" and not a "favor" that evokes a "thank you" from your customer. But clean that chassis and apply scratch-remover to a marred cabinet! Any extra margin of service you can afford gains good-will and customer confidence.

Customer appreciation will be reflected in recommendations to deal with *their* radio store, meaning you. Don't talk about your genuine interest in pleasing customers, but show it through your actions and dealings with them. Your customers will then do the talking for you.

Window Advertising

Street traffic is an ideal advertising audience. Window displays should not only tell passers-by what you have to sell inside, but should "pull them in."

Most effective in window showmanship is dramatization and animation of displays. The forcefulness of window merchandising will continue to increase and two years from now we may expect to look upon today's window displays as

"stagnant." Men like Norman Bel Geddes, with scientific eyes towards attracting people and creating intense interest in your merchandise by compelling window arrangements and color harmony, will dictate window "fashions" in the near future. Keep your eyes open for the new trends in window display.

Direct Mail

Most stores consider frequent circulars too much trouble to prepare and too costly. However, "hammering away" at regular customers, "live" leads and a chosen list of local prospects is most effective.

It is important that sales literature be timely and of greater importance that this type of advertising be prepared properly. If your circulars look cheap, readers will think your merchandise is cheap. There is a difference between quality at attractive prices and cheap quality.

A boon to direct mail advertisers is a relatively new printing process, called offset lithography. This printing process is ideal for radio retailers, because it is now possible to send out profusely illustrated, professional looking circulars at exceptionally low cost.

"Offset" requires no expensive engravings, since it combines modern photography and lithography to reproduce copy and illustrations. If you are not familiar with this addition to the graphic arts, it is suggested you call in your local offset salesman, who will show you its money-saving possibilities.

Just to illustrate the main advantage of offset, the fact that no "cuts" are required, we call your attention to your Rider manuals. If "cuts" were made for every picture and circuit diagram appearing in these manuals, the cost of each book would necessarily be so high that they might just as well be bound in gold.

* Adv. Mgr., Terminal Radio Corp., N. Y. C.



OFFSET . . .

Here are two "layouts" for the same circular, one designed for "offset" reproduction and the other for letterpress printing. Where a few thousand are needed "offset" is cheaper and

Successful radio dealers will continue to participate in community activities. This is obviously a definite type of advertising, because time expended in this direction brings you in close, personal contact with your neighbors. If your interest in the welfare of your community is genuine, and you make the right impression, you gain respect and confidence, valuable allies in selling radios.

Newspaper Advertising

Large chain radio stores have the "edge" on economical newspaper advertising. The chain store divides the cost of an ad among its branches and pays for an absolute minimum of "waste" circulation. Also, contracting for large amounts of space greatly reduces the lineage cost.

The average independent dealer, in towns and cities of fair size, therefore really must "have something on the ball" to profit from newspaper display advertising. He may operate a large establishment in the main shopping district, he

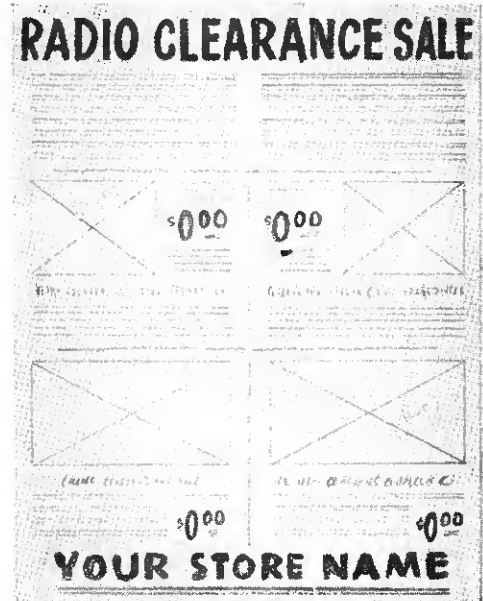
may have an exclusive franchise of a line worth promoting, or he may have some sort of service or timely merchandise to offer that cannot be obtained elsewhere.

Broadcasting

Broadcast advertising is an excellent medium for reaching people who enjoy good music. You can sell classical and popular records and similar merchandise to this audience. Generally, this type of advertising is profitably effective only when a series of programs are used to build up a following of regular listeners. For this reason, most stores shy away from broadcasting because of the investment involved before satisfactory results are realized.

The future will see a larger number of dealers promoting frequency modulation and television receivers to owners of standard broadcast sets. Manufacturers' cooperation, including financial allowances, should play an important part in pioneering these two new developments in radio.

and Like it!



LETTERPRESS . . .

cuts are not needed as sets may be reproduced and even "blown up" direct from manufacturers' literature. Note effective "reverse" or white-on-black lettering

As a hint for program material, record manufacturers no longer forbid or even frown upon their records being played over the air. However, composers' and artists' rights do restrict the use of certain records.

Manufacturer Aids

Radio manufacturers are becoming ever more cooperative in helping you display and advertise their products. They will continue to provide "dealer helps" in larger doses, since point-of-sale promotion has greatly increased in importance. Formerly, a radio manufacturer would direct his advertising budget towards building a bigger name for himself. But now there are too many big names and competition is keener than ever.

Consult your local distributors about your advertising. They can furnish valuable material and assist you in many ways. A number of radio distributors maintain advertising departments solely for the purpose of helping their dealers to advertise profitably.

WHERE ELSE CAN
YOU OBTAIN THIS

SUPPORT?

Grow
with
the

1

PRODUCTS—(a) Fast selling Test Equipment, like the famous Rider Chanalyst . . . the Signalyst. (b) Amateur Equipment—the AR-77, with its many outstanding features. (c) Receiving Tubes . . . America's best-known best sellers . . . the famous RCA Preferred Type Tubes. (d) Power Tubes—with fast-moving types no other manufacturer offers. *Where else can you obtain this support?*

2

MERCHANDISING—These high-quality, profitable items are supported by smart, tested merchandising ideas. Powerful promotions geared to today's selling conditions. Outstanding display service. Attractive window and counter cards. Promotions for service men. All designed to make more money for you. *Where else can you obtain this support?*

3

ADVERTISING—In the first four months of 1940 alone, 93 advertisements on RCA Receiving Tubes, Power Tubes, Test Equipment and Amateur Equipment ran in 21 trade papers and magazines. Many were in color—many were on front or back covers. They reached a total circulation of 1,911,253—many of them your own customers. *Where else can you obtain this support?*

4

DEVELOPMENT—The RCA Full Line Franchise is constantly growing in acceptance—growing in scope. Out of RCA Laboratories come the developments which mean constant growth in number of products—to give you new profits tomorrow as well as today. You can be sure of a constantly growing business. *Where else can you obtain this support?*



See exhibit of all RCA services . . . including Television . . . at RCA Building, New York World's Fair—and Golden Gate Exposition, San Francisco.

TUBE AND EQUIPMENT FRANCHISE

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

Modernizing MANAGEMENT

By **ROBERT LEE COSHLAND***

THE DEALER OF TOMORROW can't afford to coast.

In a one-man business, "Management" problems are simply solved. But the more complex the business becomes, and the less the owner engages in the actual performance of various activities, the greater becomes the need to establish controls whereby he can administer his business. Such controls constitute "Modern Management."

Budgetary Control

This is the process of forecasting sales volume for a future period, planning merchandise purchases and anticipating expenses to be incurred with such volume.

The "control" feature of budgeting involves keeping abreast of actual sales volume and actual expenses during a given period, comparing them with the budget and revising future plans immediately whenever the comparison reveals a change of trend. Only in this way can large losses be prevented on a declining trend, or substantial sales increases and profits be secured on a rising trend.

Financial, Inventory Controls

This is used in conjunction with Budgetary Control.

It consists of using anticipated cash income from sales, and probable corresponding expenses, to estimate the amount of cash to be required at each stage of a budget period, and to arrange in advance for whatever financing might be necessitated.

Such financing usually is easier to obtain when based on a budget than when occasioned by "emergencies" for which a budget would have provided.

*With Sirota, Krans & Gleason, C.P.A.

Inventory control involves maintaining a record to assure that merchandise will always be available to meet expected sales demand.

It is based on a predetermined pattern of sales volume, broken down by specific items. It includes the creation of a "model stock," the provision of automatic recorders as stocks are consumed, and the flashing of danger signals when items fail to move.

Accounting Control

The right-hand man of modern management in exercising control is the mechanical accounting machine. With it, one knows at the close of each day—yes, even at any time during the day—many significant facts about current operations such as sales analysis, cost analysis, cash control, accounts receivable, and many others.

Valuable information such as this, if obtained by manual clerical labor, would consume many hours, and would always be subject to human error. Now it may be had at one's fingertips, always up to date and always accurate.

Statistical Control

The "Radio Dealer of Tomorrow" will devote more time to studying figures. In the past he has usually compared sales volume of competitive items with one another. In the future he will go much further. He will compare departments with one another, and he will be especially interested in comparing his store with the trade as a whole, and his industry with other industries.

Consider the following problem in Statistical Control:

Table "A" presents actual sales figures for March, 1940, for fourteen retail stores:

TABLE "A"

Store #	NET SALES			March, 1940 Gross Profit Percent
	March 1939	March 1940	Percent Change	
21	*	\$8,240	*	32.3
39	\$9,200	10,871	+18%	32.1
9	8,825	8,486	-4%	36.5
25	8,753	11,328	+29%	41.1
5	4,484	4,901	+9%	33.6
15	1,827	2,824	+55%	34.5
17	7,020	7,581	+8%	45.0
14	7,771	6,447	-17%	31.8
16	—	1,092	—	28.8
26	6,266	6,288	+0.4%	31.7
40	9,470	8,947	-6%	38.9
3	*	5,297	*	27.4
7	5,980	4,512	-25%	28.5
8	3,976	1,788	-55%	45.3
Average Gross Profit Rate				35.4

*Not Available.

Suppose now that you own Store No. 26.

A glance at Table "A" reveals that your sales for March, 1940 are virtually unchanged from 1939. Some stores show increases, and you are worried that you are failing to get your share of the business. You likewise are disappointed to note that your Gross Profit rate of 31.7% is somewhat below the group average of 35.4%. To determine whether you are actually doing a poor job it is necessary to analyze figures more closely.

Table "B" (see larger illustration) shows in detail the sales of each of the fourteen stores, broken down according to departments, and compared with last year. In order to determine whether you have obtained your share of the business, it is necessary to summarize these data by departments for both years. Such a summary would result in Table "C":

TABLE "C"

Department	TOTAL NET SALES		
	March 1939	March 1940	Percent Change
Radio	\$19,358	\$17,905	-7.5%
Refrigerator	24,969	21,983	-12.0%
Other Major Departments	16,454	15,088	-8.3%
Minor Departments	12,791	12,714	-0.6%
Total	\$73,572	\$67,690	-8.0%

TABLE "B"

DEPARTMENTAL BREAKDOWN

RADIO					REFRIGERATOR				
MARCH, 1940					MARCH, 1940				
Store #	March 1939 Sales	March 1940 Sales	Gross Profit %	% of Total Sales	Store #	March 1939 Sales	March 1940 Sales	Gross Profit %	% of Total Sales
21	*	\$2,386.	39.1	29%	21	*	\$1,950.	21.5	24%
39	\$3,224.	3,060.	43.4	28%	39	\$4,283.	6,578.	25.9	61%
9	2,462.	2,617.	37.7	31%	9	1,182.	760.	24.7	9%
25	2,323.	2,407.	45.4	21%	25	5,345.	3,676.	30.8	33%
5	1,674.	1,721.	41.2	35%	5	1,150.	1,551.	30.0	32%
15	621.	1,090.	36.6	39%	15	644.	977.	25.1	34%
17	489.	1,117.	38.5	15%	17	1,577.	530.	26.7	7%
14	413.	498.	37.4	8%	14	1,638.	1,429.	19.8	22%
16	-o-	437.	29.1	40%	16	-o-	117.	11.3	11%
26	1,194.	1,319.	38.8	21%	26	1,790.	1,174.	19.3	19%
40	3,132.	2,338.	39.9	26%	40	4,366.	3,210.	32.6	36%
3	*	197.	38.6	4%	3	*	1,723.	23.4	32%
7	1,810.	1,046.	33.0	23%	7	1,805.	2,098.	22.1	46%
8	2,016.	692.	47.3	39%	8	1,189.	-o-	-o-	-o-
†Average		\$1,494.	40.1		†Average		\$1,983.	26.1	

OTHER MAJOR DEPARTMENTS

MARCH, 1940				
Store #	March 1939 Sales	March 1940 Sales	Gross Profit %	% of Total Sales
21	*	\$2,303.	31.9	28%
39	-o-	-o-	-o-	-o-
9	\$4,441.	4,315.	38.0	51%
25	-o-	4,254.	48.6	37%
5	-o-	-o-	-o-	-o-
15	-o-	-o-	-o-	-o-
17	4,686.	5,063.	48.1	67%
14	4,894.	3,641.	39.6	56%
16	-o-	138.	25.6	12%
26	1,630.	1,994.	30.3	32%
40	-o-	2,029.	49.1	23%
3	*	2,796.	28.0	53%
7	803.	75.	32.2	2%
8	-o-	-o-	-o-	-o-
†Average		\$2,661.	40.5	

MINOR DEPARTMENTS

MARCH, 1940				
Store #	March 1939 Sales	March 1940 Sales	Gross Profit %	% of Total Sales
21	*	\$1,601.	35.9	19%
39	\$1,693.	1,233.	36.8	11%
9	740.	794.	35.6	9%
25	1,085.	991.	37.0	9%
5	1,660.	1,629.	29.1	33%
15	562.	757.	42.1	27%
17	268.	871.	46.3	11%
14	826.	879.	15.8	14%
16	-o-	400.	34.6	37%
26	1,652.	1,801.	36.5	28%
40	1,972.	1,370.	36.8	15%
3	*	581.	33.1	11%
7	1,562.	1,293.	34.8	29%
8	771.	1,096.	44.0	61%
†Average		\$1,093.	35.6	

*Not Available.

†The averages for each department are based on the number of stores having that department.

STORE NUMBER 26

Department	March 1939	March 1940	Percent Change
Radio	\$1,194	\$1,319	+10.4%
Refrigerator	1,790	1,174	-34.4%
Other Major Departments	1,630	1,994	+22.3%
Minor Departments	1,652	1,801	+7.8%
Total	\$6,266	\$6,288	+0.4%

Note:—In order to compare the two years correctly, the totals shown above for each department include only those stores having figures available for that department both years.

Thus you see that, with the exception of the Refrigerator Department, your sales actually have increased, contrary to the trend in the group as a whole. And as for refrigerators, they show the lowest gross profit rate, so that the sales decline here is less damaging than it would be in another department.

Now, to compare gross profits,

you prepare a summary such as in Table "D":

TABLE "D"

Department	Net Sales March 1940	Gross Profit Percent	Percent of Department Sales to Total Sales
Radio	\$1,494	40.1	21%
Refrigerator	1,983	26.1	27%
Other Major Departments	2,661	40.5	37%
Minor Departments	1,093	35.6	15%
Total	\$7,231	35.4	100%

STORE NUMBER 26

Department	Gross Profit Percent	Percent of Department Sales to Total Sales
Radio	38.8	21%
Refrigerator	19.3	19%
Other Major Departments	30.3	32%
Minor Departments	36.5	28%
Total	31.7	100%

From Table "D" you would draw the following conclusions:

1. On Radios, Appliances and Minor Departments your gross profit rate is approximately the same as for the average store, and these departments account for a considerably greater portion of your total volume than in the average store. You are therefore probably doing a satisfactory job here.

2. On Refrigerators, you are doing well in not pressing for greater volume on merchandise which at the moment shows a low gross profit rate. But the latter is somewhat lower than for the average store, and it is up to you to find out why.

3. Your "Other Major Department" is the one most responsible for your low aggregate Gross Profit rate. To have an "Other Major Department" may be desirable, but why not a more profitable one?

AMERICA'S GREATEST Home Recording VALUE

\$99⁹⁵

and it's a

Federal

At the amazingly low price of \$99.95, here is the most wonderful value in home entertainment you have ever had to offer your public. It's a 5-in-1 Federal; a microphone Recorder, an excellent Radio, a hi-fidelity Phonograph, a home Broadcaster, an off-the-air Recorder. Beautiful cabinets in Crotch Mahogany or Burl Walnut, exquisitely finished, look twice the price. Crash a fresh new market with this Federal headliner. Write today, sure, for complete details.



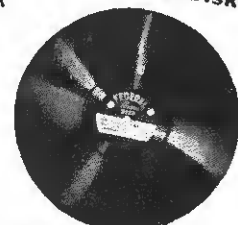
Federal gives you the most complete line of recorders in price range and variety—for every purse and purpose

Table Model No. 111	\$ 54.95
Table Model No. 106	69.95
Console Model No. 211 (Illustrated)	99.95
Console Model No. 201	119.95
Console Model with Record Changer No. 301	119.95
Console Model with Record Changer No. 306	149.95
Deluxe Console Model with Record Changer No. 311	189.95
<i>All above prices without Microphones. West Coast Prices, slightly higher</i>	
Little Pro, Portable No. 12LP Popular for schools	199.00
Symphonic Model, Portable No. 16SM, For professional use	399.00

**Now! 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

RED LABEL Federal Disk
 Sizes and Prices
 No. PN-6 1/2—6 1/2-inch . 20c each
 (Package of 3 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)



FEDERAL RECORDER CO., Inc.
 50 West 57th Street Dept. 6310 New York, New York

SECTION

2

MERCHANDISE

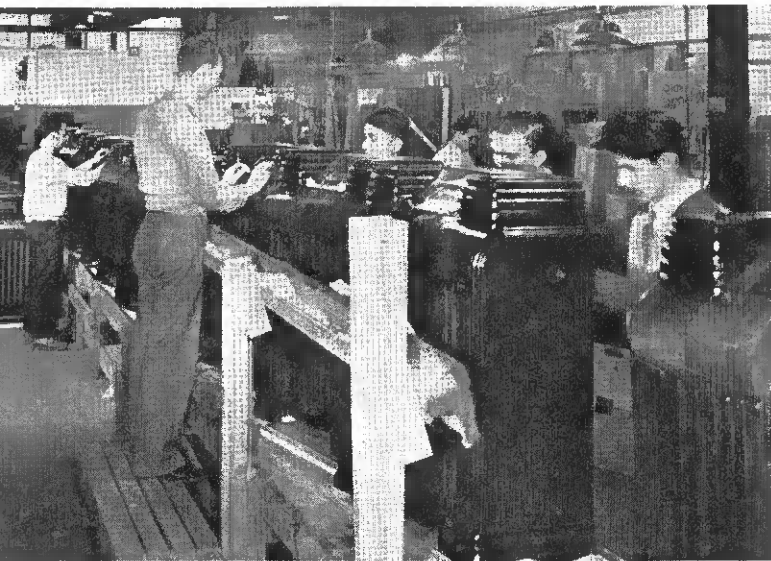
to Buy and Sell



Latest...RECEIVERS...PHONOS...ACCESSORIES...SOUND...PARTS...TESTERS

Radios

TREND considered most constructive is return to t.r.f. stages, other proven performance features, by more manufacturers in more models. Conveniences retained but less frequently at expense of basic quality. Phono and recorder combinations headlined among large instruments, many with automatic changers. Straight consoles up in appearance, performance, price. Compacts no smaller, no cheaper. Portables thinner, in wider variety of finishes, often three-way with supply switching on front

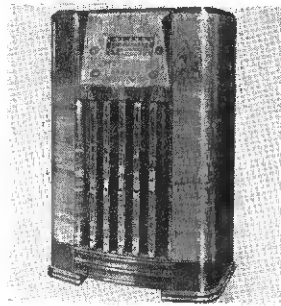
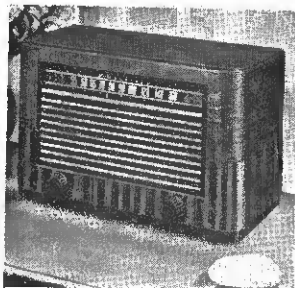


Factory production line in action

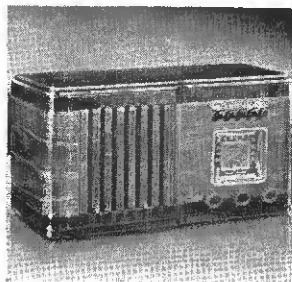
General Electric Co., Bridgeport, Conn.—Model J-805, console "Electioneer" receiver, features the dual beamscopes; 14-inch Alnico Dynapower speaker; 6 pushbuttons with a key for frequency-modulation, television audio, or phonograph reproduction. Has large horizontal slide-rule dial with the names of foreign cities clearly indicated for short-wave tuning.



General Electric Co., Bridgeport, Conn.—Table model "Electioneer" receiver, model J-51, is in two-toned walnut cabinet with large horizontal louvre-type grille. Provides a built-in beamscope 5-inch Dynapower speaker; standard broadcast tuning range and automatic volume control.

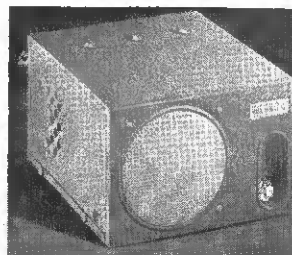


The Crosley Corp., Cincinnati, Ohio—Matched sliced walnut console 7-tube receiver with sloping dial. Tuning range from 550 to 1600 kc. for American broadcasts; 1600 to 5000 kc. for police and amateur; 6.0 to 18.0 mc. for short wave (foreign) broadcasts. Model 25AY measures 39 x 26 x 14 inches.



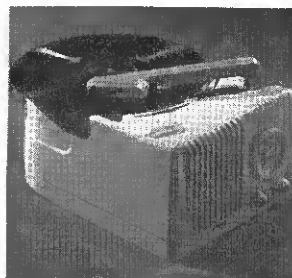
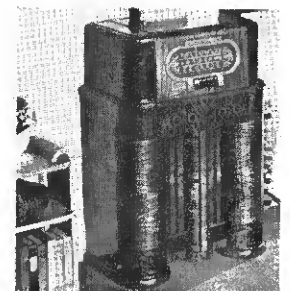
The Crosley Corp., Cincinnati, Ohio—1941 model 16AL, automatic electric pushbutton radio. 5-tube superhet, 110 volt a.c. or d.c., has built-in loop antenna; 6-inch E.D. speaker; automatic volume control large clock-type dial. Cabinet of sliced walnut veneer with top and vertical grille bars of solid walnut.

Sonora Radio & Television Corp., 2626 W. Washington Blvd., Chicago, Ill.—"Car-Pal" auto radio, midget in size, can be installed in any car, no suppressors needed. Required bracket is part of standard equipment supplied to mount set along the car-dash edge. Features new slant-view "spot" dial; positive thumb-wheel tuning control. Model KU-9 is housed in an all-steel case.



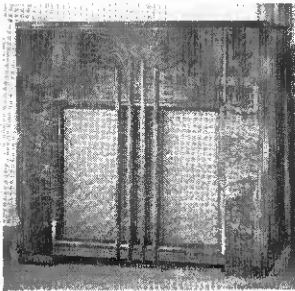
RCA Manufacturing Co., Inc. Camden, N. J.—Console radio model 110-K is a 10-tube, 4-band superhet. Has 12-inch E. D. Speaker; built-in loop antenna. Modern style cabinet has double-case construction, the top portion being set back from the lower section of the cabinet. The top center piece gives a waterfall effect, made of heart walnut face veneer.

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



RCA Manufacturing Co., Inc. Camden, N. J.—Console 3-band radio model 19K has new stabilized pushbuttons for six stations. Features built-in loop antenna; plug-in and switch for phono or television attachment; American and foreign reception; separate antenna for latter. Attractive cabinet of walnut veneers.

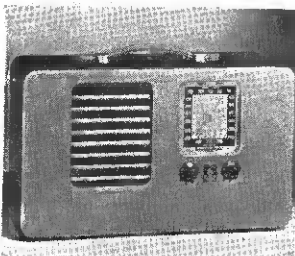
Stromberg-Carlson, 100 Carl-son Road, Rochester, N. Y.—Model 455-PL, frequency modulation labyrinth radio and automatic phonograph, comes in a walnut cabinet of modern style. Shifts and plays twelve 10-inch records or ten 12-inch records. Employs crystal pickup; three tuning ranges, standard broadcast, short wave and frequency modulation. Has new slide rule dial and automatic drift compensator; 10¼-inch speaker.



Stromberg-Carlson, 100 Carl-son Road, Rochester, N. Y.—Frequency modulation labyrinth radio, model 480-M, has an authentic Chippendale designed cabinet. Three tuning ranges of standard broadcast, short-wave and frequency modulation. Remote control. Phonograph and television connection controlled from push-button.



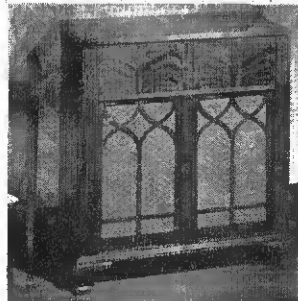
Emerson Radio and Phono-graph Corp., 111 Eighth Ave., New York, N. Y.—Three-way portable plays on a.c. or d.c. for the home and on its own power wherever you take it. Model 357 has built-in loop



antenna; 5-inch P.M. speaker; large "eye-eaze" dial; two-color grained simulated leather, tan front and maroon frame. List price \$19.95, complete with batteries.

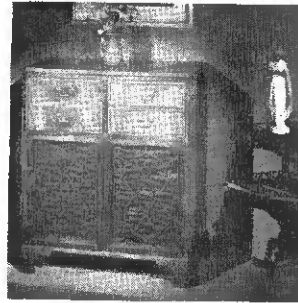


Emerson Radio and Phono-graph Corp., 111 Eighth Ave., New York, N. Y.—Model No. 345, table model combination radio and phonograph, features an inner-ceptor loop antenna; 5-inch speaker and easy reading dial. Phonograph plays all size records up to and including 12-inch with lid closed. List price \$29.95.

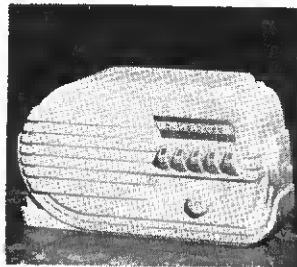


Stewart-Warner Corp., 1836 Diversey Parkway, Chicago, Ill.—This console comes in two models, 7A8 and 8A8, the former is an automatic record changer and radio; model 8A8, a microphone-recorder with public address system. Both units come in walnut or mahogany cabinet, attractively designed, incorporating a "curvilinear" speaker and providing an open or closed top cover.

Stewart-Warner Corp., 1836 Diversey Parkway, Chicago, Ill.—The new deluxe line includes concert grand models equipped with record album space. Available in walnut, mahogany, or bleached mahogany. All exposed surfaces are genuine woods. Has curvilinear speaker. Available in two console models, 8D8, an 8-tube set and model 10A8, a 10-tube set.



Belmont Radio Corp., 1257 Fullerton Ave., Chicago, Ill.—Compact No. 534, streamline light plastic receiver, with pushbuttons or manual tuning. It is a 5-tube superhet; has tuning range from 540 to 1600 kc. and uses a 5-inch dynamic speaker. Measures 11½ x 6½ x 6½ inches.



Belmont Radio Corp., 1257 Fullerton Ave., Chicago, Ill.—Table model combination phono-radio enclosed in two-tone walnut cabinet. Five-tube superhet; phonograph plays both 10 and 12-inch records; phono-motor operates on 110 volt a.c. only. "Baby Grand" model 533 employs new type crystal pickup.

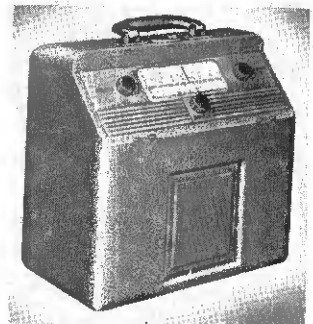


Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Ill.—Model 216-J features a record maker; record player and 7-tube radio in an authentic Sheraton period cabinet. Tunes 540-1600 and 5700-18,300 kc. Has 10-inch E. D. speaker; crystal pickup for

phonograph reproduction of 10 or 12-inch records. Includes two blank 8" records, one microphone and stand with 10 ft. cable connected to radio. List price \$149.50.



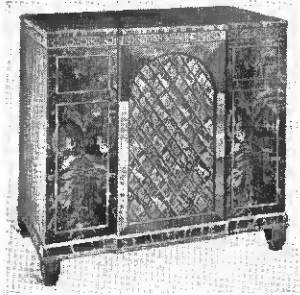
Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Ill.—Portable model 217-P, a 6-tube superhet, three-way receiver. Encased in luggage style cabinet with detachable cover and inclined panel for easy tuning. Features built-in loop antenna; 5-inch P.M. speaker.



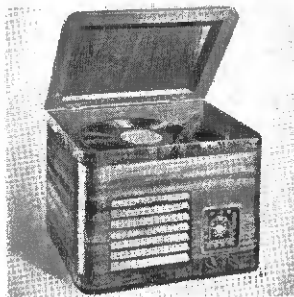
Farnsworth Television & Radio Corp., Ft. Wayne, Ind.—New 1941 line includes this attractive combination radio-phonograph with automatic record-changer. The radio control door is shown tilted forward for convenient chairside tuning. Chassis is an 8-tube superhet with shielded rotatable loop antenna controlled by knob; has television sound connection. Housed in matched walnut cabinet.



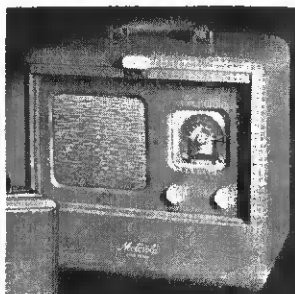
Continental Radio & Telev. Corp., 3800 Cortland St., Chicago, Ill.—Admiral model R59-B11 is a combination radio, recorder and automatic record changer known as the "Magna-Muse" Recordion. Radio is an 11-tube superhet, covering 5 separate bands for broadcast and short-wave reception. Record changer plays up to fourteen 10-inch and ten 12-inch records.



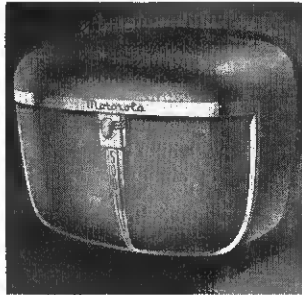
Continental Radio & Telev. Corp., 3800 Cortland St., Chicago, Ill.—Model 54-XJ55 is a combination radio-phonograph unit. This Admiral 5-tube superhet features a built-in antenna; full size dynamic speaker. Phonograph plays 12 or 10-inch records. Walnut cabinet measures 14 1/4 x 11 1/4 x 11 inches.



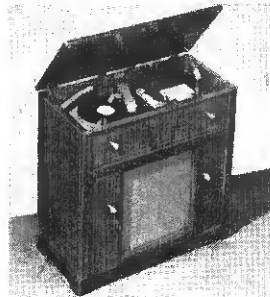
Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.—Motorola portables, No. 65BP3 and 65BP4, both 3-power, 6-tube receivers equipped with



one piece sliding door, enabling open or closed front. Case of simulated grained leather or striped airplane luggage 6 1/2 inch speaker; concealed loop; and dimensions 12 x 10 x 7 1/2 inches.

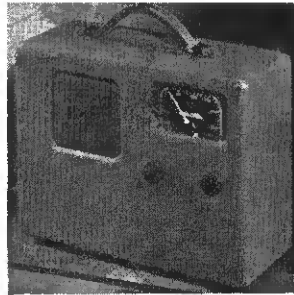


Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.—Model 500, auto radio, has 6 pushbuttons. Features a 7-tube superhet and uses an 8-inch speaker. Has instrument panel controls to match every car. Measures 11 5/8 wide, 8 1/4 high, 6 7/8 deep. List price \$49.95.



Federal Recorder Co., Inc., 50 W. 57th St., New York, N. Y.—Combination console model No. 201 makes recordings on 6, 6 1/2, 8, 10, and 11-inch discs. Plays 12-inch phonograph records. Radio has 9 tubes, two bands for short-wave and domestic reception, pushbutton tuning, and full size 12-inch speaker. Hand-rubbed walnut finish cabinet. Desk stand microphone. List price \$129.95.

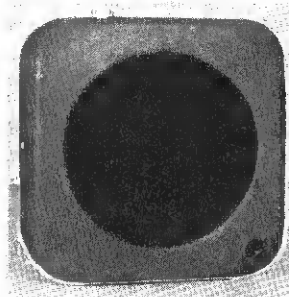
Howard Radio Co., 1731 Belmont Ave., Chicago, Ill.—Portable model 14-ACB, the "Vagabond," housed in a light brown walrus grained leatherware cabinet measuring 12 3/4 x 9 1/2 x 4 7/8 inches. Dial has large easy-to-read calibrations with plated background. Weight, complete with batteries, 13 1/2 lbs.



Howard Radio Co., 1731 Belmont Ave., Chicago, Ill.—Model 302-RA is a 7-tube combination radio, recorder and automatic record changer. Has 12-inch speaker. Cabinet is available in authentic Hephlewhite, finished in walnut or mahogany. Equipped with recording level indicator. Will play ten or twelve inch records or mixed sizes. List price \$169.50.

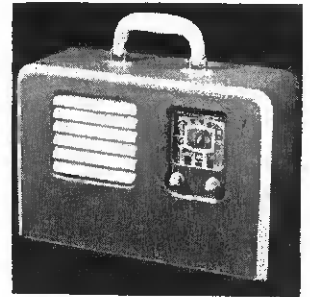


Karadio Corp., 2233 University Ave., St. Paul, Minn.—Fixed frequency police auto radio, model CP-9, is an 8-tube superhet, with a separate power pack; tone control; separate speaker, as illustrated, or custom dash speaker to fit any 1939 or 1940 car.

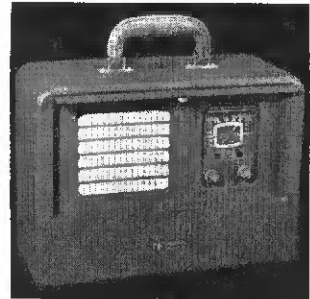


Fada Radio & Electric Co., 30-20 Thomson Ave., Long Island City, N. Y.—Portable model PD22 has a simulated leather case in new red-brown shade called "Havana" with an edg-

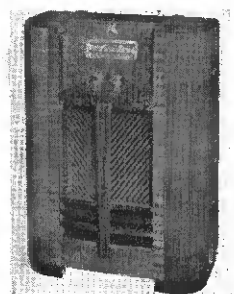
ing of natural pigskin. It is a 5-tube superhet with band coverage from 525 to 1600 kc, is equipped with 5-inch PMD Speaker. Price list \$24.95, complete with batteries.



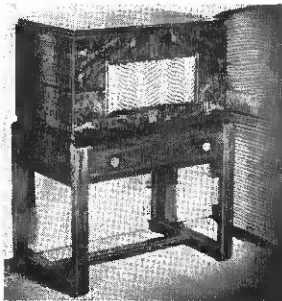
Fada Radio & Electric Co., 30-20 Thomson Ave., Long Island City, N. Y.—Portable model PL22, 5-tube super, is fitted with concealed sliding door which can be lowered or raised over the instrument panel. Cabinet is finished in simulated "London Tan" grain leather with luggage handle. Price list \$29.95, complete with batteries.



Meissner Manufacturing Co., Mt. Carmel, Ill.—The frequency-modulation receptor is a 10-tube receiving unit with exception of the audio system. Designed for reception from 39 to 44 mc.; has dual-shadow tuning-indicator tube 6AD6G with a separate amplifier circuit. Two-toned walnut console cabinet.



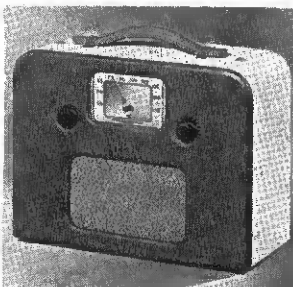
Wilcox-Gay Corp., Charlotte, Michigan—Combination phonograph, recorder and radio, can be used as a table chair-side model as shown in illustration. List price for receiver is \$88.95; with table \$99.95.



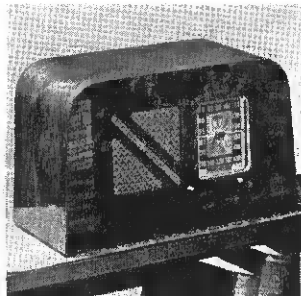
Wilcox-Gay Corp., Charlotte, Michigan—Combination automatic record changer, radio, and recorder is housed in attractive Hepplewhite cabinet. Top cover opens to reveal instrument panel. List price \$179.50.



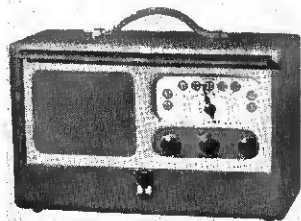
Westinghouse Radio Headquarters, 150 Varick St., New York, N. Y.—"Carryette" portable model WR-679 is covered in brown leatherette with oyster white saddle-stripe. Features automatic volume control; built-in loop antenna; improved 5-inch permanent magnet dynamic speaker. List price \$24.95 with batteries. Model WR-678 has all the above requirements, but is covered with airplane linen in brown and white check with dark brown band.



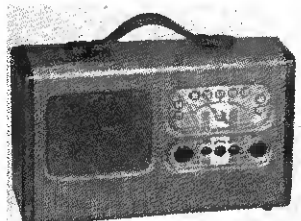
Westinghouse Radio Headquarters, 150 Varick St., New York, N. Y.—Model WR-177, table type, is modernistically designed with graceful sloping ends of walnut. This a.c. or d.c. superheterodyne receiver features a 5-inch electro-dynamic speaker; illuminated clock-type dial; built-in loop antenna and terminals for outside antenna. List price \$16.95.



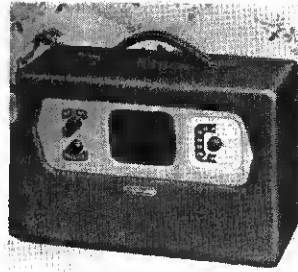
General Television & Radio Corp., 513 S. Sangamon St., Chicago, Ill.—Portable radio, model 512, operates from a.c.-d.c. line supply or battery. Cabinet is covered in a russet brown leatherette with two-tone inserted panel. Equipped



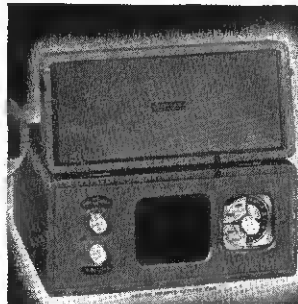
with sliding door to conceal the instrument panel. Has large easy-to-read dial. This 5-tube superhet lists for \$19.95.



General Television & Radio Corp., 513 S. Sangamon St., Chicago, Ill.—Model 592, an electric or battery receiver, is designed in a checker mellow brown airplane luggage material with stipple dark brown edge. Measures 9 1/4 x 14 1/2 x 5 1/2 inches. Features "Triadyne" control front panel power conversion.



Trav-Ler Radio & Television Corp., 1028 West Van Buren St., Chicago, Ill.—Carrying case is a two-toned genuine pig-koid leatherette covering in rich brown with lighter shade recessed panel. This 4-tube superhet, model B71, has a full vision dial; full P.M. speaker. Three-way portable is priced \$21.95 without batteries.

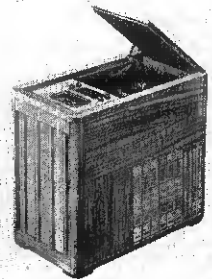


Trav-Ler Radio & Television Corp., 1028 West Van Buren St., Chicago, Ill.—Three-way portable radio is a 4-tube superhet. Model B70 measures 12 x 5 1/4 x 8 1/4 inches. Carrying case is two-toned genuine pig-koid leatherette covering in rich brown. Front panel power control. List price \$26.95, complete.

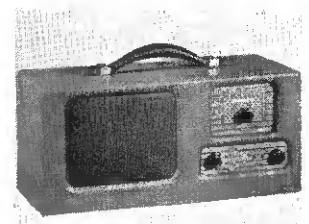
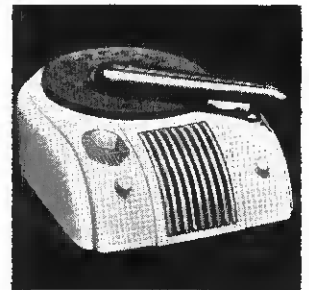
The Magnavox Co., Ft. Wayne, Ind.—This Hepplewhite model is a radio-phonograph combination. Also available in the Belvedere and in Berkeley models. All three have the new amber mahogany finish and are equipped with automatic record changers.



The Magnavox Co., Ft. Wayne, Ind.—Automatic, chairside, phonograph-radio combination in modern furniture styled cabinet has a two-band circuit with pushbuttons. Cabinet provides space for records and albums.

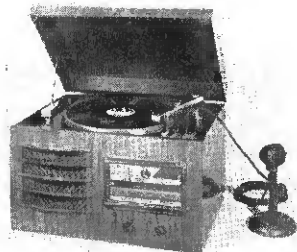


Noblitt-Sparks Industries, Inc., Columbus, Ind.—Arvin radio-phonograph combination, model 302A, has an unbreakable cabinet in ivory enamel with chrome trim on grille. Radio is a 4-tube superhet with P.M. speaker. Phonograph plays 10 and 12-inch records. List price \$16.95.



Setchell Carlson, Inc., 2233 University Ave., St. Paul, Minn.—New portable 4-way "66" receiver requires no "B" batteries. Uses 6 to 8 volts for the car; 110 volts a.c. or d.c. for the home; self contained batteries for outings. Features built-in loop antenna; 5-inch dynamic speaker. Encased in two-tone pig-grain leatherette.

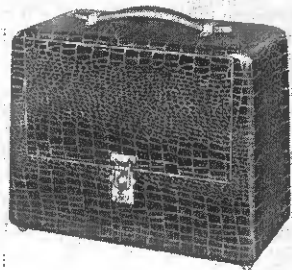
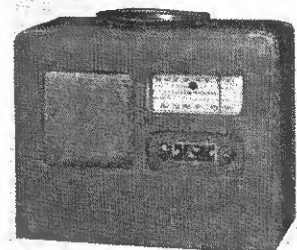
Homocord Mfg. Co., Inc., 457 West 45th St., New York, N. Y.—This radio-phonograph and recorder combination, records and plays 12-inch records. Attractive table model with walnut cabinet, houses a superhet radio, dual motors, crystal pickup, crystal cutter. Model 110 lists for \$69.95.



Automatic Radio & Television Co., Inc., 122 Brookline Ave., Boston, Mass.—"Recordex" is a table-type combination instrument comprising a recording unit, radio receiver and phonograph and sound reproduction. Equipped with 6 pushbuttons, the duty of which is found written to the left of each pushbutton. Four control knobs located below the dial.



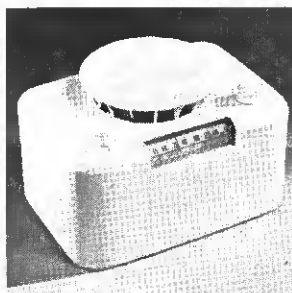
Automatic Radio & Television Co., Inc., 122 Brookline Ave., Boston, Mass.—Model P-40, portable radio, operates on batteries, a.c. or d.c. Has permanent magnet speaker; built-in loop antenna; electric on/off indicator. Comes in attractive airplane luggage with strong leather handle.



Andrea Radio Corp., 48-20 48th Ave., Woodside, N. Y.—Portable model 6G61 is available in alligator or in brown striped airplane fabric. It is a 6-tube superhet with attractive easy-to-read dial; has band coverage from 535 to 1750 kc., includes first police channel. Features built-in loop antenna; 5-inch speaker. List price \$29.95.

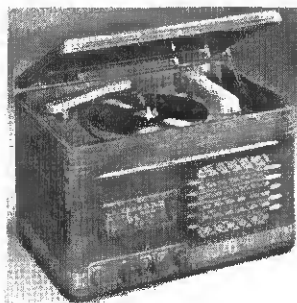
Zenith Radio Corporation, Chicago, Ill.—Model 5G500M five-tube portable receiver featuring the "Detachable Wavemagnet," loop-antenna for increased sensitivity. Luggage style cabinet in brown airplane fabric. Operates on 110 volt a.c.-d.c., or self-contained battery pack. List \$29.95 complete.

Zenith Radio Corporation, Chicago, Ill.—New portable model 5G500L with triple "Hi-efficiency" switch, Wavemagnet antenna; on-off indicator; universal operation; large dial; earphone provision; and other advancements.

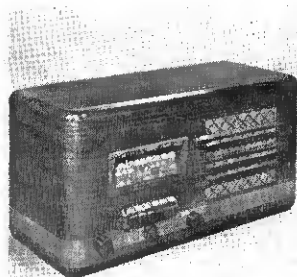


Kadette Radio Corp., Ann Arbor, Mich.—Table type model "Topper" in plastic, features an all directional sound diffuser; speaker and deflecting dome is placed in top of radio using the cabinet as an effective baffle. A 5-tube a.c. or d.c. superhet. Lists from \$14.95 to \$19.95.

Remler Co. Ltd., 2101 Bryant St., San Francisco, Calif.—Model No. 471, "Scottie Mic-Cordio," a recording, radio-phonograph is a table type, listing at \$99.90. Features a two-tone cabinet with horizontal slide-rule dial.

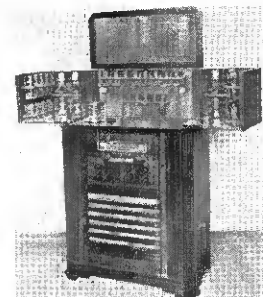


Remler Co. Ltd., 2101 Bryant St., San Francisco, Calif.—Table type model No. 464 with slide-rule dial, is equipped with six pushbuttons and lists for \$44.90; without pushbuttons \$39.90. Attractive two-toned cabinet with horizontal grilles.



Pilot Radio Corporation, 37-06 Thirty Sixth St., Long Island City, N. Y.—Model T-1021 "Feather-Weight" portable receiver with a number of new advancements such as: battery economizer; compact size; snap-on cover; leather finish case and built-in aerial.

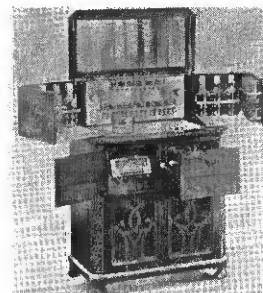
Allied Radio Corp., 833 West Jackson Blvd., Chicago, Ill.—Introduces the "Knight" 3-way portable, 5-tube receiver with tuning range from 540 to 1550 kc. Has 5-inch dynamic speaker; Air-Magnet antenna; and weighs 15 pounds; measures 13 1/4 x 9 3/4 x 5 3/4 inches. Housed in attractive airplane luggage.



Radiobar Company of America, 296 Broadway, New York, N. Y.—The Zephyr, model 100RB, is distinctively modern in design. The cabinet is made up of contrasting walnut veneers. Equipped with chromium mirror, cocktail bar which can be completely concealed. Glassware is provided with bar. Contains liquor storage compartment at side.

Radio Wire Television Inc., 100 Sixth Ave., New York, N. Y.—New Lafayette "Cosmopolitan" 3-band, 3-In-1 portable receiver. Employs 6-tubes and two built-in loops; permanent-magnet type reproducer. The drop front folds back into the case when the receiver is in use. Coverage down to 16 meters.

DeWald Radio Mfg. Corp., 436 Lafayette St., New York, N. Y.—Announces a new combination radio-phonograph and home recorder known as the "Recordomat." It is available in 3 models, priced from \$119.95 to \$174.50. Radio is a 9-tube super.



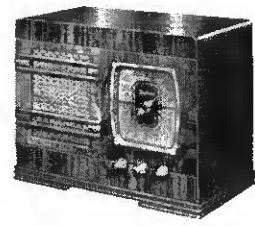
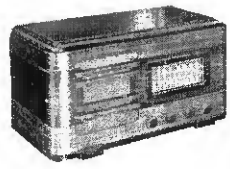
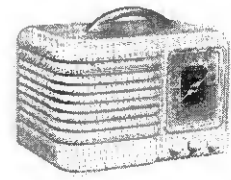
Radiobar Company of America, 296 Broadway, New York, N. Y.—The Chippendale, model 200RBP, is housed in 18th Century cabinet; equipped with an 8-tube, three-band all wave Philco radio with built-in aerial system; pushbutton tuning. Electric phonograph plays ten, 12-inch or twelve, 10-inch records automatically. Wings and top close to conceal cocktail bar, equipped with glassware.

A PARADE OF SUPER-VALUES TO GREATER PROFITS!

★ TABLE MODELS

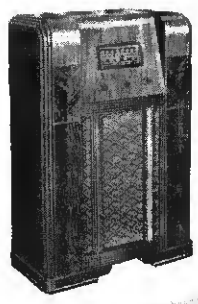
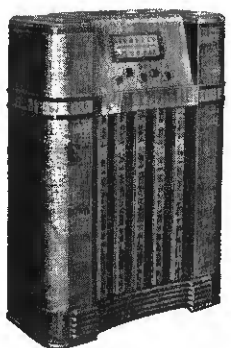
★ CONSOLES

★ HOME RECORDERS



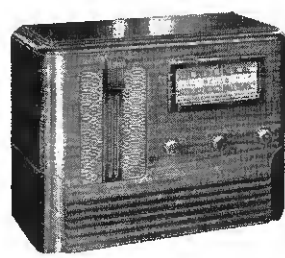
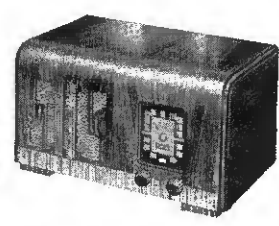
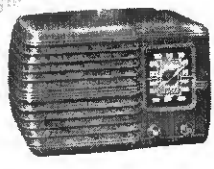
★ RECORD CHANGERS

★ PERIOD CABINETS



★ PORTABLES

★ AGAIN THE GREATEST LINE OF BATTERY SETS



RED HOT Campaign Specials!

Get your share of the election boom in radio sales with these added Sentinel values!

1. For the Big City Market

The leader in the Sentinel Parade. A knock-out value packed with eye-appeal—price-appeal . . . and profits.

2. For the Great Farm Market

Here's value that can't be challenged!—a battery set complete with 1,000-hour pack—listing at less than \$20.00. A sure bet to meet all competition.

Write TODAY, for all the facts on the entire sizzling Sentinel Line. Use the handy coupon.

Here's a record-breaking line of super-values that will make 'em STOP, LOOK, LISTEN AND BUY! . . . Featuring stepped up performance and new striking cabinet designs . . . Backed by Sentinel's traditional reputation for super-quality. It's real "over-the-counter" merchandise with service reduced to a minimum, to protect dealer profits. National advertising, local advertising, direct mail campaigns, colorful literature, forceful banners, mat service, show cards, and a big, beautiful new display stand will help you sell!

See Sentinel while at the Radio Parts Show, Room 1619, Blackstone Hotel, Chicago

SENTINEL RADIO CORPORATION,
2020 Ridge Ave., Dept. RR-6, Evanston, Ill.

I want a fast-moving radio line. Tell me all about the campaign specials and the new 1941 Sentinel Line.

Dealer's Name _____

Address _____

City _____ State _____

Sentinel

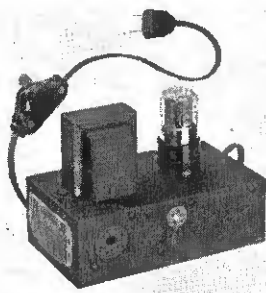
QUALITY RADIO SINCE 1920

Accessories

RECORD business expansion reflected in increased number of inexpensive storage racks and cabinets, wide variety of new needles, other disc department extras. Many new recording blanks offered for home cutting, with better size and price range. FM and tele antennas, added to broadcast and auto types, broaden installation profit potential. Tube type limitation efforts seen bearing fruit while portable battery size picture continues complicated. Several new powerpacks for existing farm sets

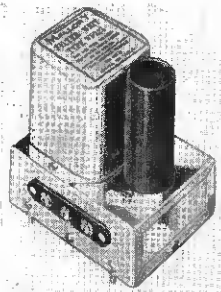


Record Display at World's Fair RCA

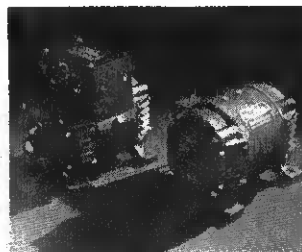


Pioneer Gen-E-Motor, 466 W. Superior St., Chicago, Ill.—New series of rotary compact power units for converting 6, 12, 24, 32, 48, 110, 220 or any special voltage d.c. to 110 or 220 volts a.c. Capacities are from 40 to 5000 watts. These converters are available with or without filters. For operating sets, transmitters and like equipment.

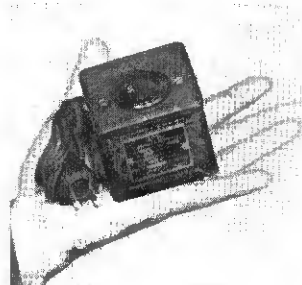
General Transformer Corp., 1250 W. Van Buren St., Chicago, Ill.—Model G Portapower designed to supply A, B, and C voltages to farm battery sets. Converts rural set into an electrically operated receiver. Handles from 4 to 6 tube sets using 1½, 2 or 6 volts A supply.



P. R. Mallory & Co., Inc., Indianapolis, Ind.—Type VF-223, a new audio or hum filter, is now available for use with all single unit vibrapacks; the filter condenser is a 3-section FPT-390, of 15-15-10 mfd, capacity, 450 working volts. Choke rated at 100 ma.

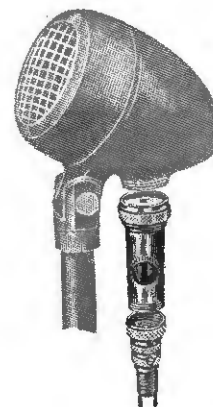


American Television & Radio Co., 300 East Fourth St., St. Paul, Minn.—Midget phonograph inverter, operates on 110 volts d.c., inverting same to 110 volts a.c. 60 cycles at an output of 15 watts. Available in three models. Model PCP weighs less than one pound; measures 2½ x 2½ x 2 5/16.



Recoton Corp., 178 Prince St., New York, N. Y.—Cutting needles are made of stiff tool metal to hold their shape. Swedish steel alloy retains the cutting edge for a longer time. Diamond-dust polishing affords a smoother, cutting edge. Needles have a "flat" on the shank to prevent inserting it at a wrong angle.

Wilcox-Gay Corp., Charlotte, Michigan—Recordio disc merchandiser, #86-2309, can be conveniently displayed on counter. Modernistically designed with space to hold blanks of three different sizes.



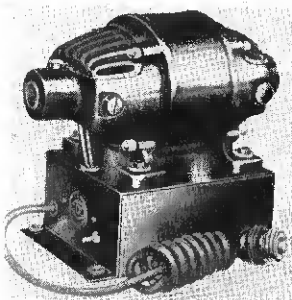
Radiart Corp., Cleveland, Ohio—Model CW-2, Ro-Tenna mechanical wind-up aerial, is controlled entirely from inside the car. Provides a handy knob to raise or lower aerial. This model is mounted on the left cowl with the wind-up knob either fastened or drilled on the instrument panel. The Ro-Tenna is furnished in several models.



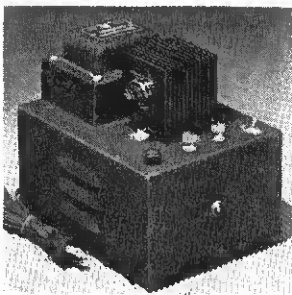
Atlas Sound Corp., 1447-39th St., Brooklyn, N. Y.—Break-in switch for all type microphones or circuits having single conductor shielded cable. Button for press-to-talk and knob to turn for on-off switching. All threads 5/8"-27. Price \$1.75.



Federal Recorder Co., Inc., 50 W. 57th St., New York, N. Y. Announces a non-inflammable metal base disc in sizes 6 1/2, 8, 10, 11 and 12 inches. Features a non-warp, non-slip, heavy coated disc to produce quality recordings with surface noise eliminated.



Janette Manufacturing Co., 556 W. Monroe St., Chicago, Ill.—Produce a complete line of rotary converters for use with receivers, sound equipment and electric organs. Illustration on type CA-18 shows latest constructional features for rotary converters and small dynamotors of 225 watts and smaller. Machine has filter box mounted under converter. Available for 6, 12, 32, 115 or 230 volt d.c. input.

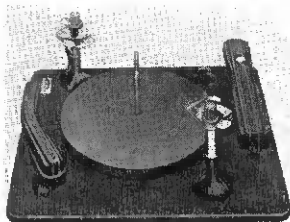


Standard Transformer Corp., 1500 N. Halsted St., Chicago, Ill.—Small power supply to operate from the 110 volt line and deliver 7 volt d.c. at 6.5 amperes, continuous duty, or 5.4 v. 12 amp. instantaneous. Intended as power pack for demonstrating auto sets and can also be used as a battery charger. Equally applicable for service test work. Price \$13.95.

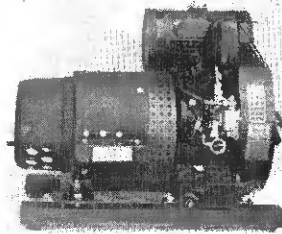
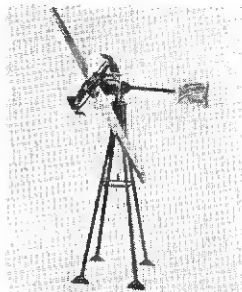
Parris-Dunn Corp., Clarinda, Iowa—A 6-volt heavy-duty 275 watt wind charger incorporating a number of new features. An outstanding advancement is the new throwout collar and retaining spring, insures proper governing under all wind and weather conditions.



J. P. Seeburg Corp., 1510 Dayton St., Chicago, Ill.—Automatic record changer and recorder named the "Record-O-Matic" handles 14-10 inch or 10-12 inch discs; one control button for all operations; crystal pickup; crystal or magnetic cutting heads. Separate switch for manual play-back.



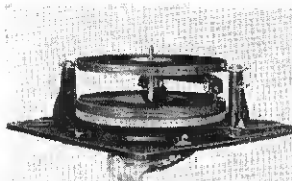
Wincharger Corp., Sioux City, Iowa—This 6-volt deluxe wind driven power unit to charge radio batteries in rural areas and provides power for several electric lights. Has top output of 17 amperes in a 20 mile wind.



Kato Engineering Co., 530 North Front St., Mankato, Minn.—Katolight 600 watt plant, 4 cycle, air-cooled engine with 2 1/4-inch bore, 2 1/4-inch stroke. Measures 23 x 16 x 17 inches and weighs around 157 lbs. Self-starting from 12 volts battery. Available with full automatic control or remote control.

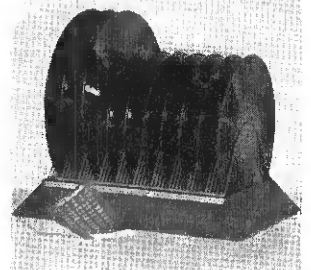


The Ward Products Corp., 1523 East 45th St., Cleveland, Ohio—The "Flex-Angle" auto antenna is single mounting and can be adjusted to a vertical position through a range of 16 degrees without resorting to the use of special parts.



General Industries Co., Elyria, Ohio—Model GI-C120 record-changer unit with such new advancements as tangent tracking crystal pickup with balanced arm; direct drive motor; cycling switch and single lever adjustment for different size records or manual playing.

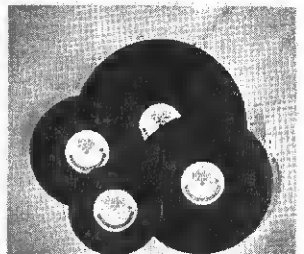
General Records, Div. of Consolidated Records Inc., 1600 Broadway, New York, N. Y.—The base of this 50-record rack is formed of pressed steel sides, spot-welded together to form a rigid unit. Soft rubber feet are inserted in the bottom to prevent marring of furniture. Finished in brown satin wrinkle with a gold decalcomania strip, indicating the position of the fifty records.



Musicraft Records, Inc., 10 West 47th St., New York, N. Y.—This neat record carrier can be obtained in grey or tan airplane cloth, or imitation walrus leather in blue or brown. Price of holder containing 25 ten-inch records is \$2.50; for 50 ten-inch records \$3.00; for 35 twelve-inch records \$3.50.

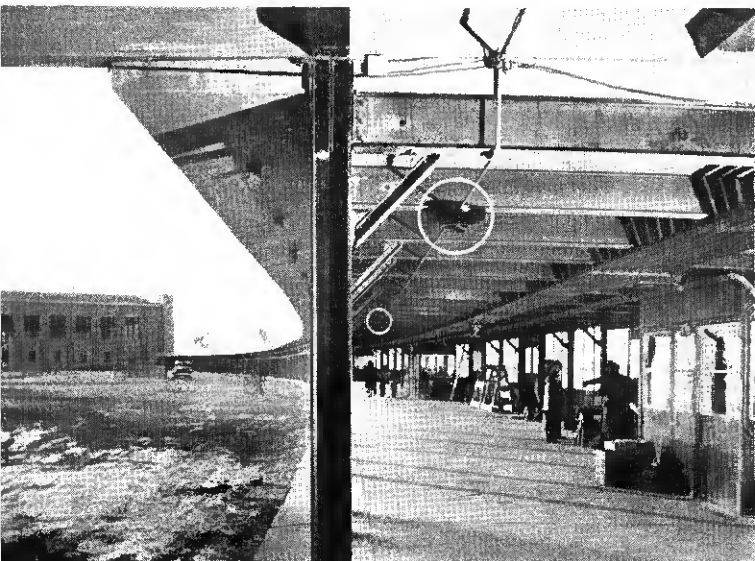


Electrovox Company, 424 Madison Ave., New York, N. Y.—Manufacturing a complete line of recording accessories to include the Walco steel and sapphire cutting and playback needles and a new non-inflammable home recording disc. This new disc made in 6 1/2, 8 and 10 inch sizes. In addition to the non-inflammable feature, there is low surface noise, non-warping, and long life.



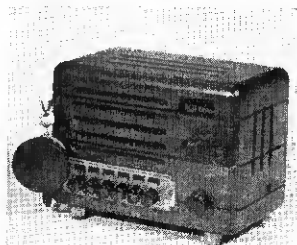
Sound

AMPLIFIERS have improved eye-appeal, more flexible input and output connections, many automatic controls. Portable systems equipped with better-finished amplifiers, provide performance nearer that of fixed installations without material increases in weight and size. Intercommunicator cabinets considered more businesslike, units providing greater flexibility for possible extensions. Recorders for both home and professional use generally priced lower. Pickups, mikes, speakers, other sound items exhibit more refinements than in recent years

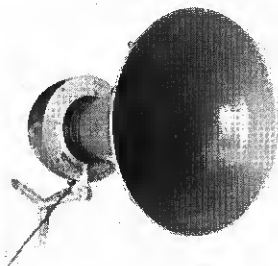


LaGuardia Airport loading platform *Western Electric*

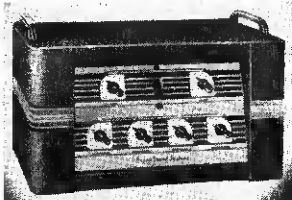
RCA Manufacturing Co., Inc., Camden, N. J. — "Telekom" series call-system with ear-phone provision for private listening. This model M16359 for installations requiring instant communication with from one to six remote positions. Power for the control station may be obtained from 110 volt a.c. or d.c. supply.



The Webster Company, 5622 Bloomingdale Ave., Chicago, Ill.—Portable recording system for records up to 10 inch size; crystal head self-groove cutter; monitor speaker; 98 lines per inch 78 r.p.m. System includes amplifier with volume and tone controls and V. I. meter complete in portable carrying case. \$149.50 list.



Jensen Radio Mfg. Co., 6601 So. Laramie Ave., Chicago, Ill.—All-purpose type "S" Peri-Dynamic projector. It employs a heavy duty P.M. speaker, capable of handling 15 to 25 watts of power input. Features a sharp improvement in the middle frequency response; weather-proof. To sell to the trade complete for \$31.20 net.

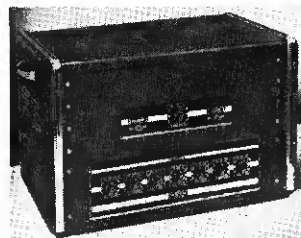
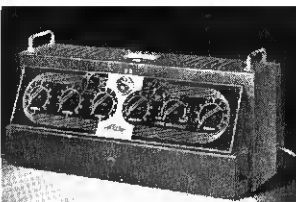


David Bogen Co., Inc., 633 Broadway, New York, N. Y.—DeLuxe models EX25 and EX35, 25 and 35 watt power amplifiers provided with four input channels. Triple range electronic tone correction; pushpull 6L6s with inverse feedback and separate fixed bias. Price from \$105.00 up complete with tubes.

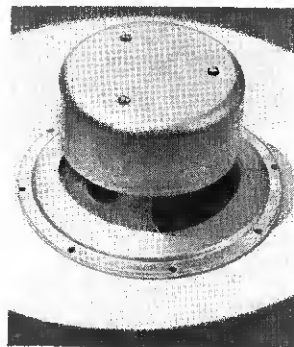
Presto Recording Corp., 242 W. 55th St., New York, N. Y.—Model K portable recorder easily set up for operation in a few minutes time. Makes 6, 8, 10 and 12 inch records; can operate as a sound system; utilizes magnetic cutting head and pickup; works from 110 volt 60 cycle line; and available for other voltages and frequencies at additional cost. Rubber-tired turntable driven directly by a steel pulley on the motor shaft.



Operadio Manufacturing Company, St. Charles, Ill.—Model 855 AR-base-type 13-tube amplifier with beam power tubes and capable of delivering 55 watts output. Four channel input; volume expansion.

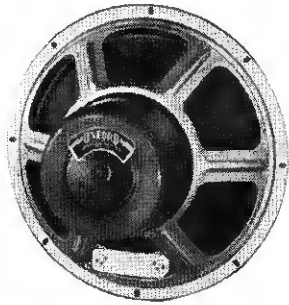


Erwood Sound Equipment Co., 224 W. Huron St., Chicago, Ill.—Model 4575 high-gain 75-watt amplifier with 4 low impedance inputs for use with long mike lines. Each input with individual gain control in addition to the master volume control, system has automatic volume control and automatic volume expansion.



Quam Nichols Co., Cottage Grove Ave., 33rd Place, Chicago, Ill.—Offer a new 8-inch PM high-fidelity speaker with greater power handling capacity. Models S80PM and D80PM with 28 and 48 oz. magnets respectively.

Oxford-Tartak Radio Corp., 915 W. Van Buren St., Chicago, Ill.—Model 12DM2, a public address speaker, is said to be rated at 20 watts and capable of handling much greater peaks. Has an improved type of voice coil construction.



Utah Radio Products Co., 812-20 Orleans St., Chicago, Ill.—New "Baflex" reproducer for public address systems is available in four models, ranging in list price from \$29.50 to \$59.50. Especially adaptable for use with television and frequency - modulation sets. Also, a new line of speakers for FM is announced in 8, 10, and 12-inch sizes.



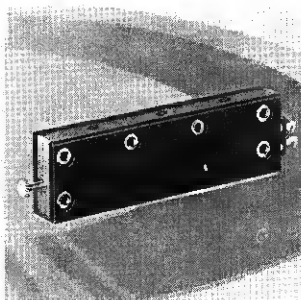
Transformer Corporation of America, 69 Wooster St., New York, N. Y.—Clarion CS-38 portable sound system, mounts in a single carrying case, rated output of 25 watt with 35 watt peak; circuit employs inverse feedback, pushpull output; impedances of 2, 4, 8, 16 and 500 ohms; 2 phono and microphone inputs; mixing facilities. Employs 2 heavy duty 12 inch PM speakers. List \$139.13.

Talk-A-Phone Mfg. Co., 1847 S. Millard Ave., Chicago, Ill.—Manufacture a complete line of page system power amplifiers with built-in speakers. Units available in 5 to 15 watt sizes.



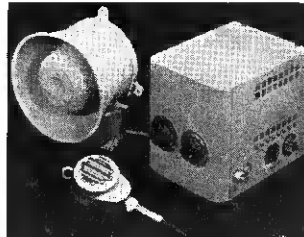
Universal Microphone Co., Inglewood, Cal.—Model N3 chest microphone for sound trucks, amateurs and other applications where the operator's hands must be free. Output 48 db. below one volt per bar. Microphone of the communications type, lightweight and compact design. Price \$19.50.

Eastern Mike-Stand Co., 56 Christopher Ave., Brooklyn, N. Y.—Manufactures a new type of microphone stand with a hollow base. Base made of die-cast metal finished in polished chromium. Edge of base fitted with a rubber ring to act as a guard and shock absorber. Various other styles and types available to meet different requirements. Also produce microphone switches, a shielded locking type telephone plug for mikes and other devices.



The Brush Development Company, 3311 Perkins Ave., Cleveland, Ohio — RC-20 crystal record cutter for use with home, school and studio recorder. For engraving on lateral type, hard or soft recording materials. Rated frequency response flat within plus or minus 3 db. 50 to 9000 c.p.s. permitting constant amplitude records to be cut without any form of equalization.

Western Electric Company, 195 Broadway, New York, N. Y.—Introduces the type 639B Cardioid microphone, which offers six patterns at the turn of a switch, non-directional, bi-directional, and cardioid, plus patterns which permit shifting the angle of minimum response to 150, 130 and 110 degrees. Designed to prevent low-frequency reverberation and feed back.

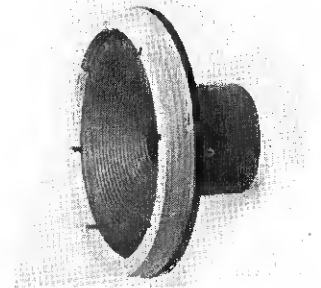


Radio Wire Television, Inc., 100 Sixth Ave., New York, N. Y.—Lafayette "Super-voice Talking Car" complete reproducing system for police and fire traffic cars, and other services. Operates on car battery or 110 volts a.c. supply; two controls volume and tone; low battery drain; miniature marine speaker of the re-entrant type. Mounts under dashboard of car. List \$49.95.

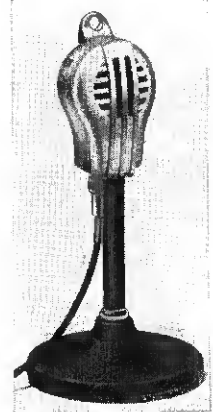
Electro-Voice Manufacturing Co., Inc., 1239 South Bend Ave., South Bend, Ind.—Model 605 dynamic-type microphone features new design. Rated frequency response 45 to 8000 c.p.s., output minus 57 db., and impedances available direct to grid and 500 ohms. Available in dark gunmetal and bright chromium finishes.

Amperite Company, 561 Broadway, New York, N. Y.—Announces new pressure gradient dynamic type mike with improved ellipsoid pickup pattern. Output level —55 db., and designed so the familiar mechanical sound due to diaphragm peaks is eliminated resulting in a natural response curve from 40 to 10,000 c.p.s. Model PGH, list \$32.00, model PGAH, \$25.00.

RCA Manufacturing Co., Inc., Camden, N. J.—Model MI-6234 new accordion permanent dynamic type speaker. Specifications: voice coil impedance 6 ohms, maximum power input 3 watts average, overall diameter 7 1/2 inches, depth 3-5/16 inches, frequency response 60 to 7000 cycles.



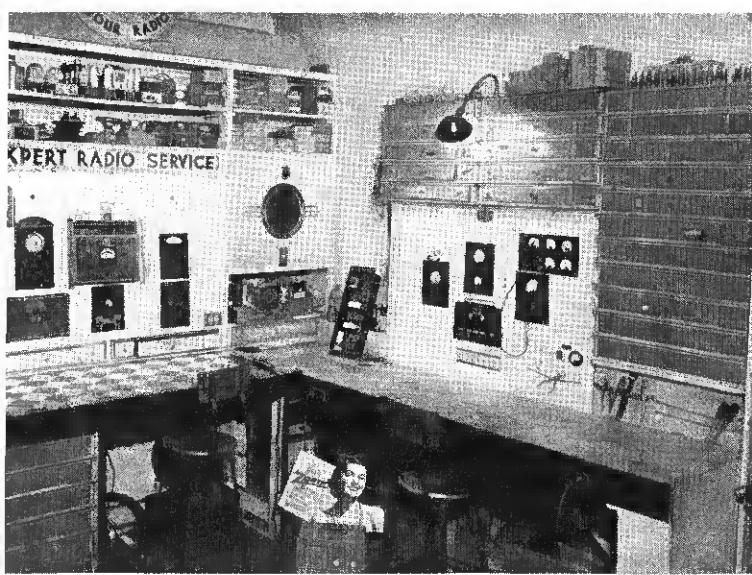
Stromberg-Carlson Tel. Mfg. Co., 100 Carlson Rd., Rochester, N. Y.—A monitor speaker for FM and AM broadcasting stations; equipped with the labyrinth and carpinchoe leather speakers in the new coaxial dual design. Sound distribution is uniform over an angle of 100 degrees; high-frequency cone is only 2 1/2 inches in diameter; housed in a modern cabinet. The Labyrinth feature to assure fundamental bass notes and to eliminate cavity resonance. The Carpinchoe leather cone edge supports used in both the high and the low frequency speakers to suppress cone resonance and provide a smooth response.



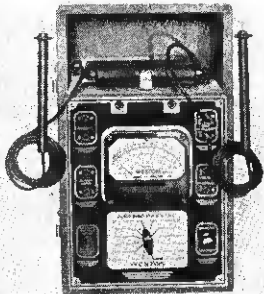
Turner Company, Cedar Rapids, Iowa — Low cost microphone called the "Han-D" is shaped to fit the hand. Provided with hook at top which permits it to be used as hanging mike for call systems. Positive contact slide switch.

Testers

INSTRUMENTS appear influenced chiefly by imminence of new ultra high frequency services. Thus voltage ranges are higher than ever, insulation improved, power drawn from circuits under test less. Oscillators, oscillographs and associated instruments cover wider range, incorporate refinements for u.h.f. work. Tube checkers covering all latest types boast easier-to-read scales and charts. Design of dynamic circuit testing units continues. Many devices for checking individual parts refined, improved. Simplicity of operation featured



Modern service bench *North Radio*

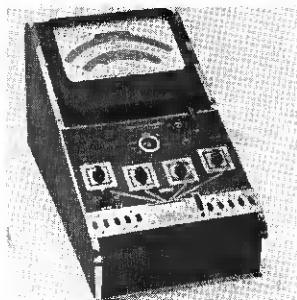


The Triplet Electrical Instrument Co., Bluffton, Ohio—Model 1290 industrial analyzer with testing facilities to include 4-a.c. ammeter ranges; two a. c. voltmeter ranges. Simultaneous readings of a.c. voltage and current. Easier to instantly locate voltage drop in any part of circuit. List \$70.00.

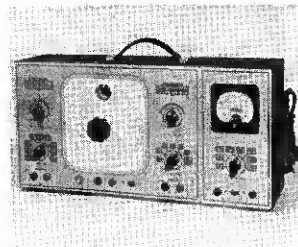
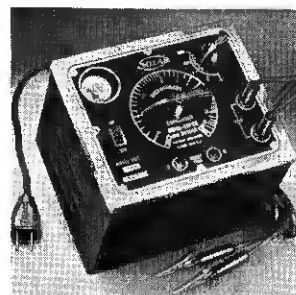
Weston Electrical Instrument Corp., Newark, N. J.—Model 772-2 super-sensitive analyzer offering facilities to make sensitive microampere measurements in frequency-modulation limiter and discriminator circuits. These tests are in addition to ranges for all customary voltage, current and resistance testing needs.



Solar Manufacturing Corp., Bayonne, N. J.—Model BQC dynamic condenser testing instrument for spotting good and bad condensers either with the condenser separate or in an operating circuit. Built-in Wien bridge provides separate capacity measurements from .00001 to 70 mfd.

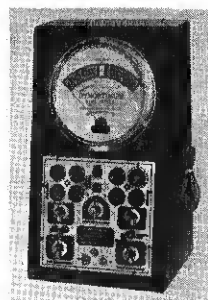
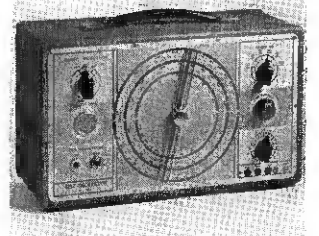


Supreme Instruments Corporation, Greenwood, Miss.—Tube and battery tester, model 589, in which the keynote of design is simplicity in operation, modernized testing circuits, and attractive layout. Instrument includes double floating filament return selector system.



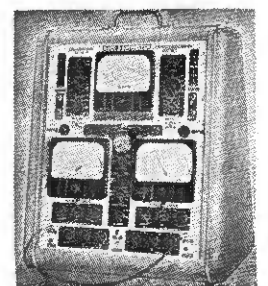
RCA Manufacturing Company, Camden, N. J.—Test oscillator No. 167 featuring accurate tuning, improved dial and pointer. Fundamental frequency range (100 to 30,000 kc) has a 400 cycle output of 8 volts for audio circuit testing. Net price \$34.50.

Sprague Products Company, North Adams, Mass. — The deluxe "Tel-Ohmike" contains the 11 features of the standard Sprague capacity—resistance unit, plus a built-in dc voltmilliammeter. Also instrument can detect opens, shorts and allows rapid tracing of circuits for continuity.

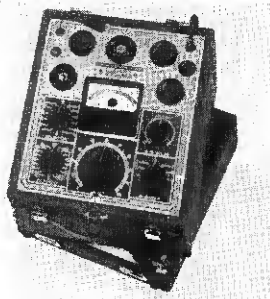


Dayton Acme Co., 2339 Gilbert Ave., Cincinnati, Ohio.—Model 600 Daco "Radiometer" with new refinements including a 7 inch meter, 1000 volts a.c.-d.c., and up to 10,000 volts if wanted, resistance range to 100 megohms, db range; rf-if oscillator, AM-FM-video range to 100 mc; calibrated output attenuator and others. Price with cabinet \$194.90.

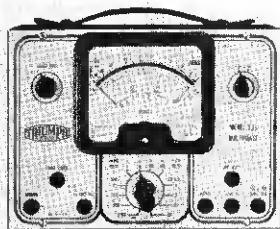
Radio City Products Co., Inc., 88 Park Place, New York, N. Y. —Tube checker, model 308 series D, with a 9-inch meter for testing all tubes including the new miniature types. Spare large and miniature sockets, to take care of new tubes. This "Dynoptimum" tester not only provides quality tests but also tests individual sections of multi-purpose tubes.



Readrite Meter Works, Bluffton, Ohio—Tube checker No. 432A for counter or portable use; takes all receiving tubes including the 1.4 volt miniature series. Settings for tests made quickly. Results read directly. Line voltage control meter. Dealer price \$17.85.

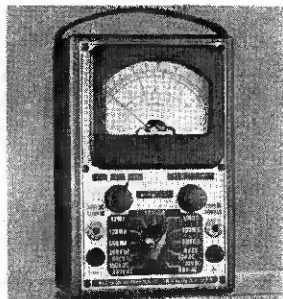


The Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland, Ohio.—The "Traceometer" No. 155 with 5-precision meters for full benefits of dynamic signal tracing. Self-contained voltage regulation for vacuum tube voltmeter circuits operating the meters. Designed to measure the signal in microvolts at any point in the rf-if section.

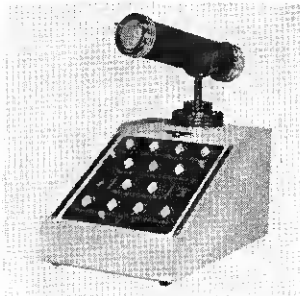


Triumph Mfg. Co., 4017 W. Lake St., Chicago, Ill.—Multi-Quantum meter, model 333, with positive action rotary switch for selection of 33 ranges; automatic overload protection on resistance ranges. Ivory metal panel with black raised designations. Measures 9x6 1/2x4 inches.

Simpson Electric Co., 5216 W. Kinzie St., Chicago, Ill.—Announces a new kit set, which include 3 small matched meters in a sturdy carrying case. The kit is an outgrowth of its new line of nine "Micro-Testers" and is available in combinations to measure current, voltage and resistance.



Precision Apparatus Company, 647 Kent Ave., Brooklyn, N. Y.—Series 832, a 31 range rotary selective a.c.-d.c. multi-range tester. Employs a square 3 5/8 inch meter; and provides 6 d.c. ranges 1000 ohms per volt up to 1200 volts; 6 a.c. ranges to 2400 volts; 4 d.c. current readings to 1200 mas; 3 ohmmeter ranges to 5 megohms; 6 decibel ranges and others.

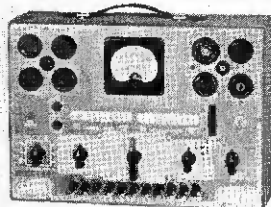


Ted Nagle Equipment Corp., General Motors Building, Detroit, Mich.—Cathode-ray oscillograph, model 160, of novel design and attractive construction; tube on swivel mounting; tube calibrated to show selectivity of receiver under test, for use in radio service work.

Monarch Mfg. Company, 3341 Belmont Ave., Chicago, Ill.—Announces a vacuum thermocouple meter for output power measurements. Has seven power ranges on ladder type attenuator from 30 milliwatts to 30 watts.

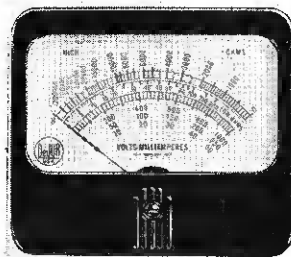
Allen B. Du Mont Labs., Inc., 2 Main Ave., Passaic, N. J.—Type 208 oscillograph designed to operate the modern high-vacuum cathode-ray tube as an oscillograph and to facilitate its application. Complete front panel control; supplied with an intensifier-type C. R. tube.

The Jackson Electrical Instrument Co., Dayton, Ohio—Dynamic tube tester, model 636, featuring full range filament selection marked directly on panel in volts from 3/4 to 115 volts tests all types, has convenient roll chart tube index on main panel. Bench style \$29.95 net.



The Radiotechnic Laboratory, 1328 Sherman Ave., Evanston, Ill.—The PMT circuit switching of the new model 120 tube checker. It is designed to accommodate any possible combination of heater and control elements of all existing sockets and future tubes. Available in portable model and for counter use.

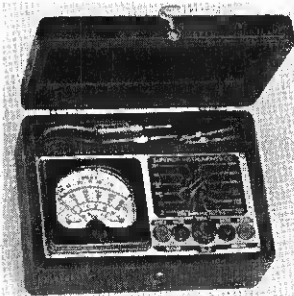
Burton-Rogers Co., 857 Boylston St., Boston, Mass.—Announce a complete line of Hoyt electrical instruments for all purposes. Included are the new 2-inch square magnetic vane meters current measuring instruments also the square moving coil meters in 3, 3 1/2 and 4 1/2-inch cases. Some models can be illuminated if desired.



DeJur-Amsco Corp., Shelton, Conn.—Now in production on a complete line of voltage and current measuring instruments in 2, 3, and 4 inch sizes. Available in round and square cases. Meter illustrated provides several volt-milliamper ranges to 1000; low-ohms 0 to 200 and a high-ohm scale 0 to 200,000.

Earl Webber Co., 1313 W. Randolph St., Chicago, Ill.—Portable low-price tube tester model 150 added to this company's complete line of testing instruments. Easy direct reading dial; sturdy construction and attractive layout. Price \$19.95.

J. L. D. Morrison Co., 1923 35 Pl. N.W., Washington, D.C.—Announces a new signal tracer tool which consists of a sensitive detector and amplifier compactly housed and equipped with a variable gain control, suitable adapters for connection to the power tube and a test prod. Designed for tracing the signal through a receiver until the exact point of breakdown is located.



Superior Instruments Co., 136 Liberty St., New York, N. Y.—All-purpose portable tester, model 1220, sensitivity of 5000 ohms per volt; 6 d.c. voltage ranges; 3 a.c. voltage ranges; 4 resistance scales; 4 d.c. current ranges and other measurements. Compact, measures 7 x 5 x 3/4 inches. Price \$10.45.

Radio Instruments Mfg. Co., Inc., 1131 Terry Road, Jackson, Miss.—The Rimco Dynalyzer, model 701 has a built-in speaker and enables two-channel tests of intermittent radios. Measures frequencies from 95 kc. to 15 mc., visual and audible tests of tubes can be made without removal from radio; measures a.v.c., a.f.c., bias cell and all d.c. voltages from 0.2 to 500 volts and other refinements. Housed in all-metal cabinet which provides double shielding and dissipates natural heat generated by tubes and transformers. Price \$79.50 f.o.b.

Big "SURPRISE PACKAGE"

NEVER BEFORE A TWO B
AT THIS SENSATION

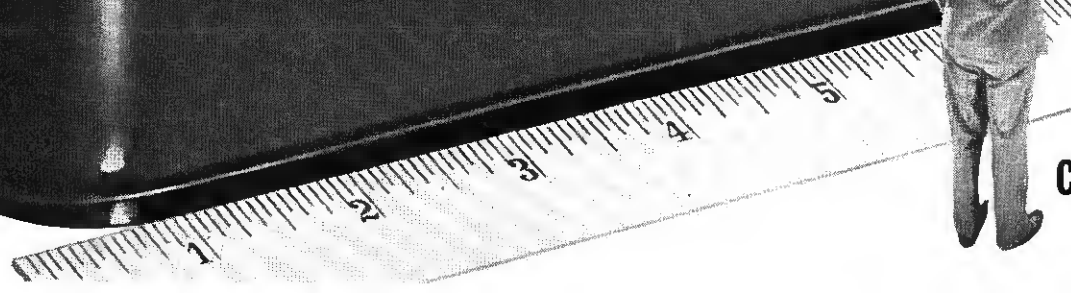
5 TUBE AC-DC
with AEROSCOPE

Model 44-J5 Ebony Plastic
Model 45-J5 Ivory Finish

\$9.95



60 55 16.5 6.0



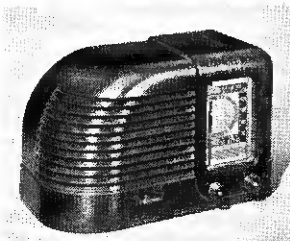
OPS

PLASTIC PRICE!!

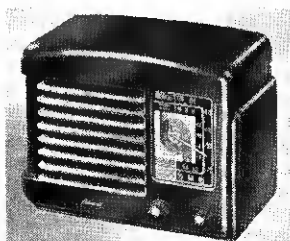
West, South and Rural **\$1295**

Admiral

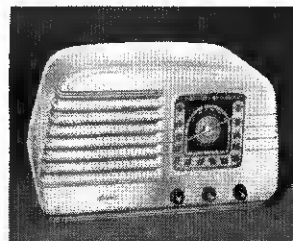
'41 LINE!



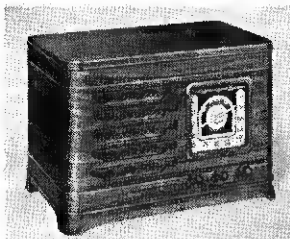
5 tube, AC-DC with Aeroscope—
one band, streamlined cabinet
15-D5—Mahogany Plastic
16-D5—Ivory Plastic



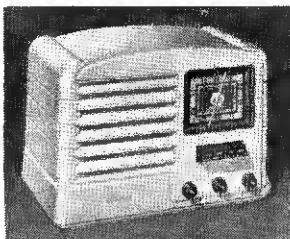
5 tube, AC-DC, 2-bands
(broadcast and full foreign)
12-B5—Ebony Plastic
14-B5—Ivory (with handle)



5 tube, AC-DC, 2-bands
52-J55—Ivory Plastic
51-J55—Mahogany Plastic



5 tube, AC-DC, 2-bands, Aero-
scope, period style cabinet
47-J55—Walnut (wood)



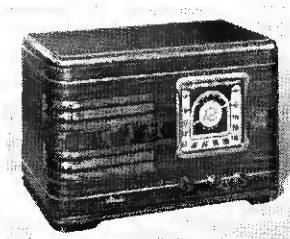
5 tube and ballast, AC-DC, 2-
bands, automatic tuning
49-J6—Ivory Plastic
48-J6—Mahogany Plastic



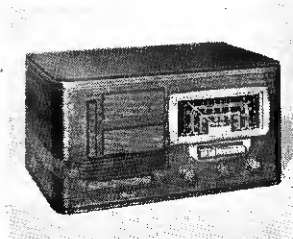
50-J6—5 tube and ballast, AC-
DC, 2-bands, automatic tuning,
Aeroscope, hand rubbed walnut
(wood) cabinet



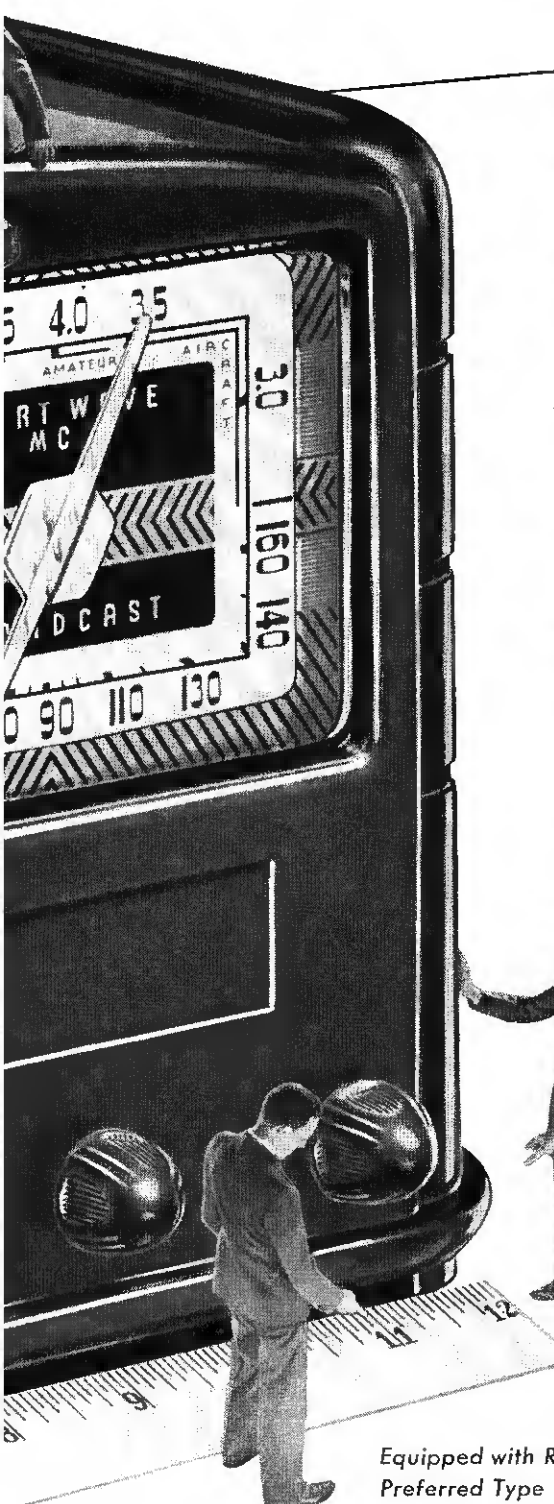
6 tube, AC, 2-bands
51-K6—Mahogany Plastic
52-K6—Ivory Plastic



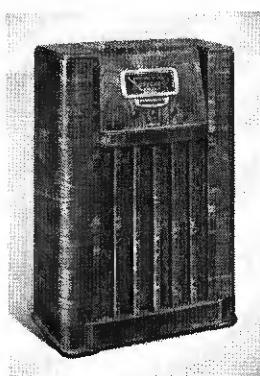
6 tube, AC, 2-bands, beautiful
hand rubbed cabinet
53-K6—Walnut (wood)



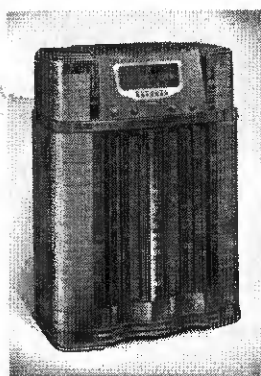
7 tube, AC, 2-bands, Aeroscope,
automatic tuning
55-A7—Walnut (wood)



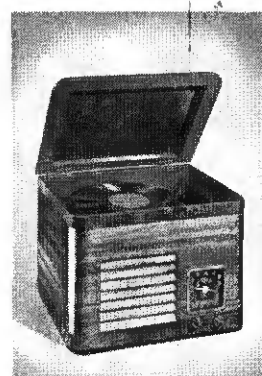
Equipped with R. C. A.
Preferred Type Tubes.



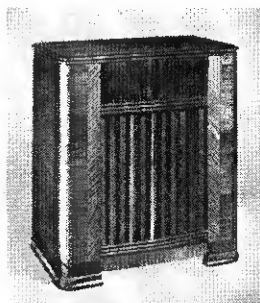
7 tube, AC, 2-bands, Aero-
scope, automatic tuning
56-A77—Walnut console



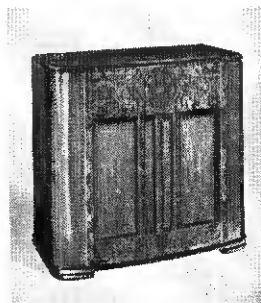
11 tube, AC, plus magic eye,
5 bands, permeability tuning
movable Aeroscope
63-A11—Walnut console



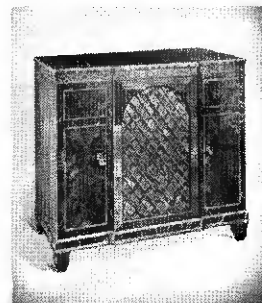
5 tube, AC, 2-bands, Aero-
scope, smartly styled cabinet
54-XJ55—Table Model
Radio Phonograph



7 tube, AC, 2-bands, auto-
matic tuning, automatic re-
cord changer
57-B7—Console Radio
Phonograph



11 tube, plus magic eye, AC,
5 bands, permeability tun-
ing, movable Aeroscope,
automatic record changer
58-A11—Radio Phonograph
R58-B11—with A.R.C. Re-
cordion (record maker)



11 tube, plus magic eye, AC,
5 bands, permeability tun-
ing, movable Aeroscope,
automatic record changer
59-A11—Period console
R59-B11—with A.R.C. Re-
cordion (record maker)

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TAL RADIO & TELEVISION CORP.

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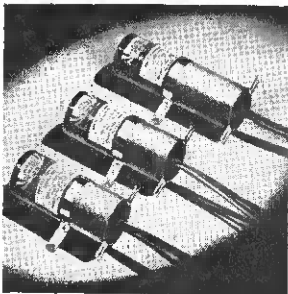
Parts

COMPACTNESS and flexibility of mounting seen as chief interest of designers in season's crop of parts, with manufacturers continuing to hold prices down as low as increasing raw material costs permit. Many parts developed especially for new services noted in lines, higher voltage breakdown distinguishing tele items and larger size required for quiet, quality performance distinguishing components for FM. Increased amateur and commercial use of ultra high frequency "specials" further expanding part lines

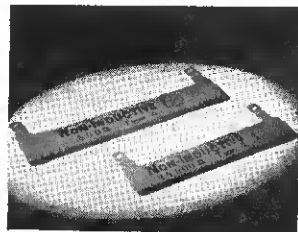


Typical parts distributor's stock

Cornell-Dubilier Electric Corp., South Plainfield, N. J.—Type EZ tubular electrolytics have moisture-proof cardboard encased units. Available in the single units, capacities range from 8 to 24 mfd. at voltages of 250 to 450; in the dual units from 8-8 to 16-16 mfd at these same voltages. The triple and quadruple units include low-voltage, high-capacity and high voltage sections.



General Cement Mfg. Co., 1041 Kilburn Ave., Rockford, Ill.—A complete radio kit put up in a neat leatherette pocket case for the serviceman. Contains service cement, carbon-x, grapholine, scratch polish, non-slip compound, dial oil, contact cleaner, dial drive cement. List price \$1.65.

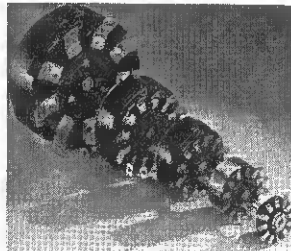


ClaroStat Mfg. Co., Inc., 285 N. Sixth St., Brooklyn, N. Y.—Non-inductive wire-wound power resistors, Series Z, is available in 10-watt, maximum resistance 3000 ohms; 25-watt, 7500 ohms; 50-watt, 12,500 ohms; 100-watt, 25,000 ohms.



P. R. Mallory & Co., Inc., Indianapolis, Ind.—The Mallory supplemental "MYE" monthly technical service presents timely radio engineering and service data. June issue covers automatic tuning, subjects scheduled for coming issues include frequency-modulation, volt-meters, and oscillators. The complete service to-date, with 8 issues in a loose-leaf, three-ring binder may be purchased for \$1.00, direct or through distributors.

Ohmite Manufacturing Company, 4835 Flournoy St., Chicago, Ill.—High current tap switches rated from 10 amps. 150 volts, to 100 amps. at 300 volts. Ratings apply to a.c. circuits operating at any power factor. Switches are multi-point, load-break, non-shorting, single-pole rotary selectors for battery charges, transmitters, voltage regulators and other applications.



Solar Manufacturing Corp., Bayonne, N. J.—Handy carton containing 12 "Red-Cap" etched foil dry electrolytic condensers. These small units useful for 30 different ratings and meet the majority of filter repair requirements. Several units strapped together occupy no more space than the original filter.



National Union Radio Corp., Newark, N. J.—New line of electrolytic condensers featuring compact size, low leakage, uniformity, high breakdown voltage and low power factor. The complete condenser line includes universal types, box and can units, paper tubulars and many others especially designed and built for radio replacement service.



Insuline Corp. of America, 30-30 N Boulevard, Long Island City, N. Y.—Combination shearing and punch tool for making holes in chassis and other sheet metal units. Shearing action is accomplished by the use of a wrench which forces the shear punch into the die and through the metal by the screw action. No reaming or filing necessary. Available in 5 sizes $\frac{3}{4}$ to $1\frac{3}{8}$ inches.



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**Booth
925**
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**OFFERS YOU GUARANTEED
PROFITS IN HOME RECORDING**

FREE!

Counter display racks for complete dealer stock of discs and needles! . . . Window and wall displays . . . Direct mail order cards imprinted for dealers! . . . Newspaper mats for dealers!

NEW!

Disc and needle *kits* to sell with home recorders! . . . Lower-priced discs and needles! . . . Long wearing cutting and playing needles! . . . Everything you need to ride the home recording boom this fall.

ALSO Two new high quality sound recorders for your commercial, educational and professional customers who want *something better* in recording equipment.

AND 5 amazing new developments in sound recording and reproducing equipment being shown for the first time.

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

World's Largest Manufacturers of Instantaneous Sound Recording Equipment and Discs

2 SENSATIONAL DEVELOPMENTS by ATR!

- ELIMINATES "B" BATTERIES IN PORTABLE RECEIVERS.
- PERMITS OPERATION OF 3 WAY PORTABLE RECEIVERS IN CARS WITHOUT "A" or "B" BATTERIES.

INEXPENSIVE — TIMELY — PROFIT MAKERS

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AMERICAN TELEVISION & RADIO CO.
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CONVERTERS

Don't gamble! Where uninterrupted operation of gaseous signs, power amplifiers, A. C. motors, radios, musical instruments and other electrical apparatus depend upon your converters, play safe by using Pincor Rotary Converters. They give thousands of hours of trouble-free service, 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 NEW complete catalog today. Use coupon below.

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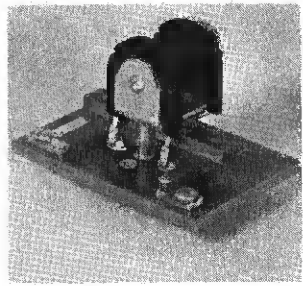
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 Dept. R-1F, 466 W. Superior St., Chicago, Ill.
 Please send me NEW complete catalog on Pincor Rotary Converters.

Name

Address

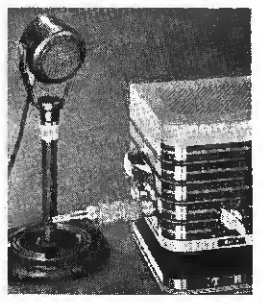
City State

Also send information on Dynamotors.

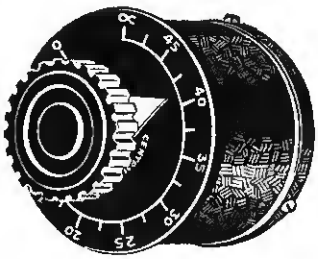


Standard Electrical Products Co., 317 Sibley St., St. Paul, Minn.—R.F. and remote control relay, type RB and RM series; in single and double-break; available for many a.c. and d.c. voltages; armature pivots on two ball bearings; coil voltage 110 volts a.c. or 6 volts d.c. Made for a multitude of applications in phone and cw transmitters. Net prices \$1.65 to \$2.55.

Thordarson Electric Mfg. Co., 500 West Huron St., Chicago, Ill.—Amplifiers can be, easily, adapted for use with low-impedance dynamic or velocity microphones by using this new microphone cable transformer. Available in two types.

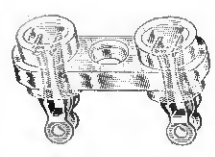


Aerovox Corporation, New Bedford, Mass.—New plug-in type electrolytic condenser, makes for ease and speed of radio tube or vibrator changes. The plug-in feature permits an electrolytic condenser to be instantly removed without tools or trouble, for testing and replacement.

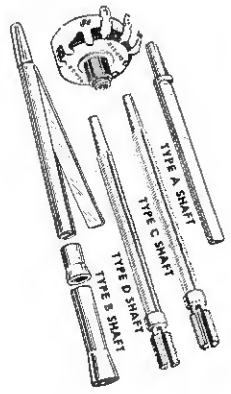


Centralab, 900 E. Keefe Ave., Milwaukee, Wis.—Sound projection controls for public-address equipment, recording apparatus and for use in broadcast stations. Made in T pad, and T fader, L pad, gain and straight fader. It is provided with electrostatic and electromagnetic shielding; resistance elements insulated from shaft and bushing, and is single hole mounting.

Crowe Name Plate & Manufacturing Co., 3701 Ravenswood Ave., Chicago, Ill.—A new automatic cut-out device for autos, which automatically cuts out the radio, head-lights and electrical accessories while the starter motor is in use. To prevent damage to the radio vibrator.

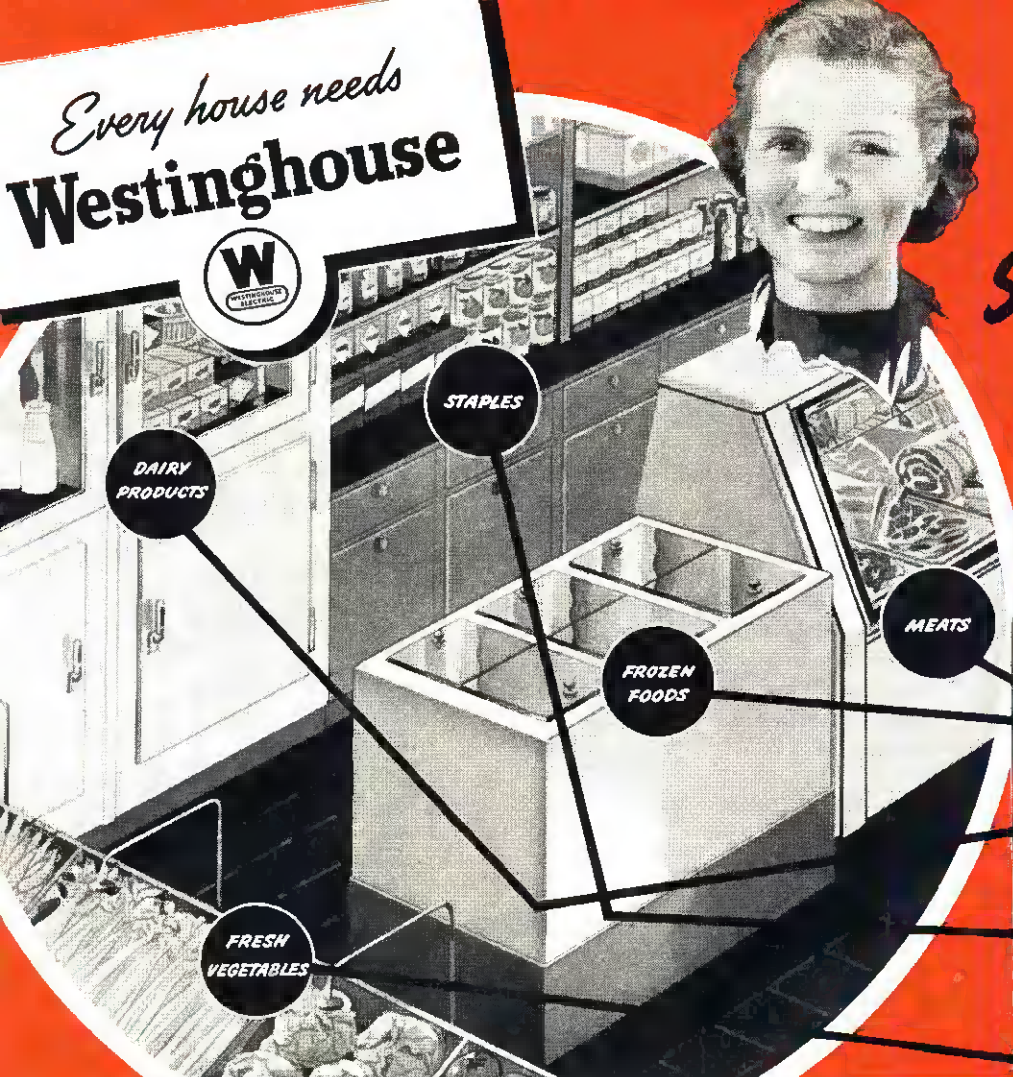


American Phenolic Corp., 1250 West Van Buren St., Chicago, Ill.—This crystal-holder is made of transparent ultra-low-loss polystyrene material. The phosphor-bronze contacts silver-plated to reduce contact resistance and are set in long pockets extending above and below the central rib, can be assembled either on top of a chassis or from underneath fastening with a single No. 6 screw.

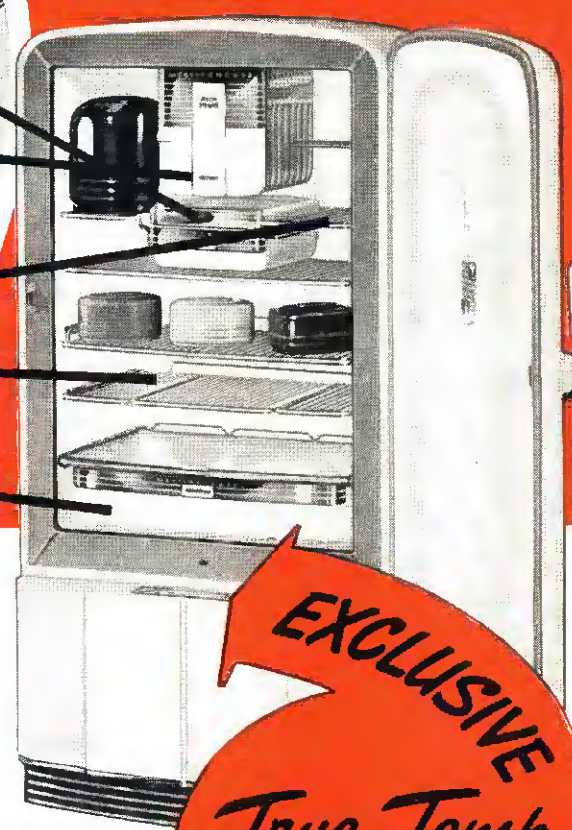


International Resistance Co., 401 N. Broad St., Philadelphia, Pa.—Midget controls with the new plug-in shafts assure easier installation. They will fit both large and midget receivers. Available are types A, B, C, and D which meet most present day requirements.

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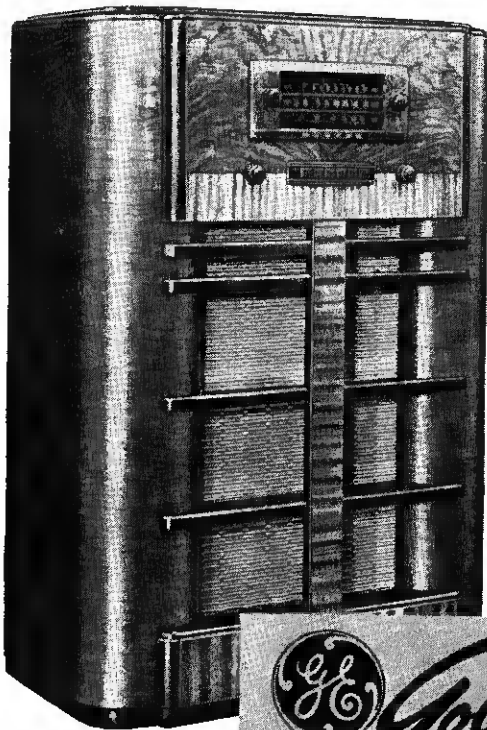
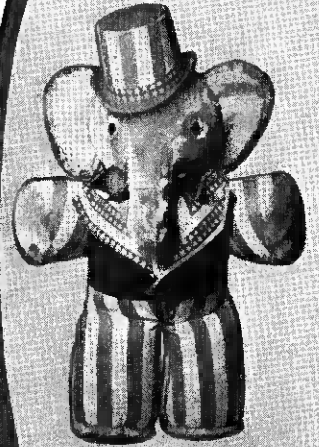


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Radio and Television Department, Bridgeport, Connecticut

GENERAL ELECTRIC

SECTION

3

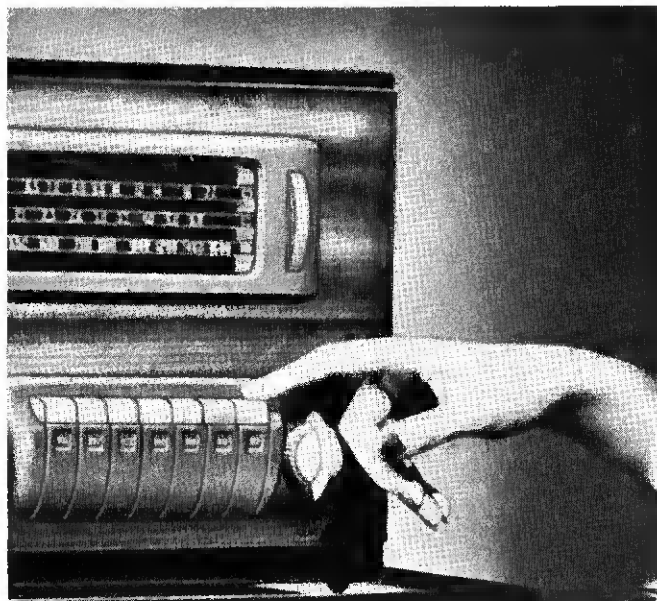
SERVICING

Tomorrow's Circuits



Technical...RADIO...TELE...FM...TUBES...SOUND

By L. R. KIRKWOOD*



Servicing PUSHBUTTON Tuners

PUSHBUTTON tuning has become almost a required feature on receivers over a certain price class. This type of tuning has been incorporated primarily for ease of operation. Another advantage, assuming the initial setting of stations is correct, is that tuning is not left to the customer, which eliminates side band distortion squeals during station selection, and use of tuning control for volume control.

There are three basic systems of push-button tuning in use at the present time; mechanical, electrical switching, and motor or solenoid driven systems.

With mechanical tuning, the movement of the button mechanically rotates the condenser thru some sort of rocker arm. If permeability tuning is used, the movement of the cores is mechanically driven direct from the button. With this system, since the energy for the operation of the mechanism comes directly from the

button, the pounds push required depends upon the friction and mass of the mechanism plus length of stroke of the button.

In variable condenser mechanical tuning systems, several types are in use today. The accuracy of tuning with the buttons depends upon four things; original lineup by customer or serviceman, mechanical accuracy of setting of the variable condenser, electrical stability of the oscillator, and stability of the intermediate frequency amplifier.

The reset accuracy of the mechanical system is, to a large extent, dependent upon the operation of the button by the customer, as well as accuracy of the mechanism itself. Since this system is normally operated without a latch, the tuning depends upon the amount of push applied by the operator.

Drift

Oscillator stability may be divided into four different stages; stability with temperature, voltage, humidity, and ageing.

Most of the drift with temperature is caused by variations in capacity in coil trimmers and switch parts. This may be compensated, if consistent, with a negative co-efficient shunt capacitor across the oscillator tank. If the variable tuning capacitor changes value with temperature, it may be necessary to compensate the inductance of the oscillator coil. A capacitor with a negative temperature coefficient of 2 percent for 30° centigrade change in temperature of a

value between 15 and 25 mmfd, will normally compensate the oscillator with sufficient accuracy for push-button tuning. With this system, some receivers have been compensated to maintain drift with temperature to less than 2 kc over 30° centigrade temperature range on the broadcast band. In order to accomplish the above specification, it was necessary to replace the normal mica shunt capacitor with an air dielectric shunt capacitor and the mica trimmer series condenser with a fixed silvered mica condenser. Variable inductance was used to align at 600 kc.

Some of the design precautions to reduce shift with humidity are impregnation of coil, oscillator socket, range switch, variable condenser stator supports; use of air dielectric trimmer, and the use of waxed or bus wire. It is possible to maintain the shift with humidity to a small amount if these precautions are taken.

Shift with ageing is a troublesome problem as some mica trimmers change capacity after going through many heat cycles.

In order to maintain a constant oscillator frequency it is necessary to eliminate movement of parts and wires. This is greatly solved by the fact that set-up is not normally made until receiver is installed in the customer's home.

The voltage stability of an oscillator using normal circuits is sufficiently good so as to cause very little worry. This only becomes a serious problem

Minimizing DRIFT

FAILURE to hold station-settings is one of the most common pushbutton receiver complaints.

The author tells why drift occurs, explains how it may be minimized.

* RCA Mfg. Co.

if sharp intermediate frequency amplifiers are employed.

In the receiver using four circuit intermediate frequency amplifier, a drift of less than 2 kc does not seem to be objectionable. If the i-f is broader, larger variations may be tolerated, or if more circuits are employed, greater stability may be required.

The drift of the intermediate frequency amplifier is as important as oscillator drift to maintain correct alignment of pushbutton receivers. Although the percentage drift may be larger since the frequency is usually from 2 to 4 times lower in the broadcast band.

A type of intermediate frequency transformer which lends itself to stable performance is the permeability tuned fixed condenser type. The principle advantage of this type is that stable, sealed condensers may be used.

Tuning Systems

Electrical switching systems differ in type of circuit elements and method of set-up. Trimmer-tuned is the cheaper of the methods but not usually as stable as others. The most common system in use is permeability tuned oscillator and trimmer tuned antenna systems. This method gives good oscillator stability and medium cost of construction. The third system, used when no loop is employed, is tandem permeability tuned oscillator and antenna. This method gives good stability and ease of set-up but more expensive construction. The principle advantage of electrical switching pushbutton systems is ease of operation. Its disadvantage is lack of flexibility of station selection, more, difficult set-up and expensive construction.

Motor tuned systems are usually made up of an induction motor mechanically connected to a variable condenser. Station selection is accomplished by a selector connected to variable condenser. The advantages of this system is ease of operation and set-up.

Solenoid tuning is another method of operation similar in action to motor tuning but with faster action.

Motor, solenoid and mechanical tuning depend for their accuracy on the mechanical accuracy of the various mechanisms as well as the electrical stability of the receiver circuits.

Typical System

An electrical switching system in use is shown in Fig. 1 above. Permeability tuning is used in the oscillator and trimmers are used to tune the loop.

The oscillator circuit is made up of a variable inductance coil selected by the push-button switch shunted by an

18 mmfd. negative co-efficient capacitor and 700 mmfd. silvered mica condenser in series with a 5000 mmfd. styrol roll condenser. The cathode tap is taken off between the 700 and 5000 mmfd. condensers. A coil is shunted across the 5000 mmfd. condenser to provide a d-c path for the tube current. The 700 mmfd. condenser and the cathode coil are used for manual tuning on the broadcast band. The 5000 mmfd. is used for series condenser on the short wave band.

The shunt push-button coils are solenoid wound on a styrol $\frac{3}{8}$ " OD moulded form. The coils are approximately $\frac{1}{2}$ " long. The cores are $\frac{1}{8}$ " diameter by $1\frac{1}{8}$ " long. These coils are designed to tune the oscillator from approximately 1000 to 2000 kc.

The temperature stability of the receiver tested was +1 kc at 1500 kc signal and +.5 kc at 600 kc for 30° centigrade change in ambient temperature.

The oscillator variation with voltage was of negligible effect. The intermediate frequency transformers had a random shift of about one kc. thru the heat cycle. This shift could be reduced by means of temperature compensating condenser across the coils.

A direct tuning motor push-button system is shown in Fig. 2. The se-

lector is directly connected to variable condenser. The contacts, movable to station position, are selected on push-button switch. The motor will rotate until contact is broken by insulated portion of selector disc.

Motor Driven Types

If the mechanism goes past the insulated portion, the motor will automatically reverse. If the system is not properly damped, the mechanism oscillates and will not come to rest. Several methods have been in use to reduce this tendency and maintain accurate fast tuning. One system is to change the ratio of drive for a few revolutions as system is reversed, another to incorporate a fly-wheel which will retard the speed of reverse.

A method of obtaining audio squelch while tuning is shown. The a-c across the motor winding is rectified and used to bias off an audio amplifier stage while motor is tuning. The time constant must be such as to allow the mechanism to come to rest before squelch is released.

In past years, it was considered necessary to incorporate AFC on push-button receivers. Due to the increased accuracy of tuning and stability of the oscillator circuit, most receivers are now being built without this feature.

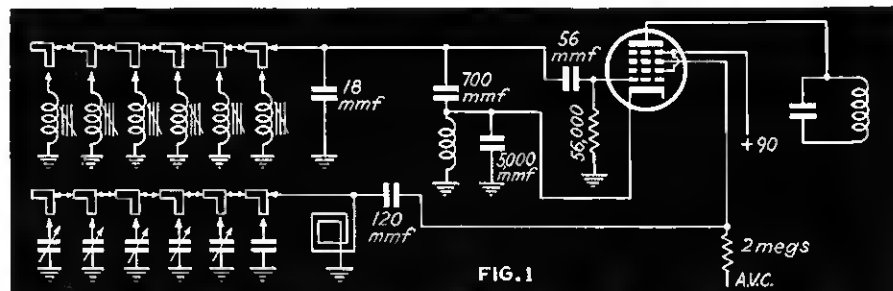


Fig. 1—Typical pushbutton circuit with good stability. Oscillator circuit is permeability-tuned and shunted by 18 mmfd. compensator condenser

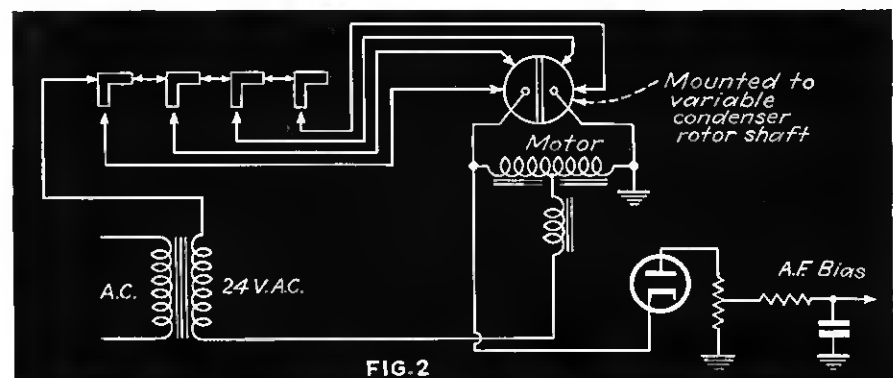


Fig. 2—Motor driven selector system with muting circuit for eliminating noise between stations

Common AVC Troubles

and their cures

By DANA A. GRIFFIN*

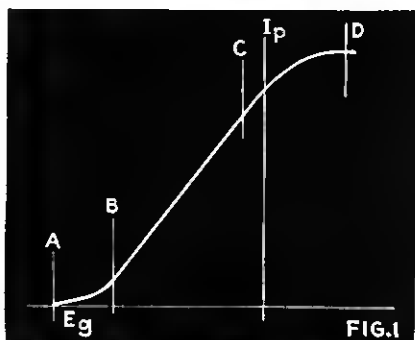


Fig. 1—Grid voltage—plate current curve of a typical amplifier. Portion B-C indicates linear area for proper operation. Section C-D illustrates cross-modulation area into which a grid may be driven by too much signal input or too little bias

IF RECEIVERS were actually equipped with automatic volume control they couldn't be sold! The reason being that all tones would come out of the speaker at the same level, and radio reception would be monotonous indeed.

Automatic gain control got started under a misnomer. While no attempt is being made to change the name, it should be realized that AVC is an adjustment of RF gain and not audio volume. In fact in the treatment of AVC circuits, care must be taken that the necessary filter network does not affect the audio amplitude or fidelity.

Common Problems

The functions of the AVC system are two-fold. The first is the primary function of controlling the signal level, and the second to eliminate cross modulation. Receivers employing AVC take the signal voltage developed at the second detector, rectify it, filter it, and apply it to the grids of the RF and IF amplifiers as a negative bias. The value of bias increases with increased signal input and this, of course, tends to reduce the gain. The result is a leveling of signals which may vary at the antenna in the ratio of 10,000:1 to a ratio of 10:1 at the detector. For this reason, the audio volume control does not have to be as carefully adjusted as did the old type of antenna volume control employed in sets before the advent of AVC.

Defective AVC circuits will cause a blocking or choking in some cases, but more often will produce cross

modulation. Cross modulation is carelessly dismissed by some servicemen as interference caused by lack of selectivity. It can be easily recognized as an interfering signal in the background which does not respond to tuning. In cases of interference due to lack of selectivity, both the desired and undesired signal can be tuned in or out. In the case of cross modulation this is not true. The interference remains constant until the desired signal is tuned out. Another symptom is the fact that the interfering signal may be located many kilocycles away, often at the opposite end of the band.

Cross modulation is caused by insufficient bias on one or more grids and a consequent rectification or detection action in a tube that is supposed to be an amplifier. Referring to Fig 1, we have the familiar grid voltage-plate current curve. If the tube operates on the linear portion of its characteristic, region B-C, the tube functions as an amplifier. If the bias is reduced due to a defective AVC circuit, the signals present in the grid circuit may "add up" and drive the tube into the region C-D, which will cause plate detection. This detecting action modulates the program of the desired signal with the program of the undesired signal, thus producing cross modulation.

No amount of selectivity after the stage so affected will eliminate the difficulty. Only correction of bias, or added selectivity ahead of the tube so affected, will get the grid back to work at the proper place on the curve. Cross modulation is generally observed in areas where a number of local broadcast stations are in operation. Obviously it is easy to drive grids positive in such places, where the total signal voltage applied to the first or second grid may add up to several volts.

Basic Circuits

A basic AVC circuit is shown in Fig. 2. This illustrates an IF amplifier and diode detector in a circuit

that is widely employed. The RF signal from the IF amplifier is rectified by the diode D. Across R1-C1 a pulsating DC voltage is built up. This voltage remains constant when the carrier is unmodulated. It rises and falls in accordance with the modulation frequency and amplitude transmitted by the broadcast station. In fact the audio component is this pulsating voltage and it is fed to the audio amplifier through the coupling condenser C4.

It is easy to see that the values of resistance and capacity used for R1-C1 determine to a large degree the frequency response of the receiver. If C1 is made large, it will by-pass an increasing amount of the higher audio frequencies to ground that are trying to build up across resistor R1. The sole purpose of C1 is to bypass the RF around R1, so that there is no r.f. impedance in the diode circuit which is operating at radio frequencies. The size of R1 is dictated to a large extent by the impedance of the diode. Loss of output and broadening of the tuned circuit occur if the resistance is less than 100,000 ohms.

The AVC voltage that is to be applied to the amplifier grids is taken from the negative end of R1. It is necessary to wipe off all traces of audio modulation from the voltage applied to the amplifier grids otherwise distortion will occur. This could be done by putting a large condenser across R1. However this would eliminate the pulsations which are necessary for the audio output. The introduction of the resistor R2 isolates the filtering action of the condenser C2 from the audio circuit and contributes some filtering action itself.

The values generally used for R2 vary between $\frac{1}{2}$ megohm and 2 megohms. Leakage in the grid-cathode circuits of the tubes make it impractical to go to higher values of resistance as such leakage will reduce the available voltage to a considerable degree. C2 may vary between .02 mfd and .1 mfd. The higher the values of R2 and C2, the better the filter action.

* Communication Measurement Labs.

But this filtration slows up the ability of the circuit to shift the gain. It will take several seconds before the gain is automatically adjusted, if large values are used. This would make tuning difficult.

The third consideration in the AVC system, is the necessity for decoupling filters in the grids of the tubes to which AVC voltage is applied. It is quite obvious that if all of the grids of the various amplifiers were returned to the junction of R2-C2, the common coupling that would take place would cause uncontrollable oscillation. For this reason all grid returns are connected to decoupling filters before returning to the source of AVC voltage, the junction point of R2-C2. Capacities of .01 mfd and resistors of 100,000 ohms may be employed for this service. Again the larger the values of R3-C3 the better the filtration, but again the longer the time constant of the circuit and the slower the recovery.

Delayed AVC

The next refinement in the design of AVC circuits is the introduction of delay. This is not a time delay action, but rather a delay in the action on weaker signals. The ordinary AVC system starts to work on all signals impartially. Naturally on very weak signals we do not want to start reducing the receiver gain as that will make the signal still weaker. Therefore by stopping any AVC action until a predetermined voltage is built up at the signal diode, we get delayed AVC. One of several delayed circuits is shown in Fig. 3.

In this instance two diodes are used. The first, D1, rectifies the incoming signal and the audio output develops across its load resistor. It is blocked off from the other diode D2 from a DC standpoint by the coupling condenser C3. Diode D2 however rectifies the R.F. signal when the signal amplitude is large enough to overcome the positive bias put on its cathode. If for example we put 5 volts bias on the cathode, no AVC voltage will start to develop until the RF signal input exceeds 5 peak volts. For this reason the gain of the receiver is not reduced by the AVC tube when the signal strength is such that less than 5 volts appear at the diodes. When the signal input to the diodes exceeds 5 volts, the AVC diode starts to function and the gain is decreased in the usual manner.

Service Tricks

There are many variations that will be encountered in AVC systems in the thousands of receivers on the market. If one remembers that they all stem from the system shown in figure 2, careful tracing of the circuit will indi-

cate if the simple circuit is used, or if one of the more complex systems is utilized. Servicing defective AVC circuits requires something more than a knowledge of the circuit principles and actual circuit employed. When the receiver blocks and seems to choke up it is a fairly sure bet that the AVC circuit is in trouble. The fact that high resistances are employed and the fact that voltmeter tests from ground to the various grid returns tends to overload the particular tube under test, make it difficult to spot the trouble. The best initial test to make is an ohmmeter test of all the resistors. Starting from the junction of R1 and R2 to ground, measure from ground to all of the other points in the resistance network. This test will show up shorted condensers or open resistors providing the tests are made with the receiver turned off.

These tests do not show up intermittent filter condensers or tubes with low grid to cathode resistance. One of the most effective tests can be made with the aid of a B eliminator delivering 200 volts. Connect the eliminator across the diode load resistor being careful that the positive side is grounded. This will cut-off the receiver completely due to the enormous negative bias. Condensers that are intermittent at the ten or twenty volts

usually developed in the AVC circuits are almost certain to blow under this treatment. Here too an actual point to point voltmeter test for shorts can be made as the source of voltage is relatively constant compared to that obtained from a signal.

Of course the voltage will decrease as tests are made through increasing resistance away from the load resistor. The IR drop is caused by the current drawn by the meter. A few trials will give the tester an idea what to expect with his particular meter and voltage supply through the standard resistances generally used.

The most difficult test of all is to locate grid to cathode shorts which occur only when the tube is in operation. About the only sure method is to measure the voltage from the decoupling resistor in the grid circuit to ground and substitute another tube. If the voltage rises, it indicates the tube in question is partially shorted. It is this type of short which will not show up in a tube checker that is very likely to cause cross modulation.

Familiarity with AVC systems and the ability to quickly diagnose and locate troubles in them will pay big dividends in time saved. It is hoped that these ideas will be of assistance to those who must delve into the maze of parts found in the average receiver.

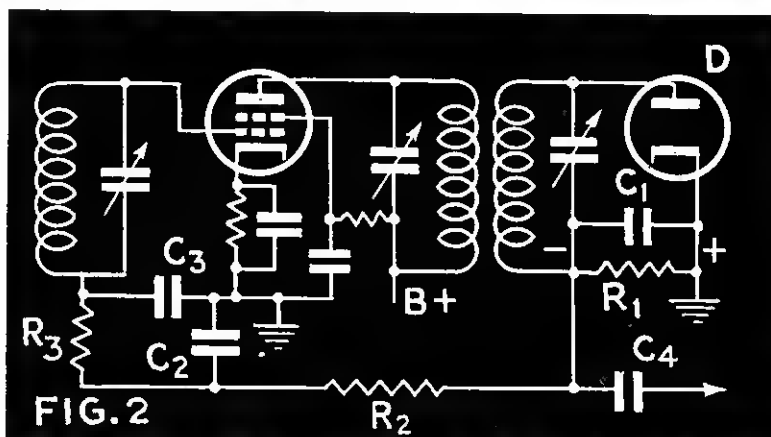


Fig. 2—A common a.v.c. circuit showing relation between diode detector and i.f. amplifier

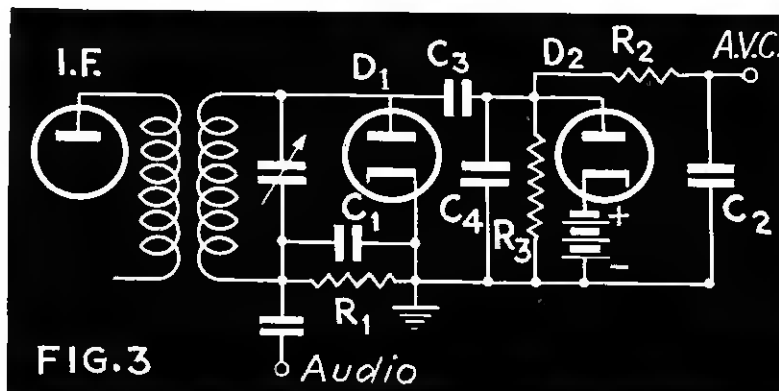
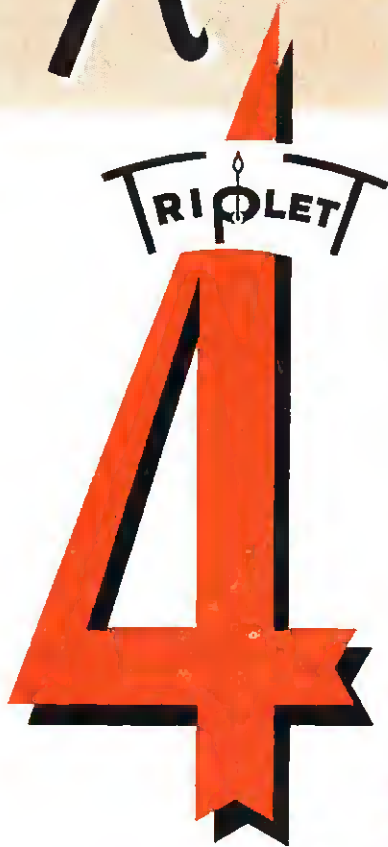


Fig. 3—Simple delayed a.v.c. system using a separate diode to rectify this voltage

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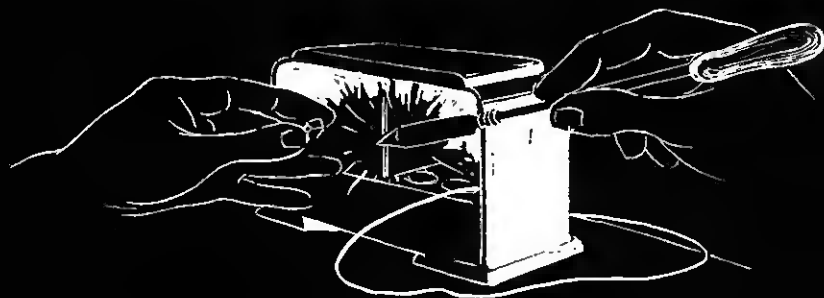
LITTLE Radios and BIG Radios

Why They Cost the Same to Repair



FINDING TROUBLE TAKES SAME TIME

It is, if anything, more difficult to test small sets because mass production assembly and extreme compactness buries parts in inaccessible places



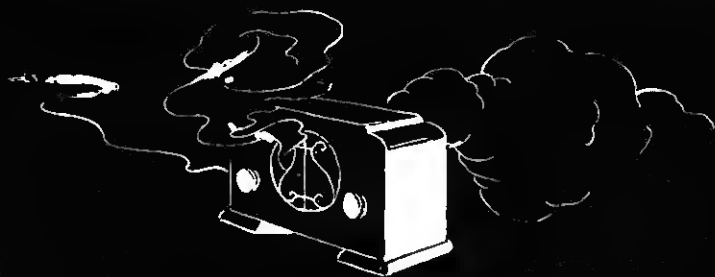
FIXING IT REQUIRES ELBOW-ROOM

Removal and replacement of a part is generally harder in a small set than in a large one as there is less space in which to ply tools and soldering-iron



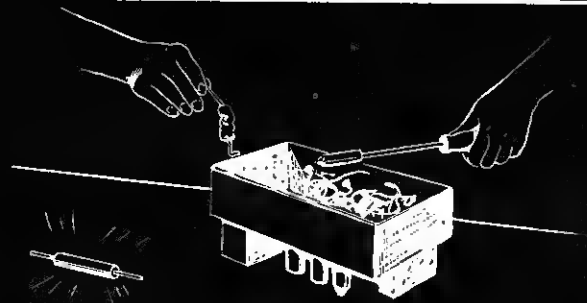
PARTS COST NEARLY AS MUCH

While parts for compact radios are frequently smaller they are not always materially cheaper because they must make up in efficiency and flexibility what they lack in size



MIDGET FAILURES OFTEN SERIOUS

Small sets usually omit all but essential parts and employ few breakdown safeguards so failure is more apt to be a major one and several parts frequently go at once



REPLACEMENTS USUALLY BETTER

Servicemen generally replace small set parts with better ones having better safety-factor, value their reputation too much to skate close to the danger line

Original Price of a Radio Cannot Be Used As a Yardstick
With Which to Measure Repair Cost

RADIO and Television
RETAILING

Tubes and Circuits for F.M.

By C. A. NUEBLING*

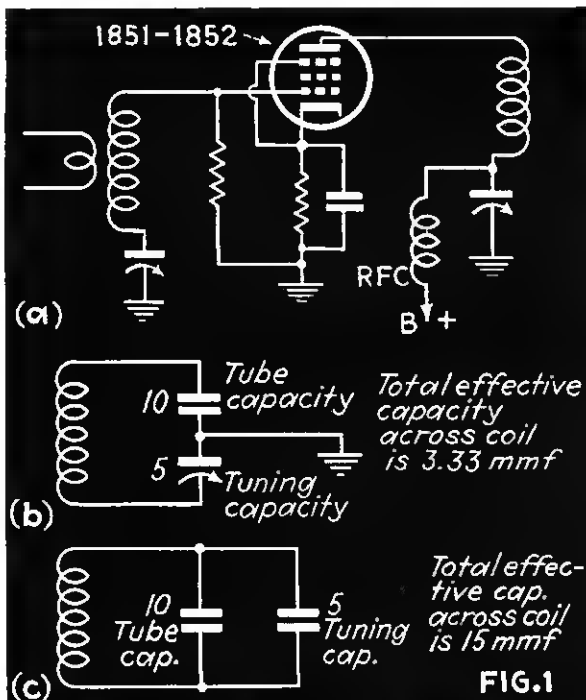
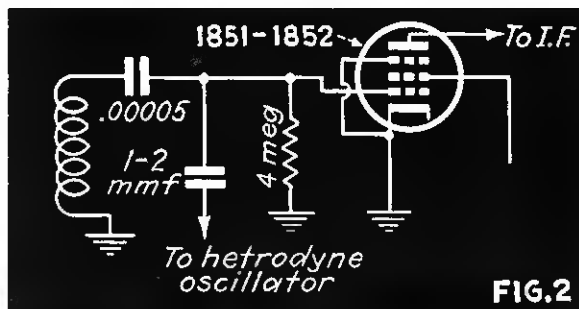


Fig. 1—Improved tuning system for use in ultra-high frequency applications where an improved $1/c$ ratio is desired

Fig. 2—Mixer circuit unusually efficient on high frequencies



IN frequency-modulated receivers important consideration should be given to tubes and circuits in the r.f. section. This is not due to f.m. itself, but because of the peculiarities of ultra high frequencies on which it operates.

Conventional tubes and circuits operate inefficiently at very high frequencies. Low input impedance is produced by large values of grid to cathode capacity, poor circuit gain is due to the small amount of inductance available in tuned circuits and increased insulation leakage.

In addition f.m. receivers, like television, require a broad band-pass response which naturally requires further loading and consequent reduced gain.

Tube gain is only a fraction of what may be obtained at conventional frequencies. Tubes normally used for r.f. and mixer stages on the broadcast band often show a loss rather than gain.

Low Impedance Circuits

As an illustration, the impedance of a tuned circuit at approximately 50 mc. is in the vicinity of a few thousand ohms. At higher frequencies or with reduced $1/c$ constants, this may decrease to a few hundred ohms. Naturally, not much voltage can build up across such a circuit, nor can a tube give much output into such a low load resistance.

Fortunately, tubes of the 1851 and 954 types possess characteristics which can provide gain even with low impedance circuits. Tremendous am-

plification permits this in the case of the 1851 type whereas reduced input and output capacity of the 954 is the reason for improved operation with this tube. Tubes of these types are desirable and often essential for r.f. and mixer stages in f.m. sets.

New Circuits

In order to provide improved operating conditions and greater gain a few new ultra-frequency circuits have been developed which are adaptable to both f.m. and television practice. Fig. 1A shows an r.f. stage with a "series tuning" system to reduce the shunt capacity across the coil, permitting a greater value of inductance and therefore more gain.

As can be seen from the breakdown diagram, (Fig. 1B) the tuning condenser is in series with the tube capacity across the coil. Thus the total capacity across the coil will always be less than the capacity of the tube or minimum of the condenser. As an example, a tube capacity of 10 mmf. and a minimum tuning capacity of 5 mmf were chosen. Computing these figures gives 3.33 mmf, the total value across the tuned circuit. With such a low value more inductance can be added to the circuit than in the case of Fig. 1C. Here the same values are used, but in conventional fashion. The minimum capacity across the coil would be the sum of these values or 15 mmf, about 5 times that of the series tuning circuit.

All is not gold that glitters, however, and this circuit is no exception. The main limitation with the series

tuning arrangement is that a wide tuning band is not permitted since the capacity change of the circuit is limited for the same reason as is the minimum capacity. However, this offers no serious drawback at present as f.m. bands are comparatively narrow.

To couple a low impedance antenna feed line to this circuit simply wind 2 or 3 turns around the center and connect to the line. If the coil is self supporting, wind up a few turns of pushback wire and insert directly into the turns of the coil.

Efficiency in converter stages is equally as important if good results are to be obtained. Fig. 2 shows the schematic of an improved circuit.

Basically this is a grid-leak type mixer and is highly sensitive because of the high value of resistance in the grid. Grid injection from the oscillator is used as this system appears to give better performance than other methods.

A separate oscillator circuit is desirable since greater stability may be obtained. The small amount of capacity coupling necessary can be obtained by twisting two insulated wires together for a few turns.

Cathode bias is not desirable in this circuit since it would cause opposition to the grid-leak operation. So that the plate current will not reach abnormal values a low screen voltage is used. A screen dropping resistor of 250,000, to 500,000 ohms will be satisfactory. Higher values than this may be used with some reduction in gain but with an improved signal to tube noise ratio.

* Technical Editor

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Improving PICKUP Operation

By ROBERT MAUTNER*

THE QUALITY of reproduction of even the finest sound systems can be greatly impaired by improper operation of associated phono equipment. In addition, the listener is undoubtedly more critical today because of the excellent reception possible on most home radio receivers.

Crystal pickups are frequently used in sound and in small portable phono units especially, sometimes present severe service difficulties.

Mechanical Vibration

Some of the smaller units are not supplied with a cover for the turntable. Where extreme portability and convenience in record changing is desired they have their use. However, experience has shown that a primary cause of dissatisfaction with crystal pickup equipment is the distorting effect of the direct tone from the arm reaching the listener. This is particularly strong at the middle and higher frequencies and, as it occurs in some cases at a fair degree of volume, it can quite conceivably spoil the effect of the louder passages of the recording. In this case replacing the crystal element may reduce this to a satisfactory low point. It has been suggested that a number of short heavy rubber bands be placed around the pickup head to dampen any mechanical resonance. While this treatment has had some effect in cases of improper shimming of the crystal element, it is not always effective. Therefore, it is suggested

that where classical music is to be reproduced a turntable with a close fitting, heavy lid be used.

Acoustic Coupling

There is another source of annoyance to the listener which can readily be corrected by the serviceman. This is the deep-toned, heavy rumble which makes itself apparent during the quieter portions of a recording. It is first advisable to check a number of different records on the same machine. Such procedure will avoid the possibility of the rumble originating from actual modulation on the record. (It will be most noticeable on equipment which reproduces the lowest frequencies faithfully.) Once this defect has been found and isolated it can usually be cured by the simple expedient of removing the pickup arm from the motor baseboard and mounting on sponge rubber. This practice is followed today even in cases where the part of the arm that is used for the mounting base is isolated from the crystal holder section. Much of the rumble originates from a vibration of the motor (and motor baseboard) and has been evident even though spring motor mountings were used. Fortunately a number of manufacturers are now incorporating isolating pads of sponge rubber as an integral part of pickup arm swivels and are thus minimizing this source of difficulty.

In connection with the foregoing there is one other possible source of trouble which may be responsible for poor quality without being very apparent. This may occur in a receiver when automatic volume expansion is employed and the sound reaches too high a level. Provided that electrical overloading of circuits or loudspeaker does not exist, distortion can quite possibly be traced to the additional amplification having reached a point where acoustic coupling between speaker and crystal element begins. Nevertheless, it is well to keep the possibility of this in mind. Use of a phono unit anywhere near or in the direct path of the sound from a speaker should be strictly avoided. Public address systems usually are operated at moderately high sound levels and while microphone placement is carefully observed, all too often phono equipment is placed without regard to possibility of feedback.

Several interesting points arise in connecting the crystal pickup to the amplifier input circuits. In the usual case there is just one arm to be

coupled to either the audio circuit of the receiver or to the input of a sound system amplifier. It has been pointed out in recent articles that the crystal pickup has an internal impedance which is capacitive in nature. This reactance is in effect in series with a voltage source of zero impedance. The magnitude of this reactance reaches several megohms at frequencies in the neighborhood of 50 cycles, and in order to develop useful voltage it is necessary to use high values of load resistance. This equivalent circuit is illustrated in Fig. 1. In any case, it is not advisable to make the value of RL too great in an effort to prolong the frequency response in the low frequency direction. Motor rumble becomes more apparent. Tube operation becomes unstable due to residual gas ionization and consequent positive biasing of the input tube. In addition the tendency towards feedback constantly increases with the higher impedance loads. While higher values have been recommended sizes ranging between one-tenth and five-tenths megohms have proved quite successful in practice. It is questionable whether amplifier, speaker and even what is recorded combined to demand response at lower frequencies than that produced with these values.

Circuit Characteristics

In the usual single pickup to grid connections used for turntables in the home there is in many cases excess voltage produced by the arm to such an extent that overloading of the input stage and poor quality results. It is convenient to lower the output of the arm by the use of shunt capacity. This method can readily be adapted to the conventional hookup. The effect of such a capacity is best understood by examining the equivalent circuit. In Figure 2a the capacitive reactance of the pickup is in series with the generated voltage and the shunt reactance is across grid to ground. As a result the system functions somewhat in the manner of a capacity voltage divider and offers frequency discrimination only at the lowest frequencies where the grid resistor is comparable with parallel reactance.

It is not advisable to use the circuit shown in the Figure 2b for reducing the input to the amplifier grid as some high frequency attenuation may result. The circuit redrawn in Figure 2c will make this apparent.

* CBS Sound Engineer



FIG. 1

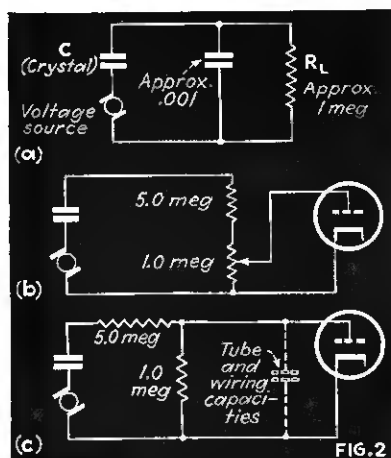
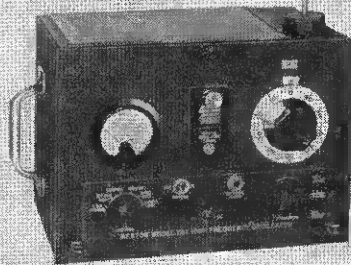


FIG. 2

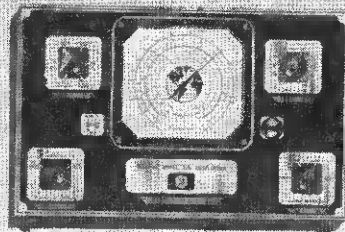
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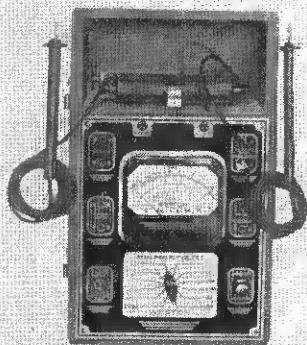
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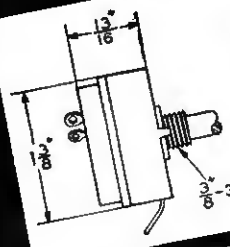
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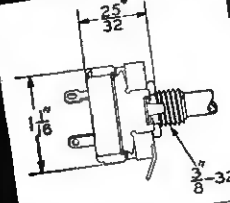
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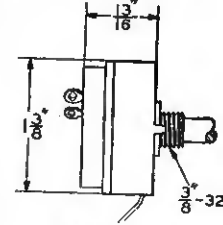
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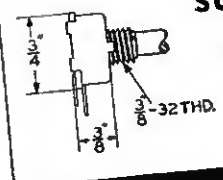
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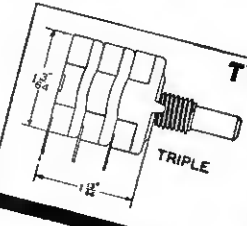


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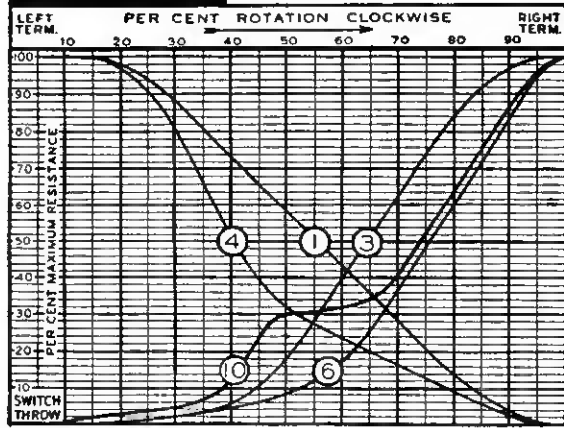


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Installing MARINE Radiophones

By ALLISON I. KURTH*

THE dependability and efficiency of a marine radiophone can be directly traced to two things—the knowledge of the man who made the installation, and the ability of the boat electrical system to stand the almost inevitable overload.

Most small boats are badly underpowered from an electrical point of view. Usually one small set of batteries is expected to do everything from supplying lights and running a receiver to pumping water and providing refrigeration, and these batteries are supposed to have enough power left to start a heavy marine engine after a couple of days of this use.

The condition of the ship's battery should be tested very thoroughly before the radiophone installation is made, and unless these batteries are up to par, top performance of the transmitter should not be expected. Also a close check should be made of the voltage in the ship's wiring, with the charging equipment operating and standing idle. It will often be found that loose connections on the switchboard and in the wiring will permit this voltage to vary as much as 50%.

Wiring

A good reason for running the supply lines for the radiophone directly to the batteries, besides voltage drop, is that the batteries act as a condenser of extremely high capacity, and so they often filter out a lot of the interference from the various pieces of electrical equipment such as fans and

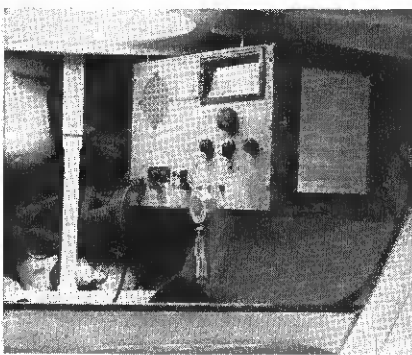


Fig. 2—A typical radiophone installed in a forward compartment, below deck. Note heavy battery leads behind right side of set

water pumps, etc., on the boat. These batteries are almost always connected to a generator or charging plant which is connected to the outside water through a cooling system or propellers and, as stated in previous article, efficient grounding is the most important single factor in controlling interference.

It should be mentioned that many transmitters and receivers are wired so that one line from the batteries goes directly to the frame of the transmitter or receiver. When this is true, try to have the polarity the same as on the engine or charging plant. If this polarity is reversed, and the grounding plate is connected directly to the transmitter, then either a direct short will show up or electrolysis will begin its work of eating away the metals that are in contact with the water.

If the transmitter or receiver units are so connected that it is impossible to change the polarity to correspond to the normal boat wiring with reference to ground, then use heavy condensers at the transmitter or receiver in series with the ground lead. These condensers should be either mica or paper. Electrolytic condensers are not dependable for such filtering because of their comparatively high R.F. resistance.

Grounding

When installing the grounding plate, and one is always advisable if the greatest performance from the transmitter is desired, use the same material as the propellers on the boat. This will tend to decrease electrolytic action.

The grounding plate should be installed by a reliable boat company, who will know how to put it on and completely waterproof it. Connection is usually made by running one or more of the bolts that fasten it on through the side of the ship. The plate should have an area of not less than two square feet, and should be larger if convenient.

The lead to this grounding plate should always be of heavy braid, and should be as short as possible. Usually a piece of braid is run to the engines of the ship, too, if they are not too far away. Incidentally, if other filters are used on the genera-



Fig. 1—Neat antenna installation on a small cruiser. Antenna is mounted along mast on screw eye insulators. Lead-in insulator can be seen under horns

tors and motors on the ship, no bad effects will be found from using this grounding plate as a common ground.

Antenna

The antenna and lead-in are a different problem. As far as the transmitter is concerned, keeping the antenna and lead-in away from metal cables and from locations where it could accidentally touch usually covers the problem. But since the same antenna will be used for the receiver, care should be taken to keep the lead-in away from all electrical wiring.

I have found that on small cruisers the greatest efficiency from the transmitter is usually obtained with a vertical antenna, and this system was used on the small boats which was used as a basis for this article. The antenna lead in insulator, of the common type, can be seen below the horns, and the lead in wire runs over to the bottom of the tube antenna. This antenna is mounted in two screw eye type of insulators which are fastened to the mast. The top section of this antenna can be easily unscrewed and stored in the boat.

This radiophone is located in a quiet part of the boat, and is well away from the compass of the ship, which would be affected by the permanent magnets of the loud speaker. Also, it is powered with a separate battery which is not connected to the wiring on the ship except at the times when it is to be charged. And it is as far away as possible from the motors of the boat.

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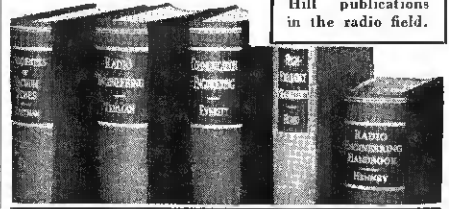
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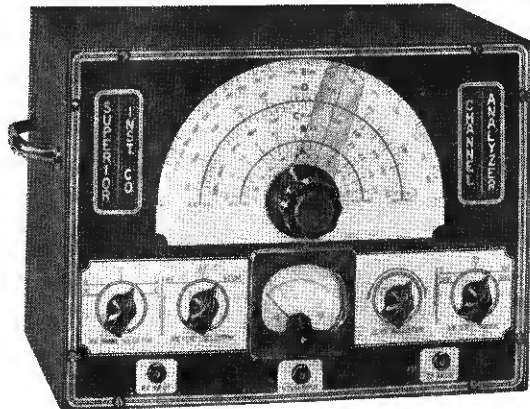
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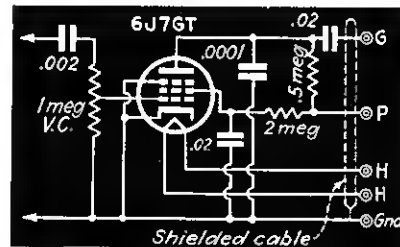
The model 312-A test instrument by RCA permits measurement of both radio frequency noise and transmitter field intensities. It is extremely useful for servicemen who have made noise-elimination a profitable portion of their business.

The unit consists of a sensitive superhet receiver with provision for attenuation of signal inputs and metering in the output.

A brief outline of circuit operation is as follows: The r-f amplifier is impedance coupled to the first detector oscillator 1C7G. Variable bias (gain control) on the signal grid of the 1C7G provides the necessary gain adjustment for the receiver. This is performed by the potentiometer adjustment connected across the "C" batteries. Output from the 1st detector is used to drive two stages of intermediate frequency amplification 1D5GP amplifier tubes. The output of the second i-f amplifier drives the diode detector through a special i-f transformer. By use of switching in the diode circuit, changes from the conventional receiver diode circuit to one in which the separate diode resistors are shunted by a large condenser value thus converting the detector into a quasi-maximum reading

circuit, one in which the time for discharge is long, compared to its charge time.

The direct current output from the diode feeds two circuits, one of which controls the a.v.c. action to the r-f and first i-f amplifiers. This produces a logarithmic output scale on the output meter. During the switching action in the diode circuit, the time constant of the circuit from which the r-f and first i-f amplifier receives its variable bias, is changed so that this bias voltage follows that voltage produced in the diode circuit. Thus the diode voltage produced is logarithmic in character on intermittent pulses as well as on an r-f carrier. The other circuit fed from the diode circuit is the variable grid bias for the d-c amplifier 1H4G. The output meter is in the plate circuit of this tube and indicates the voltage appearing in the diode circuit by converting the values to those readable on a meter not requiring the high sensitivity as would be necessary if it were directly in the diode circuit. In order that the output meter does not indicate changes of current in the diode circuit due to the audio frequency present, the d-c amplifier tube grid circuit has a resistance capacity filter in series with the driving source which is switched in and out of the two circuits.



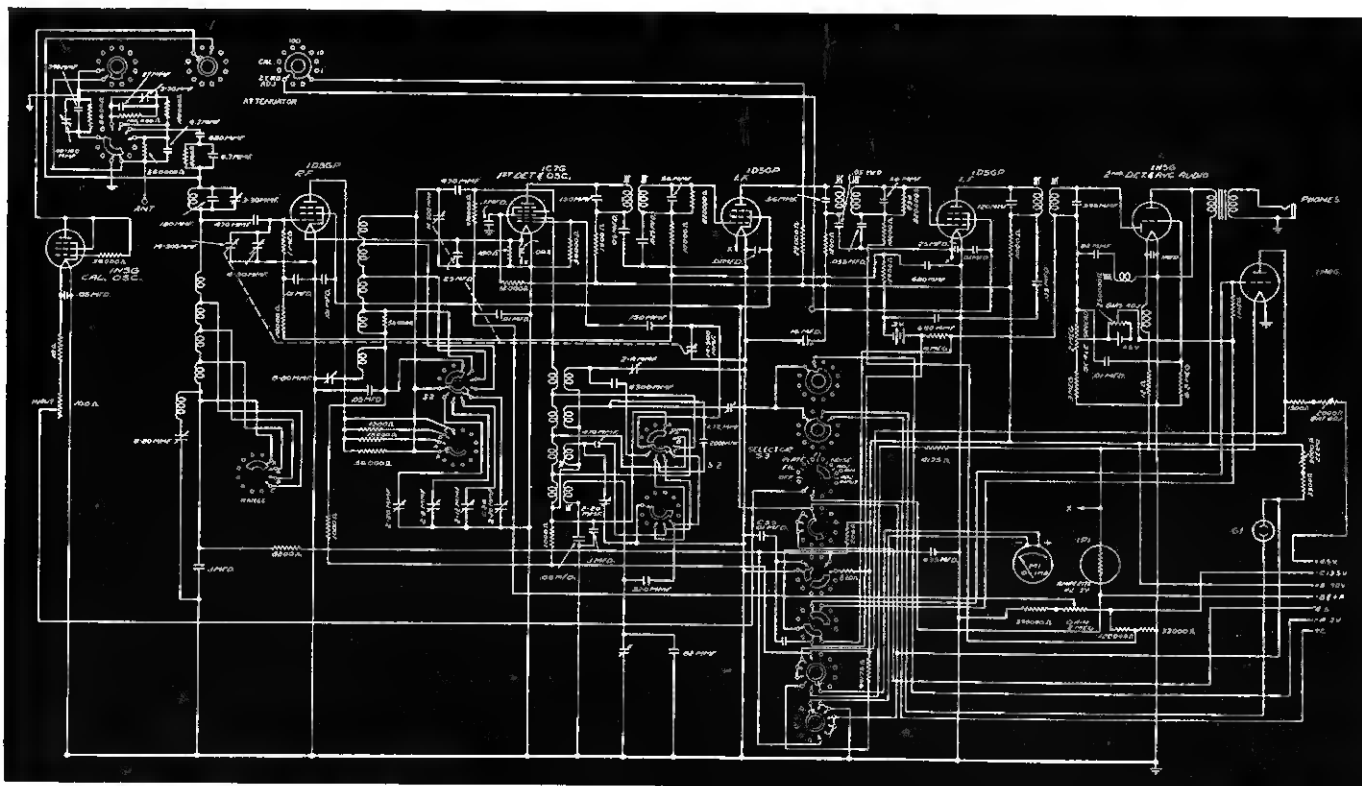
Simple Signal Tracer

An extremely simple signal tracing instrument has been recently placed on the market by Morrison. The entire unit is in a small round case with a test prod on one end and a cable on the other. A gain control is contained on one end of the case so that the unit is completely self-contained in the test prod. The cable has an adapter on the other end which is placed under the last audio tube in the receiver to be tested or any other receiver.

As the circuit shows, the tester is a combined amplifier and detector since it works on the grid-leak principle.

The tip of the test prod connects to the .002 condenser at the left which feeds the signal into the 1 meg gain control and consequently, the grid of the 6J7GT. The signal is detected in the usual manner and an audio voltage is developed across the 0.5 meg resistor in the plate circuit. From here a 0.02 mfd condenser couples the signal to the external amplifier.

The .0001 mfd condenser serves as an r.f. filter. The 2 meg resistor drops the screen voltage to a fairly low value since no cathode bias is used or desired. In this way the plate current is held to a satisfactorily low value.



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The 1940 Ward Line is brimful of extra values, exclusive features and "sales clinchers" that enable you to dominate competition. Compare it item for item, feature for feature and dollar for dollar with anything on the market. Here are two popular leaders—



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fits all cowl contours

Again Ward scoops the field with 3-section unit that has a 2-bolt single mount on which the antenna can be adjusted to vertical position within a 16° range, adapting it to all cowl contours.

E3-68 (3-section, 68")

List price \$3.35

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Three purpose antennae

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T2-48 (2-section, 48") \$1.95

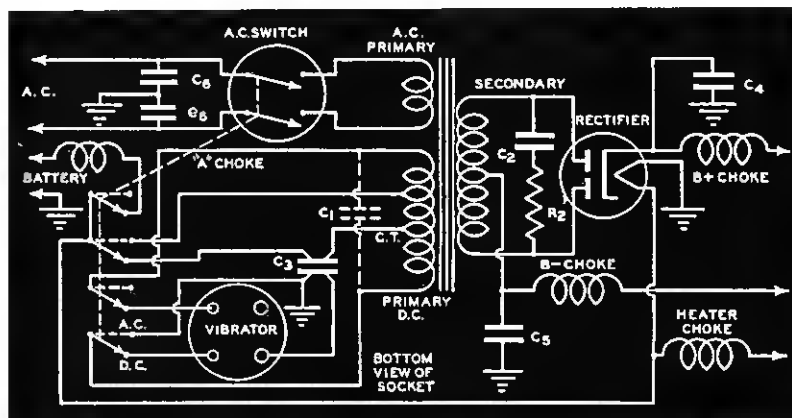
T3-68 (3-section, 68") \$2.90

U3-93 (3-section, 93") \$3.65

Write today for further details
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AC-DC Vibrator Supply

Considerable interest has been shown regarding a vibrator power supply for a.c. and battery use as outlined in the Mallory-Yaxley Radio Encyclopedia supplement number 7.

Use of an additional a.c. winding requires considerable window space in the transformer, and a winding for operating the tube heaters is required unless type OZ4 tubes are used. This would result in extra cost, more space requirements, and other complications. It was found that if a step-down a.c. transformer is provided, which will supply 10 volts a.c., 60 cycles, at the load current required, easy adaptation of standard 6-volt power units will be possible to 115-volt a.c. line service. This 10 volts is applied to each transformer, across the entire primary, by removing the vibrator and plugging in instead an adaptor having the a.c. cord connected to the two small pins of the standard interrupter vibrator base, or to the equivalent pins of an unconventional base, should one be used. The value of 10 volts is used instead of the 12.6 volts d.c. value for the whole primary winding because of the difference in waveform between the sine-wave a.c. and the square-wave d.c. The tube heaters, if desired, may be run from the same a.c. source with a dropping resistor to reduce the voltage to the correct value. This method allows maximum efficiency to be secured from the vibrator power unit when operating from d.c., and thus the maximum output with safety, and still permits a.c. operation without complicated switching means.

The illustration shows a circuit diagram for accomplishing the same purpose as that just discussed, that is, operating a radio receiver from both

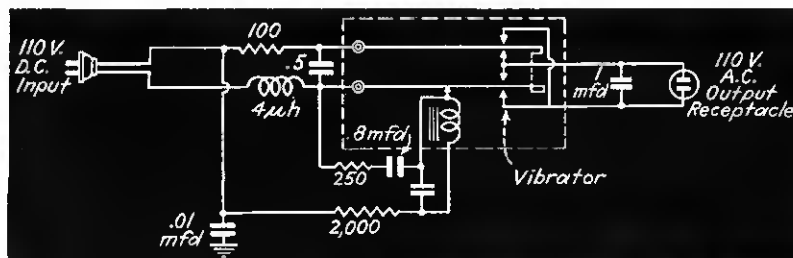
battery and a.c. sources. This circuit was developed several years ago for use with household receivers where no power-line service was available, but where the owner might have a line before the usefulness of the receiver was gone. In this case a high-voltage a.c. winding was included, controlled by a two-position switch which also controlled the primary d.c. circuits simultaneously. The heaters were run from the battery when on d.c. operation, and from a portion of the d.c. primary when on a.c. operation, thus eliminating one winding. It is not necessary to remove the vibrator from the socket when operating in this circuit.

Phono Power Inverter

Most phono motors are the synchronous type and are limited to operation on a.c. only. However, ATR has developed a midget inverter for this purpose which changes 110 v.d.c. to 110 v.a.c.

The schematic of this unit is shown. d.c. feeds into the circuit at the left and flows to the solenoid to the left of the vibrator contacts. This sets the vibrator in motion. The vibrator contacts are arranged so as to provide first a positive pulse in one output lead, then a negative pulse. In this way a simulated a.c. voltage is obtained.

A filter circuit is incorporated in the input circuit so that pulses and hash from the vibrator are not fed back into the line. A 1 mfd condenser across the output serves to smooth out the initial contact pulses of the vibrator.

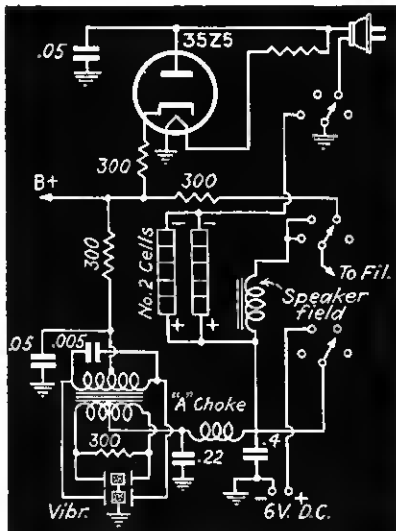


6-110 Volt Portable

Extreme portability is in evidence in Setchell-Carlson's model 66 portable as it may be operated on an a.c.-d.c. power line, from an auto battery or from its self-contained power.

A 3 gang 4 position switch accomplishes the circuit changes for the various power sources. The first position of the switch on the right is "off." The next position (going in a counterclockwise direction) is for a.c.-d.c. operation. The third position is for 6 volts, while the last contacts switches in the self-contained batteries.

For a.c.-d.c. operation the circuit is similar to the usual portable equipped for this service. When switched to 6 volts the external battery energizes a built-in vibrator supply which converts the 6 volts input to the



proper plate voltage. Filament voltage for all tubes is supplied direct from this battery. The circuit under these conditions is not unlike an auto radio.

When switched to "portable" the set operates from 10 self-contained flash-light batteries which supply filament power and at the same time operate the vibrator supply. This is the first time a portable of this type has been introduced. The advantages of such a system are the ease with which replacement batteries may be obtained. The life of these batteries should be fairly long since the battery drain is low.

INSTEAD OF BENDING A-C PLUGS TO MAKE GOOD CONTACT try twisting the end of each prong slightly. Hold the prong with a pair of long-nose pliers and twist the tip with another pair of pliers. This prevents breaking the plastic base.



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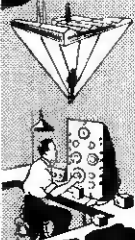
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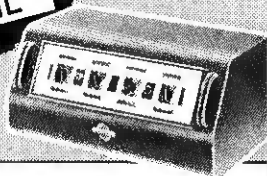
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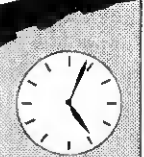
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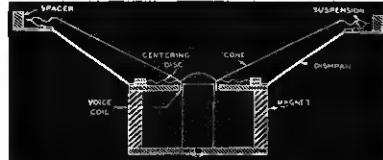
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Accordion Edge Speaker

During the past few years, the trend in sound reproduction has been in the direction of smaller and smaller cabinets together with a corresponding reduction in size of the loudspeaker mechanism. The obvious result has been a reduction in the low frequency response and quality. In order to improve the low frequency response of small loudspeakers the radiation resistance must be improved and means provided for allowing a larger excursion of the diaphragm as well as a lower fundamental resonance. The radiation resistance may be improved by a suitable environment for the loudspeaker mechanism. The allowable excursion of the diaphragm may be increased and the low frequency resonance decreased by means of an accordion type suspension system at the cone edges.

A cross-sectional view of the loudspeaker mechanism employing an accordion type suspension is shown. This suspension developed by RCA reduces the radial constraining forces which arise in the conventional suspension. The reduction of these constraints decreases the stiffness and thereby lowers the fundamental resonance frequency. The use of the second supporting suspension prevents circulation or air leakage.

In addition to reducing the stiffness this suspension presents a constant stiffness over a greater amplitude range than the conventional suspension. This results in a very marked reduction in nonlinear distortion. As a consequence the reproduction of low notes is clean cut and well defined.

This suspension does not cause non-uniform response in the range above 500 cycles which occurs in the conventional suspension.

The radiation resistance at the low frequencies may be increased by means of a suitable enclosure provided the fundamental resonance frequency of the mechanism is sufficiently low. The accordion suspension provides the means for obtaining the low resonance frequency. The combination of the loudspeaker mechanism with the accordion type suspension with an enclosure having the proper acoustical constants extends the low frequency range more than an octave over the conventional loudspeaker mechanism and enclosure. The wide frequency range and low distortion exhibited by this loudspeaker is remarkable and compares with large mechanisms and cabinets of many times the cubical content.

Interchangeable Types

So that servicemen can familiarize themselves with all the popular new tubes, this chart by Hytron is reprinted here. Equivalent types in "GT," metal, "G," and "MG" are given so that replacements can be easily made.

Types shown with an asterisk are equipped with a special shield. "G" types are not always directly interchangeable since external shielding is often necessary.

"GT"	Metal	"G"	"MG"
1A5GT		1A5G	
1A7GT		1A7G	
1C5GT		1C5G	
1D8GT		1G4G	
1G4GT		1G6G	
1G6GT		1H5G	
1H5GT		1N5G	
1N5GT		1P5G	
1P5GT		1Q5G	
1Q5GT			
1T5GT			
2W3GT	2W3		
3A8GT			
3Q5GT			
5W4GT	5W4		
*6A8GT	6A8	6A8G	6A8MG
6AC5GT	6AC5	6AC5G	
6AE5GT		6AE5G	
*6C5GT	6C5	6C5G	6C5MG
*6F5GT	6F5	6F5G	6F5MG
6H4GT			
*6H6GT	6H6	6H6G	6H6MG
*6J5GT	6J5	6J5G	6J5MG
*6J7GT	6J7	6J7G	6J7MG
6K5GT		6K5G	
6K6GT		6K6G	
*6K7GT	6K7	6K7G	6K7MG
*6K8GT	6K8	6K8G	
6P5GT		6P5G	
*6Q7GT	6Q7	6Q7G	6Q7MG
*6R7GT	6R7	6R7G	6R7MG
*6SA7GT	6SA7		
*6SF5GT	6SF5		
*6SJ7GT	6SJ7		
*6SK7GT	6SK7		
*6SQ7GT	6SQ7		
6V6GT	6V6	6V6G	
6W8GT			
6X5GT	6X5	6X5G	6X5MG
6Y6GT		6Y6G	
12A7GT			
12A8GT		12A8G	
12B8GT			
12F5GT			
12J5GT			
12J7GT			
12K7GT			
12K8GT	12K8	12K7G	
12Q7GT		12Q7G	
*12SA7GT	12SA7		
*12SF5GT			
*12SJ7GT	12SJ7		
*12SK7GT	12SK7		
*12SQ7GT	12SQ7		
25A6GT	25A6	25A6G	{ 43 MG 25A6MG
25A7GT		25A7G	
25AC5GT		25AC5G	
25B8GT			
25D8GT			
25L6GT	25L6	25L6G	
25X6GT			
25Z6GT	25Z6	25Z6G	{ 25Z5MG 25Z6MG
32L7GT			
35L6GT		35L6G	
35Z4GT			
35Z5GT	35Z5	35Z5G	
40Z5/45Z5GT			
50L6GT		50L6G	
50Y6GT			
70L7GT			
117L7GT			
117Z6GT		117Z6G	

Improved Antenna

A new, compact receiving antenna by Tilton is illustrated herewith.

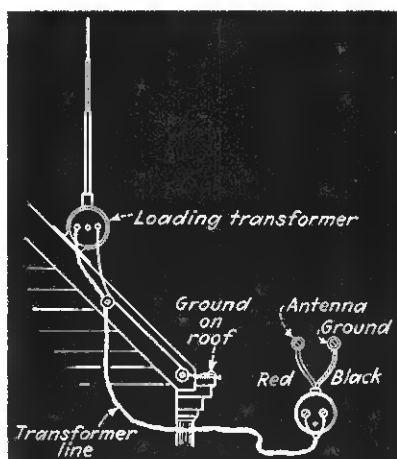
Comprising a 9 foot rod, a resonating transformer, twisted feed line and set coupler; the system claims reduced noise level by virtue of the balanced feed line.

The heart of the unit is the trans-

former at the base of the rod. This consists of an iron core coil wound in pi-sections so as to produce a balanced system and reduce capacity effects. The secondary is loosely coupled to the primary to reduce capacity coupling between the two. Because of the iron core a high degree of coupling results, however.

The transformer is housed in a ceramic shell and completely sealed against moisture.

The antenna affords complete coverage of the broadcast and short wave bands from 500 kc to 22 mc.



New Tubes

14B6—Duo diode high-mu triode of loctal construction. Designed for 12 volt operation by Sylvania.

Heater Voltage.....	12.6 Volts
Heater Current.....	0.150 Ampere
Plate Voltage.....	250 Volts
Grid Voltage.....	-2 Volts
Plate Current.....	0.9 Ma.
Plate Resistance.....	91,000 Ohms
Mutual Conductance.....	1,100 Umhos
Amplification Factor.....	100

14J7—Triode Hexode loctal converter by Sylvania.

Heater Voltage.....	12.6 Volts
Heater Current.....	0.150 Ampere
Plate Voltage (Hexode).....	250 Volts
Oscillator Plate Voltage (Triode).....	250 Volts
Screen Voltage (Hexode).....	100 Volts
Control Grid Voltage (Hexode Grid G).....	-3 Volts
Oscillator Grid Resistor (Triode).....	50,000 Ohms
Plate Current (Hexode).....	1.3 Ma.
Screen Current (Hexode).....	2.9 Ma.
Oscillator Plate Current (Triode).....	5.4 Ma.
Oscillator Grid Current (Triode).....	0.4 Ma.
Plate Resistance (Hexode).....	1.5 Megohm
Conversion Conductance.....	300 Umhos
Conversion Conductance.....	2 Umhos
Total Cathode Current.....	10 Ma.

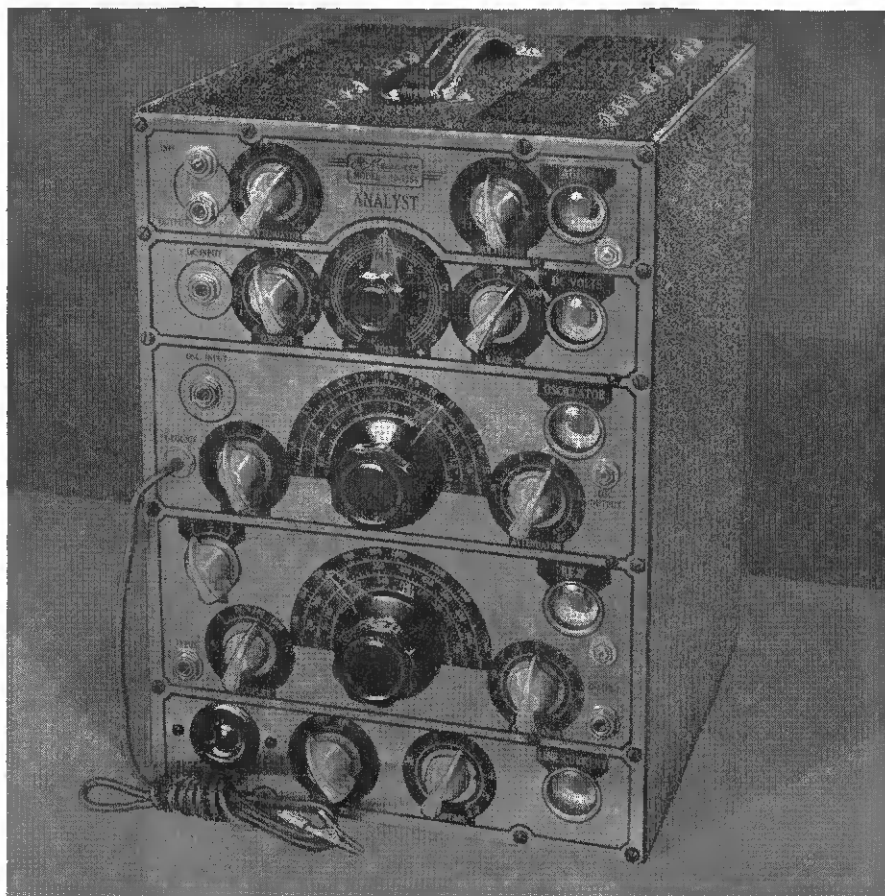
14Q7—Heptode Pentagrid Converter of local construction by Sylvania.

Heater Voltage.....	12.6 Volts
Heater Current.....	0.150 Ampere
Plate Voltage.....	250 Volts
Screen Voltage.....	100 Volts
Control Grid Voltage (G).....	2 Volts
Suppressor Grid and Shield Voltage.....	0 Volts
Oscillator Grid Resistor (G ₀).....	20,000 Ohms
Plate Resistance (Approx.).....	1.0 Megohm
Oscillator Grid Current.....	0.5 Ma.
Plate Current.....	3.3 Ma.
Screen Current (Gs).....	8.5 Ma.
Total Cathode Current.....	12.5 Ma.

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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 Analyst. See your Jobber or send 50c at once to the address below. Order it today!

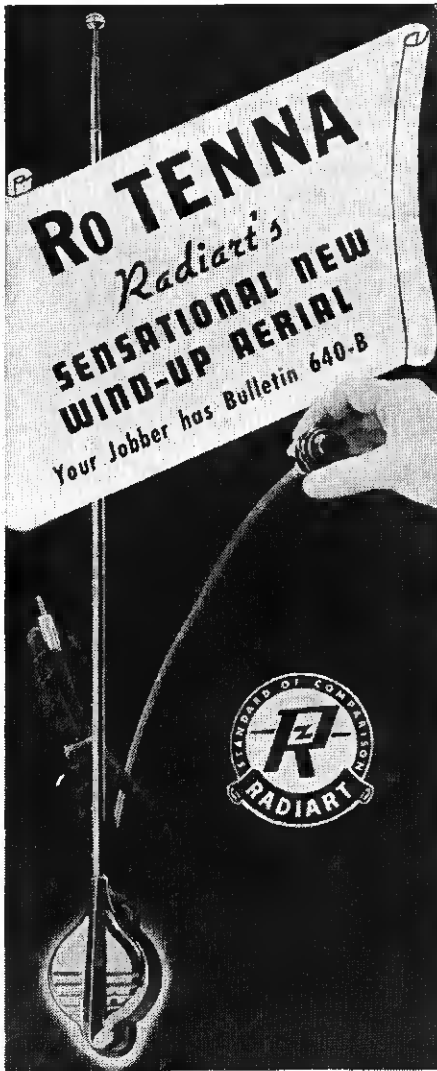
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TRICKS

AIRLINE 62-207

Crackling distortion . . . look for leaky .05 mfd 180 volt condenser by-passing small choke on rear of chassis.

ATWATER KENT 188 (2nd type)

Weak . . . check plate voltages of 55 second detector and 57 silencing tube. If abnormally low, measure resistance of blue and red metalized resistor from which tubes in question obtain their plate supply. Correct value of resistor is 100,000 ohms but unit often increases to several times this value thus lowering plate voltages of 55 and 57 tubes.

ATWATER KENT 328

Intermittent oscillations accompanied by slight noise . . . usually caused by poor contacts on fidelity switch.

AUTOMATIC 741

Hum develops after replacing 25L6G . . . try different tubes as this set is very critical in this respect.

BEVERLEY 350

Distorted . . . suspect coupling condenser connected between plate of 75 and grid of 42. Unit likely leaky or shorted.

CHEVROLET SERIES 985426

Intermittent or dead . . . replace 2500 ohm 2 watt carbon resistor from B plus to screen of 6KG with 10 watt wirewound unit.

COLONIAL 605

Dead . . . test for short in 0.1 mfd. condenser, bypassing 78 first detector plate supply. Replace with 400 volt unit. Also install new 5,000 ohm resistor in same circuit; same becomes damaged due to condenser breakdown.

CROSLY 666

The original circuit is equipped with a dual volume control. A 2 megohm control may be used instead if the 6B5 grid circuit is connected to ground through a .5 meg resistor and run to the 75 plate through a .05 coupling condenser.



Oil

CAPACITORS

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Series -09 Rectangular **HYVOL**s are intended for heavy-duty continuous service at rated voltages, with ample margin for unexpected abuse. Heavy welded steel container; high-tension pillar terminals; adjustable mounting bracket permitting upright or inverted mounting at any height above or below chassis platform. 600 to 5000 v. D.C.W. 1 to 4 mfd. A quality product—at a popular price.

Series -05 Round-Can **HYVOL**s have long been the popular choice of amateurs. Conservative ratings for continuous, cool, troubleproof operation. Round aluminum can. Adjustable mounting ring. High-tension pillar terminals, 600 to 3000 v. D.C.W. 1 to 4 mfd.

Series -10 Inverted Screw Mounting. Same appearance and dimensions as usual metal-can electrolytic. Ideal for compact assemblies, 600, 1000 and 1500 v. D.C.W. .5 to 4 mfd.



Ask Your Jobber...

- ★ He'll gladly show you these **HYVOL** capacitors for transmitting and power amplifier uses. Ask for latest 1940 catalog, and also about free subscription to the monthly **AEROVOX RESEARCH WORKER**. Or write us direct.



CROSLLEY 706

Dead or weak and distorted . . . test for short or leakage in metal-cased, 0.5 mfd. condenser bypassing plate supply of 26 first audio tube.

CROSLLEY 885

Regeneration on high end of 15 mc. band . . . connect a 50,000 ohm resistor from grid end of oscillator coil to ground.

EMERSON CU265

Burns out 2 or 3 tubes and pilot light . . . caused by two adjacent filament prongs on sockets touching each other shorting out these tubes.

EMERSON U6A

Dead or weak and distorted . . . check all sections of metal-cased, bypass condenser block for leakages or shorts.

EVERYREADY 41, 42

Noisy, intermittent . . . spring wiper on end of gang condenser and variometer shaft not making good contact. Remove spring, clean, bend to affect more tension, replace.

FAIRBANKS MORSE 4275-B

Steady drain on B batteries when set is off . . . remove 20,000 ohm resistor from 16½ C to ground.

G-E A-63, A-65

Dead . . . look for short in 0.05 mfd. condenser bypassing 6A8 plate supply. Also inspect 6,000 ohm resistor in same circuit as condenser breakdown usually damages this unit as well. Use 600 volt condenser instead of original 400 volt unit.

G-E D86

Noisy between stations . . . wide range a.v.c. circuit increases gain tremendously when no signal is present. Reduce gain in first i.f. tube (6K7) by 2,200 ohm cathode resistor with 10,000 ohms.

G-E F63

Intermittent drop in volume . . . be sure front dial plate is securely bonded to tuning condenser structure.

G-E K-62

Motorboating . . . connect 0.1 mfd condenser across resistor mounted inside antenna coil.

What . . . No "B" Batteries?



Model "66"

Radio's Biggest Portable Surprise

Setchell Carlson's pioneering engineers solved the costly bugbear of "B" Batteries, by eliminating them. Just as they in 1939 were first to introduce a combination AC and Battery Portable — using flash-light cells for "A" supply — they are first to introduce a NO "B" Battery Portable for 1940, using ONLY flash-light cells.

Portable-Auto-Home

Size 13"x6x5½ Weight 9½ lbs.

Operates on self-contained flash-light cells only — (5 or 10), or from car battery (has disappearing clips for instant window mounting — no additional antenna necessary), or from "AC" or "DC" in home, hotel, office, etc. A sensitive, selective 5-tube superheterodyne with 3-gang tuning condenser and R. F. Stage. Uses ordinary flash-light batteries, obtainable anywhere. *Expensive "B" battery packs eliminated.*

See It During the Show At Auditorium Hotel

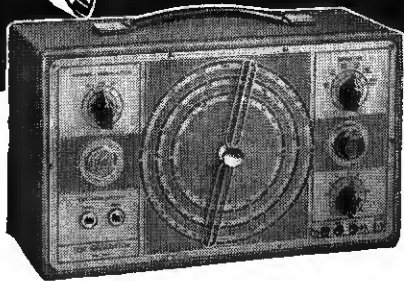
If you don't attend the show — wire or write for complete details.

Setchell Carlson, Inc.

2233 University Ave., St. Paul, Minn.

Export Dept.: HARRY J. SCHEEL, 330 So. Wells St., Chicago, Ill. Cable Address "Airvoice"

**PROFITABLE
ANSWER TO THOSE**



**New RCA Test
Oscillator #167**

\$34⁵⁰

**ACCURATE, EASY-
READING DIAL**

**FULL 1.0 VOLT R.F.
MAXIMUM OUTPUT**

**100-30,000 KC
FUNDAMENTALS**

If you're the kind of serviceman who wants to make money on modern, complex receivers—the *tough jobs*—this new RCA #167 Test Oscillator was made for you! It has the range you want for today's receivers . . . high output for single-stage alignment, or for sets misaligned completely. Its big new dial scale makes readings certain and precise. Trim, attractive, business-like appearance wins customer-confidence.

Study its features . . . see it at your RCA Distributor's. \$34.50 is all it costs! Don't buy *any* test oscillator until you've seen how much RCA can give you for so little!

Check These RCA Value Features!

- 6 Ranges: 100 to 30,000 K.C.
- 400-cycle 8-volt Audio
- Complete Shielding
- Harmonics of 6th Band for U.H.F.
- Precision, New-type Dial
- Metal Tubes—Compact, Stable
- 2% Accuracy

Over 335 million RCA radio tubes have been purchased by radio users.

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

GLORITONE 99

Inoperative on low frequency end of band . . . look for defective 3,000 ohm resistor or .01 condenser in cathode of mixer tube.

GULBRANSON 872

Distortion . . . check condenser C-7 in the plate circuit of second detector connected to junction of R5 and R6 to ground. A high resistance leak here causes considerable trouble.

MAJESTIC 1

Intermittent . . . replace .01 mfd audio coupling condenser between 6Q7 plate and 25L6 grid.

MOTOROLA 29-8

Intermittent . . . inspect bracket holding tuning condenser as this often touches volume control lugs.

MOTOROLA BUICK

Buttons will not tune except from one direction . . . increase tension of spring in scissors gear by pulling out spring to 1½ time present length.

PHILCO 16

Oscillator dead on high frequency end of broadcast band . . . reduce oscillator cathode resistor from 500 ohms to 300 ohms.

PHILCO 17

Intermittent changes in volume . . . replace defective r.f. transformer.

PHILCO 38

Frying noise . . . check pilot light for corroded contacts.

PHILCO 38-10

Dead on broadcast band . . . look for open in r.f. coil for this band.

PHILCO 38-12

High noise level . . . replace resistance No. 24 (70 ohms) with 100 ohms to increase initial bias on a.v.c. system.

PHILCO 38-38

Oscillator works intermittently . . . wash band switch with a good solvent or cleaner. If trouble persists remove switch and tighten rivets with hammer and punch.

**LET THE HIGH LINES
MAKE PROFITS FOR YOU!**

**SELL GTC
PORTA-POWER**

**CONVERTS BATTERY OPERATED
RADIOS TO ALL-ELECTRIC**

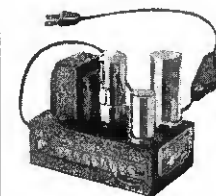
MODEL "P"
For 6 volt radios
"Twin-Powered"



Converts 98% of all 6 volt radios. Vibrator disturbance is eliminated. High fidelity performance assured. List price \$13.95.

COSTS YOU \$8.37

MODEL "L"
For 2 volt radios



Supplies "A", "B" and "C" power to 4 to 8 tube battery-operated radios using 2 volt tubes. List price \$9.95.

COSTS YOU \$5.97

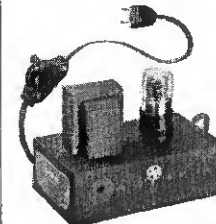
MODEL "U"
For 1½ volt portable
or farm radios



Powers any portable or battery radio using 1½ volt tubes. Provides "A" and "B" power. List price \$7.50.

COSTS YOU \$4.50

MODEL "G"
For 1½ volt radios
of 4, 5, or 6 tubes



For 1½ volt radios of 4, 5, or 6 tubes requiring more power than Model "U" provides. List price \$9.50.

COSTS YOU \$5.70

Be sure to stop in Booth 1008 at the National Radio Parts Show to see the complete line of GTC PORTA-POWER for electrifying Battery Radios of all types.

GENERAL TRANSFORMER CORP.
1254 W. VAN BUREN ST. • CHICAGO, ILLINOIS

PHILCO 66

Shrill whistle . . . look for open electrolytic filter condenser.

PHILCO 90

Weak or no reception . . . test antenna coil for open.

PHILCO 1940 Portable

Oscillator works intermittently . . . remove paper wrapper from oscillator coil.

RCA 7T, 8T

Poor tuning-eye action . . . replace R-20, a 2.2 meg. resistor which changes in value.

RCA 8K, 8T

Intermittent . . . check for open in 0.01 mfd., 500 volt condenser connected between 6F5 plate and 6F6 grid. By tugging on leads of unit trouble is often revealed.

RCA 9TX-32

Distortion and loss of volume . . . replace 20 mfd filter on rectifier side.

RCA 45X

When replacing dial lamps in this set be sure to use one rated at 7.5 volts, .2 amp. as it is in series with the tube filaments.

RADIOLA 66

Cutting in and out accompanied by hum . . . movable arm of volume control not making contact with resistance of control. Bend arm back in place by raising end of arm opposite that which rides over resistance. Also raise outer terminals so arm cannot ride past them.

RCA 94BK2

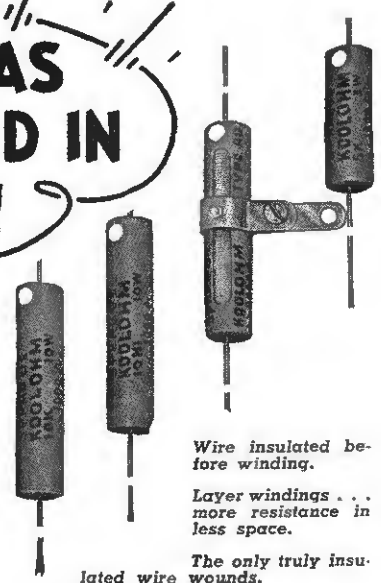
Works on manual tuning but not on push button . . . inspect push-button section of antenna transformer for open.

RCA 97K

Audio squeal when phono push-button depressed . . . gummed tape holding speaker leads against underside of chassis tears loose allowing leads to come in the vicinity of phono jack causing feedback.

SOMETHING HAS REALLY HAPPENED IN RESISTORS!

You'll never know how amazingly different, how outstandingly better a wire wound resistor can be until you've tried Sprague Koolohms and compared 'em with anything else on the market today. For Koolohms are just as different from ordinary resistors as day from night. Leading engineers have heralded them as the outstanding development in 20 years. Already they're specified for many of the toughest industrial jobs—and they're "tops" for any radio use you can name. Ask your jobber! Catalog free.



Wire insulated before winding.
Layer windings . . . more resistance in less space.
The only truly insulated wire wounds.
5% accuracy guaranteed.
Automatic overload indicator.



DON'T MISS THIS SPRAGUE RADIO INTERFERENCE MANUAL

Finest book of its kind ever written! Tells what to do, how to do it to eliminate all types of man-made radio noise. Dozens of diagrams. 25c net.



Now available in 5-watt fixed; 10-watt fixed and adjustable. Non-inductive units at lowest prices ever.

SPRAGUE CONDENSERS
SPRAGUE KOOLOHM RESISTORS
SPRAGUE TEST EQUIPMENT
 SPRAGUE PRODUCTS CO. NORTH ADAMS, MASS.



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

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



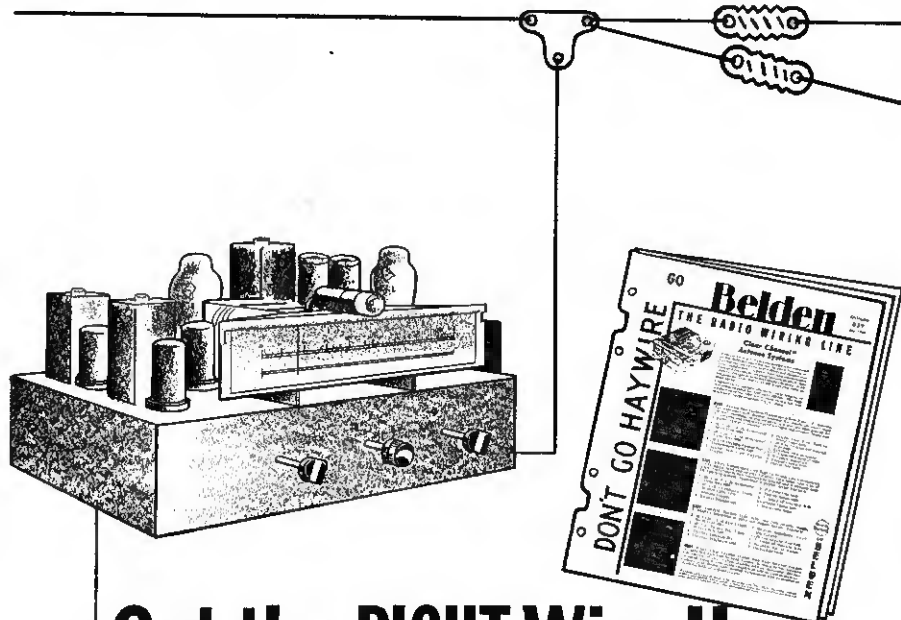
Provides four low impedance, high gain input channels, with automatic volume control . . . rack and panel construction.

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.
222 W. Huron Street Chicago, Ill.

DON'T GO "HAYWIRE"



Get the RIGHT Wire Here

For antenna systems, hook-up repairs, ground connections, microphone installations, and other radio and sound system requirements, you want wire that lives up to your service requirements and gives original equipment performance.

Belden wires—result of long, close collaboration with the industry and constant research in modern Belden laboratories—live up to your needs—protect your wiring jobs.

The Belden line is complete—see the catalog.

The Belden line is widely accepted—see Belden's big national advertising in The Saturday Evening Post.

Don't go Haywire! Specify Belden when you order from your jobber.

Belden Manufacturing Co., 4697 W. Van Buren St., Chicago, Ill.



Go

Belden

The Nationally Advertised RADIO WIRING LINE

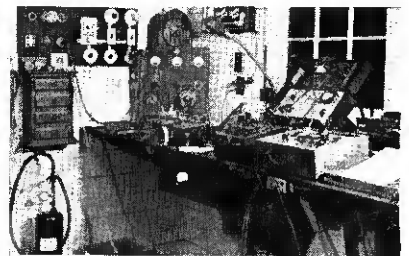
Audio Frequency

WHEN RECTIFIER BLOWS continuously when testing a.c.-d.c. sets this is usually the fault of an intermittent filter condenser which shorts under high voltage only. To find the trouble connect a 100 ohm resistor in each leg of the rectifier output. This will add sufficient resistance to the circuit to limit the current drain to a safe value. These may be left in the circuit without affecting performance.

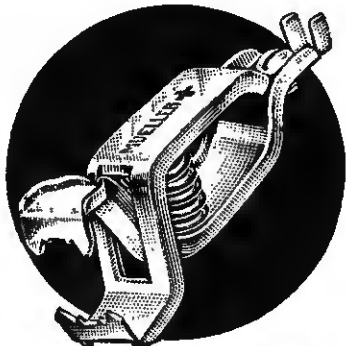
ON BATTERY PORTABLES — Don't fail to observe "A" battery polarity as this often will result in a 10 per cent increase in "B" battery drain.

WHEN KNOBS STICK especially the "pull off" type place a string, cloth, or wire in back of knob and yank, sharply.

FOR SOLDERING ANYTHING to a chassis when it is impossible to use bolts, use an aluminum solder as this will hold better than acid core and will not corrode the surface.



DESIGN FOR SERVICE—Compact test bench of Mallison Radio, Linden, N. Y. Everything is within easy reach resulting in many minutes saved on each job. Notice compressed air tank at the lower left for blowing dust and dirt out of chassis



MUELLER

The Original and Only Complete Line of

CLIPS

- Alligator Clips
- Copper Clips
- Insulated Clips
- Wee-Pee-Wee Clips
- 300 Ampere Clips

KNOWN FOR 32 YEARS AS THE BEST MADE!

SEND FOR FREE SAMPLES & CATALOG 701

Mueller Electric Co. 1584 E. 31st St. Cleveland, Ohio

A GOOD NAME GOES A LONG WAY



LONG WAY

Ken-Rad Dependable Radio Tubes are made in a modern Kentucky plant by skilled, intelligent American workers.

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

KEN-RAD

DEPENDABLE RADIO TUBES

On the Newsfront

Wideband F-M Gets FCC OK

Forty 200 kc. channels allotted. Full commercial programs permitted. Number 1 tele band shifted. Changeover deadline January

WASHINGTON—In a sweeping revision of transmission assignments on the ultra-high frequencies between 25 and 300 mc., the Federal Communications Commission May 20 allotted frequency-modulation forty 200 kc.-wide channels suitable for high fidelity service, indicated that it would authorize operation of some f-m stations on a full commercial program basis, turned television's band number 1 over to audio services and simultaneously gave video some compensating "lebensraum" higher in the spectrum.

The Commission stated that it would immediately begin authorizing operation of f-m stations on newly assigned channels, said that completion of assignments could be expected by January 1, 1941, instructed organizations with f-m station assignments on file to revise these in accordance with its latest allocation order and resubmit them no later than that date. Labelling f-m "one of the most significant advances that has been made in aural broadcasting in recent years", the Commission said it would provide supplemental service in many areas not at present adequately served due to crowding in the regular broadcast spectrum which prohibits further longwave station licensing, stated that at recent hearings there seemed to be "agreement that the new and addi-

tional service would not supplant the service of standard broadcast stations generally and that, therefore, this service will not make obsolete the receivers now in use."

Lost by television in the frequency re-shuffle which affected Federal as well as commercial wavelength assignments was so-called "Channel #1", 44-50 mc. Stations on this frequency must shift to the 50-56 mc. channel, hereafter to be known as tele channel #1, while those on this latter spot must move to a new tele channel now created from 60-66 mc. This represents a shift, rather than an airspace loss for television below 66 mc. Tele channel #8, 156-162 mc., has also been discontinued, still leaving 7 tele channels in existence below 108 mc.

Following is a brief tabulation showing how ultra-high frequencies between 25 and 300 mc. now stand:

Mc.	Service
25-41	No F-M broadcasting permitted. (Otherwise unchanged.)
41-42	Government. Otherwise unchanged.
42-43	Non-commercial, educational F-M (5 200 kc. channels), multiplexed facsimile.
43-50	Commercial F-M broadcasting (35 200 kc. channels), multiplexed facsimile.
50-56	Television channel #1.
56-60	Amateur (no change) ("5-meter" band).
60-66	Television channel #2.
66-72	Television channel #3 (no change).
72-116	No change (includes Amateur "2½-meter" band).
116-119	Used as replacement for services heretofore operating from 132-162 mc. No commercial licensing prior to 1942. No. F-M.
119-132	No change.
132-140	Government.
140-156	No change.
156-162	Used as replacement for services heretofore operating from 132-162 mc. No commercial licensing prior to 1942.



SIGNS FOR CROSLLEY EXHIBIT—Raymond C. Cosgrove, v.p. and g.m. of The Crosley Corp., signs contract for the company's participation in the 1940 World's Fair. Howard A. Flanagan, Fair's executive v.p. looks on

162-300 No change, except for re-numbering of television channels, 8 to 18 inclusive.

F-M assignments, it should be noted, are continuous. Stations, says the Commission, will be rated on the basis of coverage rather than power.

Crosley Radios Shown

Plan for expanded advertising

CINCINNATI — Approximately 300 Crosley jobbers and representatives were given a preview of the new 1941 line of radios, combinations and home recording models, at the Crosley national convention, May 24th, held in the Gibson hotel. Prices for the various models ranged from \$7.98 to \$149.95. The new line includes frequency-modulation receivers.

The company has prepared a greatly increased advertising program. Also a greatly increased list of dealer helps.

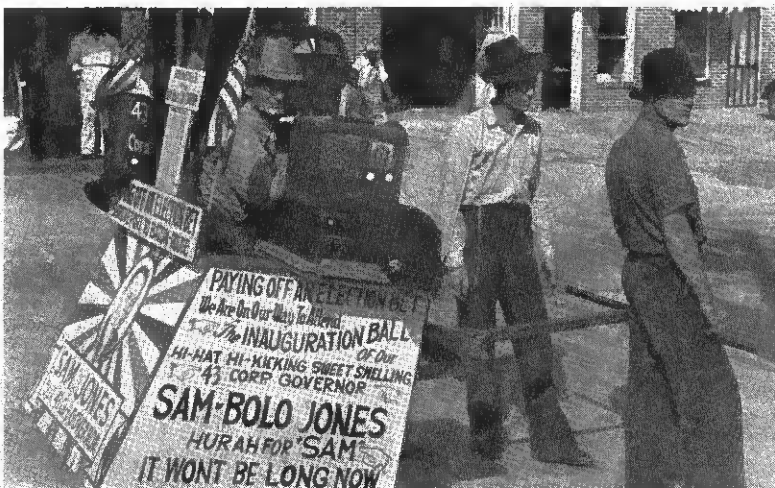
It was, also, announced that changes are being made in its radio exhibit at the New York World's Fair, to include the new radio line and to give special demonstrations.

Speakers at the convention included Powel Crosley, Jr. president, Lewis M. Crosley, executive v.p., Raymond C. Cosgrove, v.p. and general manager, and others.

The advertising program was presented by L. Martin Krautter, manager of advertising and sales promotion. A banquet was held Friday evening and the convention closed Saturday, after a busy two-day session.

New Tele Association

NEW YORK—A non-profit organization, known as The Association For The Advancement of Television, Inc., was recently formed under a New York state charter. "Its aim is advancement of the theory and practice of television elec-



THE PAYOFF—Ed. Castanedo, salesman for Dunckleman-Pace, Motorola distributor of Shreveport, snapped this photo to show how they square-off their election debts in Louisiana. The winner doesn't overlook the entertainment service of a portable while enjoying his free ride

tronics, and its associated and related arts and sciences; to foster, maintain and sponsor any movement calculated to encourage the use of television commercially and by the general public; to publish and distribute literature to propagandize the nature, use and advantages of television; to conduct experimentation and to make known the results of such experimentation."

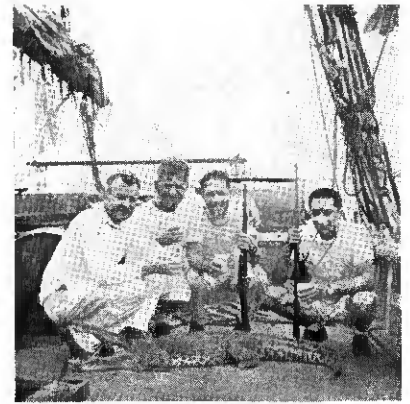
All charter members are employed in various television companies and allied fields. J. H. Prager is president, members of the board are: Elliott Garfinkel, David Katz, Joseph Barbuzza, Walter M. Jonas, Joseph Schwartz, Rubin Swern, M. Elmore Burton, Herbert V. Searles, Philip I. Squillaciote and Doris Jonas.

Stewart-Warner Preview

Distributors to see 1941 line

CHICAGO—From L. L. Kelsey, manager of the Stewart-Warner radio division, comes word that they will shortly introduce a special deluxe line of receiving sets incorporating several exclusive innovations in tone and design.

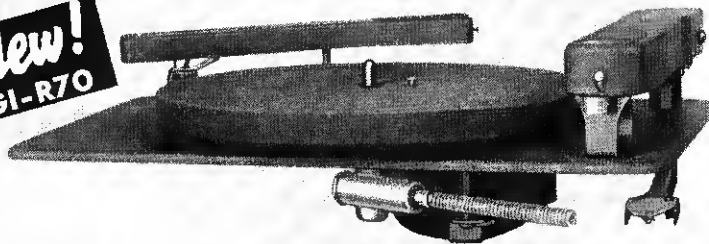
The first showing will be to some 300 radio distributors and key dealers June 14-15 at the Drake Hotel, Chicago. At the convention, the 1941 standard line of radios will also be presented to the trade. Included in the regular line will be frequency-modulation console and table model sets.



STRAIGHT SHOOTERS—Admiral's Ross D Siragusa right, finished the no-good career of that alligator on a recent fishing trip to Cuba, and is being toasted on his good marksmanship by J. H. Clippinger, Admiral's v.p., S. E. Adler and RCA's Paul Pfohl

LOW COST Simplified RECORDING

New!
G1-R70



To cut records—place the cutting arm over the uncut record blank.
To play back—place the pickup on the record. It's just as easy as that.

CONCEALED feed-screw cutting mechanism for attractive appearance—tangent tracking crystal pickup—separate pickup and cutting arms for efficient operation—special design, powerful rim drive motor—weighted turntable with retractable record driving pin—complete unit mounted on sturdy base plate ready to install. That's the new G1-R70 Home Recording Assembly.

Get your share of the recording combination business with this fast moving, enormously popular product of the world's largest phonograph motor manufacturer.

New Model "LX" Motor

Self Starting, Rim Driven, Fan Cooled

Lower in cost, lighter in weight and more compact in design than any of the previous "X" series motors, this newest addition to a famous family has already achieved outstanding popularity. It's tailored to fit 1940 requirements.



New!
"LX"

Send for
NEW
Catalog

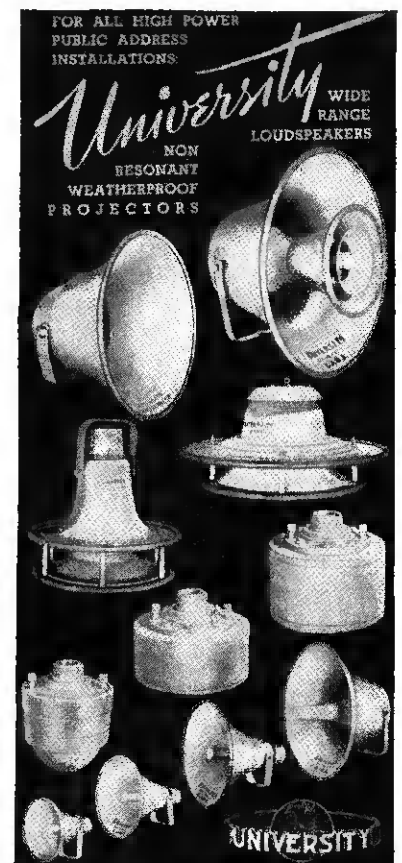
The **GENERAL INDUSTRIES CO.**

4037 Taylor Street

Elyria, Ohio

Hambleton Joins Crosley

CINCINNATI—The appointment of Roscoe L. Hambleton as manager of the Foreign Division of The Crosley Corp. was announced today, by Thomas W. Berger, general sales manager of the company. Hambleton was formerly with the overseas division of General Motors Co. He has covered both Central and South America and travelled extensively in the Orient, from Japan to Java.



University's high standards of performance set the pace for the P. A. Loudspeaker field. See us at the Chicago Radio Parts Show Booth 418 and rooms 528A and 530A
UNIVERSITY LABORATORIES 195 Chrystie St., N.Y.C.

Philco Convention Date

To Preview '41 line

CHICAGO—Jobbers, key dealers and officials of Philco will gather at the Edgewater Hotel, Chicago on June 10th, to view the 1941 Philco line of radios and combinations. Larry E. Gubb, president, announced in a pre-convention statement that the new line will incorporate new and spectacular inventions.

The entire executive and sales staff is to be present for the convention. Speakers include Sayre M. Ramsdell, v.p., T. A. Kennally, g.s.m., James A. Carmine, a.s.m., William Grimditch, v.p. in charge of engineering, David Grimes, chief engineer and others.

Robert White, division manager of the Memphis division is to be honored as winner of Philco's "All Year 'Round" race for the spring season of 1940 and awarded the Sales Manager's cup. In recognition of his outstanding work in the field of promotion and publicity, among Philco jobbers, Sam Diamond of the Broome Distributing Co. Inc., Syracuse and Binghamton, N. Y. is to be presented with the Tom Fizedale trophy.

Following the Chicago convention, dealer meetings will be held in all key cities, throughout the United States. Various Philco officials will speak before these groups, bringing them a direct presentation of the new line and plans on advertising and merchandising for the coming year.

R.I. Golf Tournament

CHICAGO—The annual RMA convention golf tournament, under the auspices of the Radio Industries Golf Club of Chicago, will be held Thursday, June 13, at the Calumet Country club. The Chicago golfing organization has also organized a radio industry tournament schedule for the summer. Henry C. Forster is the new president of the Chicago radio golf club. Other officers elected at an organization meeting May 9, include Leslie F. Muter, vice president; Oscar M. Holen, secretary; and C. H. Caine, treasurer. Tournament, membership and prize committees will be appointed later, and radio golfers are urged to send in their \$5.00 membership fees at once to Treasurer Caine at 605 West Washington St., Chicago.

Du Mont For Large Screen Tele

PASSAIC—The Allen B. Du Mont Labs., Inc., announce, that they have discontinued all development activities on small picture television sets. All its resources are now concentrated on the production of large screen direct-vision television receivers, using the 14-inch and the 20-inch teletrons.

Allen B. Du Mont stated "that television has passed through its head-phone stage, just as sound broadcasting did in its earlier days. Today the public is interested in large images that can be comfortably viewed by a group."

"WHO-CAN-TELL" RESISTORS



Don't stake *your* reputation on an unknown or doubtful, cheap resistor. The few cents saving isn't worth the risk.

Now days, good and bad resistors look pretty much alike. Who-can-tell what left-overs, returned goods, rejects, off ranges, manufacturers' experiments and defectives are being offered as bargains? Who-can-tell where they come from? Who-can-tell who made them, or when or why?

Don't risk *your* future and gamble away the good will of *your* trade on a "Who-Can-Tell."

It's easy to be safe — sure — right. Buy and use only IRC Resistors made especially for replacement and amateur work — *branded at the factory with the resistance value, type and the IRC trade mark.*

Then you can't go wrong. IRC Resistors will insure you against trouble and safeguard your reputation and standing.

They stay put — and help you to get the next job. They work *for* you, not *against* you.

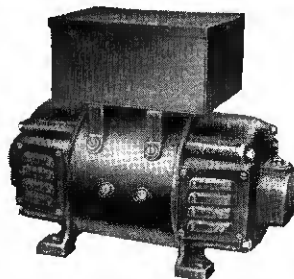
Let the other fellow who has nothing to lose — use the "Who-Can-Tells."



**INTERNATIONAL
RESISTANCE COMPANY**

401 North Broad Street, Philadelphia, Pa.

Janette Rotary Converters



D.C. to A.C.—D.C. to D.C.

When selecting a converter, play safe; profit by the experiences of the world's largest builders of sound apparatus. These companies compared the actual performance, workmanship, quality of materials used, and economy of operation of various makes, then standardized on *Janette*. Why experiment? Specify *Janette* on your next order.

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

RCA Ups Allen

To head new activity

CAMDEN—W. H. "Win" Allen, RCA territorial representative in the New York area specializing in tubes and parts, has been transferred to Camden headquarters to head up a new activity. He is to aid RCA parts distributors in developing activities and services and will act as special assistant to Fred D. Wilson, manager of Field Sales Activities.

This appointment is another step in RCA's broad program designed to promote specialty merchandising by parts distributors. Allen's experience as a field representative for all RCA products in the New York area for the past 12 years,

adequately qualifies him for his new duties. The territorial representatives who will be associated with Allen include C. V. Bradford, Boston; W. H. Autonreith, New York; W. P. Laws, Atlanta; K. B. Shaffer, Kansas City; D. M. Branigan, Chicago; F. J. Gallagher, Cleveland; Fred Dobbs, Dallas; and A. C. Nash, San Francisco.

Ward Leonard in Baltimore

MOUNT VERNON—The Ward Leonard Electric Co. announces the opening of a new branch in Baltimore, Maryland. Wilson K. Winbigler will be in charge and the location will be in the Hearst Tower building.

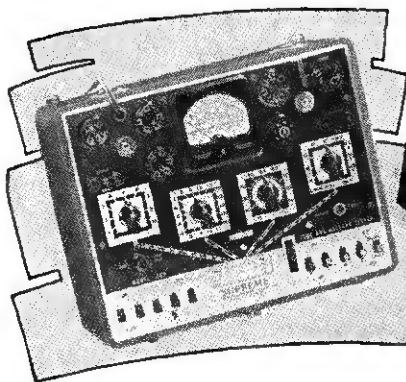


FARNSWORTH'S NEW SM — E. J. Hendrickson is now in charge of sales of the Farnsworth division of Farnsworth Television and Radio Corp. Hendrickson's background includes both national radio merchandising and executive direction of large distributing firms

Resigns RCA Post

GERMANTOWN—Lewis M. Clement resigned May 15 as vice-president in charge of research and engineering for RCA Manufacturing Company. Clement advises that he has made no immediate plans for the future and intends to take a well earned vacation.

SHOW PREVIEW 2 OF 22 NEW MODELS



\$29.95

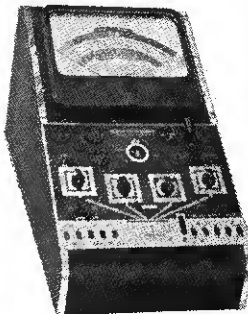
Terms: \$4.00 cash and 8 monthly payments of \$3.63

FREE
TUBE SETTING SERVICE FOR ONE YEAR

IN producing Model 589 there has been no compromise in the circuit design or materials. The same manufacturing methods, careful inspection and accurate calibration is incorporated in this instrument as in all other SUPREME testers. It will pay you to investigate and see this tester before you buy. Its price is the lowest at which a GOOD tube tester can be built.

MODEL 589 TUBE AND BATTERY tester has a completely modernized circuit. The tube test sockets are not wired directly to the circuit, but, instead, pass through the patented SUPREME Double Floating Filament Return Selector system which automatically re-connects all tube elements to any possible tube base arrangement. Due to the fact that any or all elements of each socket can be rotated to any desired position, only one socket of each type is necessary. Tests every type of tube from 1.4 volts to full line voltage at its correct anode potential under proper load. Tests separate sections in multi-purpose tubes. Checks all leakages, shorts, open elements and filament continuity with a neon lamp. A circuit insert is provided for checking noise, leakage, loose and bad connections. The battery testing circuit of the Model 589 provides the proper load at which each battery is to operate, plainly marked on the panel, for all 1.5, 4.5, 6.0, 45 and 90 volt portable radio types. The condition of the battery is indicated on an English reading scale.

This is the fastest and easiest tester to operate. Just "follow the arrows"—you can't go wrong. Roller type tube chart with brass geared mechanism lists tubes in logical numerical order. Each tester carries a one year free tube setting service. SUPREME engineering and construction PLUS the best materials the market affords, make the 589 your biggest dollar value. You will be proud to own this instrument.



Illustrated above is the Model 589 in a counter type metal case. This model is available with option of 7" or 9" illuminated meters. Has two neon lamps for sensitive or super-sensitive tests.

MODEL 599 TUBE AND SET TESTER is very similar in appearance to the Model 589, and includes all the features and advantages of this instrument. In addition, it provides the following ranges:

0.2 TO 1500 D.C. VOLTS—5 carefully selected ranges—0/6/15/150/600/1500 volts. 1000 ohms per volt STANDARD sensitivity.

0.2 TO 600 A.C. VOLTS—4 A.C. ranges—0/6/15/150/600 volts. Rectifier guaranteed with instrument and fully protected from overload damages.

0.2 M.A. TO 600 M.A.—3 direct current ranges 0/6/60/600 allow measurement of screen, plate, "B" supply and D.C. filament loads.

0.2 TO 600 OUTPUT VOLTS—0/6/15/150/600—ideal for alignment. No button to hold down—no external condenser necessary.

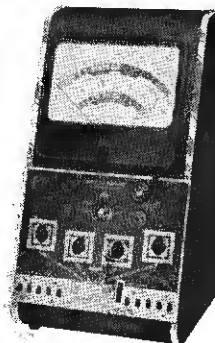
0.1 OHM TO 20 MEGOHMS—4 ranges 0/200/20,000 ohms, 0/2/20 megohms. A low range at high current with 3.5 ohms center scale.

ELECTROSTATIC—ELECTROLYTIC LEAKAGE TEST—Sensitive calibrated 20 megohm range provides excellent leakage test of paper and electrolytic condensers.

Just as the 589 is your best value in a tube and battery tester, the 599 is your best value in a combination tube tester, battery tester and set tester. Remember, you have all the features of the 589 PLUS a complete A.C. DC volt, ohm, megohm, milliammeter, at a cost of only 47¢ per range.

Dealer Net Cash Price **\$39.50**

Terms: \$4.50 cash; 9 payments of \$4.33.



Metal cabinets as illustrated for the Model 589 at left and 599 above are identical—can be used either in a horizontal position or vertical position by merely reversing the instrument panel. Write for information.

SUPREME

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

SEE US AT THE PARTS SHOW
BOOTHS 821 AND 823

Dollars For YOU!

\$\$\$

DEALER PROFITS

Every smart radio dealer will write *Today* on his business letterhead for a copy of the new **UNIVERSAL** catalog and for full details on the new discount setup that enables every local Dealer to resell to local schools, churches, lodges, etc., and allow the buyer a discount, yet thru the new **UNIVERSAL** setup, leaving a legitimate profit for the DEALER who is, as always, entitled to a fair profit for the service he renders.

UNIVERSAL MICROPHONE CO.

Inglewood, Calif., U. S. A.

Sonora Appoints

Export S.A.

CHICAGO—Jos. Gerl, president of Sonora Radio and Television Corp., announces the appointment of Harry J. Scheel, 330 South Wells St., Chicago, as sole export sales agent for Sonora. Scheel and his organization have already taken up their duties. He brings a wealth of experience to the company, covering a period of more than twenty years, including the direction of the export sale of radios, refrigerators and tubes.

Beginning June 1st, Harry J. Scheel's export agency, will be located in the Merchandise Mart, 330 South Wells St., Chicago, Ill. Increased business demanded change with greater space.

Free Radio Course

JACKSON—The post-graduate course for experienced radio servicemen, as arranged by Harold Davis, Inc., to be held in Jackson, Miss., the week of July 15 to 27, is progressing rapidly with several large manufacturers pledging cooperation and with inquiries from many interested technicians.

The lectures are being prepared by Harold Davis and will be so arranged that each discussion will connect with the previous one in a logical order. The course is free and accommodations are planned for approximately 500 servicemen.



QUAM SPEAKER CATALOG
Just off the press!

• With an exciting new and important development of vital interest to every serviceman, jobber or sound engineer, beside all the regular precision-built Quam Speakers so widely used by servicemen and sound engineers everywhere. At the Chicago Radio Paris Show, get your copy at Booth 117. If you are not attending, write to the factory, today!

QUAM NICHOLS COMPANY
Cottage Grove at 33rd Place Chicago, Ill.



AND Now

A BATTERY MERCHANDISER



Sells More Batteries

Lets Your Customer See

- 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

Only \$8.00 Deposit

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. RR-640

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

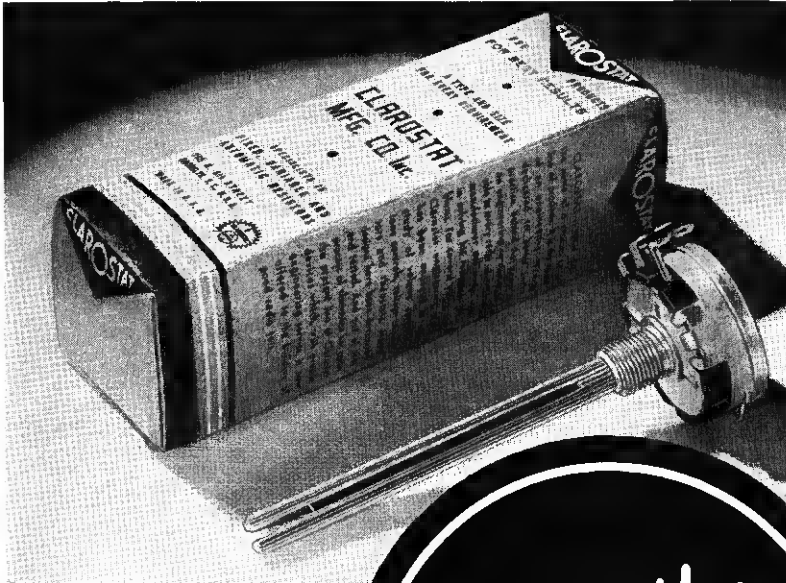
Please have salesman call.

Name

Street Address.....

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

NATIONAL UNION RADIO CORP.
57 State Street Newark, N. J.



Up to the minute...

★
By using these replacements, it is no longer necessary to hunt for knobs that fit and match. No danger of having to change the complete set of knobs to avoid off types.

★
Serration full length of shaft. Center fit cut for easy removal after cutting shaft to desired length.

★
Shaft 2 5/8" long from end of threaded 3/8" bushing.

★
Any resistance values. A few types take care of receivers using slot and knurl shafts.

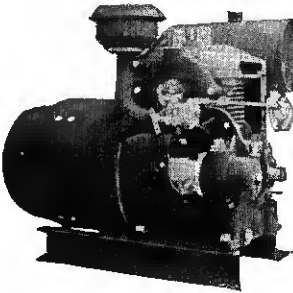
★ Typical of CLAROSTAT timeliness at all times are these Serrated-Shaft Replacement Volume Controls, Series KS, designed as replacements for volume and tone controls of 1939 and 1940 receivers using slot and knurl type shafts with special knobs. Whether it be controls, plug-in tube resistors, power resistors, ballasts or any other resistance device, you can count on CLAROSTAT, always.

★ Ask for MANUAL . . .
Latest edition of Clarostat Service Manual is yours for the asking. Ask your jobber for a copy. Or the Plug-in Resistor Replacement Manual for 15¢.

CLAROSTAT *Manufacturing Co. INC.*

 285-287 NORTH SIXTH STREET
 BROOKLYN, NEW YORK, U.S.A.
 • OFFICES IN PRINCIPAL CITIES •

110 VOLTS AC ANYWHERE!
 With KATOLIGHT. Furnish standard 60-cycle AC for operating sound truck equipment, AC radios, transmitters, flood lights, motors, moving picture projectors, etc.



A complete line of light and power plants ranging up to 10,000 watts capacity. Also 6, 12 and 32 volt battery charging plants. Diesel plants, rotary converters, and frequency changers.

List prices \$50.00 and up.
 Jobbers and Dealers Write For Latest Catalog

Kato Engineering Company
 Front and Elm Streets
 MANKATO, MINN., U.S.A.

NU-Erwood Tie-up

National Union to handle all Erwood sales

NEWARK—The National Union Radio Corp., Newark, N. J. becomes exclusive sales agent in the U. S. for the Erwood Sound Equipment Co., Chicago, Ill., in accordance with a contract entered into by these two companies.

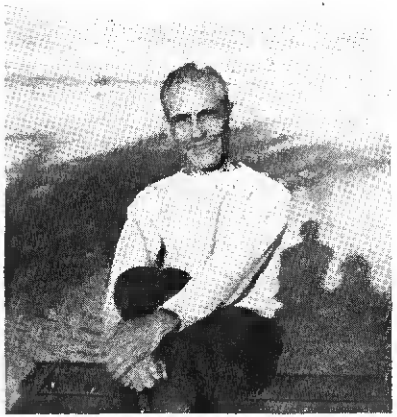
All sound systems will be manufactured and advertised by Erwood. National Union will handle all matters pertaining to sales, promotional work, credit, collections. Erwood products will be merchandised through jobber and dealers. A jobber who does not handle N. U. tubes will not be barred from selection as an Erwood jobber and vice versa.

John Erwood, president of Erwood Sound Equipment Co., stated the importance of selling effort in connection with development of the sound business; that there is a big untapped market waiting for development and that he feels National Union's far flung sales staff will carry the message of sound far and wide and bring about, in a relatively short time, a market development that would otherwise take years to accomplish.

Henry Hutchins, general sales manager of National Union, called attention to the new line of sound X/TRA tubes which are especially adapted for audio and sound work. He stated that these new tubes, plus improvements in sound engineering by Erwood, bring technical improvements that will appeal to many new prospective sound users.

Receives Award

NEW YORK—Stephen Nester, sales manager of Recoton Corp., was awarded the Advertising Club's silver medal in its recent selling and advertising essay competition. Awards are given periodically for these competitive essays. Presentation was made at the Hotel Roosevelt before a gathering of about a thousand club members.



SENTINEL'S RUSSELL — Making seven spades doubled and redoubled is plenty reason for the smile of satisfaction that *George Russell*, Sentinel's sales manager, displays here. And furthermore he is relaxing at Palm Beach

New Distributorship Policy

PASSAIC—In order to provide a better service to buyers, and those interested in cathode-ray oscillographs and allied equipment, the Allen B. Du Mont Labs., Inc., is setting up authorized distributorships on a franchise basis. Such distributors must carry in stock and be prepared to demonstrate Du Mont cathode-ray oscillographs and the electronic switch, in return for longer discounts than those granted on pickup type business.

Norge Exec Upped

DETROIT—Howard E. Blood, president and general manager, announces the promotion of H. H. Whittingham

to the assistant general managership of Norge division, Borg-Warner Corp., Whittingham has held various executive positions with Norge, including that of assistant salesmanager and vice-president in charge of engineering. In his new capacity he will supervise engineering, production and sales.

G-E Advances Tilley

NEW YORK—P. A. Tilley, was recently appointed assistant manager of General Electric's radio and television department. In the absence of Dr. W. R. G. Baker, manager of this department, Tilley will be in charge of all activities.

As Usual...

the "Quality" of the Show

Webster Electric Pick-Ups . . . Crystal Pick-Up Cartridges . . . The New Webster Electric Recorder Heads . . . and Webster Electric Sound Equipment

Webster Electric Equipment will be on Display in Booth 421, Radio Parts Manufacturer's Trade Show, Exhibition Hall, Stevens Hotel, June 11th to 14th

The word quality and Webster Electric are inherently synonymous. They always have been . . . and they continue to be so.

This year, Webster Electric offers manufacturers and jobbers a superlatively fine Pick-up and Crystal Pick-up Cartridges that, for performance, exceed anything previously offered.

The new Webster Electric Recorder Heads are designed to provide a new standard of Webster Electric performance.

And, as usual, Webster Electric Sound Equipment with its reputation for tone fidelity will also be on display.

We invite your inspection of the Webster Electric Line.

Licensed under patents of the Brush Development Company

Licensed by Electrical Research Products, Inc., under U. S. Patents of American Telephone and Telegraph Company and Western Electric Company, Incorporated

WEBSTER ELECTRIC COMPANY, Racine, Wis., U. S. A. Established 1909. Export Dept.: 100 Varick St., New York City. Cable Address: "ARLAB", New York City

Webster Electric

"Where Quality is a Responsibility and Fair Dealing an Obligation"

MANUFACTURERS OF TELEPHONE INTERCOMMUNICATION AND PAGING SYSTEMS • POWER AMPLIFIERS AND SOUND DISTRIBUTION EQUIPMENT • RADIO PHONOGRAPH PICKUPS • IGNITION TRANSFORMERS AND FUEL UNITS FOR OIL BURNERS

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

LLOYD F. 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.

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.

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

Visit Hytron's dynamic exhibit featuring the manufacture of radio tubes at the Radio Parts National Show, Booths 212-214 on Coulomb St.

*Trade-name registered

†Officially recognized by R.M.A.

**HYTRON
CORPORATION**



25 N. DARBY ST.
SALEM, MASS.

MANUFACTURERS OF RADIO TUBES SINCE 1921

Launch Cooperative Campaign

To abolish upstairs discount houses

NEW YORK—A meeting of distributors recently held under the auspices of the Dealers Group of the Electrical and Gas Association, launched a cooperative movement to eliminate sales to the so-called upstairs discount houses and others not properly equipped to merchandise standard brand products.

Prevailing opinion among the metropolitan dealers is the belief that the distributors mean business and that the loft operator with only packing case display, is on the way out. The chairman of the Dealers Group states that

manufacturers and distributors alike are realizing that the methods of these operators are injurious to the entire industry.

The next plan is to eliminate the mis-used industrial group-buying activities. It is said that many large business houses maintain purchasing departments to buy radios and appliances at regular dealer discounts. Legitimate dealers see no reason why this group should enjoy special prices. The commodity these industrials sell, whatever it may be, has a set price tag with no favoritism. Prompt attention is to be given this phase of the business with every endeavor to abolish this type of competition.



SCANLAN AT WORK — Muter's "Pete" Dailey claims this is a candid-camera shot of Jack Scanlan thinking out ways and means of breaking sales records in the manner recommended by fiction's "Scattergood Baines"

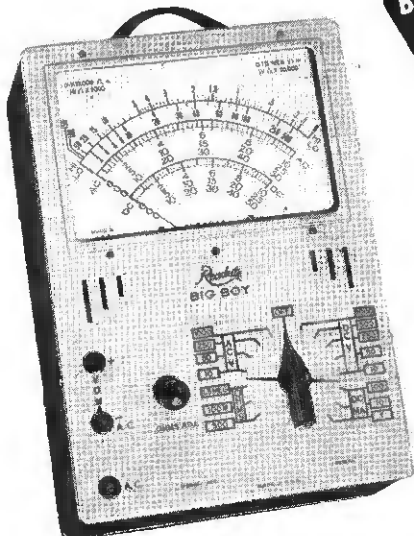
"Repers" Plan Fall Caravan

MINNEAPOLIS—The Northwest "Repers" organization is planning now for its second annual fall trade tour. The "Caravan", as it is called, is to get under way immediately after Labor day.

Readrite
THE BANGOR METHOD

BIG BOY

BIG IN VALUE
BIG IN PERFORMANCE \$17.85
SENSATIONALLY PRICED AT



Here is an AC-DC Volt-Ohm-Milliammeter with all the ranges you want . . . easily readable on the large 7" instrument with extra-long 6" scale . . . in a new up-to-the-minute three-tone case you will be proud to use in your panel, bench or calls to the home. Check Readrite Big Boy's adaptability for your requirements; DC V. 0-10-50-250-500-1000 at 1000 ohms per volt; AC V. 0-10-50-250-1000 at 400 ohms per volt; DC Ma, 0-1-10-100; Resistance ranges: 0-500 ohms shunt type circuit; 0-100,000 ohms and 1.5 megohms. Maroon case with cream panel, attached handle . . . Dealer Net Price . . . \$17.85.

MODEL 739 VOLT-OHM-MILLIAMMETER

AC-DC Pocket Volt-Ohm-Milliammeter with Selector Switch . . . Molded Case . . . AC and DC Volts 0-15-150-750-1500; DC MA 0-1.5-15-150; High and Low ohms scales . . . \$9.90 Dealer Net. Model 738 DC Pocket Volt-Ohm - Milliammeter . . .

\$7.50

Dealer Net.

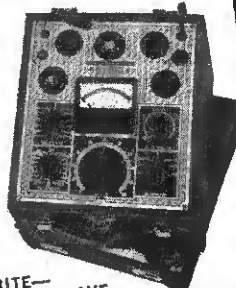


MODEL 432-A TUBE TESTER

The Outstanding Tube Tester Value Checks all types including Locals, Single Ends, Bantam Jr., and 1.4-volt Miniatures, gaseous rectifier, Ballast, High Voltage Series, etc. Filament Voltages from 1.1 to 110 volts. Direct Reading GOOD-BAD Meter Scale. Counter or Portable Case with roomy compartment for tools, etc. \$18.85 Dealer Net. In case less compartment . . . \$17.85. Model 432-A-742 Combination Tube Tester (432-A) and Volt-Ohm-Milliammeter with 16 Ranges . . .

\$27.85
Dealer Net.

FOR CATALOG WRITE—
SECTION 620 COLLEGE AVE.



READRITE METER WORKS, Bluffton, Ohio

SEE
OUR COMPLETE LINE OF
PHONO-
MOTORS

at the **TRADE SHOW**

Stevens Hotel, Chicago

June 11th—14th

BOOTH No. 416

Alliance Mfg. Co.

ALLIANCE, OHIO

The tour will take about ten days.

Plans call for a display of the latest merchandise and developments in radio servicing, and in addition, clinics are to be set up at each meeting with leading factory engineers in attendance. Stops are scheduled for Duluth, Minn., Fargo, N. D., and Sioux Falls, S. D., with a windup stop and show at Minneapolis. Dwight Linborg is tour manager with headquarters at 39 South 11th St., Minneapolis.

Decca Opens New Branch

OKLAHOMA CITY—Decca Records, Inc., has just opened a completely stocked distributing branch here, bringing this firm's total number of branches to 26.

NRPPA Meeting Held

PHILADELPHIA—On Sunday, May 26, jobbers and sales representatives serving eastern Pennsylvania, Maryland and the District of Columbia met at the Benjamin Franklin Hotel here under the auspices of the National Radio Parts Distributors Association, discussed common problems.

In attendance were: Arthur Moss, R. M. Pepper, G. O. Zimmerman, A. J. Reid, George Barbey, R. H. Wile, Gene J. Rothman, Dahl Mack, Maurice Rademan, Louis Herbach, James Strauss, Edw. Alliman, R. E. Martin, Alfred B. Stewart, J. W. Kratz, S. Kratz, Robert Sylvester, Ben Freeland, Wilmer S. Trinkle, E. N. Hyde, W. G. Stewart, Dan Fairbanks,

Herman Freeland, J. B. Sanborn, Martin Friedman, Byron Deadman, Arnold Braun, Joseph E. Neutra, Samuel McDonald, Milton Shapp, Leiter D. Lowery, Fred Dannenhauer, Jr., Bruce Burlingame, Noble C. Shift, Jack Simberkoff, Harry A. Steinberg, Haskell Blair and Morris Taylor.

Latham New ATC S.M.

NEW YORK—Gene W. Latham has resigned as metropolitan sales manager of the Allen B. DuMont Laboratories, Inc., to join American Television Corporation of this city as general sales manager. His active association with ATC began on June 1.

SPEAK-O-PHONE RECORDING

Announces

10 NEW MODELS

RECORDERS,
TRANSCRIPTION UNITS, ETC.

All improved, different, definitely of interest to the entire industry, these new products by veteran producers. 10 to 16 inch turntables; list from \$90 to \$600 . . . on display in Booth 305, Stevens Hotel, June 11-15th.

Don't fail to examine this great line

FREE

Be sure to stop at our Booth for free sample of a splendid new recording disc . . . just what you have been waiting for!

SPEAK-O-PHONE
RECORDING & EQUIPMENT CO.
23 West 60th St. New York, N. Y.

WHY *Eleven* RIDER MANUALS?

*Because
You Need
Eleven!*



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

from the complete servicing information that only Rider Manuals can give you: Data on alignment, I-F peaks, operating voltages, parts lists and parts values, voltage ratings of condensers, wattage ratings of resistors, coil resistance data, and all the other information that is vital if you are to know exactly what the manufacturer put in that receiver. Nowhere else can you make an investment so certain to increase your profits.

That . . . is why Rider Manuals are standard the world over.

That . . . is why you need all eleven Rider Manuals.

VOLUME XI—OUT IN JUNE

New Arrangement provides for maximum number of sets.
New How It Works section.
New pocket handbook.
New Index (cross-indexed).
All these services at no increase in price.

YOU NEED ALL RIDER MANUALS

Volume XI—Price \$10.00—Covering up to June 1940

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

JOHN F. RIDER, PUBLISHER, Inc.

404 FOURTH AVENUE, NEW YORK CITY

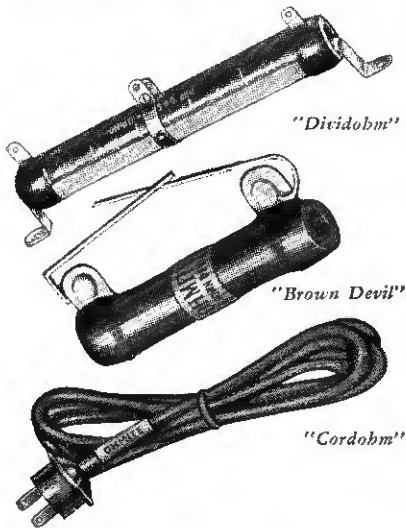
Export Division: Rocke-International Elec. Corp., 100 Varick St., N. Y. C. • Cable: ARLAB

Take it from me
OHMITE parts
 do a swell job



• Yes, sir! I'm free of worries when I install Ohmite Parts—'cause I know they stay at work through thick and thin!" It's proved by leading manufacturers of commercial, amateur and broadcast equipment who specify Ohmite units for their products. And by the many Servicemen, too, who make it a habit to say "Ohmite Parts for Me Every Time!"

See Your Jobber for: ★ *Adjustable Dividobms*—Easily adjusted to resistance you want—or tapped where needed. ★ *Brown Devils*—10 and 20 watt vitreous enameled resistors for voltage dropping, bias units, bleeders, etc. ★ *Cordobms*—Replace internal voltage dropping resistors in A.C.-D.C. radio sets. Tapped Cords for pilot light also available.



Visit Ohmite Booth 119 at the Radio Parts Trade Show

MAIL COUPON TODAY

OHMITE MANUFACTURING COMPANY
 4873 Flournoy St., Chicago, U. S. A.
 SEND FREE CATALOG 17

Name
 Address
 City State



New Speak-O-Phone Plant

NEW YORK—Speak-O-Phone Recording and Equipment Co. reports that it is now settled in its new plant here, started production on its low-cost acetate disc early in May and plans to merchandise this product solely through parts jobbers.

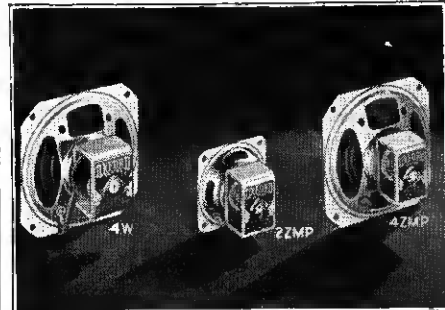
S-C Appoints Phila. Rep.

ROCHESTER—Allan R. Royale is the new Stromberg-Carlson sales representative for the Philadelphia, Baltimore and Washington districts. Royale takes up the post left vacant by Clifford J. Hunt when the latter became manager of S-C's distributor division.

Distribution News

RCA—The Wyatt-Cornick Company, Richmond, Va. and The Yancey Company, Inc., Atlanta, Ga. have just been appointed distributors for R.C.A. Victor radios, tubes, Victrolas, and records. Both jobbers are newly formed companies. Arrangements for the new connections were completed by James Cooke, district sales manager at Atlanta.

FARNSWORTH—The Sunset Electric Co., Seattle, Wash.; Miller Brothers Co., Chattanooga, Tenn.; and Wholesale Appliances, Inc., Little Rock, Ark. are three new distributors of the Farnsworth



OXFORD
 The choice of servicemen everywhere

WHY do jobbers find it so easy to sell Oxford replacement speakers?

BECAUSE Oxford Tartak Radio Corporation has built millions of speakers for set manufacturers and has designed its replacement line around the original specifications of leading manufacturers throughout the country.

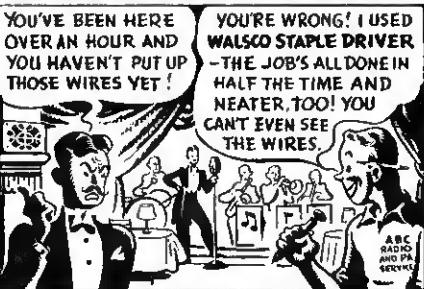
Having pioneered in small speaker design, Oxford replacement speakers are recognized by Servicemen for their dependability, high quality, and economy.

- EASY TO INSTALL — STANDARD MOUNTINGS
- LOW INITIAL COST — WIDE PROFIT MARGIN
- YEARS OF TROUBLE-FREE SERVICE — SATISFACTION GUARANTEED

Visit us at the Radio Parts National Trade Show Booth 829.



WALSCO
 PRODUCTS TO HELP THE RADIO MAN



With the amazing new patented automatic Walsco Staple Driver YOU CAN

- 1) install wires in moldings, corners, behind radiators, where you cannot work with a hammer.
- 2) drive staples into hard walls, like mortar, plaster, etc.
- 3) make the installation job so neat, that it will hardly show.
- 4) save 50% or more on time for putting up wires.

The Walsco Staple Driver holds 24 staples and feeds them automatically (takes 4 seconds to reload). Staples come in ivory, brown, blue—for wires or cables up to 1/4" diameter. Simple to operate. Jam proof. Fully guaranteed.

OTHER WALSCO PRODUCTS:

Cements and Solvents—Crystallizing Lacquers—Dial Cables—Cabinet Refinishing Kits—Complete Line of Cabinet Patching Materials—A Sensational New Scratch Remover

FREE WRITE FOR CATALOG NO. A 40 ABOUT ALL WALSCO PRODUCTS



BOGEN SOUND SYSTEMS
 Sound Specialists!
 Servicemen!
 1940 IS A SOUND YEAR
 Increase your sales with BOGEN

BOGEN Equipment Offers You—

- Exclusive performance features.
- Popular prices to minimize competition.
- National acceptance and prestige to inspire customer confidence.
- Most complete selection of equipment in the country to help concentrate your sales efforts.

VISIT OUR EXHIBIT AT THE RADIO PARTS NATIONAL TRADE SHOW ON JUNE 11, 12, 13 AT THE STEVENS HOTEL, CHICAGO STEINMETZ AVE. BOOTH 4029 ROOMS #535A - 536A - 537A

Buy BOGEN and you buy the BEST

Literature available at your jobber or write

DAVID BOGEN CO.
 663 Broadway New York, N. Y.
 Largest Manufacturer devoted exclusively to production of sound systems — amplifiers — recording and intercommunication equipment and sound accessories.

line of radios and automatic radio-phonograph combinations. *Sunset Electric Co.* will cover about two-thirds of the state of Washington. Territory assigned to *Miller Brothers* includes 10 counties in Tennessee and 5 in northern Georgia. *Wholesale Appliances* will service all of Arkansas except a few counties in the northeast part of the state, which are assigned to the distributor at Memphis. Appointment of these companies raised to 56 the number of Farnsworth distributors throughout the country.

SPRAGUE—*Wilmer S. Trinkle*, representative for this company on condenser sales in the Philadelphia area receives the appointment to handle the industrial representation on its Koolohm resistors.

Trinkle's headquarters is 2324 Ripley St., Philadelphia, Pa.

TRANSFORMER CORP. OF AMER.—New reps. for the Clarion sound equipment includes *H. Gerber*, 49 Portland St., Boston, Mass., for the New England territory, and *R. C. James* of the *Northwestern Agencies*, 2411 First Ave., Seattle, Wash. as sales representative for the northwestern territory.

especially prepared for its distributors. The folder highlights the new line of compacts, portables, consoles and combinations and its general makeup is in tune with the presidential election year, presenting its platform and leadership of features provided in the new receivers. Contains information and illustrations on many dealer helps and ideas on attractive window displays.

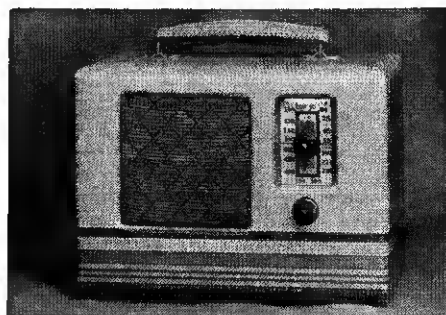
TRANSFORMER CATALOG — *Thordarson Electric Mfg. Co.* releases a 19 page "Tru-Fidelity" catalog on broadcast transformers, arranged and classified for simplicity. Those interested in broadcast components are invited to write for a free copy. Address your request to 500 W. Huron St., Chicago, Ill.

Dealer Helps

RECEIVER PORTFOLIO — *RCA Mfg. Company, Inc.*, has just brought out a large 29 page brochure in color,

If it's performance you want
— If it's price you want
— If it's sales you want

SELL THE SENSATIONALLY NEW "AUTOMATIC" BATTERY PORTABLE



MODEL—TOM THUMB

—And for 5 cents retail in any store, replacement A batteries can be purchased.

• 4 TUBES • SUPERHETERODYNE • PM SPEAKER • AUTOMATISCOPE LOOP • BEAUTIFUL AIRPLANE LUGGAGE CASE • NEW RCA MINIATURE TUBES.

LIST PRICE

\$ 9.95

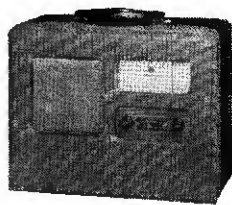
COMPLETE with BATTERIES

Attractive Discounts

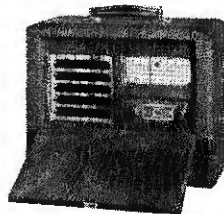
JUST THINK OF THIS STUPENDOUS SALE FEATURE

SEE IT — HEAR IT — SELL IT

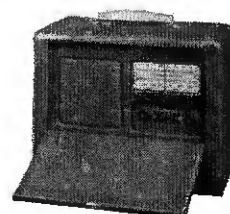
Also 3 in 1 (AC-DC-Battery) Models with famous Rejuvenator



Model P-41 — 5-tube Superheterodyne — PM Speaker — Automatiscope Loop — AIRPLANE CASE....19.95
 Complete with batteries



Model P-51—5-tube Superheterodyne — Large PM Speaker — Automatiscope Loop — Beautiful case with cover comes in 7 different colors (Maroon, Blue, Gray, Olive, Brown, Ivory, Alligator)24.95
 Complete with batteries



Model P-81—6-tube Superheterodyne — Large PM Speaker — Very powerful performer — Beautiful two-tone case in 7 different colors as Model 51 with Ivory trimmings....29.95
 Complete with batteries

WRITE, WIRE OR PHONE FOR FURTHER DETAILS

See These Sets at the RMA Show, Hotel Blackstone, Chicago

AUTOMATIC RADIO & TELEVISION CO., INC.

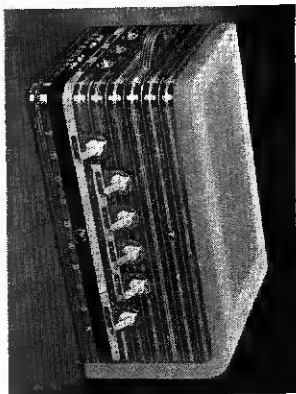
122 BROOKLINE AVENUE, BOSTON, MASS.

AMPLIFIERS FROM 8 TO 900 WATTS!

THORDARSON

The new line of Thordarson amplifiers comprehensively covers most amplifier requirements.

THORDARSON ELEC. MFG. CO.

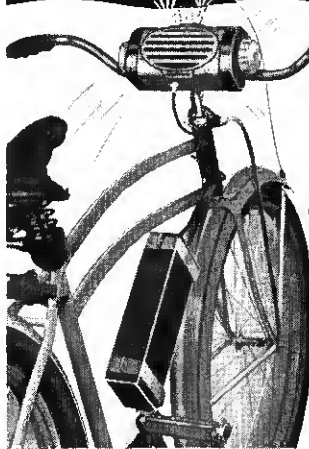


AMPLIFIERS

The finest line outstanding audio experts can design. Distributed by outstanding Paris Merchandisers.

500 W. HURON ST., CHICAGO

NEW *Motorola* BIKE RADIO



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FUN
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SPORTS
AS
THEY
RIDE

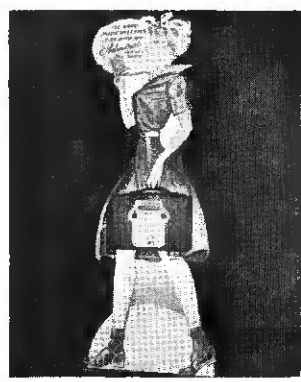
BE FIRST TO FEATURE THEM

• New, 3-tube superheterodyne Motorola Bike Radio. With AVC, 4" P. M. Dynamic Speaker, long-life "Ray-O-Vac" "A" and "B" batteries. Brightly finished in vermilion with blue grill. Mounts on handle bars with rubber shock-proof mounting. EASILY **\$19.95** INSTALLED

FOR FULL PARTICULARS WRITE YOUR MOTOROLA DISTRIBUTOR OR

GALVIN MFG. CORP'N 4545 Augusta Blvd. Chicago, Ill.

PORTABLE SET DISPLAY—The Continental Radio and Television Corp. has two new life size displays for Admiral portable sets, made available to dealers



through its jobbers with orders for "deals". The accompanying illustration shows one of these displays which stand 63 inches high and is produced in full color.

OSCILLOGRAPH BULLETIN

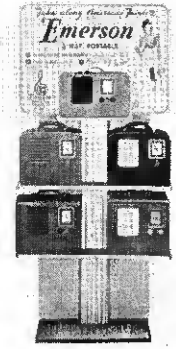
The Allen B. Du Mont Labs., Inc., Passaic, N. J., announces a new bulletin on its type 208 cathode-ray oscillograph. Comprises eight pages with descriptive data and general information on C.R. oscillograph functions.

BUILDER'S HANDBOOK — The Allied Radio Corp., 833 W. Jackson Blvd., Chicago, Ill., has a revised edition of its Builder's Handbook. It has been en-

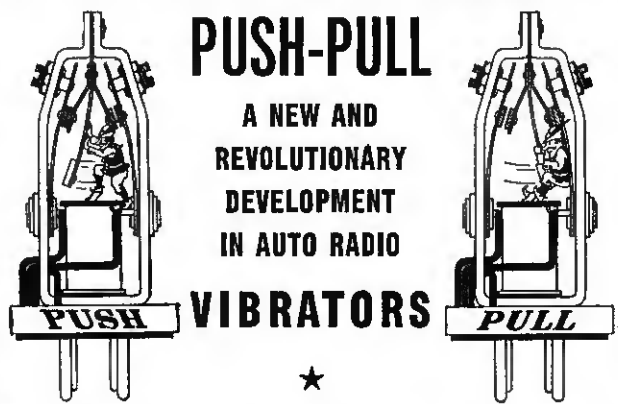
larged to include new diagrams and kits with complete data and plans on a wide variety of sets, amplifiers and transmitter equipment. Offered at 10 cents to cover mailing and handling.

TUBE BASE CHART—Hygrade Sylvania Corp., Emporium, Pa., announce a new radio tube base chart for dealers and servicemen through Sylvania jobbers. It utilizes a new style of layout with a complete cross index for all tubes and base views.

TIMELY AID—The Emerson Radio and Phonograph Corp. announce this new



attractive stand display for its 3-way portable receivers. Card at top of the stand outlines the various features.



PUSH-PULL

A NEW AND REVOLUTIONARY DEVELOPMENT IN AUTO RADIO

VIBRATORS

- ★ Increased high amplitude of the reed.
- ★ Increased high frequency of the reed.
- ★ More positive wiping action of the points.
- ★ Higher output voltage with less drain.
- ★ 50% less R. F. Interference.

Two years ago we placed on the market the first successful adjustable vibrator. Jobbers and dealers the country over offer nothing but praise for its design, construction and performance. Its sales success has been phenomenal.

Now—after 15 months of research and testing, production is under way on a new and radically different type of vibrator—the DeLuxe Push-Pull James Vibrapowr Unit. It embodies principles of design and construction never before used in any auto radio vibrator.

DeLuxe Push-Pull James Vibrapowr Units list at \$3.95 for the non-synchronous type—and \$4.95 for the Push-Pull synchronous type. Regular non-synchronous types list at \$2.95. Twenty different models are now available. All types are guaranteed one year. Your inquiry will bring complete details regarding discounts, plan of selling and a technical description of the operation of the unit.

Literature on Request

JAMES VIBRAPOWR CO., INC.

341 No. Crawford Ave. Chicago, Illinois

THE WINNER — \$69.95

RADIO MODEL #110

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HOME BROADCASTER

- Records and Plays 12 Inch records.
- Microphone can be faded in while recording off the air.
- Radio plays while record is being made.
- High Fidelity Phonograph.
- Superheterodyne Radio and 8 in. dynamic speaker.
- Dual Motors rim and center drive.
- Patented unbreakable feed screw.

Model #120 — \$89.95 console
Model #130 — \$139.95 console with automatic changer.

Standard Jobber discounts. Write for open territory.

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MANUFACTURING CO., INC.

457 West 45th St. New York City, N. Y.

Save Servicing Time
MAKE MORE MONEY

New RCP

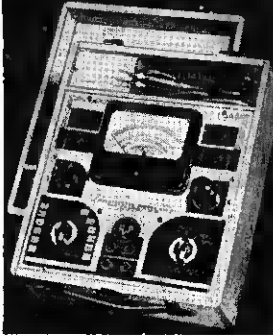
MODEL 414
 (Open Face)

**Master
 Multi-
 Purpose
 Meter**

ONLY

\$21.95*

NET



RCP's system of AC measurements insures higher accuracy, greater ruggedness, more sensitivity (2000 ohms per volt), A.C. scales linear, coinciding with D.C. Eliminates crowded calibration and confusion in reading. Model 414 includes direct reading capacity meter, 5 individual ranges measuring from .0001 to 300.0 MFD. Capacity scale easy to read from end to end. Five ohmmeter ranges, with self-contained power supply measuring from .05 ohms to 15 megohms. A total of 42 ranges for measurement of Output, A.C. volts, D.C. volts, D.C. current, Inductance and Capacity Resistance. Masterly engineered, with many unique features, RCP Model 414 far outclasses the ordinary type of multi-range, multi-purpose meters. Money never bought a better value! Available in a variety of combinations to suit individual service requirements. Model 414P, portable as illustrated, \$24.50.

*Other models with 7" and 9" meters.
 Write for new Catalog No. 122

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Although Radio & Television Retailing takes every precaution to insure accuracy, we cannot assume responsibility for an occasional change or omission in the above index.

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ALL RADIO NEEDS
 Your nationally known favorites in sets, parts and supplies, public address systems, testers and kits, etc., at lowest possible prices. Write for this big book.
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 as few as 12 condensers cover most repair requirements.
 Stock these new, smallest dry electrolytics . . .
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RED-CAPS for Service — today!
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Announce
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RADIO CITY
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MADE BETTER TO WORK BETTER

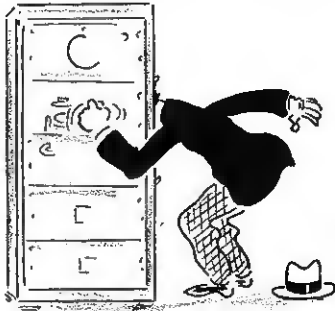
• The combination of high tensile strength that assures a lasting bond, and faster, cleaner work made possible by quick acting flux of pure water white rosin, has given Gardiner Rosin-Core Solders an outstanding reputation for efficiency and economy on radio work by expert or amateur. Yet, due to modern 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.

Gardiner METAL COV
 4808 S. Campbell Ave. Chicago, Ill.

TRADE SHOW

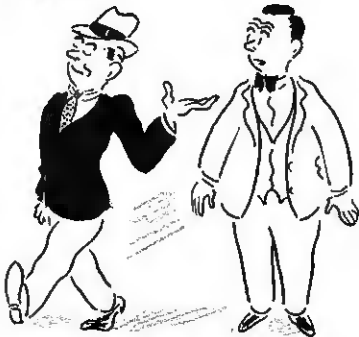
TERMITES

THE CUSTOMER IS ALWAYS RIGHT...OR IS HE



THE COMPONENT CUDDLER

PICK UP PARTS, EXAMINING MINUTELY. TWIDDLES KNOBS, PUSHES BUTTONS, SNAPS SWITCHES. OPENS CABINETS, PEERS INSIDE SPECULATIVELY PROBS UNRECOGNIZED ITEMS. UPON APPROACH OF ATTENDANT SCURRIES LIKE RABBIT INTO CROWD.



THE GONE GOOSE

PROFESSES FRIENDLY INTEREST IN PRODUCT BUT THINKS DESIGNER MISSED BET BY OMITTING SPECIAL DINGBAT. SIMULTANEOUSLY SAYS PRICE IS TOO HIGH. CONCLUDES BY DIVULGING HE HAS JUST SIGNED UP FOR COMPETITIVE LINE ANYWAY.

RADIO
RETAILING



THE CATALOG CANNIBAL

COMES WITH CAPACIOUS PAPER BAG AND CONSUMING PASSION FOR PRINTED MATTER, NO MATTER WHAT IT'S NATURE. SO BUSY COLLECTING CAN'T WASTE TIME TALKING TO BOOTH ATTENDANTS. LATER FILES CIRCULARS, UNREAD, IN SHOP WASTEBASKET.



THE FRIENDLY FIREMAN

SHOWS UP AT EXHIBITOR'S ROOM JUST AS LIGHTS ARE BEING TURNED OUT. CLAIMS CLOSE ACQUAINTANCE WITH FIRM'S FOURTH VICE PRESIDENT FAILING TO RECOGNIZE SAME IN ADJACENT CHAIR. DRINKS ALL VISIBLE LIQUOR. SAYS WILL RETURN NEXT NIGHT TO SEE PAL.



THE EMBRYO ENGINEER

INTERRUPTS CONVERSATION WITH A-I CUSTOMER TO ASK INVOLVED TECHNICAL QUESTION ANSWERABLE ONLY BY GOD AND THE FACTORY'S CHIEF ENGINEER, IF AT ALL. DROWNS OUT REPLY VERBALLY PARADING OWN KNOWLEDGE, SHOWS SELF UP, KNOWS IT, DEPARTS.



THE REMINISCENT RACONTEUR

TALKS NOSTALGICALLY ABOUT 1919 EXPERIENCES AS WIRELESS OPERATOR ABOARD SS. PODUNK. OBSERVES WOULD HAVE BEEN RADIO BIGSHOT IF HAD KEPT UP WITH ART. NOW IN THE PLUMBING BUSINESS AND JUST DROPPED IN ON WAY TO MOVIES.

W. MacDONALD
AND EDGAR ALLEN

WEBSTER - CHICAGO

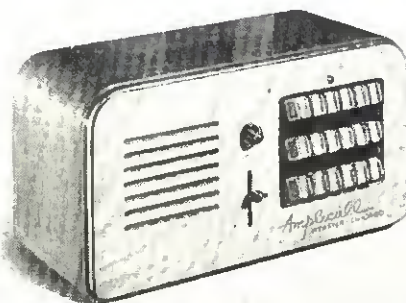
Five *NEW*
Products
for 1940



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MICROPHONE



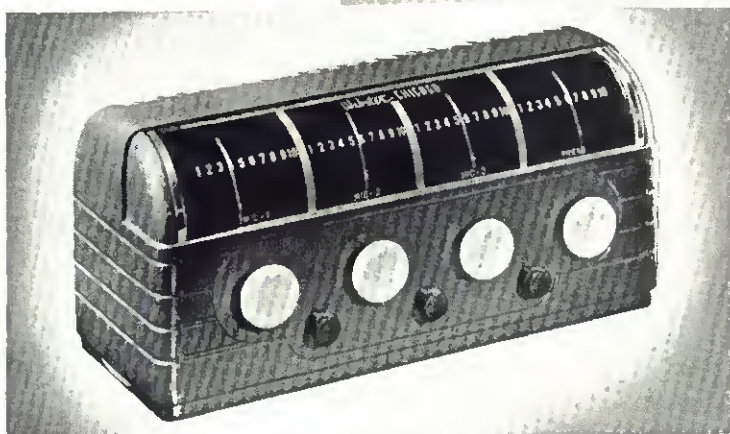
UNIDIRECTIONAL
MICROPHONE



"AMPLICALL"
INTERCOMS



PORTABLE
RECORDERS

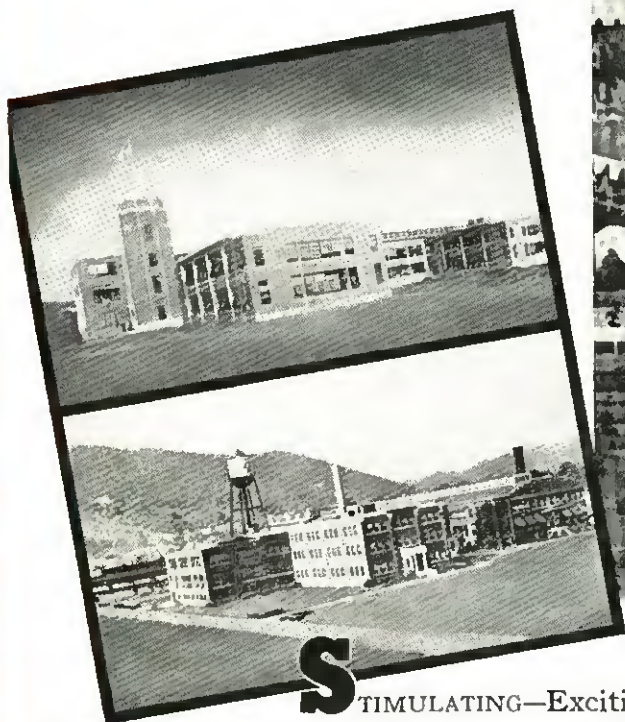


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S Y L V A N I A

SET-TESTED



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