

RADIO TODAY



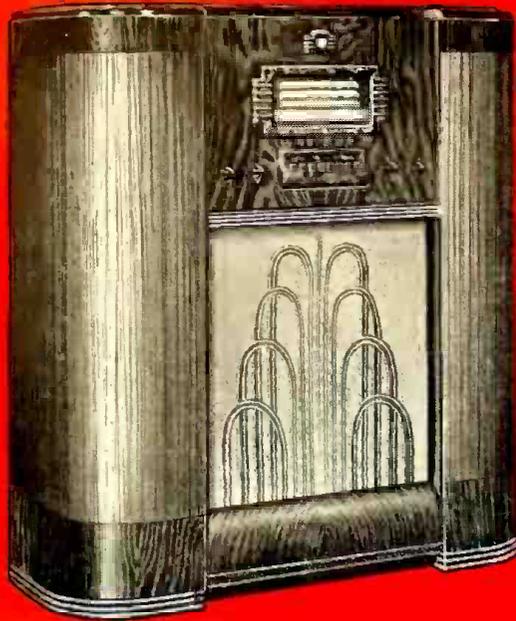
All About the New "Remote Controls"

Scoop! "Mystery Control" circuits in this issue

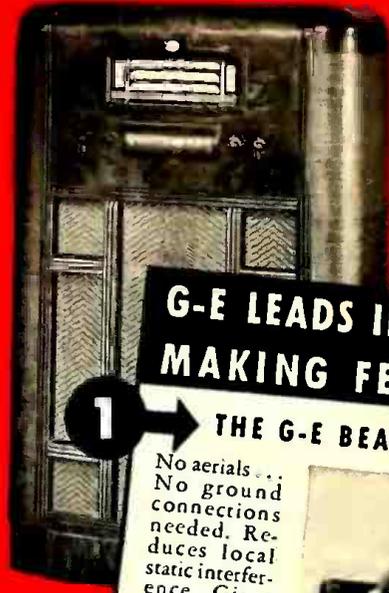
How the new wireless controls work

OCTOBER
with "Selling Sound"

*Engineered FOR PERFORMANCE!
 Styled FOR LEADERSHIP!
 Priced FOR ACTION!*



MODEL G-76



MODEL G-99

**Introducing Two Great New G-E Radios
 for the Biggest Selling Season of the Year**

The two new G-E Radio models presented here will help you cash in on extra Fall, Winter and Christmas business. They bring the amazing G-E features . . . the exclusive built-in Beam-a-scope and Keyboard Touch Tuning . . . into new big-volume price brackets . . . These and all other G-E Radio models are sensational in features, styling and prices. They carry discounts that spell big-profit opportunity. They are backed by a tremendous barrage of General Electric 4-color advertising in ten leading magazines . . . in pages and double pages . . . that will reach more than 33,000,000 readers plus a great newspaper campaign in the leading markets of the country. Get in touch with your G-E distributor NOW . . . and

tie in with this great selling drive, starting this month. It pays to line up with G-E Radio. *General Electric means business!*

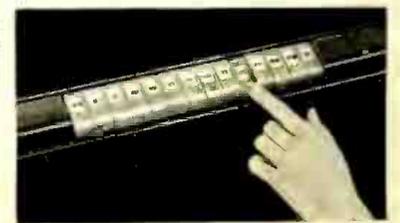
**G-E LEADS IN SALES-
 MAKING FEATURES**

1 THE G-E BEAM-A-SCOPE

No aerials . . . No ground connections needed. Reduces local static interference. Gives quieter, finer reception, especially in noisy areas. It makes the new G-E one radio that does not need to be anchored in one fixed location. It operates in any spot, in any room. Just plug it in like a floor lamp . . . anywhere.



2 G-E KEYBOARD TOUCH TUNING



Utterly new! A tremendous advance in automatic tuning. Lightning fast! Your program at the touch of a key. Easier tuning. More accurate tuning. A great demonstration feature that will clinch extra sales for you.

3 G-E TIME TUNING



At last a radio that tunes itself for 24 hours ahead. Pick out the programs you want to hear on five different stations . . . and the G-E Automatic Program Pre-Selector brings them in without your doing another blessed thing. No re-tuning. No re-dialing. From now it's Time Tuning!

GENERAL  ELECTRIC



RADIO

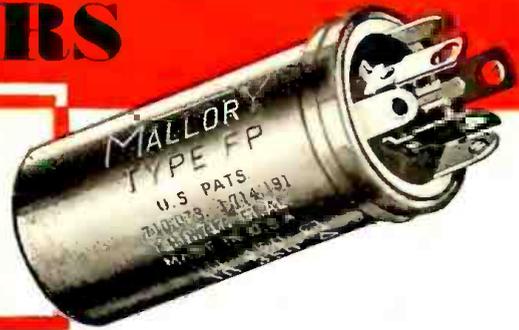
For the FIRST TIME in the Industry

Completely Standardized

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

***FP CONDENSERS**

New, Compact Trouble-Free Units Having Exceptional Range of Application



Specified for original equipment by leading radio manufacturers, new Mallory FP Condensers are now available to radio service engineers, amateurs and experimenters. They are ideal for construction purposes and for all service applications where the special characteristics of these new condensers are of vital importance.

Two years of research and intensive development by Mallory engineers have gone into the final perfection of these revolutionary Fabricated Plate Condensers. A minimum ratio of 10 to 1 accomplished without acid etching provides extremely small sizes without squeezing, or sacrificing any of their excellent electrical characteristics.

Again Mallory provides revolutionary features.

1. Small size without a sacrifice of safety or efficiency.
2. Low R. F. Impedance. Quieter operation of vibrator powered sets.
3. Long life due to chemical purity and freedom from corrosion.
4. Surge proof construction obtained through new separator materials.
5. Better filtering efficiency.
6. Permanent identification of condenser ratings.
7. Improved performance for battery sets with minimized battery drain.
8. Improved sealing against unusual humidity or heat.



TYPE BB

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

Fabricated Plate Tubular Condensers

New Mallory Type IFB Condensers, with exclusive Fabricated Plate construction offer in a "tubular" all the typical advantages of the Mallory FP Condenser. Made with a one piece drawn aluminum can and covered with heavy, deeply embossed cardboard tube for rating identification. Equipped with heavy leads . . . no thin foil tabs.

YOUR DISTRIBUTOR HAS COMPLETE INFORMATION ON THESE TWO AMAZING NEW CONDENSERS. SEE HIM TODAY.

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

P. R. MALLORY & CO., Inc.
 INDIANAPOLIS INDIANA
 CABLE ADDRESS—PELMALLO

Use
YAXLEY
 REPLACEMENT
 VOLUME CONTROLS

RADIO TODAY, October, 1938, Vol. IV, No. 10, published monthly by Caldwell-Clements, Inc., 480 Lexington Ave., New York, N. Y. Subscription price U. S. and Latin American countries: \$1.00 for 2 years. Canada: \$1.25 for 2 years. All other countries \$2.00 for 2 years; single copy, 15c. Entered as second-class matter July 24, 1936, at the post office at New York, N. Y., under the Act of March 3, 1879. Printed in U.S.A. Member of A. B. C. Copyright 1938 by Caldwell-Clements, Inc.

You're Invited

... TO JOIN
SALES

FEATURING
A

\$40 TRADE **40TH** ANNIVERSARY
IN ON THIS **RCA VICTROLA!**

\$40.00 TRADE-IN

We told our factory, our designers, our engineers: "We want the best value that has ever been created—something special—to celebrate the 40th Anniversary of RCA Victor!" And that's why you can offer this amazing new instrument to your prospects with a \$40.00 trade-in on their old radio or phonograph, regardless of make or condition!

\$5,000.00 OLDEST VICTROLA CONTEST

This is a contest in which both you and your customers can win prizes. There will be 20 first prizes of \$250 apiece. These awards will be given to the public in exchange for the oldest Victrola made in each of the 20 years from 1906 through 1925 inclusive. Contestants will be required to secure entry blanks in your store. If one of the winners gets his entry blank from you, you win \$250 in merchandise.

3-WAY COMBINATION SALE BETTER THAN EVER!

With this popular, profitable RCA Victor Combination Offer, which enables you to sell Model 97KG, Victrola Attachment and Victor Record Society membership at a special bargain price, you may now offer the new RCA Victor 40th Anniversary Album of Victor's Records, worth \$10.50. It contains recordings by 11 of Victor's outstanding artists. Or your customers may have their choice of \$9 worth of Victor or Bluebird Records.

GET FULL DETAILS ON
40th ANNIVERSARY
SALES CELEBRATION
FROM YOUR RCA
VICTOR DISTRIBUTOR

RCA presents the Magic Key every Sunday
2 to 3 P. M., E. S. T., on NBC Blue Network
For finer radio performance—RCA Victor Radio



RCA Victrola

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

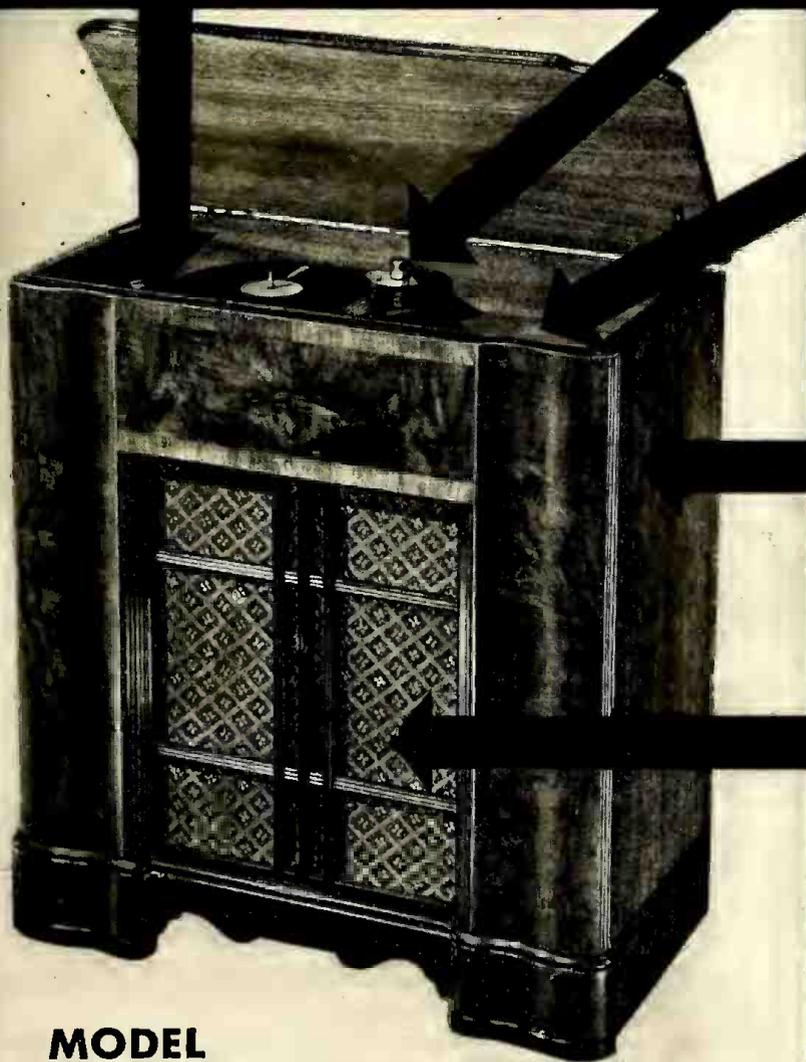
RCA Victor's 40TH ANNIVERSARY CELEBRATION

AUTOMATIC RECORD CHANGER

A marvel of gentle yet positive action. Although used on the most expensive Victrolas, this same mechanism is a feature of this 40th Anniversary model!

CRYSTAL PICKUP, TOP-LOADING NEEDLE SOCKET

Crystal Pickup offers extended musical range. Top-loading Needle Socket provides jiffy changing of needles—without pricked fingers!



MODEL

U-125

A remarkable instrument of outstanding quality—offering unheard-of value to prospects and untold profit opportunities to RCA Victor dealers!

IMPROVED ELECTRIC TUNING

RCA Victor introduced to the world Electric Tuning . . . "Push a Button—There's Your Station!" Again RCA Victor leads with a finer, faster version of this famous feature.

CABINET OF EXQUISITE DESIGN

Available in either Walnut or Mahogany. For forty years, the products of RCA Victor's cabinet factory have been known as the finest in the industry—*heavier, finer, more expertly fashioned.*

12" DYNAMIC SPEAKER

Especially designed to faithfully reproduce radio and recorded music of this 40th Anniversary instrument. Delicately responsive to every shading in the music and each inflection of the human voice.

"RCA ALL THE WAY"

An instrument made by the makers of Victor Records, radio and broadcasting equipment, and producers of fine radio programs (NBC).

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FROM YOUR RCA
VICTOR DISTRIBUTOR



RCA Victrola

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

... TO JOIN RCA Victor's 40TH ANNIVERSARY SALES CELEBRATION

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MODEL
U-125

A remarkable instrument of outstanding quality—offering unheard-of value to prospectors and untold profit opportunities to RCA Victor dealers!

SALES BUILDERS with the ACCENT ON YOU!

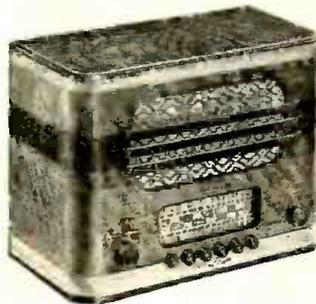


Your major concern in selling radios, is to make a profit. Profit depends largely upon the product you select and the localized promotional activity behind it.

So Westinghouse has designed a line of radios that look and are VALUES . . . and packed them with features easy to talk about, demonstrate and sell! Backing this quality radio line is a merchandising program expressly planned for *your local use* . . .

Twenty cooperative newspaper advertisements establish you as Westinghouse Radio Headquarters! There are publicity articles, radio shorts, 2-color selling book, colorful floor and window displays, consumer folder and other profit-building helps. This business-getting program is building profitable sales for dealers every day. Call your local Westinghouse Representative for complete details.

Don't miss this one!



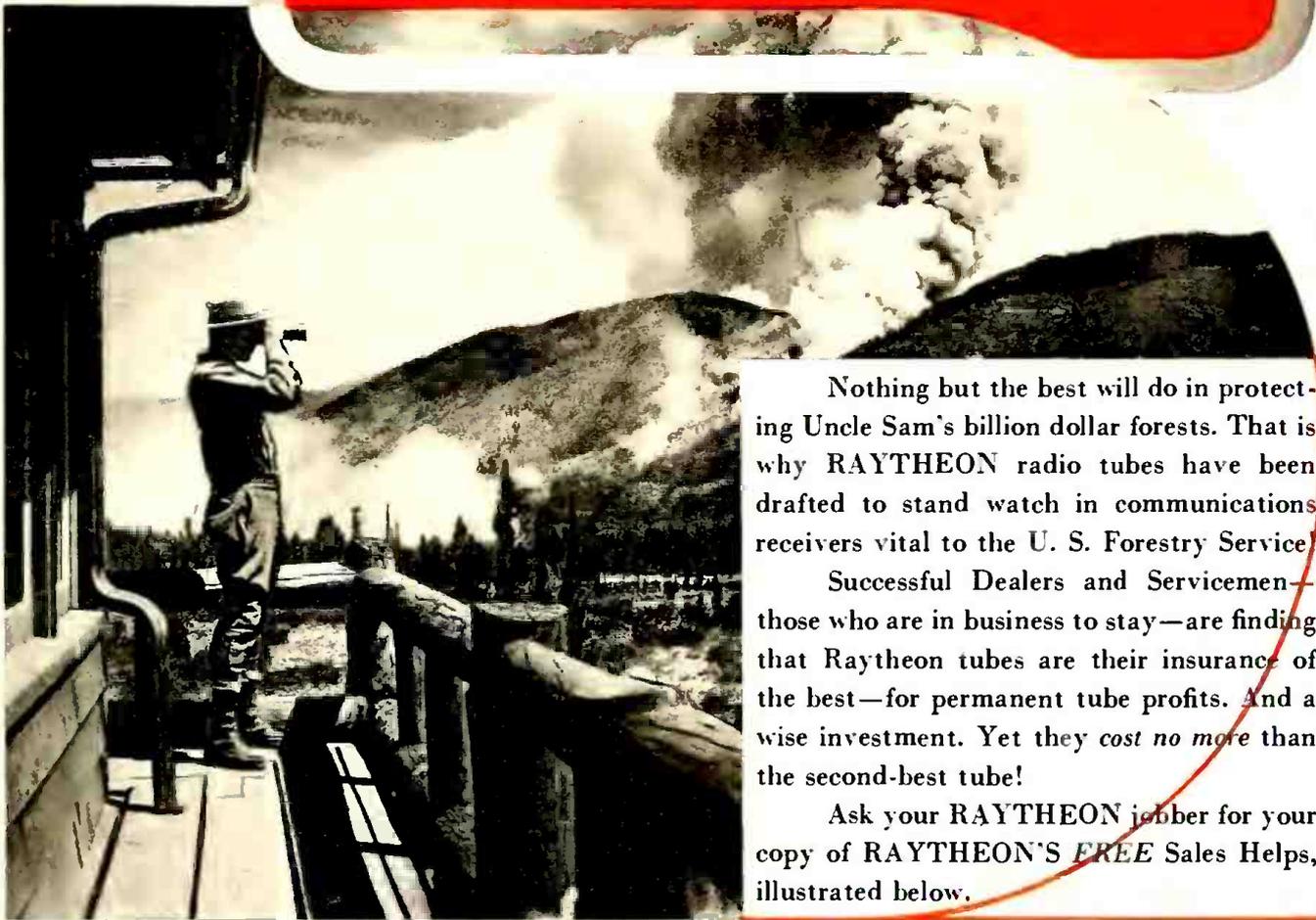
Above—Model WR-158 for AC-DC operation. Model WR-258 same as above, for AC only.
Right—Console Model WR-368.



Merchandise Headquarters—Westinghouse Radio—150 Varick Street, New York, N.Y.

Westinghouse Precision RADIO

RAYTHEON RADIO TUBES
FIGHT FIRE
WITH THE
U. S. FORESTRY SERVICE!



Nothing but the best will do in protecting Uncle Sam's billion dollar forests. That is why RAYTHEON radio tubes have been drafted to stand watch in communications receivers vital to the U. S. Forestry Service!

Successful Dealers and Servicemen—those who are in business to stay—are finding that Raytheon tubes are their insurance of the best—for permanent tube profits. And a wise investment. Yet they *cost no more* than the second-best tube!

Ask your RAYTHEON jobber for your copy of RAYTHEON'S *FREE* Sales Helps, illustrated below.

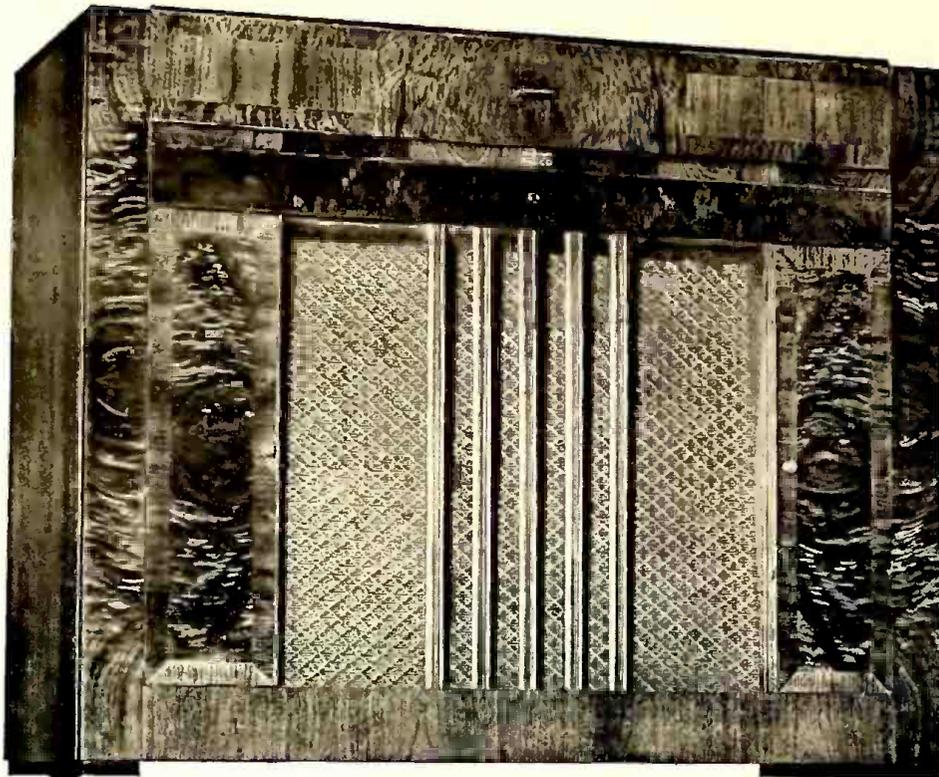
RAYTHEON

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

"WORLD'S



LARGEST EXCLUSIVE RADIO TUBE MANUFACTURERS"



Exquisite new Spinet style console of rare-grained walnut gives this PHONOGRAPH WITH PHILCO instant sales appeal to the quality market.

The Last Word in Combinations
PHONOGRAPH WITH PHILCO

MODEL 116 PCX

WITH *Mystery Control*

With *Capehart Automatic Record Changer*

Like a salesman's dream come true, this PHONOGRAPH WITH PHILCO 116PCX combines every quality feature in one instrument. The famous PHILCO "116" radio plus CAPEHART Automatic Record Changer . . . plus PHILCO Mystery Control . . . and in the new Spinet type console that sets the style for 1939 combinations! Demonstration of the 116PCX is the sure way to capture the quality market . . . and greater profits!



(Below) Top Lid of 116PCX Lifted to Show Instrument Panel and Record Changer



New 1939 Model 116PCX — \$395*
Complete with Mystery Control

*Price slightly higher in the West

See Your PHILCO Distributor

**Fill Your Pockets by
Filling Sockets with**

PHILCO TUBES

Here's what one of the country's leading radio dealers says about Philco Tube sales:

"I consider replacement tube sales the 'bread-and-butter' of my business, because they bring me sure, steady, day in and day out profits. Furthermore, I concentrate on *Philco* tubes, because I find that the prestige and public acceptance of the name *Philco* makes them the easiest tubes in the world to sell."

Don't neglect the year 'round, profitable tube replacement business! Cash-in on *Philco's* overwhelming popularity . . . and fill your pockets by filling sockets with **PHILCO TUBES!**



The Easiest Tubes in the World to Sell



HARRY BOYD BROWN
National Merchandising
Manager of Philco

First Returns—As We Go To Press— On Public Response To Philco Mystery Control

AT this moment—in local newspapers throughout America—Philco dealers are making their first announcements of Philco Mystery Control to the public. By the time this publication reaches you, the actual results of this advertising will be a matter of history.

But even now—as I write this editorial—early exhibits and demonstrations of Mystery Control already have created an amazing wave of public interest, excitement and response. Now the retail buying public will get the thrill that you folks in the trade got 4 months ago.

As this paper goes to press—it is too early for me to give you any figures on the newspaper advertising results. However, here are some exciting advance experiences in public reaction to Mystery Control—the result of demonstrations at Fairs and Expositions early in September.

“The management of the Washington County Fair at Hoosick Falls, New York, requested Mystery Control as one of the acts of the big vaudeville show at the Fair Grounds,” writes William J. Rouditis of the Hoosick Radio Service, *“and Mystery Control was the sensation of the show. After the demonstration, it seemed to me that the entire crowd in the grandstand swarmed over to our Philco booth.”*

A Sanford, Maine dealer sold 12 Mystery Control models during a 3-day demonstration at a County Fair. More than 100,000 people witnessed a demonstration of Philco Mystery Control at the New York State Fair in Syracuse. Every Philco dealer was entirely sold out of Mystery Control models within 24 hours and back orders were piling up.

Philco Mystery Control stopped the show at the Elgin Merchants and Manufacturers Exposition in Elgin, Illinois, last week. It was exhibited and demonstrated by the Kimball Furniture and Rug Corporation of Elgin. And here is what Mr. D. C. Williams of the Kimball Store writes us:

“Without asking one single person to buy, 18 people left their names and addresses and asked us to deliver a Philco Mystery Control model to their home. In addition, over 100 people left their names and addresses with the request that we come to their home and appraise their old radios.”

“In my 17 years of selling radios, it is the first time I have ever had the thrill of such an experience—18 bona fide customers plus 100 golden prospects with hardly a word of selling pressure on the part of our salesmen.”

Yes, in Philco Mystery Control the retail radio dealer has a traffic-getter without parallel in the radio industry—an advertising attraction so new and so revolutionary it will pack your store with truly interested prospects.

Harry Boyd Brown

PHILCO

Staff—

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

M. E. HERRING
Sales Manager

R. Y. FITZPATRICK
201 N. Wells, Chicago, Ill.

RADIO TODAY

MEMBER AUDIT BUREAU OF CIRCULATIONS

ORESTES H. CALDWELL
Editor
M. CLEMENTS
Publisher

Vol. IV, No. 10
Copyright 1938

CALDWELL-CLEMENTS, INC.
Tel. PLAZA 3-1340
480 Lexington Ave.
New York, N. Y.

A FALL WITH A FILLIP

For radio, the season is to have snap.

Pre-holiday buying has begun, general war has been averted, strikes have been settled, the World Series helped, and the broadcasters have started a terrific breed of winter entertainment. The football broadcast season is likewise under way.

September gave the radio business a brisk boost, during the war scare in Europe, by establishing itself as a dramatic No. 1 source of news. People sat around by the hundred, nudging their radios for more reports from abroad. Many were finally convinced that a good receiver deserves the center-spot in streamlined life; many extra persons began to feel the importance of consistent listening.

INKLING ON INVENTORIES

Those who have access to the weekly figures on receiver production and stocks, conducted among certain co-operating radio manufacturers, report that while inventories as a whole are in good shape, the number of consoles on hand in stockrooms of manufacturers and wholesalers is accumulating at a rate which is causing some concern. Advent of the holiday buying season is expected to help correct this situation.

Condition of stocks in retail outlets classified as "radio, electrical and gas household appliances" is shown in Dun & Bradstreet's recent check-up among 354 concerns. During the first six months of 1938, inventories here decreased by 4.4 per cent. During the years 1936 and 1937, the increase had been 57.5 per cent, in this same group. It was found that in 56.5 per cent of the stores, this year, a decrease in inventory had taken place.

Among the manufacturers of radios, with which are grouped the makers of appliances and electrical tools, the 6-month inventory drop was

3.2 per cent, while during the last two years the increase had been 69.2 per cent.

SEE 6,000,000 SETS FOR 1938

With general business recovery reflected in the sales of radios and particularly in the demand for small sets, students of industry statistics now predict sales of at least 6,000,000 radios during 1938. This will be a 25 per cent drop below the 8,000,000 figures for 1937, but represents a better showing than had been expected earlier in the year.

While the year started out about 50 per cent off, there has been a gain in the rate of set production, though the dollar total will probably remain around the half-way level.

Already radio suppliers report that their present sales to set manufacturers approximate those of last year

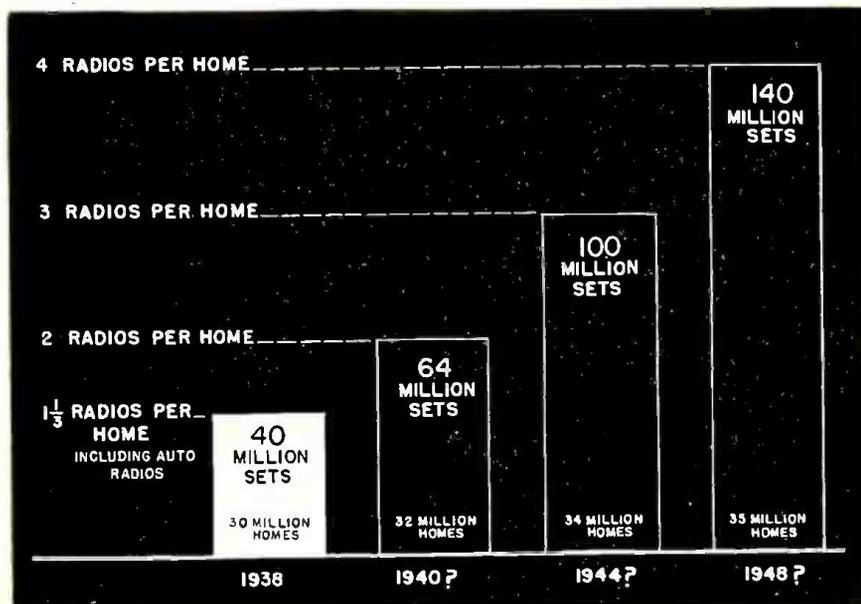
at this season. In the case of the smaller AC-DC sets, production seems to be actually exceeding last year, bringing the expected total up to 6,000,000 sets of all classes for the 1938 twelve months.

THANK YOUR LUCKY

Whatever you say about the American radio system, it is still bravely and splendidly free. Radio is loose from the government, responsible for its own health and enterprise. This appears to be a happy practice, when you notice what's going on in license-laden Europe.

In Great Britain, you have to be blind to be able to listen to the radio without paying for a license. (England has extended this courtesy to 50,000 blind persons—willingly, we hope.) Otherwise the listeners are encouraged to pay and to pay promptly.

TWO TO FOUR RADIOS PER HOME, AND 15-MILLION-SET YEARS!



Discussing radio's future, an article presented on a following page, predicts "three to six sets per home" and possible 15-million-set years. Above chart shows national totals resulting from such extra sets per home; also years required, at 15 million sets per year, to build such intensity of radio convenience.

ly; there's a stiff fine if they don't. And recently in London, radio sets have been abruptly confiscated for failure to get the license.

Extent of the license racket: Germany 9,514,000, Great Britain 8,650,000, and France 4,500,000. It's to be supposed that Benito is doing pretty well, too.

DEALERS GO TO COLLEGE

Radio has become profitably interested in the college market. The facts are that there are approximately 650 universities and colleges in the country, with 1,350,000 students enrolled in them. Most persons who can afford to go to college can afford to buy a table model radio, if the color and the style suit.

As for the matter of color, it is now convenient for dealers to order the exact color combinations appropriate for their particular localities. Some colleges use a single color; some use three. The most popular combination is blue and white; there are 47 universities which use this pair. Some of the main ones are Brigham Young, Buffalo, Connecticut State, Creighton, Drake, Dubuque, Duke, Elmhurst, Howard, New Hampshire State, Notre Dame (Md.), Pennsylvania State, Pomona, Teachers College (Columbia), Utah State Agricultural, Villanova, Washburn, and Washington & Lee.

Between now and December, while the major collegiate football clashes



Into Ketchikan, Alaska, radio shipments now come by airplane. Here's a plane-load of Zeniths for Ketchikan's Service Electric Company, being received for by George Beck, while airways officials look on.

are being held, is an excellent promotion period for dealers. These prospects like their sports broadcasts. Also it will be found that the collegiates are always interested in dance music. Many of the most eager "jitterbugs" are to be found on the U. S. campus.

PRACTICALLY 6 MILLION PIANOS

They tell the story about a newspaper notice which ran like this: "For sale—a piano by a divorcee with mahogany legs."

Anyway, it is true that most pianos are outmoded. The National Piano

Manufacturers' Association recently took a census and found that the average age of pianos now in use is 18 years. And about 10% are over 30 years old.

The census also revealed that there are 5,865,296 instruments now active in U. S. homes. In the higher income brackets the ownership runs 53.4%, and in homes with children, 56% have pianos.

The Association points out that nearly 800,000 families are thinking about buying a piano. Radio men are hoping that a good part of these will use radio tubes in one form or other.

INSTALMENT SALES

An interesting trend in instalment sales has been revealed by A. E. Duncan, of Commercial Credit Co., who has been studying the relation of retail credit to general prosperity.

Figures estimated by the U. S. Bureau of Foreign and Domestic Commerce are quoted to show what per cent of all retail sales are made on time:

1937	12.2%
1936	11.8%
1935	10.9%
1929	13.0%

Mr. Duncan also declares that "a 40 per cent drop in all retail sales, during a depression, based on 1937 figures, means a drop of 4.88 per cent on all instalment sales; but it would also mean a drop of 35.12 per cent in retail sales made for cash or on open credit."

The conclusion in that, "the drop in volume of sales for cash or open credit, and not the drop in instalment sales, causes and prolongs a business depression."



David Sarnoff, just back from Europe in time for RCA-Victor's 40th Anniversary Celebration, reports that television abroad has nothing in advance of television in the U.S.A. Here "DS" is showing a guest RCA's newest projection-television equipment, for large-screen pictures.

"INCLUDING BALLAST TUBE" ON PAN

The National Better Business Bureau, Chrysler Building, New York City, has just addressed a letter to 28 radio receiver manufacturers regarding the use of such receiver descriptions as:

"6 tubes (including one ballast tube)."

George L. Burkle of the Bureau points out that since, by R.M.A. definition, a ballast unit cannot be correctly defined as a "tube," such a description as above is misleading. The Bureau has asked for R.M.A. action in this situation, threatening to put the issue before the Federal Trade Commission, and has received the support of individual manufacturers in agreeing to desist.

DON'T WORRY ABOUT THE COVER

Except from the prowling eyes of readers, the blonde article on the front cover of this issue is quite safe. It's true that she's surrounded by water, worse luck, and that she's fiddling with an electrical device. Electrical appliances are usually considered hazardous to touch in a bathtub. But the Philco "mystery control" is a device that can't shock anybody, wet or dry.

You can be sure that RADIO TODAY's girl friend is being treated properly. She doesn't even have to do her own bath-tub singing. She can dial the radio in the next room until she gets just the right tune.

And if you like the gal-in-the-bath-tub idea, maybe next month we'll put the control box on a high shelf.

KEEP AFTER NEW CUSTOMERS

Speaking before the Philadelphia Radio Servicemen's Association in June, Harry P. Bridge, advertising counsellor for International Resistance Company and several other radio component manufacturers, urged that servicemen consistently spend not less than 5 per cent of their gross receipts for some form of advertising.

"Five per cent should be a minimum for promotional activities," said Mr. Bridge. "As a matter of fact, the smaller you are, the greater your need for additional customers, the more you ought to be spending.

"Up to the present, all of the emphasis seems to have gone to the technical side of servicing. That is basic. No one will deny its importance. The



GE's big guns of merchandising broadcast a sales message to their distributing organization. From left, Ralph Cordiner, Chester Lang, and Carl Snyder, with exec-vp. C. E. Wilson at mike.

thing to remember, however, is that the best technician in the world may still be a complete flop if he is not a good businessman to boot.

"There is an axiom in retail merchandising that ought to hold just as true of servicemen as it does of any store. This is to the effect that a business *must* contact its own weight in new customers every year if it is to show continued growth. In other words, a serviceman who has, say, 250 old customers, must contact at least 250 new ones every year. In no other way is it possible to replace the old ones who die, move away their trade

elsewhere—and show a substantial profit besides."

Stating that no other trade is so richly endowed with free or semi-free promotional materials available from manufacturers, Mr. Bridge urged servicemen to make the fullest possible use of them, supplementing material of this sort with their own original ideas, in order to maintain a point of difference between themselves and competition.

RADIO TODAY'S COAST-TO-COAST BROADCASTS

on

"How to Get Better Radio Reception"

NBC Blue Network, Thurs., Oct. 20
11:05 p.m. E.S.T.—10:05 p.m. C.S.T.

NBC Red Network, Mon., Oct. 24
11 p.m. E.S.T.—10 p.m. C.S.T.

By Dr. Orestes H. Caldwell

Editor of RADIO TODAY
Former Federal Radio Commissioner

These broadcasts are designed to help listeners put their receiving sets in 100 per cent condition for the fall programs, by means of (1) correct antennas, (2) fresh tubes, (3) replacement of faulty parts, and (4) elimination of interference. Listeners will be advised to call in their local radio man.

Tune In on these Broadcasts, and Tie in Your Own Service and Replacement selling with this Nationwide Campaign for Better Radio Reception.



Vice-president Sherman R. Hoyt of Cinaudagraph Corp. is now general manager of the firm.

NEW MAGIC TO SELL

Wireless remote control for radio sets amazes buying public
Record-players without wires. Practical sales points dealers should know

Every line of business needs, from time to time, a "merchandising shock"—something *startlingly new* to arouse the interest and curiosity of the buying public, declares a famous authority on sales promotion.

Such merchandising shocks stimulate sales, it is reasoned, not only for the particular products and manufacturers directly involved in the new offering, but also for the whole trade and industry in any way connected with the new development.

On such a basis, everybody in radio should benefit this Fall from the dramatic onslaught of radio's new "remote controls."

Practical miracles

For two parallel "miracles" have hit the public's consciousness in the last few weeks. To wit:

1. *The ability to tune one's radio set from a distance, control its volume, etc., all without wires!*
2. *The operation of record-players having no direct connection with the radio-set and loud-speaker from which the sound issues.*

To the lay mind, these twin miracles are additional evidence of the practical resourcefulness and ingenuity of radio men. And already the public is buzzing with this new challenge to its curiosity—and pocket-book!



Radio alarm! Householders find dozens of uses for the electric clock-radio service performed by Kadette's Autime

Wives are asking husbands, "Have you seen that wonderful new radio set down at Bill's?" In dinner groups and evening bridge parties, people are talking about "the new phonographs that play through your radio, yet without any attachment to it!"

Store traffic builders

To sell these new remote-control radios—as with automatic combinations and other high-priced merchandise—a higher type of salesman is needed. Hence the radio dealer should see that he employs the kind of man capable of closing sales of sets in the higher figures.

Remote-controls and wireless record-players represent the greatest traffic-producers radio has had in years.

But it will not be enough merely to demonstrate the remote control in

the store by circus methods. After the show has been put on, and the crowd gotten interested, it is necessary for the salesman to single out his likely prospects and to talk with them later, away from the crowd, if he is to get purchase-orders on the dotted line. Otherwise the crowd that has attended the demonstration may break up, its curiosity satisfied, and the selling opportunity will be lost. But the capable salesman will know how to go after the better prospects in the group, and follow up his leads with personal selling until the contract is signed.

Points for salesmen

These new products have now reached the status of dependable merchandise, which can be sold by the radio dealer with confidence. They have already been subjected to exhaustive home and service tests, and are equipped to stand up reliably in operation.

They tremendously increase the convenience and pleasure of radio listening and home entertainment. They augment the usefulness of the home radio receiver. They offer new arguments for the radio salesman to use in building radio sales into higher price brackets.

The story of radio's new home magic is spreading like wildfire, among groups who have money to spend. And whether the particular new "miracle merchandise" itself meets with universal demand or not, certain it is that all this hoorah is arousing new interest in all radio! And all radio sales will benefit.

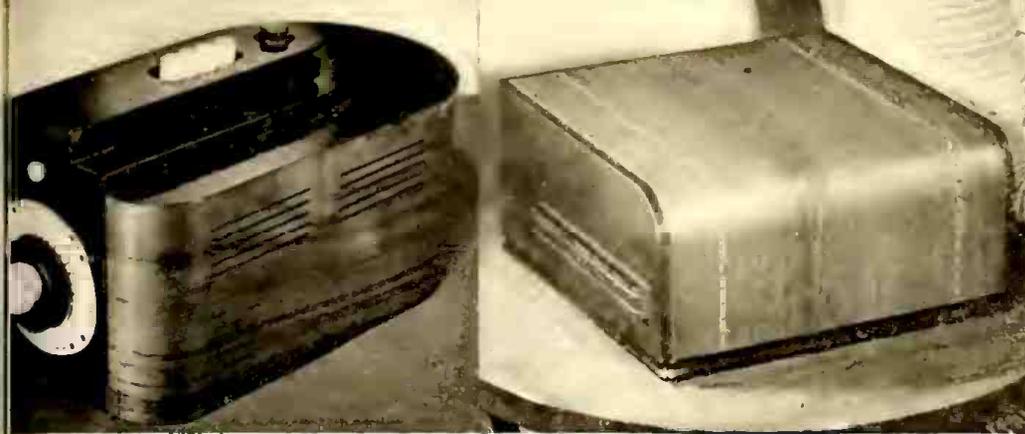
Types of remote tuning

With the extreme customer interest in remote-control devices, it is essential that the radio dealer be familiar with the various types of units that are offered and know what each one will do.

Basically there are only two types of remote control now in use. The



At left, dial your favorite program at the breakfast table. Philco "mystery control" picks broadcasts from the next room.



Kadette Tunemaster will get any B.C. station on any radio, and control volume.

Wilcox-Gay's wireless model A57 looks like this while playing record through radio



Admiral presents a wireless playback, streamlined, Model AR-10.

first is where the remote control box operates a tuning mechanism located in the radio set. Either wire or wireless circuits may be used. Examples of this type are the Philco mystery control (wireless); General Electric touch-tuning remote control (wire); and the Stromberg-Carlson remote control (wire). In all these types the tuning is performed at the radio set, by an automatic tuner, and the remote control device operates only when it is desired to change the station set-up.

The "converter" is the second type of remote control. In this type of device, which may be wired or wireless, the antenna signals are fed to the remote-control box, where they are converted to an intermediate frequency, usually in the broadcast band on an unused frequency. The radio set then picks up the signal from the converter. This type of remote-control device must operate as long as remote-control reception is desired, since the radio signal must pass through it.

Akin to the converter type of remote control, is the wireless type of record-player. This device takes its signals from the phonograph pick-up and broadcasts them to the radio set. In this way, any radio can be used with the phonograph unit, merely by tuning to the frequency of the phonograph oscillator.

"Wireless" vs. wire

Since the word "wireless" as now used in the trade, may have two meanings, the radio dealer should take pains to find out precisely how each device really operates. One form of wireless is "space radio" or induction, where no wire link whatever is used, since the signals are transmitted through space.

Then there is also what is known as the "carrier" type of wireless, or "guided radio." With this latter type

of transmission, separate connecting wires are not necessary, since the device sends its signals over wire circuits that are already installed. The regular house electric-light wiring most commonly serves for this purpose. Carrier systems, thus, can be operated from any point where it is possible to make a plug-in connection to the electric light circuit.

Finally, there is the familiar wired type of control, in which wires are used between the remote control and the radio set. In many receivers such remote controls are extensions of the push-button circuits already in the receiver.

Receiver controls

The Philco "mystery control" is a battery-operated remote control having no wire connections whatever, which sends out induction impulses to control the tuning device in the radio set. In operation it can be likened to the dial telephone which automatically selects the dialed number. However, instead of having connecting wires like the telephone, the mystery control operates by magnetic induction. The Philco device also can effect changes in volume from the remote-control box, as well as turn off the set.

In the G-E remote control, wire

connections are used. These receivers have motor-operated push-button tuning, and the remote-control device is an extension of six of the push-button stations. In addition to selecting the station, the G-E set will control the volume from the remote position. A motor on the volume control shaft performs this task.

Some of the Stromberg-Carlson and the less-expensive Philco receivers have a remote device which by wire controls a switch for selecting the proper pre-selected push-button stations. Both require a connecting cable to the radio set.

The Motorola "All-in-one" remote control tuning operates the motorized push-button tuning mechanism in the set for station selection. Also, the volume can be raised or lowered from the remote box. A connecting cable to the receiver is used.

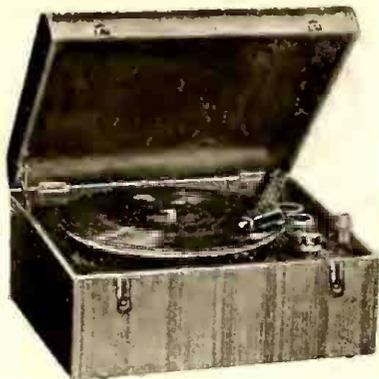
As optional equipment for its sets having electric-motor tuning, RCA has a remote-control box and connecting cable. In this way the push-button stations are operated remotely.

Converter types

Most recently announced is the new Kadette Tunemaster, which is a remote control operating on the converter principle. Device will operate with any radio set or special Kadette



At the right, Meissner control offers, from an easy chair, push buttons for seven stations, with volume control.



Sparton has just hit the market with this DeLuxe model 219-PD wireless phonograph, complete with mike, \$29.95.

receivers. The radio signals from the broadcasting stations are converted to a single frequency and transmitted locally to the radio set or sets. In addition to having push buttons, the Tunemaster has a variable condenser so that any station can be tuned in. Means for controlling volume is provided. Since the device must have power, there is a cord for connecting it to the electric light line. Aside from this connection there are no wires. The radio set is tuned to the frequency of the Tunemaster for remote control and left there.

A wired type of converter is Meissner's push-button remote control. This device is connected to the antenna and it converts the incoming signals to a single frequency, to which the

radio set is tuned. A connecting cable to the radio set is used to transfer the energy to the receiver. As with the Tunemaster, this device requires a connection to the electric power line. Remote volume control is incorporated in the device.

Time-tuning

In addition to remote tuning, some manufacturers are offering automatic station selection. In its simplest form, this is a clock-operated time-switch which turns the radio on and off at pre-set intervals. This type of radio is offered by Kadette under the name of "Autime."

A second type of automatically-timed tuning is offered by General Electric and Motorola. In these receivers, it is possible to set up in advance the operation of the radio for a full 24-hour period. Stations desired for each 15-minute period throughout the day and night are automatically tuned in at the appointed times. Any combination of stations and off periods may be selected. This "time tuning" is similar to push-button except, that a timing unit automatically causes the push-button mechanism to function.

Record players

In order to overcome the need for awkward connecting cables and wiring changes in radio receivers when adapting them for phonograph operation, several manufacturers have



Espey Mfg. Co.'s new wireless record-player comes in portable-style case.

developed a wireless type of phonograph attachment for use with any radio set. No wires to the radio set are required, thus simplifying installation. The signals from the phonograph record modulate an oscillator, and this oscillator transmits the signals to the radio set. In other words, the phonograph is a miniature broadcasting station, to which the radio set can be tuned. Devices of this type are manufactured by Wilcox-Gay, Sparton, Continental, Sonora and Espey. Naturally, a connection to the electric light line is required to supply power for the record-player element.

For several years RCA has had a phonograph oscillator device which may be used with any type of phonograph attachment and radio set with no wiring changes. The modulated oscillator is connected to the antenna circuit of the set, and the radio set amplifies the signals just as it does for a broadcasting station.

While only a few manufacturers are named in this article, there are rumors that before the season is over, numerous other companies will be offering remote control devices and record players of various types. As soon as they are announced, RADIO TODAY will have the information for its readers.

Complete technical description of the Mystery Control appears on pages 30-1 of this issue, presented exclusively as a detailed explanation of the device which marked the opening of a new trend. The circuits of this tuner are revealed for readers in special illustrative material.

MEMPHIS BC STUNT SELLS 750 RADIOS

A radio distributor in Memphis, Tenn., drummed up plenty of business for his dealers by going on local station WIBQ with a 30-minute pro-

At the left, the lazy hand tries the handsome remote tuner by GE. It's wired; neat keys marked with station letters.



gram, seven days weekly. The program was called "Stumpus Boys," the talent consisting of two pianists, who were also vocalists, and familiar with a wide variety of tunes, old and new.

WHBQ manager E. A. Alburty describes the campaign for RADIO TODAY:

"Listeners were invited to telephone their requests for any published tune that they wanted played and if the tune requested could not be played in whole or in part by the Stumpus Boys, then persons requesting these tunes would receive a prize. Four separate trunk lines were installed and four girls were employed to answer these phones. In addition, listeners were urged to enter the oldest radio contest by submitting the name of a person owning an old radio. Besides the daily prize given those who stumped the musicians, a weekly prize of two new (small) receiving sets were given to the person owning the oldest radio registered during the week, with a duplicate award to the person submitting the name of the winning contestant.

Picked prospects

"The telephone girls took down the name and address of the person calling, the tune requested and the age of the radio.

"Later in the day, this information was transcribed into a card file, duplications were weeded out and to every separate person entered, a merchandise check was mailed which was acceptable on the purchase of one of the new radios as advertised. Merchandise checks were redeemable at any retail dealer handling this make of radio and provided a discount of 20 per cent on a \$200 radio and was scaled down on the lower priced models to average 10 per cent on the purchase price.



One of the first phonographs of the wireless type—a smart player by Sonora.



Set it once and forget it—the "time-tuning" development by Motorola automatically offers any one of 6 stations during the entire day. On and off service, too.

"The result of the campaign showed that the distributor moved his entire stock of radios and had to reorder from the factory, selling a total of 750 units within the 30 days that the campaign ran. The actual sales reached a higher figure than this, for the retailer often made delivery from his floor stock and did not reorder from the distributor."

ASKS DAYTIME MUSICAL PROGRAMS

"I read RADIO TODAY with great interest," writes C. F. Rolf, Schenectady, N. Y., dealer, "and commend the article in your September issue on page 10, under the heading of 'Better Daytime Demonstration Programs Needed.'

"Present daytime programs are a sore disappointment to the radio dealers' salesmen and the radio industry as far as sales performance comparison goes. All day long, practically all the larger stations broad-

cast mostly about 'two teaspoonfuls sugar, and two cups of flour,' and so on, or otherwise we have to listen to some soap program of a similar nature. Such programs make you and me turn our radios off. We would much rather listen to traffic horns.

"RADIO TODAY could do the radio industry a great favor, by putting on some real worthwhile music that would appeal to the customers, and this would be greatly appreciated. When a customer comes in to compare the new model radios with his old one, he wants to compare the tone. We would like to show him the great improvement in the tone. However, we can very rarely do this without good music. With present daytime programs, there is very little that we can do to compare the tone and the full roundness of today's modern radio unless we attach a phonograph and play records on the set. But with good musical programs on the radio during shopping hours, the sales resistance would be cut."



RCA-Victor's 40th Anniversary Model Victrola U125 adds sales features to the phonograph-radio field, backed by unusual series of big promotions.

MOVING PHONO-RADIOS

Field tips on the combination business

At Trinity Talking Machine Co., New York, you can hear the story about the man who came in the store to buy a \$1 record, and went out with a \$1,000 Capelhart. It may have been because he asked to hear the record, and the salesman was alert enough to play it on a high-priced instrument, rather than a small record player.

The policy here is to let record buyers hear the discs on a combination—a model that they might buy, if they look like the type to be buying anything.

Multiple appeal

In straight demonstrations at Trinity, according to what Paul Sonnenthal says about them, the procedure is to play a record first, before demonstrating the radio. He says that if you'll select a favorite recording, the fidelity reproduction will likely put the prospect in a good frame of mind.

If he's used to radio static, the performance will suit him, right off.

Mr. Sonnenthal likes the combination business, thoroughly, because he declares that the record-buying traffic is a big asset to any store.

Further success

"We're suggesting combinations to all radio customers these days," reports Alfred C. Tuffery of Wurlitzer's. Records are played right and left for those who come in only for radios.

Drawn to a combination, prospects are asked what they'd like to hear. Usually they say, "Oh, play any old thing." This gives the salesman a chance to put on a record that is good, but catchy. The instrument is handsome; the tone perfect, the mood more quiet than the tempo of the radio demonstration. Mr. Tuffery tells them that there's nothing like it—"music you want, when you want it" after a

hard day's work. He has a tendency to sell relaxation, via good music, with his radio merchandise.

Not only that, this expert points out to his customers, there are many other advantages to having a record player in the home. They fit in with home movies, they have become a part of guest entertainment practice, and they give the owner a chance to play around with novelty recordings made by friends.

Another stunt used at the store is the weekly appearance of popular orchestra leaders, who come to the store in person and autograph records for the fans. These affairs get the benefit of build-ups in ads and in windows.

Musical headquarters

Assorted dealers declare that any store which goes heavy on combinations should make a point of keeping an appropriate series of musical books. To serve as reference lists for customers and salesmen alike, the volumes will include opera books, record catalogs, material on famous composers, books on the symphony, collections of musical reviews, etc.

These publications make impressive displays, and often represent a further source of income for the dealer. Also, they carry a wealth of ideas for direct mail promotion, and for display advertising.

WAX WORTH WATCHING

BUNNY BERIGAN and his orchestra playing Why Doesn't Somebody Tell Me These Things and When a Prince of a Fella Meets a Cinderella, both with VR by Jayne Dover—Victor 26055.

KAY KYSER and his orchestra playing For No Rhyme or Reason with VC by Ginny Simms and Harry Babbitt, and At Long Last Love, with VC by Ginny Simms—Brunswick 8209.

LARRY CLINTDN and his orchestra playing Summer Souvenirs, with VR by Bea Wain, and Zig Zag—Victor 26042.

COUNT BASIE and his orchestra playing Stop Beat-in' 'Round the Mulberry Bush and London Bridge Is Falling Down, both with VC by James Rushing—Decca 2004.

BING CROSBY, with John Scott Trotter and his orchestra, singing Mexicali Rose and Silver on the Sage—Decca 2001.

ROY SMECK and his Serenaders playing Tu-Li Tulip Time and I Used to Be Color Blind—Decca 2015.

EDDY DUCHIN and his orchestra playing My Heart Is Unemployed and How Long Can Love Keep Laughing, both with VC by Stanley Worth—Brunswick 8219.

JIMMY DORSEY and his orchestra playing The Yam, with VC by The Dorsey Trio, and Change Partners, with VC by Bob Eberle—Decca 2002.

HAL KEMP and his orchestra playing F. D. R. Jones, with VR by Hal Kemp and his Swing-a-Roosters, and My Heart Is Unemployed, with VR by Bob Allen—Victor 26038.

GRAY GORDON and his Tick Tock Rhythm orchestra playing Heigh-Ho the Merry O and For the First Time, with VR by Cliff Grass—Bluebird B7784.

ART SHAW and his orchestra playing Begin the Beguine and Indian Love Call, with VR by Tony Pastor and chorus—Bluebird B7746.

XMAS XTRA!

Gift items to sell

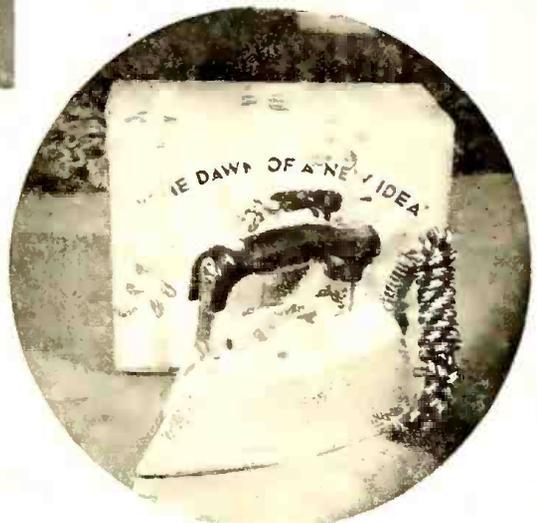
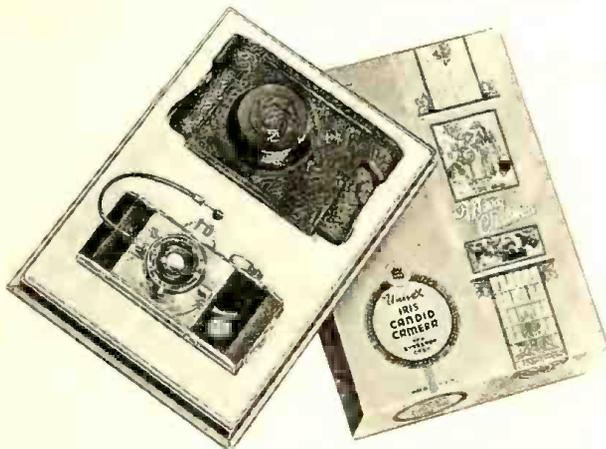
Directly at left, the electric blanket by GE with automatic adjustable control, convenient to movie star Marie Wilson of Warner Bros.

At left center, the new Iris candid camera by Univex, brightly packaged for Xmas, \$9.85.

Lower left, a deluxe Remington Rand noiseless portable; new, and likely-selling at \$69.50.

Lower right, a sure-fire appeal to youngsters, with Elkay's new Junior Executive Communicator. Two-station package is \$6.50 net.

Directly below, a holiday merchandising nifty for the Steem-Electric iron; list, \$12.95.



PROFITS AMONG FARMERS

Dealers go into action on new products

A batch of new developments in the farm radio field has awakened many dealers to the fact that there are fat profits still to be made in the promotion of farm sets, batteries, motors and wind chargers.

All major radio manufacturers are ready with receivers which use the new low-drain tube and offer dramatic sales features in the way of economical operation. The facts are that batteries for the set costing \$7 and lasting about a month in 1937, can now be bought for \$4 and will last over 6 months. This is what the new 1.4 tube has given the farm dealer as a sales asset, this season. And the battery manufacturers have been quick to feature appropriate batteries.

32-volt activity

Meanwhile, the makers of wind-electric equipment are having a good time with the 32-volt proposition. Due to the fact that farmers may run appliances and lights with this apparatus, the merchandise can be advertised, promoted and demonstrated with an extraordinarily dramatic effect. The appeal is wider and stronger than when only a radio was to accompany the generating equipment.

Many dealers are interested here because this kind of merchandise means higher-priced units and more profit. Also, sales of additional appliances are involved.

Motor market

Styles and prices of motor chargers have been smartly gauged for 1938-39 selling. These days, the motors come equipped with electric starting, power-take-offs for extra convenience, and portable features which are important to the farmer.

Further, one manufacturer points out that dealers will find additional prospects among cottages, cabins, camp trailers, boats, yachts, cruisers, tenders, contractors, oil fields, users of flood lights, trucks, buses, freight trailers, filling stations, stores, garages, etc.

Electric fences

The matter of electric fences, as a product which most farmers do not have but could profitably use, has settled safely into the hands of more skilful designers. Demonstrations of

the new devices in this field will prove to prospects that the element of danger has been removed.

One New Jersey manufacturer points out that there are not more than 175,000 electric fences in use, leaving a wide-open market among the 6,800,000 total farms in the country.

For all these products, the prospects are generally better in terms of all-over agricultural conditions. Events in Europe have had a favorable effect on wheat prices. And the folk on thousands of farms are just now making final plans for the season of winter-night listening.

WATCH YOUR MEN

Manager Berutio of the Ace Radio Co., St. Louis, Mo., says that the important thing in house-to-house work is the selection of the men to do it. Where a terrific sales campaign is launched as such, the accent may be unhappily based upon sheer volume, rather than on the long-time welfare of the store.

POWER FROM (COLD) WIND



Wide-eyed Eskimos watch a recent installation by Wincharger Corp. at Cape Dorset in Baffin Island.

Salesmen must be taught to depend on the store as a guidance center, and not just a place to report briefly on highly individual activity. This guidance should consist of an exchange of notes with other salesmen, a thorough understanding of store policy as it applies to daily selling problems, an appropriate plan as to what claims can be made for the merchandise, and a definite outline of what this particular store expects of its representatives in matters of rewards and promotions.

Otherwise, evils crop up. Salesmen may accept fees from several different stores; they may develop high-pressure methods which turn out to be unhealthy for the shop, or they may find it convenient to count only on a quick clean-up.

The dealer has to handle the sales personality so that it will be gently supervised, but not cramped.

SELL THEM IN THE STORE

The more times you can get prospects to consent to store demonstrations instead of home demonstrations, the more sure sales you will make, says Charles Deason, owner of Deason's Radio Service, 104 Navarro St., San Antonio, Texas.

Deason, who won second place in a national sales contest recently (Philco-Deason, out of 207 dealers in his area, was second with 64010 points) does all his own selling, and rings up a fine yearly sales total.

"I tell prospects that the radio they are hearing plays as well at the shop as in their home," says Deason, "and that if they want it, to take it home, on a \$10 down payment. Then if they want their money back within a few days, I'll give it to them. They don't even have to buy another set. No question asked. Deals made in this manner stick. When one of our sets goes into a home we see that everyone knows how the set operates, and we tell everyone just what the set will do.

"The man who is willing to part with a \$10 bill to take a radio into his home, usually will keep the radio, and he'll test the set out thoroughly in our shop before he decides to lay out his ten-spot and take the set home. In this way, we sell him better."

To make extra sales, Deason contacts all regular customers and learns from them the names of friends who may want sets. He also visits all business friends, spends lots of time with them, and gets tips here on who to see to make sales on new sets.



MR. DEALER:

At Last —YOU CAN GET THE SAME MAXIMUM DISCOUNT AND EXCLUSIVE SALES FOR YOUR CITY ENJOYED BY AMERICA'S BIGGEST DEALERS—ON THE WORLD'S FINEST CUSTOM-BUILT RADIO.

McMurdo Silver

President and Chief
Engineer
McMurdo Silver Corp.



The MASTERPIECE VI, in Clifton bass-reflex console pictured above, is one of 16 equally distinguished models. Optional in each are two chassis, the MASTERPIECE VI just awarded the GRAND PRIX at the Paris International Exposition in competition with the finest American and European radios, and the "15-17" which, used by the winner of an International Short-Wave Distance Contest, was declared "World's Champion."

Both chassis are triumphs of sound engineering rigorously avoiding short-lived "gadget-appeal." Every penny of cost goes into building the finest toned, most sensitive, most selective, and most beautiful radios the world has ever seen.

A PROVED AND PROFITABLE PLAN I offer you the exact selling plan and merchandise which are making money for the largest dealers in the country today. During the past year they have eliminated most of the well-known "headaches" of selling for these selected dealers. Coming through the acid test of the biggest, toughest markets with flying colors—McMurdo Silver radios "clicked" 100%—as they will click for you.

MAXIMUM JOBBER DISCOUNT Whether you order one sample or twenty, you get the absolute full discount. Dealing direct with the manufacturer gives you every penny of the largest profit margin in radio today—on every sale.

ONLY ONE DEALER TO EACH CITY Here is the sweetest part of the plan . . . no more throat-cutting competition . . . no more racketeering trade-in allowances, that steal your sales . . . For in your city and its suburbs, you are the *only* one who can sell McMurdo Silver radios.

CUSTOM-BUILT RADIOS Under this proved plan which guarantees full profit on every sale, you get the world's finest radios and combinations—each has the eye appeal of polished chromium, battleship construction, and is enclosed in distinctive cabinetry . . . placing it in a class no other maker touches. This is quality that makes your prospect forget price chiseling in the amazement of performance he did not believe could be built today.

LOCAL AND NATIONAL ADVERTISING We are now in the midst of a national advertising campaign that is pulling prospects from your very city. Every one will be turned over to you for sale. The biggest dealers in America are running McMurdo Silver ads in state-wide papers that create sales in your trading zone. We supply you with mats and money to run these identical ads, which enable you to dominate radio advertising in your city. Add to this, beautiful circulars for direct mail and give-aways, prospect-pulling store displays and direct mail letters tested and proved by the biggest dealers, and you are definitely equipped to do a real profit selling job.

NO MINIMUM REQUIREMENTS There isn't a single "but" in this plan—not a single restriction or demand. You prove the profits it will make for you by ordering one or as many samples as you select, and see how fast they sell. You don't even have to buy until you have sold them, if you don't want to!

MADE TO ORDER FOR YOU No dealer is too small—or too large—to get in on these profits. This tested and proved plan is the result of my 27 years of active work in radio. The past year of trial has proved it to be radio's greatest profit-guarantee plan. Now I am offering all this to you—every chassis carrying your name plate or your customer's name, as you prefer—and to you only for your city. You will immediately recognize it as the "horse sense" radio selling has long needed. I know you will act quickly to get it exclusively.

**McMURDO SILVER
CORPORATION**

CLIP THIS COUPON to YOUR LETTERHEAD and MAIL-NOW!

McMURDO SILVER CORPORATION
2902 South Michigan Avenue
Chicago, Illinois

Rush me full details of your "horse sense" plan to make money for me. My letterhead is attached. My normal territory which I want exclusively

is.....

SMALL RADIO—ITS RECORD AND PROMISE FOR THE FUTURE

Anticipating a twelve-to-fifteen million sets per year business

By BEN ABBAMS,
President, Emerson Radio and
Phonograph Corporation.

No one in the radio business, so far as I can recall, "ever made a dime" by going against the trends, the forces and facts of progress. Before enlarging upon this, as it applies to small radio, I want to state that I regard it as a tribute to the intelligence of the radio merchants of America that, as a group, they have been able to distinguish between sound business practices and the defeatism of selfish arguments in behalf of any one particular type of product, gadget or price range. They have learned in the hard school of experience that their success, the net profit of their operations, has been and always will be determined by their own ability to recognize public wants and buying capacities, by their sales of units in all price brackets and, finally, by the practical management of their affairs.

When any given type of product—in any general industry—accounts for from 60 to 70 per cent of the total number of units sold, it usually means that the buying public has asserted its preferences. This has been the unprecedented achievement of small radio.

Seven out of ten

From six to seven out of every ten home sets now being sold are small radios. I like to believe that Emerson's designing, styling, production and promotion have had some influ-

ence on this trend, but at the same time I recognize the fact that something more fundamental than manufacturing and promotional effort is responsible for the ever-increasing public demand for small sets and for the success of those dealers who see the handwriting on the wall and are conducting their operations accordingly.

That small radio should have assumed its huge relative proportions in the industry—that its development should have become an epic in the history of American business—that it served as a bulwark and protected and furthered the fortunes of the trade and rose to greater relative heights every single year during the worst depression ever experienced in this country—was a natural and inevitable consequence of its desirability, easy availability and manifold services to millions of people.

Big years

The radio dealers who have recognized the possibilities of small-set merchandising and who are featuring small radio as the chief motivating force in their sales promotion, do not need to be told about its almost endless uses in the retail scheme. But to engender a proper appreciation of small radio in the minds of those who have yet to realize its potentialities, let us discuss, for a moment, a few of the contributions it has made. Then we can get down to the case of its practical building aspects.

In the year of 1929, when prosperity

was at its peak, when radio was still regarded as a novel sensation—and most everybody had ample money to buy—the production of home sets reached an all-time high of approximately four million units. From 1929 on, while most other business was in a virtual state of collapse, the production of radio receivers increased in number until it reached the staggering total of approximately eight million sets in 1936 and again about eight million sets in 1937. What was responsible for that phenomenal growth against such overwhelming odds? Let there be no mistake about it—the chief factor was the advent, the development and the public demand for a type of set that gave hundreds of thousands of families full radio satisfaction at a price they could afford to pay in their reduced circumstances. Had the small set not been developed there can be no question that radio production, as it was geared at the time, would have been curtailed in some proportion to production in all other fields.

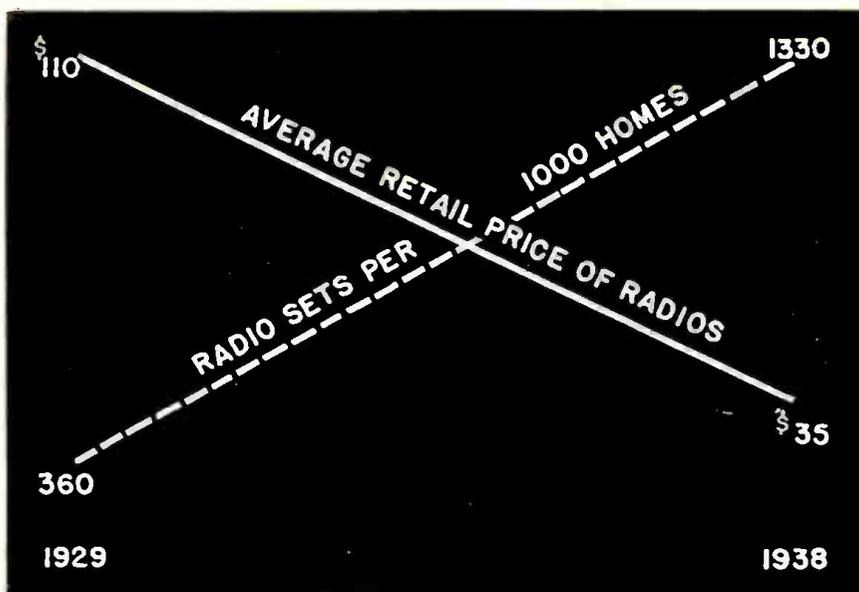
Not only did small radio play a major part in saving the industry, it is a matter of no mean record that because vast numbers of people bought small radios at a lower price, many thousands of people were kept at work who otherwise would have been forced into the ranks of the unemployed. Suppliers, radio workers, salesmen, dealers, service men were kept on the job. With millions of additional sets in homes, the broadcasting stations were able to reach greater audiences for their sponsors. That advertising had its effect and thus still more people were helped—and the march of progress continues.

All during this period, when the volume of Emerson's sales was consistently reflected in the industry's advance, my friends kept telling me that our growth was merely a product of the depression—that as soon as good times returned there would be a reversal of buying, and the small set would give way to the console. From the standpoint of increased buying power they may have been right, but they overlooked several important considerations which have always been the guiding lights and inspiration of the organization now producing the "World's Biggest Selling Little Radio."

Three to six sets per home!

We at Emerson, our distributors and dealers know today that small radio, when it is properly designed and constructively promoted, is one of the most vital forces working towards a continuing prosperity in the business and to greater earnings in the future. We envision an average of from three to six sets in American homes. We see

(Continued on page 22)



Note that as retail selling prices of radio sets have come down, the saturation of radios in American homes has risen at an even faster rate! Without small sets, it is doubtful such wide use of radio could ever have occurred.

Perfect?

... THEY'VE GOT TO BE!

HERE you see just a corner of a typical Sylvania testing laboratory. In this room, highly skilled experts check Sylvania tubes for quality—record life tests—check engineering standards.

And Sylvania quality is *not* based on "averages." Each individual tube must prove itself perfect—or be completely destroyed by the "crusher."

When you sell radio tubes, you can't afford to take chances with quality—*it means too much to your business!* Sell Sylvania's and you can be sure of satisfied customers, repeat sales. For Sylvania quality is always A-1—protected by precision manufacture . . . proved by scores of tests.

SYLVANIA

SET-TESTED RADIO TUBES

Hygrade Sylvania Corp., Emporium, Pa. Also makers of Hygrade Lamp Bulbs



SMALL RADIOS—THEIR FUTURE

(Continued from page 20)

them in offices, in schools, in hotels, in hospitals. We anticipate a total industry's production and sale of from twelve to fifteen million sets a year. We are realistic enough to believe that, regardless of financial status, when one console is purchased by a family that is usually the end of consoles in that home until it becomes obsolete—and it marks the beginning of additional small set purchases. Moreover, we see from actual surveys and dealer experience everywhere, countless people buying small sets as their first radios.

Here is one for the book. It has been proved beyond question that the radio dealers who do the biggest small-set business are almost invariably the dealers who do the biggest console and combination business. Do not believe for a moment that those dealers feature the small sets as "come-ons." With them, small radio stands on its own—and acts as an advertising and traffic stimulus for their store in the bargain. A case in point, out of many similar instances, was the experience of one of Emerson's Philadelphia dealers. Early this year, when we introduced our first \$9.95 model, the dealer mentioned ran a full-page ad on this and a \$29.95 Emerson set. More than two thousand sales were made as a result of that one insertion—and approximately one thousand of those sales were sets ranging from \$19.95 to \$100.00!

Reach all the market

As a matter of information the local and national newspaper and magazine advertising of the \$9.95 and \$14.95 Emerson products almost invariably includes other table models listing at higher prices. Regardless of opinions and statements to the contrary, it has been proved over and over again that the actual units-and-dollar volume which results from this advertising is on the side of the higher priced sets. The point which should always be borne in mind is that in this country of thirty million homes, most families have definite buying limitations and it should be the purpose of radio merchandising to reach ALL of the market. Small radio's place in this all-embracing aim is perfectly obvious.

I have always found it a refreshing experience to stop at the windows of radio stores to observe the interest of the man in the street. I believe everyone who has done this will agree that the showing of a variety of small sets in the range of styles which this type of set permits, invariably stops more people and excites far more comment than does any other merchandise. It attracts and interests more people, draws more people into stores, makes for a much more active form of merchandising and retail selling and, in itself, constitutes one of the best forms of store advertising. These are but a few of the reasons why radio dealers should give small radio more of a play in their windows and stores. A com-

parison of newspaper advertising and its results—and actual response experience—also proves these points. Every successful merchant we interview tells us most emphatically that in the absence of small radio he could not sustain his space costs.

Cost of retail selling

Suppose we look at small radio from another angle—the cost of doing business. One investigation after another proves the average cost of installment selling to be 38 per cent. Cash sales involve an average overhead of 20 per cent. How many consoles are sold for cash? More than half of small radios are sold for cash. Think of the sales work, the delivery costs, the installation of consoles and compare them with the over-the-counter method in small set merchandising.

Of course consoles will continue to be in demand and money will continue to be made on their sales. There are Emerson consoles and they range in price from \$69.95 to \$219.95. They constitute a profitable part of our business and the business of our distributors and dealers. But Emerson is following the trend. We have adapted our business to the need of the dealer for a greater variety of styles with a lower stock investment, for more rapid cash turnover, for inventory that is always worth one hundred cents on the dollar, for a twelve-months-per-year radio season, for "news" features which keep public interest alive, for merchandising policies which insure his protection, for

styling and performance and values which keep his advertising constantly alluring and his sales force forever enthusiastic.

The ultimate and inevitable questions in the dealer's mind are, "Can I make a profit on small radio? Will it pay me to advertise small sets? Would I not be better off if I featured gadgets—concentrated on higher priced units?" I believe I have answered these questions generally in the foregoing statements. But let us put it this way: Roughly speaking, if your overhead on a \$100 console is 38 per cent and 20 per cent on a \$25.00 small set (which is the average) and you sell three small sets to one console (as most dealers average), you may have a net profit of \$8 on the console and a net profit of \$15 on the three table models. I am speaking of actual net now—not the delusion of gross profits—and that is what your bookkeeping will show at the end of your fiscal year! My only suggestion here is that dealers in doubt figure the cold facts out for themselves and take all of the attending merchandising factors into account.

Service man's gain

One of the issues which the increasing demand for small sets has raised is its possible effect on the activities and earnings of service men. Because of the lower price of the small sets, will it be possible for the service man to make sufficient charges for repairs and replacements to sustain his business? I do not believe that any service man need be concerned about this, for the reason that while continuing his work on consoles he will be getting the additional calls which will come from the buyer of the small set—the two-three-and-more-sets-to-a-home families in his community. Whatever reduction in charges he may have to make will be far more than offset by the volume increase in the number of his calls.

There is also raised from time to time the question of what effect television sets might have on the sale of radio receivers. Because of the tremendous production, broadcasting cost and other problems involved, we are, of course, a long way off from a wide purchase and use of television. But if, and when it comes, I am persuaded that the small set will continue to hold its relative position in the home and institution, for the same reasons that apply in the comparison of small sets with the console.

As to the future and the retail opportunities and possibilities in the radio business, we at Emerson headquarters and, I am sure, all of our distributors and their dealers who, incidentally have virtually doubled last year's commitments to date, are looking forward with greater confidence than ever before.

But it is not the manufacturer, not the distributor and not the dealer who make radio a profitable business. It is the great general public. Theirs is the final word and it is up to all of us to manage our affairs in a way which will enable us to produce and sell the type of merchandise which, while giving us a reasonable profit, will encourage an ever widening support of our operations.



Ben Abrams, Emerson's president, who foresees the future with "three to six radios per home," and receiver production reaching 15 million sets yearly.

Mystifying! • Thrill-Packed!

A Money Maker for Dealers . . . A "Door Opener"
to Countless New Sales Opportunities

**Sensational New SPARTON
WIRELESS PHONOGRAPH**

NO
Wires
NO
CONNECTIONS
NECESSARY



**SPARTON
Microphone**

This high quality microphone is fully enclosed in metal case with attractive cloth grill reinforced by metal screen. Complete with approximately 5 ft. of cord and plug in tips.

**Additional
MICROPHONES**
\$5⁰⁰ each

(Price subject to change without notice)

Complete with Microphone . . . **\$24⁹⁵**

HERE'S multiple feature entertainment that packs more mystery and suspense than the famed Hindu rope trick. This miracle music box looks and works like an ordinary phonograph attachment but it works **WITHOUT ANY WIRE**. It churns the wax disc, either 10 or 12-inch, to serve up music and entertainment clear across the room, or from room within reasonable limits. Good results have been obtained in adjoining houses and across the street. It's an electric ventriloquist that makes a "stooge" out of radio.

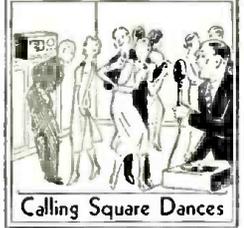
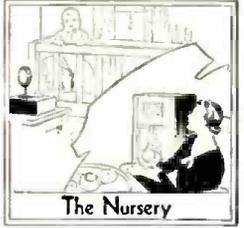
Just Plug It In

. . . to power outlet and snap the switch. Tune radio to the frequency of the oscillator tube in the phonograph unit and turn up the volume. Each unit is equipped with the SPARTON microphone, which makes all sorts of things possible.

Aside from its profit-making possibilities this new invention will make an excellent "door opener" to thousands of homes where obsolete radios await final discard when their owners discover the improvements in modern SPARTON receivers and radio phonographs. Be the first in your city to announce and demonstrate this newest radio miracle. A letter, postal card or wire will bring you the facts about the SPARTON WIRELESS PHONOGRAPH and the proven sales plan that goes with it.

THE SPARKS-WITHINGTON CO.

JACKSON, MICHIGAN, U. S. A.



LETTERS TO THE EDITOR

McMurdo Silver points to "big set" opportunities
Keene Jackson urges an end to piracy of designs

A CLEARING HOUSE FOR RADIO DESIGNS

Editor, RADIO TODAY:

I want to point out to you, as editor of a publication devoted to the best interests of the radio manufacturer, jobber and dealer, an opportunity for a service to the industry which I believe would be enthusiastically received by all worthwhile elements in the industry.

Suggesting a "Crusade" for someone else to carry on is like saying to a man—"Let's you and him fight." But this crusade should be carried on by someone or an organization indirectly connected with the radio business.

When a man steals your car or your money, you have a recourse to the law. But the theft, just as flagrant—the theft of ideas in radio design—of circuits—of manufacturing methods—goes unpunished.

No new idea conceived by a manufacturer is now safe from counterfeiting by price-cutting competition. Manufacturers who spend thousands of dollars in research, patents and designs are wide open to copyists and therefore cannot harvest the fruits of their efforts.

I believe RADIO TODAY can give an answer to this most important question now confronting the radio manufacturer.

You are in a position to set up a central clearing bureau, to which I believe reputable manufacturers could submit new set designs, circuits and ideas to be recorded and notarized. If pirated later, the manufacturer would have recourse to your published record, especially when the question of "Who produced what first" could be proven by your Bureau of Registration.

The moral pressure brought through your publicity of all registered ideas would bring on the transgressors unfavorable position throughout the trade.

If you want to undertake this Bureau of Registration of new radio ideas you can be sure that International Radio Corporation will welcome the opportunity to participate, and we predict that you will have very little difficulty in obtaining enthusiastic agreement of all the other manufacturers who abhor design piracy and have suffered from it.

W. KEENE JACKSON,
General Sales Manager.
International Radio Corporation,
Ann Arbor, Mich.

We think you have a splendid idea there, Mr. Jackson! RADIO TODAY will be delighted to offer its facilities to the radio industry, if the industry will make use of such a Bureau of Registration—and we think it will. Comments from other manufacturers and trade leaders will be welcomed.—Editor, RADIO TODAY.

NOW IS THE TIME TO INCREASE PROFITS THRU "BIG-SET" SALES!

Editor RADIO TODAY:

I have noticed with interest recent comments upon the lack of profit possible to the dealer concentrating upon the sale of \$10 and \$15 radios. In at least one case I have seen arithmetical demonstration of the certain loss which follows any attempt to profit from the sale of compact radios through sizeable expenditures to advertise such radios.

Possibly, going into my 28th year in radio, and never having produced a single radio in this low price range, I am at least fitted to add my voice to this discussion, yet the very objectivity which non-participation makes possible may make my views of interest.

In the main, all economic developments are the result of economic needs—and in the same pseudo-philosophic sense, all economic evils are self-corrective. Thus, if the radio dealer finds he can't make money selling any class of merchandise, he quits one way or another, and the evil, if evil it be, is self-corrected—sometimes rather painfully to the individual.

If consumers wouldn't buy \$10 and \$15 compacts, they would not be made and offered for sale. Their manufacture and sale proves their soundness economically—that they fill a specific demand. And the dealer who does not

GETS PARIS EXPO GRAND PRIX



This McMurdo Silver custom-built Masterpiece, with Clifton console, was awarded the grand prize at the Paris International Exposition of 1937, according to cables just reaching McMurdo Silver at Chicago.

offer what his customer asks for is foolish—exactly as is the dealer who would try to force all sales into a single groove. Either just can't be done successfully.

The essence of the question seems to me yet to be stated—admitting that cheap compacts have a logical market, the question is how is the dealer to confine these sales *only* to their logical market? How is he to prevent the loss of the large-profit sales which are absolutely essential to his continued existence? How, in brief, is he to prevent the prospect who can and should buy a good radio, from contenting himself with the purchase of nothing but a compact, producing little or no net profit to the dealer?

His job is one for which RADIO TODAY can profitably continue to seek the solution. The desirable solution is one of a nice balance of compact to big radio and combination sales—the condition wherein compact sales are held to their logical market of "second set," servant quarters, nursery, and very low income group sales where nothing more profitable to the dealer is possible.

How to determine when a more profitable sale is possible is not excessively difficult, yet, depending as it does upon individual circumstances, some "rule of thumb" applicable to all cases is desirable.

Is not such "rule of thumb" the actual demonstration to the compact prospect of the finer results he will obtain, particularly upon the music which is the majority of all radio entertainment, from larger sets? Could not RADIO TODAY develop a technique to aid the dealer in shifting prospect attention from cheap compacts to large sets? To me, the simplest method is an unostentatious tuning on of a large set close to the compact display in order that the prospect may perceive the difference, and the wisdom of forgetting a compact in those cases where he is buying his "main" or only radio.

Distracts attention

Certainly the thought of any but the largest department store or dealer regularly accustomed to very heavy prospect traffic spending sizeable amounts upon compact advertising seems absurd. The average dealer will not get sufficient returns to so justify, and the belief that a \$10 compact set will attract enough prospects who can be traded up to really profitable sales seems most remote. However I look at it, the sale of compact radios does not seem to justify advertising expenditure by the small dealer, if for no other reason than that in itself it distracts public attention from the high-priced radios he must sell in order to live, and so makes big sales even harder to get. Much more sensible seem his advertising of the new features of big sets and combinations, for, if he must, he can then fall back to a compact sale. In such manner he does not impair his chances of big set sales by having advertised the prospect into the belief that all the best of radio entertainment costs today is \$9.95.

Which brings us to another phase of the dealer's problem—how to sell big sets. Because so far in 1938 economic

(Continued on page 66)

AMAZING.. STARTLING

WIRELESS CONTROL FOR ANY RADIO

WITH KADETTE *Tunemaster*



Retails for
\$25⁰⁰
COMPLETE



Modernizes

CUSTOMERS' PRESENT RADIOS ..
MAKES NEW ONES BETTER STILL

Over 20,000,000 Prospects!

TO visualize the tremendous sales possibilities of Kadette Tunemaster, just imagine yourself lounging at ease the whole evening through, really enjoying radio as you have never enjoyed it before. Never once is the spell broken by having to leave your chair to change programs or adjust volume. Think, too, how convenient for the busy housewife. She can carry *Tunemaster* from room to room and operate a radio anywhere else in the home as easily as if sitting beside it.

But this is only the beginning of the alluring sales-compelling picture. *Tunemaster* actually improves reception—sharpens tuning—increases sensitivity—gets distant stations with greater volume. In addition, it provides push-button tuning for four stations, remote volume control and true wireless tuning—not for just a few stations—but for every station on the broadcast band from 540 to 1500 Kilocycles! Yet, the radio can still be used as before. Nothing is added to it—nothing taken away. Merely

plugging *Tunemaster* into any electric outlet (AC or DC) is the only installation!

You don't merely tell this exciting story—you PROVE it! *Tunemaster* itself backs up every word. There's something you can REALLY sell, and virtually every radio owner is an immediate prospect. You will find, too, that a surprisingly high percentage who come to buy *Tunemaster* will easily be persuaded to replace antiquated radios with new ones, and those who come to buy a new radio will be just as easily persuaded to add *Tunemaster*.

What's more, there will be no lack of opportunities for such sales. Powerful national advertising that starts with a full page in the November 5 issue of *SATURDAY EVENING POST* will soon have millions looking for *Tunemaster*. Someone in your community is going to grab this unparalleled opportunity, and it might as well be YOU. Mail the coupon on the right for full details. INTERNATIONAL RADIO CORPORATION, Dept. P-110, Ann Arbor, Mich.

Mail COUPON NOW

INTERNATIONAL
RADIO CORPORATION
Dept. P-110, Ann Arbor, Michigan

Rush full information about KADETTE
TUNEMASTER and your new LIMITED
DEALER-FRANCHISE plan.

Firm Name

By

Address

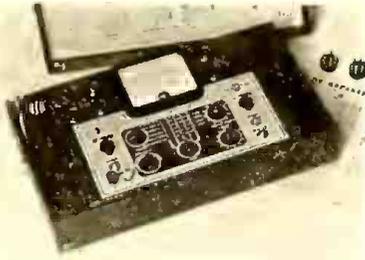
City..... State.....

KADETTE RADIO

INTERNATIONAL
RADIO CORP.
ANN ARBOR, MICH.

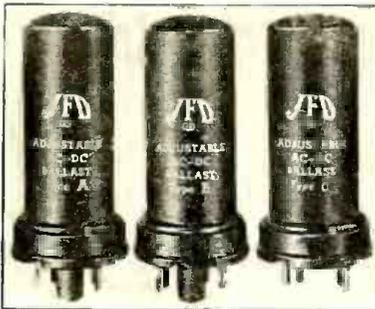
NEW THINGS

Latest news of radio products from manufacturers



C-B unilyzer

★ Radio set test unit for socket analysis and point-to-point tests. Two rotary switches provide all socket connections. AC-DC type meter has 29 ranges including capacity, output, and decibels. Function switch and range switch used in a new safety sequence arrangement. Model 285. Clough Brengle Co., 2815 W. 19th St., Chicago, Ill.—RADIO TODAY.



Adjustable plug-in resistors

★ Plug-in resistors for replacement in AC-DC receivers. Mounted in shell similar to that of metal tube. Three types adjustable so as to fit 99 per cent of the units now in use. Chart lists over 800 plug-in line resistors which may be replaced by the 3 units. List \$1. J. F. D. Mfg. Co., 4111 Ft. Hamilton Pky, Brooklyn, N. Y.—RADIO TODAY.

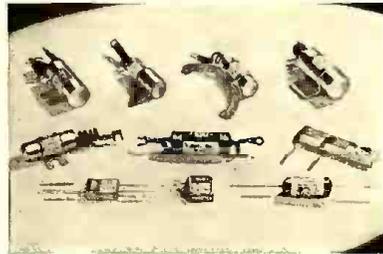


Dual Minicap condensers

★ Dual midget dry electrolytic condensers. Occupies less space—has permanent sealing. Has characteristics of the single-unit Minicap condensers. Solar Mfg. Corp., 599 Broadway, New York, N. Y.—RADIO TODAY.

World time gadget

★ Radio world time indicator gadget for determining the time in any part of the world. Will also show the time difference between any two cities. Device is 5 x 7 inches and printed in two colors on light yellow stock. Priced at 50 cents. Radio & Technical Publishing Co., 45 Astor Place, New York, N. Y.—RADIO TODAY.



Auto filter units

★ Complete line of auto filter replacement condensers. Mechanical design similar to those supplied by the majority of auto radio set manufacturers. Designed to withstand excessive temperatures and vibration existing in autos. Some units with special mounting brackets. Described in catalog 161 Cornell-Dublier Corp., S. Plainfield, N. J.—RADIO TODAY.

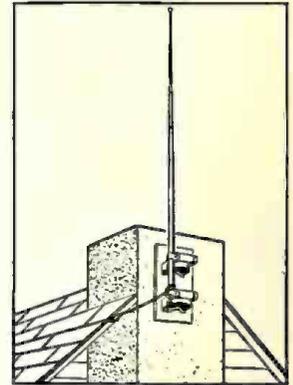


Million tube checker

★ Push-button tube tester with direct-reading meter. Emission tests for all tubes. Hot leakage and short tests. Voltage adjustment and pilot light. Open filament indicator for metal tubes. Model MO for counter—net \$18.95. Model MOP for portable use \$19.95. Million Radio & Television Labs., 685 W. Ohio St., Chicago, Ill.—RADIO TODAY.

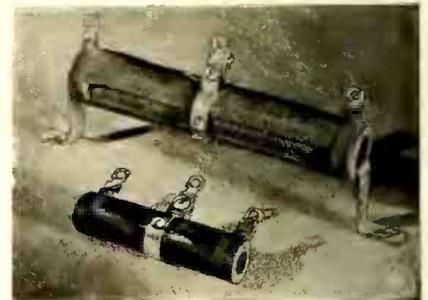
Bumper aerial kit

★ Bumper aerial for use with auto radios. Does not damage or disfigure car. Kit consists of 4 insulators, shielded cable, attachment clips, and grommet. L. S. Brach Mfg. Corp., 55 Dickerson St., Newark, N. J.—RADIO TODAY.



Ward vertical aerial

★ Self-supporting antenna with 4-section bronze tubing 12 feet high. Lightning arrester and .002 mfd. for additional capacity required by receivers. Easily installed to roof, wall, vent pipe, window frame. Complete with low-loss insulators. Ward Products Co., 1523 E. 45th St., Cleveland, Ohio.—RADIO TODAY.



Adjustable power resistors

★ Wire-wound power resistors with adjustable band. Coating of inorganic cement solidified with very low heat treatment. Unit may be operated at red heat without deterioration. Removable mounting feet. Units available in 10 to 200-watt ratings. Clarostat Mfg. Co., Inc., 285 N. 6th St., Brooklyn, N. Y.—RADIO TODAY.



Replacement speakers

★ Speakers for replacement in table type radios. Will handle 2½ watts output. Universal-type transformer for single and push-pull tubes. Universal field. Fully rust-proof. Available in 5, 6, 8 inch diameters. Type E5LU 5-inch unit list \$3.10. Wright-DeCoster, Inc., St. Paul, Minn.—RADIO TODAY.

THE
1939
~~CROSELY~~
Sensations

RADIO
PHONOGRAPHS



PORTABLE COMBINATION

A highly efficient and simple Crosley developed self-starting record playing mechanism in combination with a new Crosley push button radio.

24⁹⁵

A wooden cover with handle covers turntable pick-up and radio panel. A switch changes from radio to phonograph. Efficient pick-up with volume control provides unusual performance in record playing.

CONSOLE COMBINATION

A full size console, the quality of performance — record pick-up—radio amplification and speaker reproduction — delights all hearers. It's a wonderful value and it gives a wonderful performance. A flip of a switch plays either radio or phonograph.



49⁹⁵

New Crosley push button radio incorporated in this model makes this combination a wonderful value and gives every indication of its being top seller in its field.

NOW MORE THAN EVER
YOU'RE THERE WITH A

"THESE ARE PART OF
THE GREATEST LINE IN
~~CROSELY'S~~ 17 YEAR
RADIO HISTORY"

Powel Crosley, Jr.



Factory production facilities taxed. Amazing reports of sales that sound like the radio days of the 20's—enthusiasm from coast to coast—that's the Crosley radio picture NOW. Ride these winners to a profitable radio season.

6 TUBE 2 BAND PUSH BUTTON
SUPERHETERODYNE \$19⁹⁹

Refinements and improvements added to an efficient radio of which over half a million have been built, plus an extra tube, produces a startling value in this new 1939 "Sixer". Plastic cabinet—easily adjusted push button tuning—as well as manual tuning.



AMAZING PUSH BUTTON RADIO

\$9⁹⁹

Incorporating the new Crosley Push Button tuning technique—positive, sharp—easily adjusted on the button for any station. An amazing value.



Prices slightly higher in South and West.

7 TUBE SUPERHETERODYNE

2 BAND (American and Foreign) PUSH BUTTON

CONSOLE
\$49⁹⁵

A 2 band (American and foreign) 5 push button receiver with electric eye tuning—a radio log dial (99 stations located). Laydown (pictured) and upright table models. Exquisitely fashioned console.

TABLE
MODEL

\$29⁹⁵



CROSELY

THE CROSELY RADIO CORP., CINCINNATI • POWEL CROSELY, Jr., Pres. • Home of "the Nation's Station"—WLW—70 on your dial

MORE NEW THINGS



Portable radio-phono combination

★ Semi-automatic phonograph-radio combination. Pick-up assembly mounted in lid of case. When lid is lowered, needle is automatically set in groove of record. AC-DC motor and chassis. Speed regulator. Built-in copper screen aerial. Tuning controls on front. Model 80-F with fabricoid case—list \$89.95. Portomatic Corp., 1015 Madison Ave., New York, N. Y.—RADIO TODAY.



Battery receiver

★ 1½-volt battery receiver for farm use. Uses 4 tubes in low-drain circuit. 5-inch P.M. speaker. Tunes 540-1730 KC. Automatic volume control. Walnut cabinet. Allied Radio Corp., 833 W. Jackson Blvd., Chicago, Ill.—RADIO TODAY.



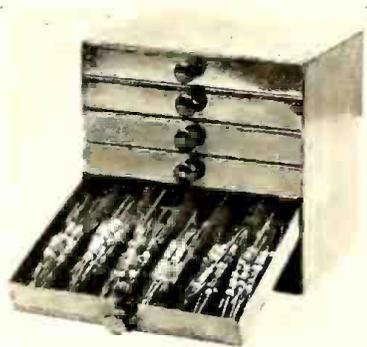
Tubemaster

★ Tube tester for accurately determining the dynamic performance of the tube. Basic features of dynamic-mutual conductance and

power output are combined in a single reading. Circuit called Dynapower. Roll chart shows set up of switches. Direct reading meter. Model 20—net \$29.50. John Meck Instruments, 164 N. May St., Chicago, Ill.—RADIO TODAY.

High-voltage condenser

★ Paper-type condensers for high-voltage circuits. Designed for heavy duty operation in transmitters and industrial apparatus. Oil-impregnated and wax-filled. Metal cased with ceramic stand-off insulators. American Condenser Corp., 2508 S. Michigan Ave., Chicago, Ill.—RADIO TODAY.



Insulated resistors

★ Kit of insulated resistors for replacement purposes. Steel cabinet given free with the purchase of 250 or 500 Ex-stat insulated 1-watt resistors. Units have ceramic insulation with cement-filled ends. Color-coded and stamped with value. Tilton Electric Corp., 15 E. 26th St., New York, N. Y.—RADIO TODAY.



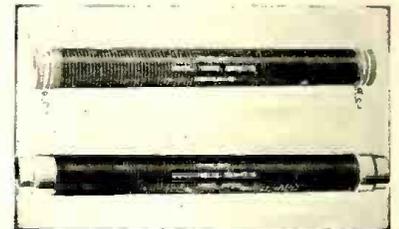
Univex Mercury candid camera

★ Super-speed candid camera with f:3.5 lens and focal-plane shutter speeds up to 1/1000 of a second. Every adjustment on front of camera for convenient operation. Built-in photo-flash synchronizer. Automatic film transport eliminates double-exposure hazard. Exposure calculator and depth of focus scale. Uses 35 mm. film (ultrachrome) costing 40 cents for 36 exposures. Interchangeable lenses up to f:2. Universal Camera Corp., 46 W. 23rd St., New York, N. Y.—RADIO TODAY.



Transmitter kit

★ Self-contained transmitter kit for phone and C.W. operation. Crystal controlled. Plug-in coils for operation on 1.6 to 60 megacycles. Meter switching, oscillator keying for break-in. Punched chassis and panels, as well as transformers available from Stancor. Parts are standard stock items. Standard Transformer Corp., 1500 N. Halstead St., Chicago, Ill.—RADIO TODAY.



High-voltage resistors

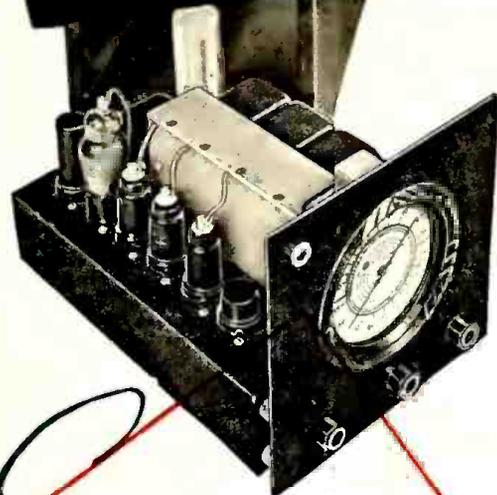
★ Resistors designed for use at voltages from 5,000 to 100,000 volts. Metallized element on ceramic tubing. Spiral application of element provides a long path. A 150-watt 100,000 volt unit measures only 18½ inches by 2-inch diameter. IRC type MV. International Resistance Co., 401 N. Broad St., Philadelphia, Pa.—RADIO TODAY.



Jumbo volt-ohm-milliammeter

★ Nine-inch multi-range meter for radio and sound servicing. 350 microamp movement. AC and DC voltage ranges of 0/10/50/250/500/-2,500. DC current of 0/½/5/50/500 milliamperes. Resistance: 0/30/10M/1meg/10meg. Also calibrated in decibels. Accuracy within 2 per cent on both AC and DC. Model 4922—net \$34.50. Hickok Electrical Instrument Co., DuPont Ave., Cleveland, Ohio.—RADIO TODAY.

Special 6-Tube P. A. Tuner



Wire It Yourself!

Here is the special-purpose job you have been looking for. It is a T.R.F. circuit designed just for P.A. work. Provided with a dual audio-output channel, so that one channel may be used for monitoring purposes without giving, in the P.A. channel, any indications of the switching done in the monitoring circuit. The absence of oscillators makes this tuner absolutely non-interfering regardless of the number that may be grouped together in a multiple-channel P.A. system **\$23²⁵**

Special Features

- 530 to 1600 Kc. Coverage • Four Tuned Circuits Using Ferrocort (Iron Core) Shielded R.F. Transformers • 4-Gang Precision Tuning Condenser • High-Q Coils—Enormous Gain and Selectivity • Full Automatic Volume Control • Audio Gain and Tone Controls • Works With Any Amplifier Input • Self-Contained Power Supply

This P.A. Tuner is supplied in complete kit form including all coils, 4-gang variable condenser, power transformer, fixed condensers, resistors, sockets, knobs, dial and escutcheon, punched and drilled heavy steel chassis, miscellaneous small parts, hardware, pictorial and schematic diagrams and clearly written detailed instructions for assembling, wiring and operating. (NOT including Panel, Cabinet, or Tubes.) And it is **GUARANTEED** to work satisfactorily or the Meissner Manufacturing Company will fix it for you—even supplying a shipping carton for returning it to the factory!

Tuner is designed so that two of them can be mounted side by side in one relay-rack panel. (8 $\frac{3}{8}$ " x 8 $\frac{3}{8}$ " x 12 $\frac{1}{2}$ ".) Also making it small enough for portable use. Contains its own power supply. Operates from 110-volt line. Black crystal front panel 75¢. Black crystal cabinet \$2.85. **ASK YOUR PARTS JOBBER.**

SERVICE PARTS

VIBRATORS

ADAPTER KITS

TUNING UNITS

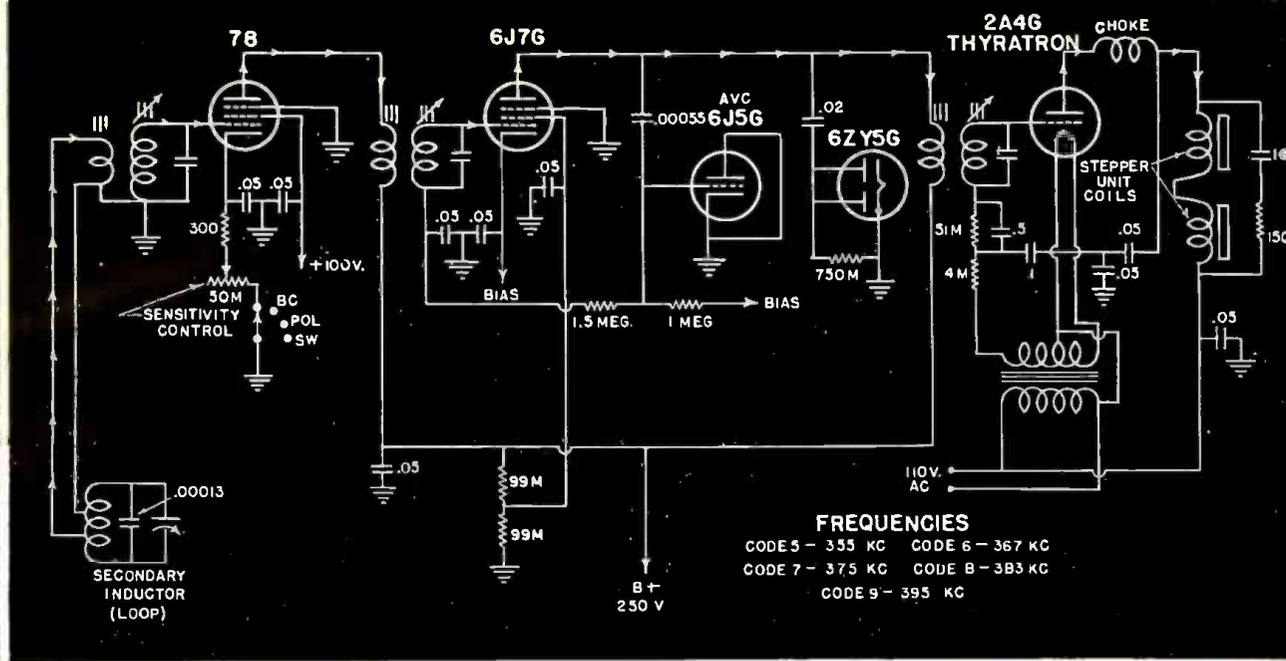
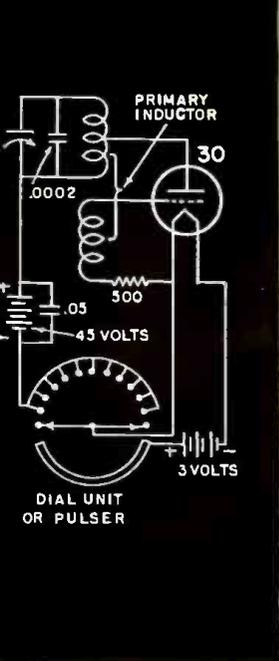
COMPLETE RECEIVER KITS

MT. CARMEL,
ILLINOIS



Meissner

"A FAMOUS NAME FOR TWO DECADES"



FREQUENCIES
 CODE 5 - 355 KC CODE 6 - 367 KC
 CODE 7 - 375 KC CODE 8 - 383 KC
 CODE 9 - 395 KC

Fig. 1—Circuit of the "Mystery Control" box.

Fig. 2—Control signal amplifier amplifies the pulses picked up by the secondary inductor (loop) and passes them on to the thyratron tube which operates the station selecting mechanism.

HOW THE MYSTERY CONTROL WORKS

Simplified explanation of new wireless tuner. Exclusive to *Radio Today*

★ Briefly, the Philco "mystery control" is a remote control device which transmits impulses to an amplifier to operate a stepper type relay to select the desired station. Its principle of station selection is similar to that of the dial-type telephone except that no connecting wires are needed.

In Fig. 1 the circuit of the control box is shown. The tube and coils form an oscillator which can be pre-set to 355, 367, 375, 383 or 395 kilocycles. The dial mechanism is technically termed the "pulsar unit," since it keys or pulses the output of the oscillator.

As the control box is battery operated, the device is only turned on while selecting a station or changing the volume. This means the battery drain is practically nothing. When the dial is operated, the filament circuit to the tube is closed by means of the lower switch arm and the continuous contact bar.

Pulses tune radio

The pulses are caused by making and breaking the plate battery circuit. As the dial mechanism turns, the plate circuit is opened and closed as the switch-arm touches the equally-spaced contacts. Each station has a certain definite number of contacts that must be made. Corresponding to the station to be dialed, from 4 to 11 pulses are transmitted by the device. Two pulses increase the volume of the set, while 3 pulses decrease the volume. During the volume changes, a thumb-lever is held down which causes a continuous signal to be emitted. This lever is released when the volume reaches the proper value.

The signal from the control box is transmitted to a loop or secondary

coil in the radio set by induction. The remote control box has a tuned coil (oscillator coil) which acts as a primary to induce a signal in the secondary. The coil in the control box can be likened to the primary of an induction coil. When a current flows in the primary, a current is induced in the secondary. The dimensions of both coils are made as large as possible so as to effect a maximum transfer of energy.

In the mystery control it is desired to transfer energy over a distance approaching 75 feet while avoiding any form of wire connection. It is also desired to limit the maximum operating range of the device as sharply as possible. For numerous reasons, electromagnetic induction (rather than radiation) seems to be the most suitable means for the purpose.

Pulse amplifier

Because the pulses sent out from the primary (remote box) unit are rather feeble at the radio set, it is necessary to amplify them before they are strong enough to control the selector mechanism. The pulses are picked up by the secondary coil in the radio set as shown in Fig. 2.

The tuned secondary coil responds only to impulses to which it is tuned, so it is necessary to tune the remote oscillator to the frequency of the secondary coil and amplifier. As the range of the remote control device may be 75 feet under normal conditions, a variable frequency in both the oscillator and amplifier is provided so that no interference will be produced on neighboring mystery control sets. A choice of 5 frequencies from 355 to 395 KC is provided to eliminate the possibility

of two or more sets interfering with one another.

The signals picked up by the loop are coupled to a tuned grid coil by a low-impedance link circuit. From the grid coil, the signals go through two stages of amplification to the grid of a 2A4G thyratron tube. The output from the thyratron tube is fed into the relays which in turn control the stepper unit and station selecting switch.

Sensitivity control

In the control (pulse) amplifier circuit there is a sensitivity control which is employed for the purpose of adapting the set to the particular location where it is used. This control is in the cathode of the type 78 first amplifier tube.

The setting of this sensitivity control is of tremendous importance to the mystery control operation.

The normal range of mystery control is within a circle of the receiver with a radius of about 25 feet. It is important to remember that mystery control operates in a circle around the receiver cabinet. To get the most from mystery control it is, therefore, advisable to place the cabinet as close to the center of the "operating circle" as possible. If the receiver is located against the front wall of a home only half of the effective operating area is within the house. The remainder is outside the walls. There is a distinct advantage in operating the control amplifier sensitivity control at the lowest possible setting. Extra sensitivity in the control frequency amplifier is provided so as to permit operation in the presence of inductive shields such as steel girders, metal lath construction and large bodies of metal—

furnaces, boilers, stoves, refrigerators, chandeliers, or any similar metallic objects.

The sensitivity of the control frequency amplifier is variable to fit a large range of operating conditions. Normally, sufficient precautions are taken in the amplifier and remote control circuits to greatly reduce the possibility of electrical interference. The control amplifiers are very much less subject to interference than an ordinary radio receiving system. It requires an extreme and unusual type of interference to interfere with the operation of mystery control. There is no possibility of interference affecting mystery control receivers if the sensitivity control is kept down to the first half of its total movement. This illustrates the importance of setting the sensitivity control to the minimum position possible.

In some installations, however, owing to the presence of large metal objects around or near the receiver chassis of the mystery control cabinet, it will be necessary to increase the sensitivity of the control frequency amplifiers owing to the absorption of the metal surfaces. When this occurs, it will very likely be found that the same metal objects are shielding the receiver from excess static which would normally interfere with the mystery control circuits in a high setting of the sensitivity control. Therefore, when it is necessary to increase the setting of the sensitivity control in order to get operation of mystery control, you will very likely find that interference is not present and that a higher setting of the control is possible. In all installations be careful to set the sensitivity control at the lowest possible position and to locate the receiver away from metal objects which would absorb the induction field of mystery control.

The 6ZY5G and 6J5G tubes act as a noise gate to exclude unwanted inter-

ference which might control the stepper assembly. This noise gate makes the amplifier respond only to pulses having a time interval equal to that of the pulser mechanism. Thus pulses of random timing do not operate the set.

The operation of the thyratron tube is entirely different from any tube so far encountered by the radio serviceman. It is a gas-filled tube which can handle large plate currents—in other words, large amounts of power. For a detailed explanation see page 62 of this issue.

Before getting into the operation of the stepper relay unit for station selection, the R.F. circuits of the receiver should be examined. In Fig. 3 a simplified schematic of the wave-switch and its circuits is shown. The wave switch selects any one of three wave-bands or automatic tuning (mystery control operation).

Tuning circuits

To illustrate the automatic operation, the wave switch has been drawn in that position. The wave-switch sections disconnect the R.F. amplifier from the circuit and transfer the antenna coil to the grid of the converter tube. Also, the antenna coil is connected to the station selector switch which selects the proper trimmer condenser for any one station. The gang condenser is cut out of the circuit for remote operation.

The oscillator coil system is completely cut out of the circuit and trimmer type inductances with iron-core tuning are connected by the station selector switch.

A third rotary switch turns on the proper station indicator lamp.

The assembly for the station selecting circuits is located beneath the chassis and is driven by the stepper assembly.

There are three groups of contacts operated by the switch. One group

switches in the oscillator coils, the second group switches in the antenna padding condensers and the third group of switches, lights the pilot lamps indicating the station dialed.

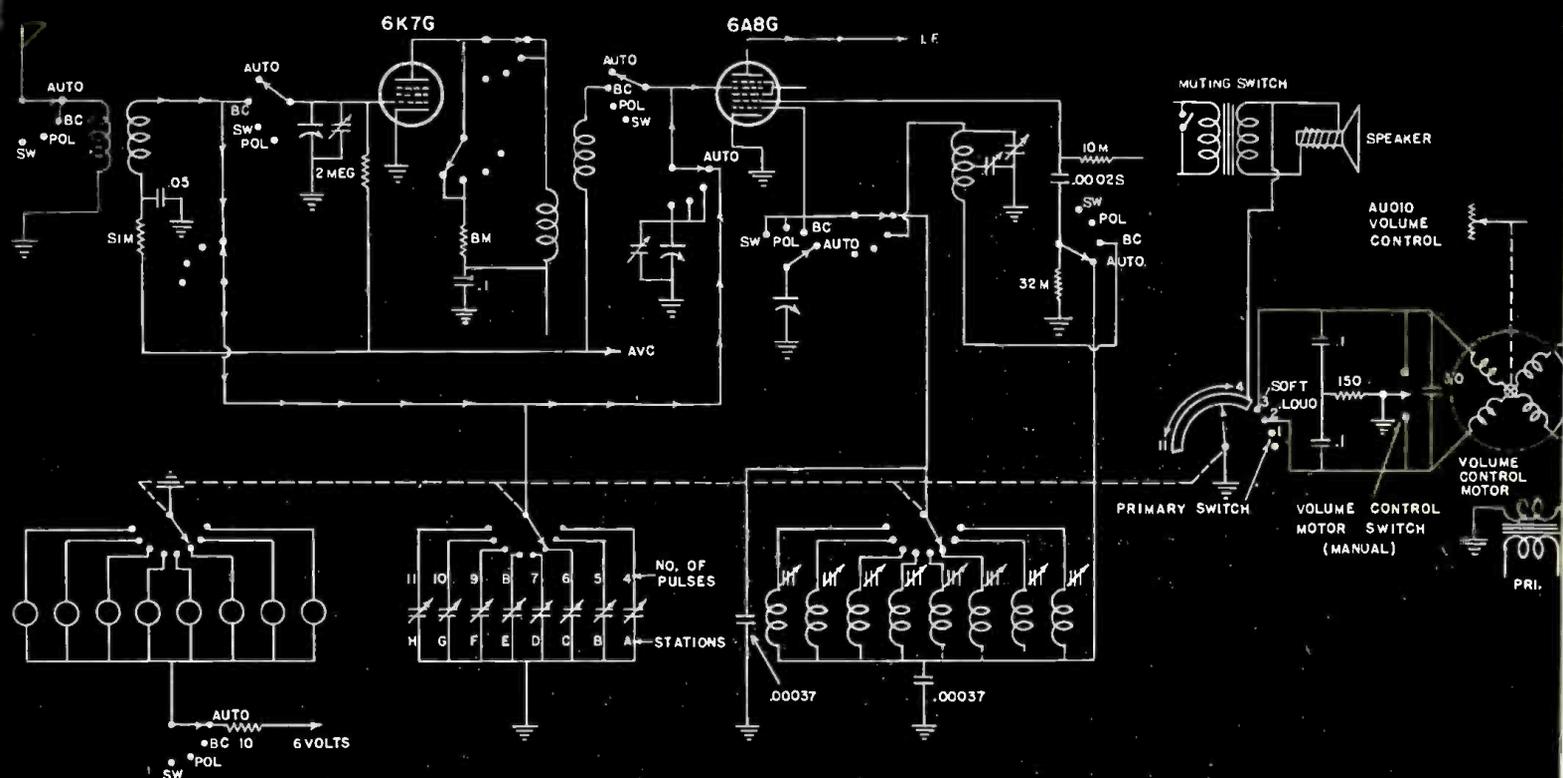
Excessive friction in this switch would cause improper action of the stepper assembly. It should be adjusted so that when the relays have selected the station dialed, the contact arm is squarely on the contact. The tension of the contact arm is regulated by the setting of the hub on the switch shaft. The long wiper contacts exert a firm pressure on the contacts which may be increased or decreased by adjusting the location of the hub. The position of the contact arm is determined by the set screws which hold the driver arm onto its shaft. This is located above the chassis but beneath the stepper assembly. If the contact arms do not come to rest on the contacts it may be necessary to loosen the set screws on the switch shaft and relocate the position of the driver arm so that the contacts are made correctly. Excessive tension in the switch would act as a load on the relays and might result in chattering on one of the stations, part way up, and then failing to reach the station dialed.

Stepper assembly

The stepper assembly which operates the station selecting switch is operated by the thyratron tube referred to previously. The coils which operate this assembly as shown as the plate load of the thyratron in Fig. 2.

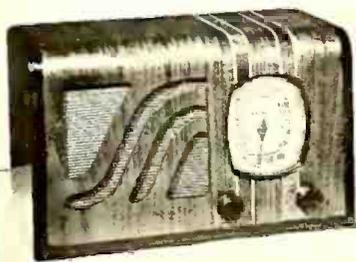
When the thyratron tube lights, the holding relay closes and the stepping relay pushes a ratchet as many times as there are pulses sent out by the pulser in the mystery control box. There is a primary and a secondary ratchet. The stepper relay operates the primary ratchet which is connected to the volume control motor and shorts the
(Continued on page 62)

Fig. 3—Signal selecting circuits showing arrangement of contacts on stepper assembly. Wave-change switch in receiver is shown in automatic position.



SERVICE SECTION

MORE NEW THINGS



Philco compact

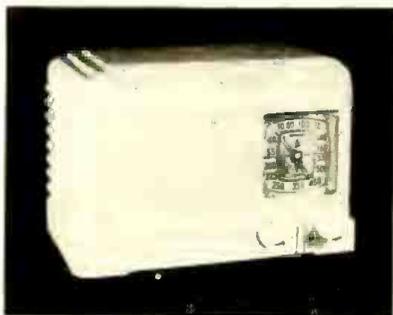
★ 5-tube table type receiver with single-band coverage. Illuminated dial, walnut cabinet. Dynamic speaker, pentode power output. Model 6C. Also available in white. Philco Radio & Television Corp., Tioga St., Philadelphia, Pa.—RADIO TODAY.

Dummy antenna resistor

★ Vacuum-type resistor for use in constructing dummy antennas for transmitters. Unit is built like a vacuum tube and has a 4-prong base. Resistance constant within a very few per cent up to 14 megacycles. Resistance of 73 ohms, which matches concentric and twisted pair feeders. Model D-100 is rated at 100 watts. Units may be used in series parallel connections for higher ratings. Ohmite Mfg. Co., 4835 Flournoy St., Chicago, Ill.—RADIO TODAY.

Wire-wound resistors

★ Vitreous-enameled resistors with resistance wire having low temperature coefficient. Fired at red heat—glossy coating. Soldering lugs or pig-tail connections. Available in 10 and 20 watt ratings. Pyrohm Jr., Aerovox Corp., 70 Washington St., Brooklyn, N. Y.—RADIO TODAY.

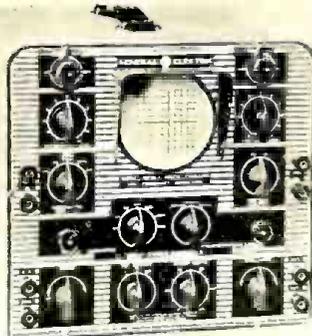


Fadalette receivers

★ 4-tube AC-DC T.R.F. receiver tuning 545-1,650 KC. Illuminated dial, automatic overload control. Power output of 2 watts. 4-inch dynamic speaker unit. Model 5F50V in ivory, list \$12.95. In walnut, \$9.95. Fada Radio & Electric Co., 30-20 Thomson Ave., Long Island City, L. I., N. Y.—RADIO TODAY.

3-wire antenna connector

★ Outlet and plug for connecting antenna and ground systems to radio set. 3-circuits provided with polarized plug to accommodate all-wave antenna systems. Mounts on wall or baseboard. Provides neat, direct connections to radio set. Type 329—list 65 cents. M. M. Fleron & Son, Inc., Trenton, N. J.—RADIO TODAY.



Oscilloscope

★ Cathode-ray oscilloscope and frequency modulator. Frequency sweep of 0-50 KC. Vertical and horizontal amplifiers for use up to 100,000 cycles. Sweep amplifier automatically synchronized. Sheet metal case in crystalac. Model OFM-1. General Electric Co., 1285 Boston Ave., Bridgeport, Conn.—RADIO TODAY.

Switch contact cleaner

★ Cleaner for radio switch contacts. Harmless to any metal surface. Removes corrosion, oxides, and restores switch to normal efficiency. Packaged in 2 ounce bottles. Nash Radio Products Co., 5437 Lisette Ave., St. Louis, Mo.—RADIO TODAY.

Admiral wireless record players

★ Portable record players for use with any type of radio set. Wireless operation does away with need of connections to radio set. Player is connected to power line for operation and radio set tuned to record player. Model AW-11 in figured walnut cabinet. AR-10 in metal case. Continental Radio & Television Corp., 3800 Cortlandt St., Chicago, Ill.—RADIO TODAY.

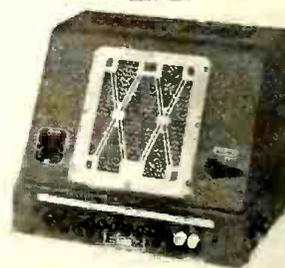
Parasitic suppressor

★ Combination inductive and resistive unit for suppressing parasitic oscillations in push-pull and parallel radio frequency amplifiers in transmitters. Units are connected in the grid circuit. Type 507-622—list \$2. Ward Leonard Electric Co., Mt. Vernon, N. Y.—RADIO TODAY.



Farm radio set

★ Battery-type radio set using 1.4 volt tubes for low battery drain. Push button tuning for 4 stations. Superhet circuit with automatic volume control and 4 tubes. Magnetite core coils for permanent alignment. Model 94BT-2 illustrated. A similar set in same cabinet for 6-volt operation is designated as the 96BT-6 and it can be adapted for AC operation using the CV-9 converter. RCA Mfg. Co., Cooper St., Camden, N. J.—RADIO TODAY.



Interphone and paging system

★ Master type two-way intercommunicating system. All of the outlying stations may be called by using the master switch. Separate stations are called by using the individual selector switches. Unit illustrated is for 10 stations. Additional switches may be used to increase the capacity. Call switch may be used on outlying stations. Model 190. Operadio Mfg. Co., St. Charles, Ill.—RADIO TODAY.



Stromberg record player

★ Cabinet type record player with crystal type pick-up. Plays records up to 12 inches at 78 r.p.m. May be attached to practically any make of radio. Equipped with 7-ft. power supply cord and 20-ft. pick-up cord. Adjustable automatic stop. Plugs into phono jack of Stromberg-Carlson receivers. Stromberg-Carlson Telephone & Mfg. Co., 100 Carlson Rd., Rochester, N. Y.—RADIO TODAY.

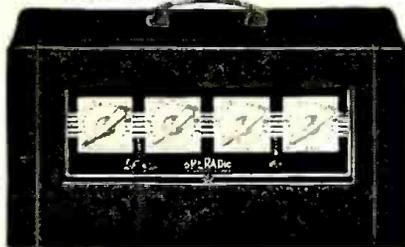
Selling Sound

OCTOBER, 1938

PUBLISHED SEMI-ANNUALLY AS A SECTION OF "RADIO TODAY"



Your Arm Can Reach Out 3000 Feet with OPERADIO REMOTE CONTROL



There is nothing mysterious about Operadio Remote Control. It is not a wireless. A cord from the amplifier to the Remote Control Unit enables you to control volume as far away as you can hear it. The Remote Controller is used for remote master microphone gain control and the

Remote Mixtrol for remote mixing of two microphones.

A book could be written about the advantages of Remote Control. But below is a word picture of the Remote Controller that tells the story better than anything we could write.

WHICH IS YOU? BEFORE REMOTE VOLUME CONTROL

THIS CONTROLLING VOLUME GAVE ME A PAIN IN THE NECK AND OTHER PLACES... AND PLENTY HARD ON THE DOGS



SIGNALING IS ALL RIGHT FOR BOY SCOUTS, BUT IT COST ME THE TIME OF ANOTHER MAN



JOB'S DONE AND ALL IN... AND I STILL CAN'T BE SURE THE SOUND WILL FIT THE CROWD



AFTER REMOTE VOLUME CONTROL

THIS IS ME CONTROLLING SOUND WITH O. P. REMOTE CONTROLOR. EASY AS FALLING OFF A LOG



BELLOW



BELLOW, SWEET MUSIC, SOFT VOICE, THEY ALL COME OUT SWELL WITH O. P. REMOTE CONTROLOR

JOHNNY, TAKE A TIP FROM ME. OPERADIO P. A. EQUIPMENT WITH REMOTE CONTROLOR, MEANS MORE BUSINESS, WITH LESS EFFORT... MORE SATISFIED CUSTOMERS



All Operadio Systems are licensed by Electrical Research Products, Inc. under U. S. patents of American Telephone and Telegraph Company and Western Electric Company, Incorporated.

You buy P. A. Equipment. Why not buy Operadio P. A. equipment so you yourself can have the advantages of this outstanding development? All Operadio equipment is designed to use the Remote Control feature. It has proved practical, workable. Thousands of

dealers say: "Anyone who buys an amplifier without Operadio Remote Control doesn't know what he is missing. He is back in the 'horse and buggy' days of P. A." See your jobber today, or address Dept. RT10.



Manufacturers of a complete line of Public Address Equipment, Intercommunicating Systems, School Sound Systems, Public Address and Radio Replacement Speakers

EXPORT DIVISION: 145 W. 45TH STREET, NEW YORK CITY

OPERADIO MANUFACTURING COMPANY ST. CHARLES ILLINOIS

"MAKE IT EASY" FOR PROSPECT TO UNDERSTAND

Emphasize "convenience" in selling sound jobs
Show how extras will add to value of installation

The old bromide "To sell something, you must yourself thoroughly know what you are selling," truly fits sound-equipment merchandising. For today, everyone knows and realizes that selling sound equipment is definitely a big and increasing part of the radio business.

However, sound sales are often lost or placed in jeopardy by either of two situations; (1) The soundman is talking a language of decibels and watts that is not understood in the least by the prospective purchaser, or (2) he does not answer fully the questions of the prospect concerning the equipment.

The average person can differentiate between a microphone and a speaker, but still has a pretty hazy notion of just what transpires between the two in the amplification process.

To overcome this lack of understanding is perhaps one of the hardest parts of a sound sale. For everything explained may be electrically and "radio-ly" correct and clearly understandable by another radio man, but still be not in the least clear to the prospect.

Suggest additions

Generally speaking the first requirement of the sound sale is to survey the situation and area, and to decide just what is absolutely *essential* as a minimum, and what items may be *added* to render the installation *complete*.

This does not mean that one should specify six speakers where four would be more than adequate, but that the sound man should suggest additional features that may be useful and convenient.

Schools have opened and this season school people are taking more and more of an interest in sound equipment. The major networks have laid out programs which are destined to provide a most complete schedule of activities over their stations aimed for the most part to schools and education.

Educators have fast recognized the advantages of sound equipment and it is said today that any school of more than four rooms without sound amplification, is out of date as far as educational standards is concerned.

But to get back to recommendation of sound equipment, a case is cited herewith which better explains the specifications of sound equipment.

Profitable extras

The soundman made a preliminary survey of a school which consisted of eleven rooms, an auditorium-gymnasium, and in addition a small room called a "music appreciation room," which was used by the music department. The teachers in this grade school felt sound equipment would provide an exceptional means of additional education for the students.

It was decided to install speakers in each of the school rooms, enough speakers in the gymnasium for adequate coverage, which was two), and also another speaker in the music-appreciation room. The principal's office was selected for the control room and "studio," of the entire set-up.

The soundman made his bid for such a layout. He then suggested additional facilities, which were also sold to the institution. An additional microphone was installed in the music-appreciation room for the origination of programs by the music class to the entire school. The school boasted a fairly good orchestra so he sold them on the idea of a contact microphone for the guitar. Also an additional microphone was incorporated in the gymnasium for amplification.

Stress case

This incidentally was quite an additional amount of equipment to be installed compared with the original bid, and resulted all from careful thought and recommendation. The principal remarked afterwards, that others bidding did not suggest any such ideas. He also added, after the equipment was installed, that the "extras" could have hardly been done without.

By looking for and pointing out additional items to be incorporated with any sound installation, the soundman places himself in a high position for the extra profits from such extras. Even in the event the installation would only comprise a setup without the extra recommendations, the soundman has placed in the minds of the



The Mineola (NY) skating rink turned out to be a PA paradise. Jensen speakers were staggered on roof-beams, to cover up to 1,200 guests. Skating music supplied by Hammond organ and electric Minipiano is recorded on Presto recorder; records sold to other rinks. Rack by Par-Metal, mike by Astatic.

prospects, the need for the additional accessories, and will get the extra business when the time comes.

In explaining an amplifying installation, the soundman should first and foremost stress the ease of operation. Showing the prospect how to use the equipment and then letting him operate the controls, will dramatically carry over this sales point. Dependability is another good factor, but is secondary to the ease of operating the equipment.

Explaining that all equipment will become an integral part of the building as does the electric-wiring system or heating system, provides the stability argument still further.

Generally unless the prospect has a special knowledge of radio or sound equipment, it is best to leave out the decibel and wattage angles and instead concentrate on area coverage and audience covering. This can still be further carried out by explaining that the audience will always have a maximum coverage, with additional power available to cover any additional requirement.

By such treatment of the proposed installation, the prospect envisions the system in actual working operation and can further understand your point.

Demonstrate if possible

In either case an actual demonstration will prove more than weeks of talking, and such an actual installation should, when feasible, be arranged. If possible this should be held in conjunction with some occasion when there is a large assembly to demonstrate the advantage and help a sound system really gives.

A prospect who has accepted such a service naturally feels obligated and will give that soundman preference.

In sound, as in every line, there is always cut-throat competition, alike in sales and rentals. Naturally, such competitors will often creep into the sound bids. However, a mention of a competitor rarely strengthens your sales position. A comparison of the value you offer may never be given a thought unless you suggest it.

Meeting competition

In the event of the mention of a competitor and his equipment offered, definite comparisons will swing the sale your way. In the same way "knocking" a competitor's product produces the opposite effect intended, for the prospect usually decides to investigate the other equipment further.



The modern sound job can become as complete as the imagination and resourcefulness of the sound salesman permits. A hotel installation may embody many auxiliary services including radio.

In one case, Soundman A made a bid of \$475 for type X equipment. A competitor offered \$395 for Y equipment. Now both of the two brands offered were not nationally known. So A said the other brand was "junk." The customer, however, investigated the Y equipment and told A he had decided on it. A quickly said he would supply it for \$360. Thereupon the customer as quickly decided to call for another bid, and so A lost everything.

Whereas if A had offered an honest comparison of the two brands and suggested that he recommended X more than Y, but would supply the

latter at the lower price, he would have been in a better position.

Sometimes a suggestion that immediate purchase of the equipment would be most desirable in the prospect's case, results in the sale. If the prospect is familiar with the equipment being offered, it is useless to offer a big-winded sales argument, but instead the sound man should emphasize the immediate use and its consequent savings in time and energy.

Use of testimonials in selling has its weak and good points. Everyone who sells sound, at one time or another takes pictures of representative

(Continued on page 48)

FOURTEEN POINTS TO REMEMBER WHEN SELLING A SOUND JOB

1. Use simple, non-technical language—forget watts and decibels.
2. Answer fully all questions the prospect asks.
3. Survey the area and indicate a "bare-essentials" installation.
4. Show also what extras are needed to make it a complete job.
5. Try to sell the "complete, convenience job."
6. List extras for immediate or future sale.
7. Stress ease and convenience of operation.
8. Make actual demonstration where possible.
9. Let prospect himself handle controls.
10. Never mention competition, if prospect doesn't.
11. Lay off knocking competitors' apparatus.
12. Turn rentals into sales when you can.
13. Pictures of past jobs are better than letters.
14. When job is operating, call occasionally to see that everything is O.K.

BROADENING THE SOUND MARKET

Industry leaders point out new selling opportunities for radio men to handle sound locally

From a check-up made by RADIO TODAY in the radio trade, we find great interest right now in the trend toward *diversifying* products handled.

More and more, radio men are turning to sound-equipment sales as a means of diversifying—and so stabilizing—their own businesses.

Recent developments have helped to swing radio men's

attention to sound sales, as a way to collect important dollar volume out of their local communities.

To confirm our own observation, the Editors have invited from leaders in the sound business their comments and suggestions on this move of the radio trade to take on "sound." A number of these comments follow, pointing out how local sales of sound equipment can be increased.

Surface barely scratched

PETER JENSEN

Jensen Radio Mfg. Co., Chicago, Ill.

A progressive radio dealer can sell sound successfully because: He has the technical staff; he has a radio parts inventory and test equipment already which can be used for sound tests and servicing, therefore no increased equipment expense.

A dealer can add to his revenue by selling sound because: The peak in sound sales occurs when radio sales are lowest; practically no trade-ins; credit of customer is better; no saturation, surface barely scratched; many present installations obsolete due to faulty or poor equipment; new uses discovered every day.

Sound apparatus is more closely related to radio than any other kind of electrical appliances.

A dealer should use the best material available to avoid servicing cost.

In strategic position

S. N. SHURE

Shure Brothers, Chicago, Ill.

The radio dealer and serviceman are in a strategic position to get sound business. Opportunities for sound sales and rentals crop up at every turn for the actively sound-minded radio man. We believe that a thorough study of the latest advances in directional microphone performance and intelligent application of these devices in the field will give alert technicians a big advantage in closing sound sales.

Round-the-calendar sales

JOHN ERWOOD

The Webster Co., Chicago, Ill.

Sound equipment and its use in the scheme of things today is becoming so important that it is difficult to imagine the live and progressive radio dealer failing to take advantage of the opportunities presented therein.

While the sound equipment field must be regarded as highly specialized, it is this factor alone that makes it more attractive to the more progressive and sales-minded group of radio distributors and dealers.

The sound equipment field should not be regarded as a seasonable business. Its many ramifications present

such a variety of applications that the dealer can practically write his own ticket. Industrial and school sales possibilities present almost around-the-calendar opportunities for their specific types of equipment. In addition thereto, we have a widely changing variety of social activities throughout the year that offer an exceedingly large number of sales possibilities.

Sound equipment must be sold and because the unit sale and consequently the profit is large, this activity most certainly justifies the required effort.

Demonstrate to sell

S. RUTTENBERG

Amperite Co., New York

The fundamental principle in successfully selling sound is simple—by *good demonstration*. Investment required to enable good demonstration is low. With a little study, proper experience can be gained in a short time. A successful demonstration will sell—even at a higher price. Sound is used for commercial purposes. Natural reproduction, reliability, ruggedness and service are most important—price next important.

Get out after business

HENRY G. KOBICK

Webster Electric Co., Racine, Wis.

The sale of Sound differs in no respect with any other piece of merchandise. It is true that there are some approaches on the technical side which differ slightly from the conventional run of merchandise, but the important point is that it needs the constant application to getting out after business that any other piece of equipment requires.

Daily, new uses are being found for Sound and an increasing number of dealers other than radio dealers are inquiring into the possibilities of the field. Yet the radio dealer is still the logical outlet for Sound equipment, provided this dealer makes up his mind that he must sell it in the same manner that he sells any other piece of merchandise in his stock.

There is a tendency toward buying better equipment, which is another indication that Sound is here to stay.

Prospects everywhere

H. A. WILSON

Operadio Mfg. Co., St. Charles, Ill.

Public address—intercommunication—industrial and commercial sound—school sound distribution!—All are lucrative fields for the radio dealer or serviceman who is alert and anxious to increase sales by diverting activities and the addition of lines that have a distinct *high unit sales value*.

Prospects are everywhere. Investigation will prove that Sound in its many variations *spells profits*.

Start on small jobs

JOHN MECK

Vocograph Sound Systems, Chicago, Ill.

Look for sound sales right under your nose. Start on small ones that the sound specialist doesn't bother with. Hundreds are in every community; some even in your own block. Locate one today and ask your parts jobber to cooperate in a demonstration. That's how you start on the road to sound profits. No investment—just cash in a quick sale to your own present customers. Best October and November prospects are churches, undertakers, cafes, lodges.

Radio man knows local field

H. L. SHORTT

Transformer Corp. of America, New York City

The radio-set dealer is in a decidedly advantageous position as compared to the present types of outlets selling sound equipment. This is easily seen when you consider that "contact" is the most vital aspect of sound sales promotion. In fact, the strongest argument presented by present outlets against any type of sound sales promotion program instituted by a manufacturer is that—"It requires too much time and money to cover his vast territory considering the relatively few potential sound equipment outlets. He would rather sell parts." This state is true enough when you consider that in many cases one outlet will try to

(Continued on page 52)

ARE YOU *Buying* RADIO TUBES

...OR *Selling* THEM?

You need planned sales help to sell tubes—and here's what RCA does to help you!

1. Current "Money Back" promotion
 2. Consumer advertising
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Over 325 million RCA radio tubes have been purchased by radio users . . . in tubes, as in radio sets, it pays to go RCA ALL THE WAY.
RCA presents the Magic Key every Sunday, 2 to 3 P. M., E. S. T., on the NBC Blue Network.



***New Fall Display Ready**

The attractive football display shown here is now available for use in your window. Timely, colorful, and informative, it will stop people at your store. Ask your RCA distributor how you can get this display for your own use.



Radiotrons

RCA Manufacturing Co., Inc., Camden, N. J.
A SERVICE OF THE RADIO CORPORATION OF AMERICA

SOUND FOR HOTELS

Special problems that must be solved in centralized systems

While few branches of sound work compare with the hotel field in point of profit, none, probably, presents as many unusual difficulties, or is as exacting in its requirements. The apparently attractive profit can easily turn into a substantial loss before the customer's demands are met to his satisfaction, unless the original estimate has been very carefully based on the peculiar necessities of hotel operation.

Hotel managers face a number of operating problems unlike those of any other business, and must therefore impose special demands on the public address system. The question of help, for example, is extremely difficult in hotel routine. They do a great part of their work in the sight of the customers, and that in a place which strives above all things to present an atmosphere of ease and restfulness. Consequently, the most complicated services must be performed without seeming effort.

Automatic operation

Everything proceeds as if by magic. The hotel man merely wants his sound system to work the same way. Control operators, if any, must be out of sight; he greatly prefers to have none, and often demands equipment designed accordingly. All the hotel manager wants is perfect results, under the most complicated and difficult conditions, delivered automatically. He is willing to pay for what he wants.

A second factor in the hotel man's dislike for manual control, and a very

important one, lies in the enormous variety of apparatus he uses in his business. It is impossible for him to burden his payroll with a specialist for every different kind of machinery and appliance—and the p.a. system is merely one among many dozens of appliances. He naturally wants his house electrician to maintain it, and operation to take care of itself.

At the same time perfect service, in accordance with the hotel's standards of performance, is demanded as a matter of course.

How these requirements are met in practice will be indicated in the course of some examples cited below.

Performance standards

In one of the hotel systems to be described, for instance, the loud speakers and the microphone are in the same dining room, the room is lined with mirrors, some of the artists insisted on cuddling the microphone while others maintained a more than respectful distance. Under these conditions the management imperatively required that there be no control operator, no pick-up of room noise, no feedback of course, and never the least trace of improper volume at any table, under any conditions of attendance. Except for one slight compromise, which the management accepted, these requirements were met completely.

Before going into details, however, it will be desirable to sketch some general difficulties, those that are met with in almost every installation. The

demand for fully automatic operation, to take that factor first, possesses the interesting problem of a high-power, high-voltage system which headwaiters and similarly unskilled persons switch on and off. Some hotels prefer to eliminate even that much human intervention in favor of time clocks. The house electrician who takes care of maintenance is likely to think a decibel is something that has a clapper and is worked by an electromagnet. Yet breakdowns are unforgivable.

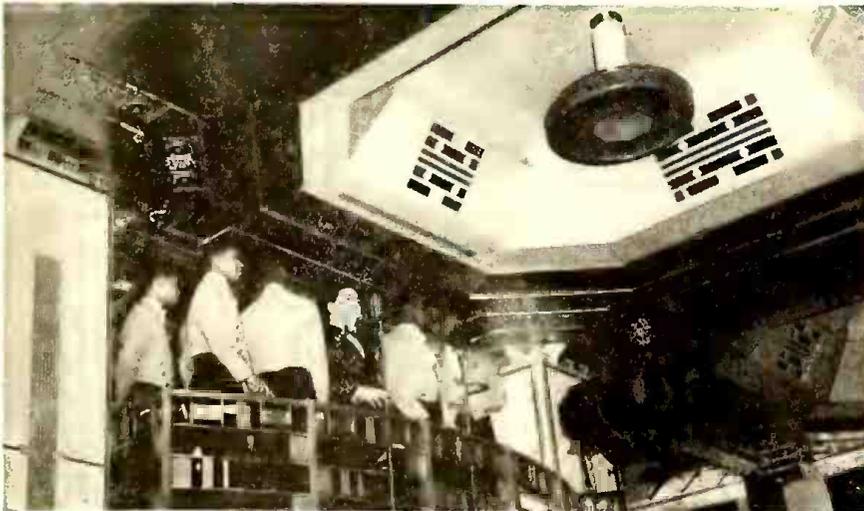
The common answer to the headwaiter-time clock difficulty is installation of time-delay relays which give large tubes a chance to heat up before plate voltage is applied. The maintenance problem is met by using double-channel systems throughout.

Long wire runs

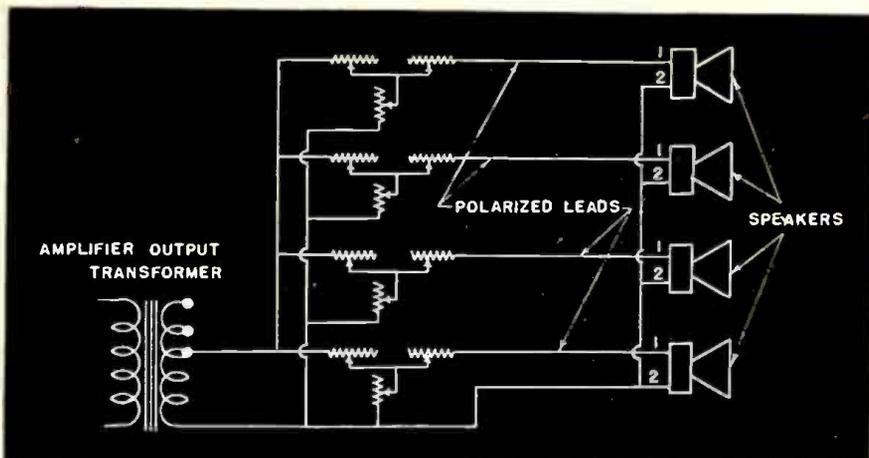
Another headache of hotel work is the strong chance of extraneous pickup in the long wire runs that are almost universally required. This applies even to the speaker wiring, when several different programs are piped through the same conduit to individual room speakers. Cross-talk under such conditions is far from unknown, and may be encountered even when lead-covered pairs are run inside the conduit. A specially-designed cable has been successfully used that permitted simultaneous operation of as many as ten circuits, each at plus 45 level, but this cable is not universally available, and with ordinary materials the sound man should use extreme conservatism in estimating what can be done with multiple loud speaker circuits operating in the same run of conduit.

The long pipe runs, which add so much to the cost of a hotel installation, and consequently to the size of a profit figured on even a very small percentage, must never be skimmed to meet competition. It is better to lose the contract.

The microphone run presents a very special problem. For one thing, the amplifier rack is practically always in a remote location, yet pre-amplifiers can seldom be used at the bandstand. There are several reasons for this: One is that breakdowns must never happen. Consequently, if pre-amps are used they must be supplied in duplicate, with provisions for instantaneous changeover. But operating the emergency switch is the responsibility of the house electrician's staff, not of the band leader, and the house electrician is not wanted on the bandstand. An-



At the Terrace Room at the Hotel New Yorker, the sound system is often operated during broadcasts from that location. Picture shows bandstand; Amperite mike.



Volume can be adjusted individually at the speakers when controls are placed at the speaker. Diagram shows connections for "T" pads.

other objection to placing pre-amplifiers in that location is the scarcity of concealed space. A third lies in the fact that many hotels (at least in the larger Eastern cities) have d.c. only at the bandstand and vicinity, with any number of fans, motors and miscellaneous machines on the same circuit. Under these circumstances, a low impedance microphone is the only choice.

The acoustic and operating problem of the dining room with mirrors, referred to above, was solved very largely through the use of a velocity microphone. The place is the Glass Hat, at the Belmont Plaza Hotel in New York. It can never be acoustically treated until the management is willing to change its individual character. A directional velocity microphone of excellent quality, set at a sharp, nearly horizontal angle, proved to be an almost magical cure-all. One factor it could not cure, namely, variation in volume with different conditions of attendance. On this point the management compromised; they agreed that the remote loud speakers might be equipped with switches and volume controls operated by the waiters.

P. A. and broadcast pickup

An exceptional radio problem arose at the Terrace Room of the Hotel New Yorker, where entertainment is both reinforced for the benefit of the patrons and transmitted via telephone line for broadcasting. The pickup of loud speaker sound, although not strong enough to produce feedback, created an echo in the broadcast program. The radio interests asked to have the sound system cut off while the Terrace Room was on the air, but the management refused on the ground that anyone who paid Terrace Room cover charges was entitled to hear the show. Sharply directional microphones, coupled with some reduction in volume, achieved a partial remedy. Complete elimination of the echo was not attained, however, until a special acoustic treatment had been worked out and applied.

The coffee room of the same hotel presented a problem that compelled development of one of the first of infinite baffles. The nature of the walls and decorative scheme are such that only the thin partition marking off the kitchen could be used to mount the loud speakers. The management demanded that no part of the speaker back-wave, no sound at all, should be audible in the kitchen, for fear that orders called in by the waiters might not be correctly heard. Infinite baffles, each carrying two woofers and a tweeter, provided a solution so complete that the kitchen staff cannot even tell whether the sound system is on or off.

The demand for automatic or nearly automatic operation, already mentioned, can hardly be overstressed. Mixers, when used, are commonly pre-set, even in those cases which make it necessary for the artists to adjust volume themselves by changing their distance from the microphone. Microphone huggers are sometimes con-

trolled by surrounding the mike stand with an ornamental metal ring, which some manufacturers provide for that purpose.

Hotel amplifiers should always have ample reserve power. Two-channel systems are practically mandatory in any hotel of importance. The time-delay relays often used in the larger amplifiers have already been mentioned.

Speaker equipment

Loud speakers are usually equipped with directional baffles, for obvious reasons, and are always of the permanent magnet type to minimize wiring and avoid power supply problems. Individual speakers are often provided with volume controls that modify their impedance over a short range; these are generally pre-set and control acoustic feedback only. Volume controls may also be used on individual speaker units to compensate for variations in attendance or seating. Occasionally speakers are switched on or off for that purpose. Such speaker switches may be wired to dummy load resistors which substitute an equal impedance in the speaker line, while individual controls may be of the constant-impedance pad type.

However, when there are a great many speakers on a single line, as is often the case in hotel installations, the switches or volume controls associated with a few of them cannot upset the overall line impedance in any important degree. Under those circumstances the dummy load resistors may safely be omitted, while ordinary potentiometers can be substituted for the more expensive pads. This is particularly true where the amplifier has enough undistorted reserve volume to make good any reasonable loss through mismatching.



The glass-walled Glass Hat at the Belmont Plaza presented extreme acoustic difficulties which were overcome by velocity microphones. The speaker units with directional baffles are concealed behind grilles in the walls.

Why voters today — as their

IN THE OLD DAYS, the grandfather of today's voter got his political facts from the rumor experts around the cracker barrel in the village store. Authoritative, non-partisan sources of information were hard to find. Never could grandfather push a button and tune in a radio discussion of both sides of a political issue, . . . local or national. Probably grandfather never heard a President speak. He never listened to an English King or a French Minister. Foreign issues and even most national issues were a closed book to many before the days of radio.

What the American System of Radio has done for Voters today

Today every man in the radio business from engineer to dealer can take a bow for his share in performing a real public service for all America. Now the Nebraska farmer and the old lady in California have the opportunity to be as close to national and international affairs as the alert resident of Washington. By reporting events impartially as they happen . . . by presenting both sides of every national or local issue . . . radio helps improve the nation.

RADIO BRINGS OUT THE VOTES . . . BY BRINGING OUT THE FACTS



*Broadcasters present
All the arguments of
All the Candidates to
All the Nation!*

In the Presidential election of 1920 only 25 persons in each hundred voted, although about 60 in each hundred were eligible. In 1936, the percentage of active voters jumped to 36 out of each one hundred. Authorities agree this gain . . . so important to the welfare of the nation . . . was to a great degree due to the complete information which radio brings to the public.




RADIO CORPORATION OF

RADIO CITY

RCA MANUFACTURING CO., INC. • RADIOMARINE CORPORATION OF AMERICA
NATIONAL BROADCASTING COMPANY

know twice as much grandfathers!

An Informed Electorate Makes for a Better America!

Thanks to radio, the American democracy has the opportunity to function better than ever before in history. Radio keeps voters informed . . . on their toes. And greatest of all . . . it gives them the opportunity to form intelligent opinions based on unbiased facts. The National Broadcasting Company, one member of the great radio family of RCA, has always performed an outstanding service in this respect. Last year there were 821 microphone appearances of prominent statesmen over NBC Networks. This year, the facilities of all 154 NBC Stations are again available to leading candidates.

By Radio Merchants Developing Radio on a basis of public service . . . RCA Develops Opportunities for Dealers

Since its inception, the Radio Corporation of America has played a most important part in originating and developing new services in radio. Much that makes radio the most vital and interesting force in American life today is "RCA All the Way." The public recognizes RCA's contributions . . . the public realizes the benefits they receive by going "RCA All the Way." As a result, year in and year out, there is a rich field of opportunity for RCA Victor merchants.

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

AMERICA

NEW YORK

RCA COMMUNICATIONS, INC.
RCA INSTITUTES, INC.

October, 1938



**WORLD'S FIRST POLITICAL BROADCAST
NOVEMBER 2, 1920**

This photo shows scene during world's first pre-scheduled radio broadcast, when station KDKA in Pittsburgh sent out Harding Presidential election returns in

1920. Second from right is the announcer in front of microphone which resembles primitive telephone transmitter. KDKA is now an outstanding NBC station.

ACOUSTICS FOR SOUND JOBS

Practical tips on "acoustical treatment" which will help the sound man improve his P. A. installations

It sometimes happens that the P. A. man, after installing even the best sound equipment he can obtain, is disappointed with the results produced by the actual working installation. The reinforced speech sounds muffled, conflicting echoes occur, and the customer complains about the performance of the whole job.

Yet such deficiencies in the actual installation are usually due not to any fault in the sound amplifying or reproducing apparatus, but to the absence of proper acoustical treatment of the interior in which the installation is operating. Such faults can in most cases be easily corrected by applying simple acoustical principles to the job, in the form of acoustical treatment of the wall surfaces which produce reflections of the sound waves as they issue from the loudspeaker.

"Aiding hearing"

Acoustics constitute the main "bug-aboo" of all P. A. salesmen and dealers. It is probable that the word itself contributes more toward this feeling than the actual meaning that lies behind it. As a matter of fact, the science of acoustics is comparatively simple and very easy to understand. Webster's Dictionary gives the following definition for the word "acoustics":

"Pertaining to the act or sense of hearing . . . adapted for conveying sound or aiding hearing."

Therefore, it is easy to visualize that

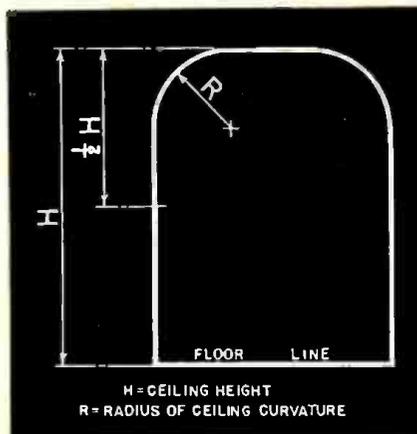


Fig. 1—When the radius of ceiling curvature is less than half the height of room echoes are not troublesome.

the word acoustics covers a wide but well-defined field. Any material or anything that contributes to ease in hearing becomes an acoustical aid or an acoustical material. With this explanation in mind, it becomes comparatively easy to discuss the practical side of acoustics, particularly as it applies to the sound industry.

Reflection of sound waves

There are only two more terms that should be defined or explained before progressing to the practical side of the question. Every salesman of equipment has encountered the term "rever-

beration" either when reading literature on the subject or when talking to a potential prospect. The term is most frequently used when describing a poor acoustical condition that exists in a room. The term "excessive reverberation" means the spoken word, or music, is being reflected back and forth between the walls, ceiling and floor many times before the word dies away to inaudibility.

Described in another way, this condition could be called "excessive reflection" rather than "excessive reverberation." It then becomes more easy to visualize the fact that words can be reflected back and forth between parallel walls so many times that the next few words emanating from the loudspeaker meet the reflected words and become mixed with them. Thus the listeners who sit at the rear of the auditorium are unable to distinguish one word from another. They hear only a lot of noise. This is the result of excessive reverberation, or excessive reflections.

How echoes occur

When a reflected sound from a distant wall or ceiling arrives at the ear about one-tenth of a second after the direct sound arrives from the loudspeaker, the ear hears a distinct echo. Both reverberation and echo are reflected sounds. In the case of reverberation, the reflections are usually so fast and so close together that a blurring of the words or music is the result. In the case of echo, the reflection takes a longer time interval because of the distance involved and it is, therefore, distinctly heard as a repetition of the original sound. Echoes are usually caused by curved ceilings or curved walls located at an appreciable distance from the listener. If the radius of curvature of a ceiling is less than half the ceiling height, the echo will not be troublesome (see Fig. 1). Likewise, if the radius of curvature exceeds twice the ceiling height, as indicated in Fig. 2-A, the echo will not be troublesome. Should the radius of curvature lie between these two limits so as to focus the reflected sounds near the floor or near the ears of the audience, as illustrated in Fig. 2-B, a bad condition will exist.

Excessive reverberation or reflections are comparatively easy to correct. The cure consists of treating the walls with soft porous material that will absorb the sound instead of reflecting it. While ceilings also are frequently treated, usually the walls are

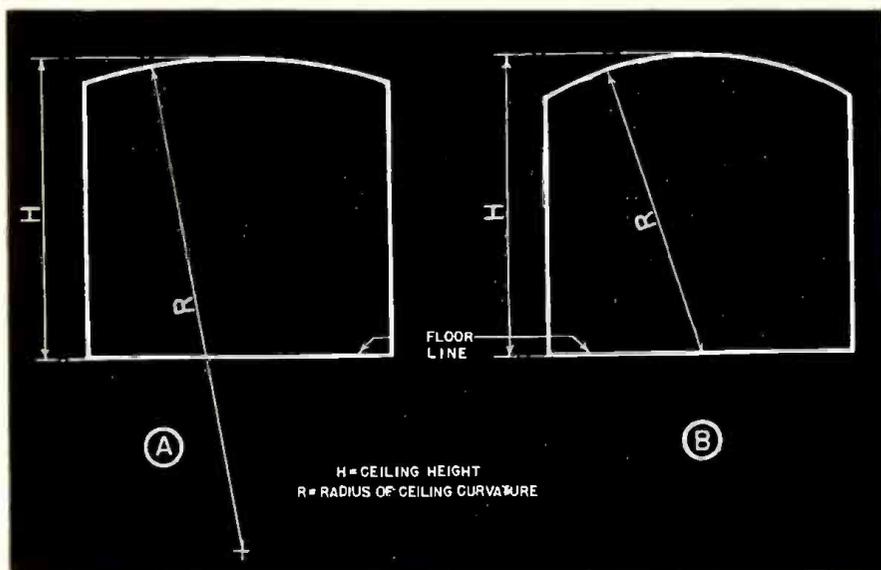


Fig. 2—When the radius of curvature is greater than the height as in A, echoes are not serious. In B, when the radius is equal to the height, echoes are focussed on the audience.

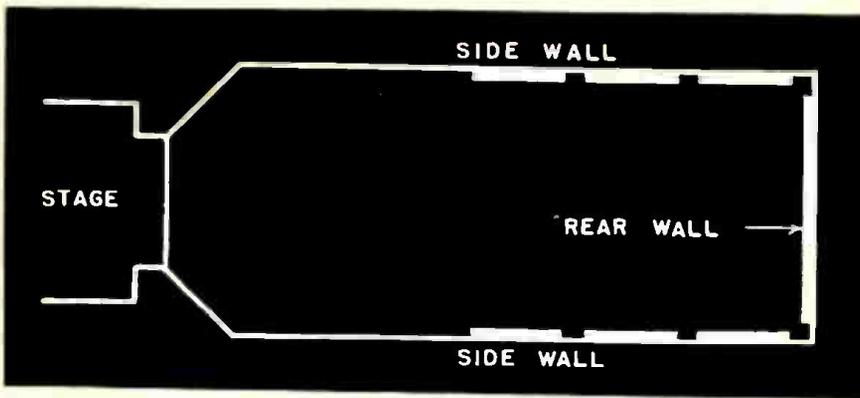


Fig. 4—Sound absorbing material should be placed on the rear wall first, and the balance on the sides at the rear.

the main offenders. It so happens, however, that rooms with heavily upholstered seats, carpets in the aisles, or a considerable amount of draperies will usually have a good acoustical condition and practically no reflections to speak of.

Men selling sound systems should note the conditions in the room that constitute good or bad acoustical conditions from the standpoint of sound reflection. A few of these items to look for are listed below.

Bad conditions

- No carpets
- Wood seats
- No draperies
- Curved ceiling
- Curved rear wall
- No acoustical materials

Good conditions

- Carpets (lined with Ozite particularly)
- Upholstered seats
- Draperies
- Rectangular shape room
- Acoustical materials

If upon inspection of the room it is observed that carpets, heavily upholstered seats and draperies are present, the salesman can usually proceed with confidence and sell his sound system with assurance of fairly good results. He can further demonstrate by talking in a loud voice in the room and if he notices that his words die away quickly and do not bounce around in the room, then he has had the good fortune of encountering a room with good acoustics.

These same observations can be made in auditoriums, lecture halls, music rooms, gymnasiums, restaurants and, in fact, any place that is prospective for the sale of a P. A. system. If, on the other hand the floors are concrete with no carpets and the seats are wood, or possibly covered with very thin leather behind which there is practically no padding, and the walls are bare of any acoustical materials or draperies, you may be reasonably sure that complaints with regard to the poor acoustical conditions will arise after the installation of the sound system.

In the latter case, it is necessary to recognize in advance the poor conditions and to be able to recommend

the proper steps necessary to correct those conditions. Fig. 3 has been developed from the formula that follows:

Units of sound absorption needed equals $.3\sqrt{V}$. Thus the formula may be neglected and the amount of sound absorption needed can be determined by the use of Fig. 3. First determine the volume of the room in cubic feet, read vertically to the curve, then horizontally, to determine the number of sound absorbing units. This curve is predicated on a bare room with wood seats and no carpets. Should any of the following materials be present in the room the amount of absorption that they introduce can be deducted from the chart.

Material	Units of absorption
Wood seats.....	0.25 each
Leatherette seats.....	1.60 each
Fabric upholstered seats....	2.6 = 3.0 each
Draperies.....	0.12 to 0.30 per sq. ft.
Carpets (lined) ..	0.25 average per sq.ft.
Hair felt 1 in....	0.69 per sq. ft.
Rock wool 1 in....	0.83 per sq. ft.
Insulating board	
½ in.....	0.33 per sq. ft.

If the auditorium in question is 100,000 cubic feet, approximately 630 units of absorption will be needed. If there are two hundred leatherette seats in the room with absorption of 1.60 units

each, the seats will contribute a total of 320 units, which should be deducted from the 630 needed. Thus a total of 310 units must still be added to the room by means of draperies, rock wool blanket, hair felt, or other types of acoustical materials. Select the material that can be obtained locally and learn its sound absorption efficiency from the dealer and divide the number of units needed by the material's sound absorbing efficiency in order to determine the total square footage that must be ordered. If 310 additional units are needed and rock wool can be obtained locally in 1 in. thickness, total square footage that should be ordered equals 310 divided by .83, or 374 sq. ft.

Installing acoustic material

The material should be installed first on the rear wall. Sound systems are directional and are usually pointed toward the rear wall, or toward the edge of the balcony if the balcony exists. The main reflections will, therefore, come from the rear wall and this area should be the first to which sound absorbing materials are applied. If materials are left over after application on the rear wall, the balance should be installed on the side walls, starting at the rear of the house and working forward. This particularly applies to auditoriums or assembly halls. In restaurants or night clubs, ceiling treatment is almost always desirable, since it tends to reduce the noise caused by the clatter of dishes in addition to providing good acoustics for the sound system.

Usually it is necessary to install a soft material and cover it with a decorative fabric for the sake of appearance. Almost any soft material with a thickness of 1 in. or more has good sound absorbing qualities. Many ordinary materials, such as cotton batting, thick quilt-like materials, blankets, clothing, etc., are good sound absorbers. Most of them, however, cannot be used because of, first, they are too soft

(Continued on page 48)

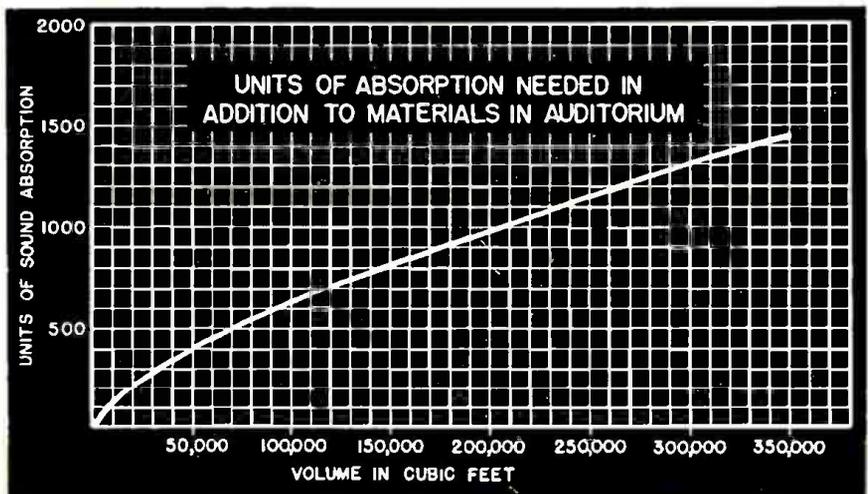


Fig. 3—Chart showing the amount of sound absorbing material to correct reverberation in an auditorium.

NEW SOUND EQUIPMENT



Thordarson amplifier

★ 60-watt amplifier using dual push-pull 6L6 tubes with inverse feedback. Three mike channels and 1 phono input. Two separate channels incorporating compressor and expander circuits which may be used separately and simultaneously. Cathode-ray volume indicator tube. Separate high and low-frequency tone controls. Thordarson Electric Mfg. Co., 500 W. Huron St., Chicago, Ill.—RADIO TODAY.



Webster-Chicago amplifier

★ 18-watt p.a. system. Four-stage 7-tube amplifier with inverse feedback. Gain of 125 DB. Phono and mike inputs. Two input gain controls. Response from 50 to 10,000 cycles within 3/4 db. Output impedances of 3, 6, 250, 500 ohms. Model 2L18. Webster Co., 5622 Bloomingdale Ave., Chicago, Ill.—RADIO TODAY.



30-watt sound systems

★ Beam-power amplifier having 30-41 watt output. Dual 12-inch PM speakers. Choice of microphone. Modern luggage carrying case. 4 input channels, multi-impedance output. Inverse feedback. Clarion model C-458—list \$166.90. Model C-462 with dual channel remote control and 50-ft. cable—list \$188.20. Transformer Corp. of America, 69 Wooster St., New York, N. Y.—RADIO TODAY.

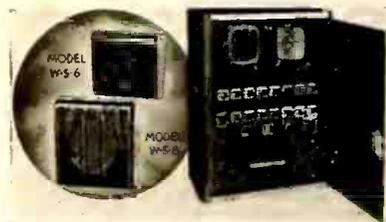


Multi-unit crystal mikes

★ Wide-range crystal pressure-operated microphones. Output level of -56 DB. Model MU-2 is constructed with a double-diaphragm, yoke-driven crystal units using 4 diaphragms. MU-4 assembly employs 4 units using 8 diaphragms and is characterized by smoother response. Acoustic overloading entirely eliminated. Self-locking, tilting head. Astatic Microphone Lab., Inc., 830 Market St., Youngstown, Ohio.—RADIO TODAY.

Uni-directional dynamic mike

★ Dynamic type of microphone having uni-directional characteristics. Response of rear 180° less than 50 per cent. May be used for close talking. Response up to 10,000 cycles. Available in high and low impedance models. Model D9 low impedance—list \$35 with shielded cable. American Microphone Co., 1915 S. Western Ave., Los Angeles, Cal.—RADIO TODAY.



Centralized sound system

★ Complete sound system for schools and institutions. Will handle up to 32 rooms. Has all-wave tuner. Talk-back two-way communication. Input for external phonograph unit. Choice of speakers. Selective or group calling. Provision for remote control. Bogen Junior model S-32. List less speakers \$309.50, 16-room installation. David Bogen Co., Inc., 663 Broadway, New York, N. Y.—RADIO TODAY.



Mobile sound system

★ 25-watt sound system for 6-volt or AC operation. Dual 12-inch PM speakers. Aerodynamic microphone. Phonograph turntable and all necessary accessories. May be used with remote control. Model MI-12754, list \$245.50. RCA Mfg. Co., Front St., Camden, N. J.—RADIO TODAY.



100-watt amplifier

★ 17-tube amplifier having 100-watts output. Built-in 4-channel preamplifier and electronic mixer. Dual-stage electronic tone compensation. Monitor loudspeaker. Illuminated control panel. Model 40-75C. Vocagraph Sound Systems, 164 N. May St., Chicago, Ill.—RADIO TODAY.

Exponential sound projector

★ All-steel baffle for use with 12-inch speaker units. Extra large shell takes care of P.M. speakers. Baffle has welded fixture tapped to take bracket or any 1/2-inch standard pipe fitting. Baked art metal finish. Type S-12—list \$18.50. Kainer & Co., 761 W. Lexington St., Chicago, Ill.—RADIO TODAY.



Tilt-type dynamic speaker

★ 8-inch P.M. type speaker assembled in attractive walnut finished cabinet. When mounted on wall, sound is projected downward at an angle of about 15 degrees.

TRIPLET

NEW 1939 SERIES

Push Button

TUBE TESTER

\$39⁰⁰



MODEL 1610

\$39.00 net

- Tests All Receiving Tubes and Has Ballast Tube Continuity Test
- Separate Plate Tests on Diodes and Rectifiers
- Neon Short Test

- Uses Approved Emission Circuit Constructed to RMA Load Requirements
- Illuminated Dial on Good-Bad Scale

Beautiful metal case, black velvet electrofinish with chrome fittings. A tester you will be proud to operate and proud to show.

This new push-button tester catches the eyes of everyone. Compact in size, light in weight and sturdily built with all wiring in orderly cable form, it can be handled easily and safely. The new black velvet finish case with chrome fittings and the attractive colored buttons create an atmosphere of distinction and ultra modernness whether the tester is used on the counter, in the shop or on call in the home.

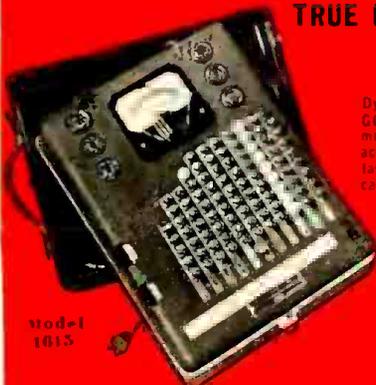
TRUE DYNAMIC MUTUAL CONDUCTANCE TUBE TESTERS

MODEL 1615

Dynamic Mutual Conductance Tube Test shows not only GOOD and BAD on illuminated dial but the Percentage of μ to 100. Diodes and rectifiers are tested for emission according to the latest approved engineering standards. Ballast tube continuity test and gas test included. In same case as 1610. Net price **\$63.34**

MODEL 1616

Same as 1615 but includes push-button Volt-Ohm-Milliammeter. Decibel chart permits readings against volts to 42 decibels. Uses plug-in type rectifiers. Net dealer Price **\$76.34**



Model 1615

MODEL 1510

Model 1510 is a Dynamic Mutual Conductance Tube Tester only. Same as Model 1615 less Volt-Ohm-Milliammeter. Net Price **\$49.67**

MODEL 1511

Is same as Model 1616 but is in a standard 1500 series quartered-oak case with selector switch controls. Net Dealer Price **\$59.67**



Model 1510

MODEL 1610

• Model 1610 is Triplet precision built. GOOD-BAD illuminated meter. The approved emission type circuit used is constructed to RMA load requirements and is conclusive. All types of receiving tubes including ballast tubes can be tested, push-button settings for each tube being given under each row of buttons on the scroll at bottom. Line voltage adjustment also controlled by push-buttons. Model 1610 Complete. **\$39⁰⁰**
Net Price

MODEL 1611

• Combines push-button Volt-Ohm-Milliammeter with Tube Tester of Model 1610 in same type case. Readings: D.C. Volts 0-10-50-250-500-1000 at 1000 ohms per volt; D.C. Milliamperes 0-1-10-50-250; low ohms shunt type circuit 1/2 to 500; 300,000 ohms, 1.5 and 3 megohms, series type circuit; A.C. Volts 0-10-50-250-500-1000 at 400 ohms per volt. Uses plug-in type copper oxide rectifiers. Model 1611. Dealer **\$49⁵⁰**
Net Price

MODEL 1212 TUBE TESTER

• Emission type tube tester circuit as used in Model 1610 but unit has selector switches instead of push-buttons and is installed in popular master case. Net Dealer **\$22⁰⁰**
Price

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Get Entry Blank from your Local Jobber!

THE TRIPLET ELECTRICAL INSTRUMENT CO.
1910 Harmon Dr., Bluffton, Ohio

Please send me more information on:
 Model 1610 Model 1611 Model 1615
 Model 1616 Model 1510 Model 1511
 Details on Radio Service Puzzler Contest

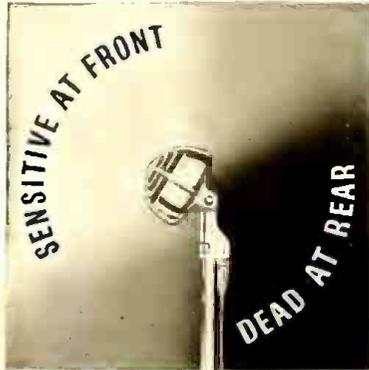
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STOP... UNWANTED SOUNDS



NEW SHURE "UNIPLEX" REALLY SOLVES FEEDBACK, BACKGROUND NOISE AND REVERBERATION PROBLEMS

There's no other microphone like this uni-directional "Uniplex." It solves pick-up problems—does most every sound pick-up job better—yet costs surprisingly little. Provides excellent high-quality response from 30 to 10,000 cycles at the front, yet is practically unaffected by sound approaching from the rear. Tilting head, in new "speed-line" design and rich Satin Chrome finish. Equipped with new Shure built-in Cable Connector and 25 ft. of special noise-free Super-Shielded Cable. Model 730A "UNIPLEX" Crystal Microphone.

List Price..... \$29.50



NEW SHURE "ROCKET"

A semi-directional crystal microphone with performance watching its striking streamlined beauty "Ultra" wide-range response. A91A Baffle increases high frequency discrimination against sound from sides and rear. Model 705A "Rocket." List price, with 25 ft. cable and plug.....\$25 (A91A Baffle, \$2.50 List Extra)



"Sound Systems Sound Better
with Shure Microphones"

Shure Patents Pending. Licensed under patents of the Brush Development Company.

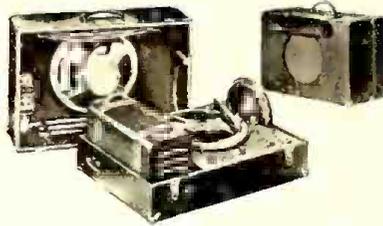


SHURE BROTHERS

"Microphone Headquarters"

225 W. HURON ST. CHICAGO, U.S.A.

MORE NEW THINGS



Radolek sound system

★ 25-watt P.A. system with high-fidelity amplifier having 130 DB gain. Dual microphone input and phonograph input mixing facilities. Record player, microphone and floor stand housed in one case. Other systems from 10 to 90 watts. Radolek Co., 601 W. Randolph St., Chicago, Ill.—RADIO TODAY.



Mike with acoustic compensator

★ The acoustic compensator is now being supplied with the lower-priced models such as the RSHK, RBSK at no extra cost. These makes also come equipped with cable connector and switch. Acoustic compensator is a mechanical shutter that gradually closes the back of the mike, changing the operation from velocity to pressure. List for the RSHK and RBSK—\$32. Amperite Co., 561 Broadway, New York, N. Y.—RADIO TODAY.



Lafayette amplifier

★ 30-40-watt amplifier for sound systems. Model 277A illustrated. Other amplifiers available for all purposes. The Lafayette line includes 50 completely coordinated sound systems and 40 amplifiers. Smallest unit is a 5-watt system—largest one will handle an audience of 100,000 persons. Wholesale Radio Service Co., 100 Sixth Ave., New York, N. Y.—RADIO TODAY.

Mobile microphone

★ Hand-type dynamic microphone weighing only 13 ounces. Fits into palm of hand. Designed for close talking. Is rugged and impervious to heat and rough handling. Available in high and low impedances. Complete with switch and 8-ft. cable. Electro-Voice Mfg. Co., 324 E. Colfax Ave., South Bend, Ind.—RADIO TODAY.



Bell school system

★ Sound system for use in schools and other similar places. Unit illustrated will handle up to 30 rooms. Has high-quality radio. Talk-back intercommunicating system. 24-watt amplifier with bass and treble compensation. Provision for phonograph. Master switch for each panel of 10 switches. Priced at \$295 for 10 rooms less speakers. Bell Sound Systems, 1183 Essex Ave., Columbus, Ohio.—RADIO TODAY.

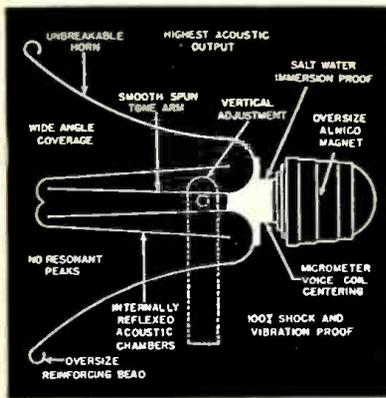


Silvered mica condensers

★ Condensers with extremely stable characteristics for use in tuned circuits. Silver is deposited directly on the mica. Available in capacities from 5 to 5,000 mfd in two physical sizes. Tolerances as low as plus or minus 1 per cent. Sprague Products Co., North Adams, Mass.—RADIO TODAY.

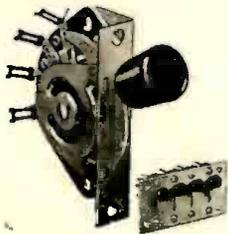
AC power plants

★ 2000 and 3000-watt AC plants with water cooling. Welded-steel generators. Available with manual, self-starting, or fully-automatic starting. Two-cylinder 4-cycle gas engines operating at 1800 r.p.m. Units shielded against radio interference. 12-volt DC current for recharging the starting battery. Rubber bushings absorb vibration. D. W. Onan & Sons, 45 Royalston Ave., Minneapolis, Minn.—RADIO TODAY.



Reflexed trumpets

★ Reflexed type of air-column trumpets for sound installations. Uses P.M. type unit. Model S.M.R. has an air column of 30 inches. Smallest overall dimensions of any unit. Other types with air columns up to 72 inches. Absolutely water-proof for use in outdoor applications. Efficiency twice that of cone unit. University Labs, 195 Chrystie St., New York, N. Y.—**RADIO TODAY.**



Lo-capacity switch

★ Lever-action switch with low capacity between circuits. Available in single or multiple mountings. Standard types of contacts available for broadcasting, receiving, amateur applications, public address, and signaling equipment. Described in form Nos. 628 and 694. Centralab, 900 E. Keefe Ave., Milwaukee, Wis.—**RADIO TODAY.**



Recording blanks

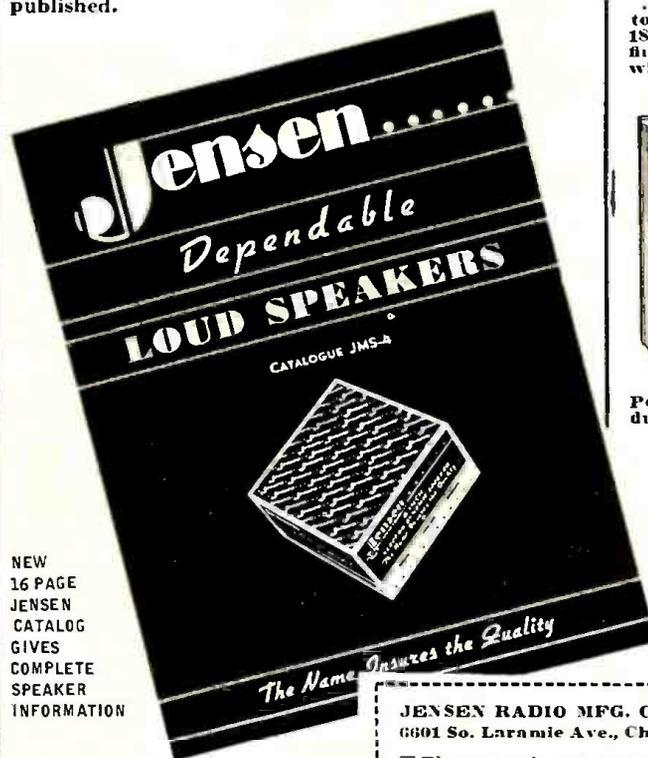
★ Semi-plastic blank for instantaneous recording and immediate playback. The cellulose-nitrate coated blanks will be distributed in 2 types. "Silveroid" soft blanks are for extremely free cutting. "Professional," a harder type, is of extremely high density, producing extremely wide frequency response. Universal Microphone Co., Inglewood, Cal.—**RADIO TODAY.**

Select the Right Speaker for each Specific Purpose

... and depend upon the most extensive line of loud speakers and accessories in the world for your selection, all of them built to the same high Jensen quality standard ... for which there is no cost premium.

WHETHER for replacement in the smallest radio receiver, use in the finest organs or in the world's largest theatres, there is a Jensen product built for the purpose. And we believe that more of them are used in these applications than any other known loud speaker.

No Service Dealer, Sound Dealer or any buyer or user of loud speakers should be without complete information of the extensive line of Jensen loud speakers and accessories. A new catalog, 16 pages, has just been completed ... and it's yours for the asking. It includes descriptions of the smallest and the largest speakers, accessories and complete High Fidelity Reproducers in handsome cabinets. We consider it to be the most comprehensive book of its kind ever published.



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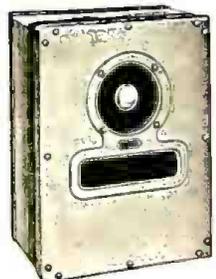
A
Jensen Speaker
for Every Purse
and Purpose



Replacement speakers ... PM and Field Coil types ... fixed and adjustable transformers ... all sizes ... at strictly competitive prices.



For outstanding sound reproduction ... heavy duty Auditorium, 15-inch and 18-inch speakers. The finest offered anywhere.



Peri-Dynamic Reproducers ... A Jensen contribution of real merit for improved sound installations ... for 8, 10, 12, 14, 15 and 18-inch sizes.

And many others. ... Don't be without this Catalog!

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Please rush me your New 16-page Loud Speaker Catalog.

Name

Address

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

This **LOWEST COST**
Portable Sound System
builds sales and rentals



complete
crystal microphone, stand,
carrying case - **\$29⁶⁰**
P. M. Speaker . . .

• Here is the low cost—modern high fidelity portable sound system—that every sound man and radio dealer has needed for profitable rentals and quick sales.

Use it for window demonstrations, singing acts, call systems, etc. Fidelity and tone range to equal largest systems. Complete equipment includes VOCAGRAPH five watt high-gain amplifier, newest bullet-type crystal microphone with 25 ft. cable, 8 in. p.m. dynamic speaker, and fabric covered carrying case.

VOCAGRAPH is
The Most Complete Sound Line
5 to 100 Watt Systems

For every sound need—there is a VOCAGRAPH amplifier to give dependable performance—at low cost!

- 12-WATTS—Amplifier only.....\$16.50
- Portable Complete System... 41.40
- 20-WATTS—Amplifier only..... 27.90
- Portable Complete System... 67.20
- 30-WATTS—Amplifier only..... 39.90
- Portable Complete System... 90.00
- 40-WATTS—Amplifier only..... 57.00
- 100-WATTS—Amplifier only..... \$4.00

6 AND 110V MODELS

- 20-WATT—Complete Amplifier..\$48.00
- 30-WATT—Complete Amplifier.. 66.00

Compare these prices—and you will see why VOCAGRAPH leads all others in sales gains. Complete descriptive bulletins are available upon request.

See Your Jobber or Write Today

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FREE — 1939 CATALOG!

Send at once new VOCAGRAPH 1939 Catalog and place our name on your mailing list for all new model announcements.

NAME

ADDRESS

ACOUSTICS FOR SOUND JOBS

(From page 43).

to be handled and, therefore, cannot be properly installed. Likewise, they would dirty fast. Secondly, many materials, although fairly soft and good sound absorbers, are too expensive to be used for acoustical correction. Many other materials, however, such as rock wool blankets or hair felt, insulating board, etc., are reasonably good because they can be handled and the cost is relatively low. If curved surfaces exist in the auditorium and tend to produce echoes, they should be covered entirely with a good sound absorbing material. While the echoes cannot be entirely eliminated, the treatment usually weakens them to the point where they cease to be troublesome.

No doubt cases will be encountered where the above simple formula and simple selection of materials are not adequate to solve the problem to the owner's satisfaction. In these cases the P. A. salesman should contact a reputable manufacturer of acoustical materials. These firms maintain trained engineers to handle the more difficult complaints. On the other hand, it is believed that much trouble can be avoided by those who deal in sound systems by following the simple procedure outlined above.

MAKE IT EASY FOR PROSPECT TO UNDERSTAND

(From page 35)

installations and, if possible, secures a letter of testimonial outlining "how much time is saved and better efficiency is maintained by the sound equipment—its dependability and satisfactory service."

However, the use of such letters has to be watched, for often the prospect will get the impression that after the sale is made he will be a walking advertisement for you. Pictures are better than letters in the long run, and simple explanation given to the next prospect about the various installations and the names of the organizations, will convince the most skeptical.

After the installation is completed, a few calls should be made at regular intervals to determine whether the system is working properly. During the first month, a few stops should be made to see if the purchaser understands the operation. With such precautions, little or no service trouble should develop. It is definitely cheaper for a salesman to drop in for a call, when in the neighborhood, than to send a trouble-shooting serviceman when a real emergency does occur through lack of proper instruction.

Par Metal

SOUND MEN!!

These new de-luxe units will increase your profits . . . grey or black . . . streamlined with chromium trim.



New Catalog Now Ready!

You need it! Illustrates and describes many racks, panels and chassis which you can use in your P. A. work. Get it. . . It's FREE!

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IMPROVED OXFORD PERMAG SPEAKERS

Stepped-up in sensitivity, and otherwise improved in construction—Oxford Permag (Permanent Magnet) Speakers specially developed for Public Address and Intercommunicating Systems now enable sound engineers to do a better job at no more cost. Available in convenient stock sizes from 3 inches to 14 inches—or special units designed to meet specifications. See your Jobber or write today for complete information.

New York Office: 27 Park Pl., New York



SOUND SHORTS

Under the name *Dutyphone*, *Regal Amplifier Mfg. Corp.* has announced a new 2-station wired intercommunicating system to be sold at \$9.95. This list price is lower than anything known in the field, according to sales manager *Walter Spiegel*. The units are hooked up, ready for use by plugging into any 110-volt AC or DC line. Greater wire lengths up to 500 feet can be used without additional attachments. Cabinets are made of wood, finished in telephone black. Tubes used are one 25A7, one 6C6 and ballast.

J. C. Koonz, of the *Magnavox Co.*, Ft. Wayne, Ind., has been advanced to the post of sales manager of the capacitor division. Mr. Koonz has been with *Magnavox* for 10 years; he has been busy in the Chicago, New York and Philadelphia areas as salesman or district manager.

Messrs. *Murphy and Cota*, 291 Peachtree St., N.E., Atlanta, Ga., have been appointed by *Atlas Sound Corp.* as sales representatives in Georgia, Tennessee, North and South Carolina.

Atlas has also announced that *J. E. McKinley*, 1819 Ridge Ave., Coraopolis, Pa., has been named to assist the Pittsburgh, Pa., representative *John O. Olsen*. Mr. McKinley will cover West Virginia, and parts of western Pennsylvania.

Bell Sound Systems, Inc., have moved into a new plant, a modern 3-story factory and office building at 1183 Essex Ave., Columbus, Ohio. Increased volume on Bell permanent and portable PA systems, intercommunicators, etc., is the reason for expansion in manufacturing facilities; the company covers the U.S. and 13 countries abroad and is rapidly expanding. *F. W. Bell* is president; *R. E. Polts* sales manager.

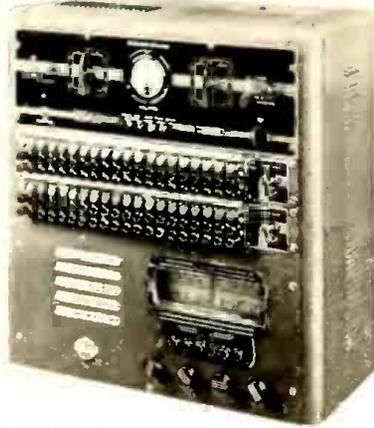
In what is announced as the first large-scale national consumer campaign on home recorders, *Presto Recording Corp.*, 139 W. 19th St., New York City, has begun a series of advertisements in *Esquire*, *Scribner's*, *The New Yorker*, *Parent's Magazine*, *Stage*, *House Beautiful* and *Down Beat*.

Large scale production is the reason for extensive improvements and alterations being made at *Universal Microphone Co.*, Inglewood, Calif. The company will specialize on uniform quality and prompt delivery of its regular line of blank recording discs as well as on a new line of recording blanks about to be introduced.

Cinaudagraph has announced a big advertising program in all major trade magazines this Fall. The ads will feature the quality and economy of the company's line of electro-dynamic speakers from 5 in. to 18 in. and permanent magnet speakers from 5 in. to 18 in., which are "designed to meet all needs of radio set makers, PA equipment engineers, servicemen, and amateurs."

TWO Sound NUMBERS FOR BIGGER DEALER PROFITS

MODEL S-40



Model S-40, sectionalized . . . for smaller schools . . . will handle any number of rooms from 1 to 40.

A BRAND NEW SCHOOL LINE THAT'S GOING OVER IN A BIG WAY

• Telegrams! Long distance calls! Rush shipments! . . . That's what's going on with Webster-Chicago in the school field.

New and better application of Webster-Chicago's famous Sectionalized Sound System has placed sound within reach of schools of all sizes.

Don't fail to investigate the possibilities in your community!

MODEL 305-7



Model 305-7 . . . Paging . . . Talk Back . . . Remote Station Call . . . No Microphone necessary . . . Easy, Simple Installation . . . Extremely Low in Cost. . . . No wonder it is selling big. . . Be sure to send for brochure below!

SYSTEM 305-7.. The Biggest Opportunity in SOUND HISTORY

• Because its answers the need for the small business at very low cost, dealers report sales of System 305-7 in such quantities that it is our conviction it is the biggest money-making opportunity in sound history.

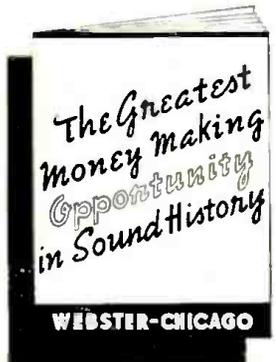
Every business is a prospect; garages, service stations, coal and lumber yards, warehouses, howling alleys, clubs, etc. . . . businesses and activities present in every community.

Why not learn all about it? Folder is free to any dealer on request.

A few 16-page booklets left on Sound Engineering, theory and practice. Copies free while they last.

WEBSTER-CHICAGO

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Section 0-9, 5622 Bloomingdale Ave., Chicago, Ill.
Please send me free copy—
 "The Greatest Money-Making Opportunity in Sound History."
 "Sound Engineering."
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PENTODE LOAD IMPEDANCES

The need for proper load matching in pentode amplifiers and how to dynamically test for proper conditions

By VINTON K. ULRICH, *Service Editor*

While all design engineers and many sound specialists realize the need for proper matching of the load in power output amplifiers, altogether too few radio servicemen take this factor into account in their work. Up to the present, part of the difficulty could be traced to inadequate means of quickly checking the conditions.

In RADIO TODAY for September, on pages 52, 53, and 56, the subject of load impedances in triode amplifiers was discussed and a method of quickly checking for proper load impedance was described. While the method is not highly accurate, it is sufficiently sensitive to detect improper load impedances that adversely affect the performance of the amplifier.

Pentodes more critical

With pentode type tubes, the use of a proper load impedance is many times more important than with triodes. While triode tube characteristics introduce distortion at low values of plate current (high negative grid voltages), the pentode amplifier may also introduce distortion at the upper portion of the tube characteristic. (Low negative grid voltages).

In Fig. 1, the plate current vs. plate voltage characteristics are shown for a typical pentode amplifier tube. Plate load lines for three values of load resistance are shown for a plate voltage of 250 and bias of -25 volts. The load lines illustrated are for 2150 ohms, 6750 ohms (recommended value), and 50,000 ohms. The internal plate impedance of the tube is about 80,000 ohms.

Although the method of constructing

Dynamic Testing as developed and sponsored by Radio Today, is an independent method of testing, for servicemen, which can be used with any brand of suitable quality servicing instruments. Radio Today does not advocate the use of one type of instrument against another, but leaves it to the individual manufacturers to present their own sales arguments regarding the special merits of the respective product. The purpose of *Dynamic Testing* is to help the serviceman make his diagnosis as fast as possible and to make fullest use of quality instruments.

a load line was discussed last month, a brief review of the principle will refresh the readers' memories. If an external plate load resistance is assumed, then the reader knows that there will be a voltage drop across this resistance which depends upon the value of plate current flowing. Past experience has shown that if the grid bias is decreased, the plate current will increase a certain amount. Because this increased plate current must also flow through the load resistance, it follows that there must be an additional voltage drop across the resistance.

Assuming that the plate voltage supply remains constant, which is generally true, the voltage across the tube itself must decrease by an amount equal to the increased voltage drop across the plate load resistance. For Fig. 1, at point O, the plate current is 32 mils for 250 volts on the plate and

-25 volts bias. For point E₁, the bias is decreased to -20 volts. The plate voltage value for that point is 198, and the plate current is 39%. From Ohms Law, resistance equals $\frac{E}{I}$, Substitut-

$$\frac{250 - 198}{39\% - 32\%} = \frac{52}{7\%} = 6750 \text{ ohms.}$$

Since the increase in plate current has brought about a voltage-drop increase equal to that which would be obtained through a 6750 ohm resistance, the load line is said to represent a resistance of 6750 ohms.

Dynamic tube characteristics

If the points A, B, C, etc., are plotted in terms of plate current versus grid bias, one obtains the curve shown in Fig. 3-A, which is called the dynamic characteristic of the tube for a plate load of 2150 ohms. The term dynamic is used, since the curve takes into account the plate load impedance and instantaneous plate voltage variations. Similarly a curve is plotted from A₁, B₁, C₁, etc., for a load of resistance of 6750 ohms. The exceeding high value of load resistance of 50,000 ohms is plotted from the values A₂, B₂, C₂, etc., and is shown in Fig. 3-C.

In order to show how these tube characteristics affect the waveform of the input signal, the grid signal has been shown below the characteristic superimposed upon the bias voltage in the usual manner. The points are projected up from the grid signal to the tube characteristic and then to the right to form the current output waveform. See Fig. 3-A for a complete portrayal of the points involved. The points on the curves correspond to those shown in Fig. 1.

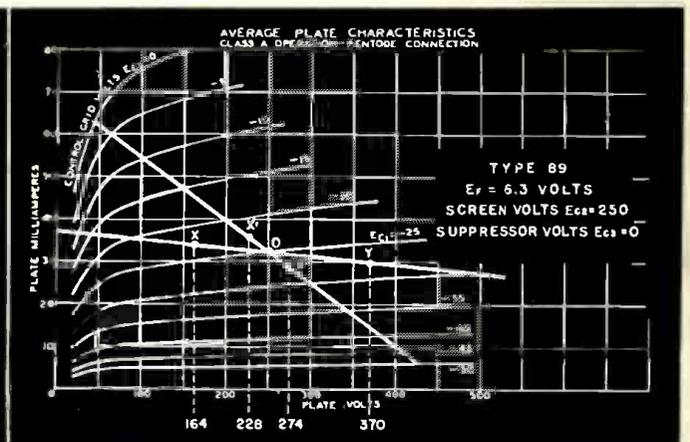
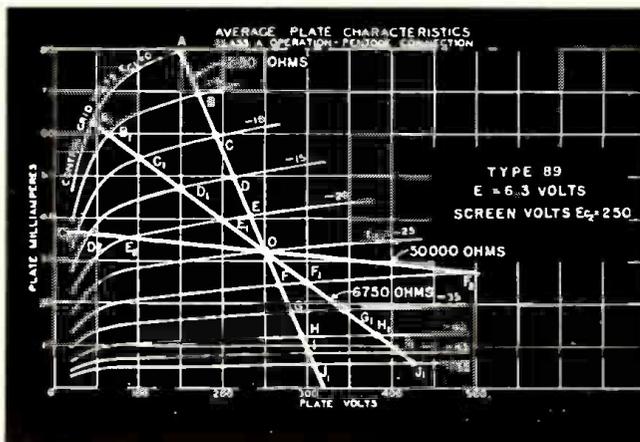


Fig. 1—Plate characteristics and three values of load resistances used for calculating curves of Fig. 3.

Fig. 2—Load lines (resistances) showing plate voltage swings (points X, X', O, Y, Y') for no-load and load conditions.

Even harmonics

In Fig. 3-A, the top half of the current wave is considerably greater than that of the lower half. This indicates a fairly large amount of even harmonics, such as the 2nd and 4th. (In wave form analysis, non-symmetry indicates even harmonics). The average plate current for a swing of 23 volts increases to 39 milliamperes, although for no signal the plate current is only 32 milliamperes. This increase in average plate current is caused by the non-linearity of the tube characteristic and is to be expected.

In Fig. 3-B the top and bottom halves of the output wave are fairly symmetrical. This is caused by the flattening of the top of the dynamic tube characteristic. Since the waveform is fairly symmetrical, it follows that there is little even-harmonic distortion. What distortion that occurs is mainly odd-harmonic. The operation indicated by this chart is for the normal recommended conditions. Even under this normal operation, the plate current rises to 33 mils when the grid is excited by a 23 volt signal. While the increase is only 1 milliampere, for a signal swing of 25 volts equal to the grid bias, the rise would probably be 2 mils. This represents an increase of about 7 per cent over no signal conditions, and is entirely normal for class A operation of the amplifier.

Flattening of the tube characteristic

In Fig. 3-C the conditions are about the worst possible. The plate load impedance is very nearly equal to the internal plate impedance of the tube. Note how the top half of the current wave is practically non-existent because of the flattening of the dynamic

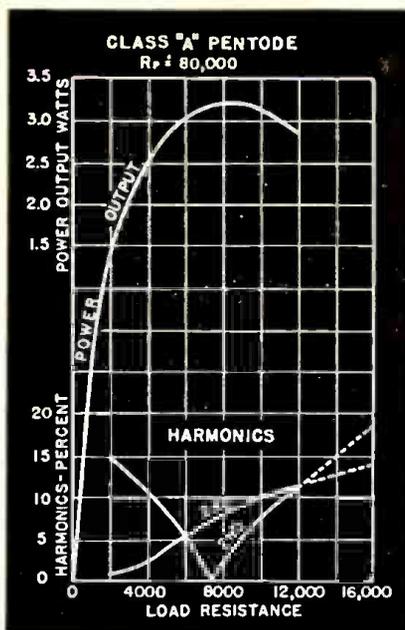


Fig. 4—Curves show variation of harmonics for different values of load impedance. Note that the harmonics change more rapidly than the power output in the region of 7,000 ohms.

tube characteristic for low values of grid voltage. Since the top half of the current wave is so small, it is to be expected that the plate current for this condition will decrease tremendously when the grid of the tube is fully excited with a sine-wave signal. Actually it drops from 32 mils to 26 mils with a signal having a peak of 23 volts.

In view of the fact that tremendous distortion is caused in pentode amplifier merely by the wrong load impedance, it is essential that the serviceman and sound specialist look into this trouble if a radio set or amplifier will

not deliver its full undistorted output.

With triode amplifiers, a method of load and no load measurements across the voice coil winding of the output transformer was described. It was shown that the load voltage for triodes should not be less than $\frac{2}{3}$ of the no load for single-ended class A amplifiers, and that slightly less (60 per cent) might be tolerated for push-pull amplifiers because of the cancellation of even harmonics.

For pentode amplifiers, the load voltage is a much smaller fraction of the no load voltage since the load impedance is always a small fraction of the tube plate impedance. Generally the plate load impedance is $\frac{1}{5}$ to $\frac{1}{10}$ of the plate impedance. If the tube impedance is considered as being in series with the load impedance, then the voltage across the sum of the two impedances will be roughly 6 to 11 times that across the load, since the total resistance is 6 to 11 times that of the load. (This voltage, however, cannot be measured for reasons to be explained later).

In Fig. 2, the typical operating conditions of a type 89 pentode are shown for proper load impedance (line X'-O-Y') and for open circuit or no load conditions (line X-O-Y). If the tube is excited with an AC voltage having a peak about $\frac{1}{10}$ of the bias voltage, a voltage swing appears across the plate load impedance. For proper load impedance this voltage is $250 - 228 = 22$ and $274 - 250 = 24$. The average of these two is 23 volts. For open load conditions the voltage obtained are $250 - 164 = 86$ and $370 - 250 = 120$ or an average of 103. In this particular instance the ratio is about $4\frac{1}{2}$ to 1.

In usual receivers the losses in the

(Continued on page 55)

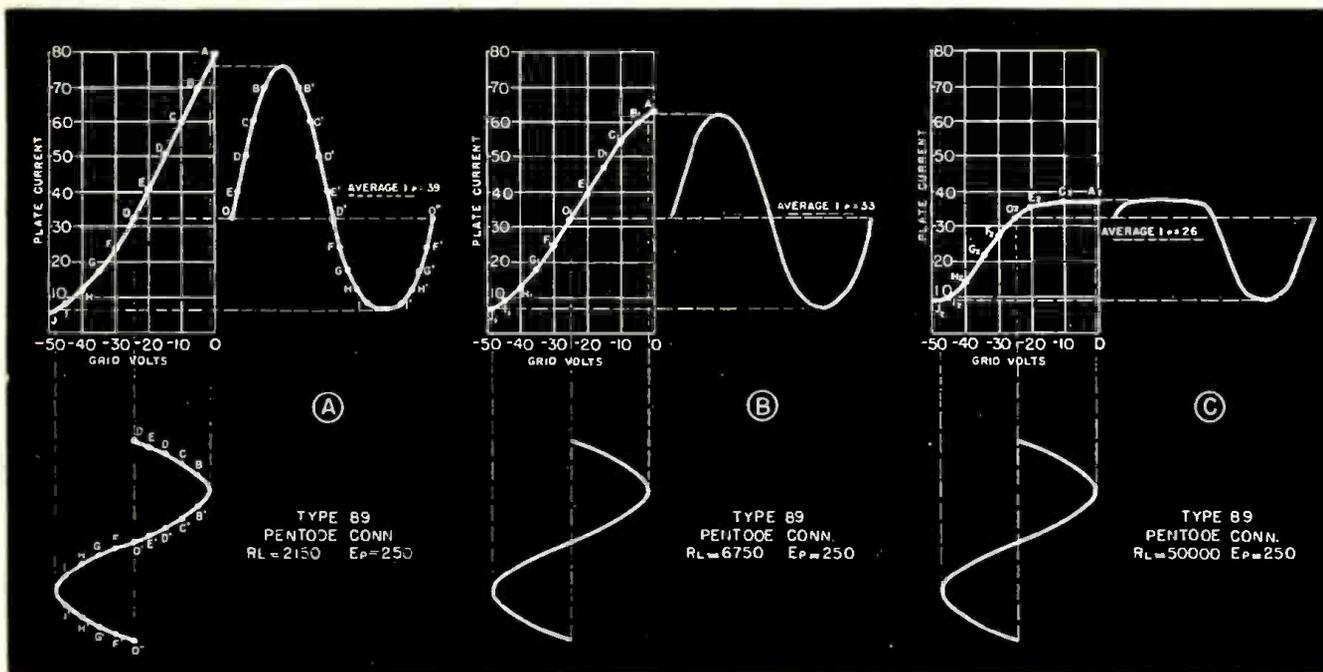


Fig. 3—The dynamic characteristics and consequently the tube output currents are greatly affected by the value of the load resistance. 3-B represents a normal value of load impedance. The distortion shown in 3-A and 3-C is caused only by improper load impedances.

BROADENING THE SOUND MARKET

(From page 36)

cover a whole state. A re-alignment of this situation will change the picture entirely.

As a rule, the radio dealer knows his immediate vicinity like a book. Every worth-while civic minded or active business man is already carded. Just reflect for a moment and you will immediately realize how easy it is for the radio set dealer to obtain practically every sound sale in his respective locality, simply because he knows where every single outlet is and whom to see about it—further he is right at their doorstep. No additional sales expense is necessary. Just pull the card out of the file, make a telephone call, demonstrate and—bingo—a sale that would have gone to an out-of-state concern becomes a profitable return to the local dealer.

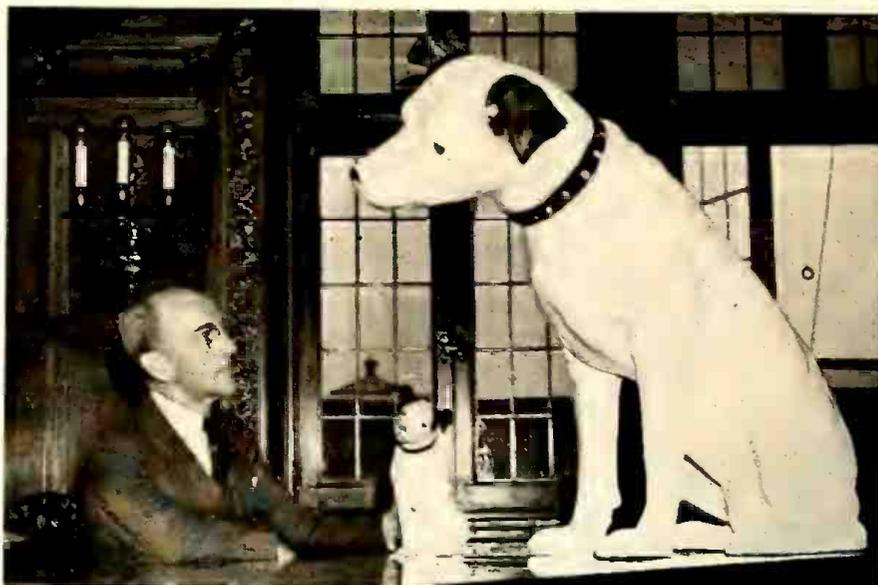
Why? What? How?

R. C. REINHARDT

Atlas Sound Corp., Brooklyn, N. Y.

The commercial application of sound embraces a legitimate and tangible market. All industrial and commercial organizations are interested in reducing operating expenses or giving better service.

Remember, you are not selling a cheap or sensational novelty to a gul-



The famous terrier Nipper is being heard, as well as seen, by RCA Mfg. Co. president George K. Throckmorton. The dog now contains a loudspeaker, for promotion purposes; part of RCA Victor's eye-and-ear-catching 40th anniversary.

lible individual. The factors that will interest Mr. Practical Businessman, are: "Why do I need it? What are its advantages over the present arrangement, if any? How much will it save me in lost time and effort? How long will it take for it to pay for itself in effected savings?" Price is not the issue. The value is measured in results.

Legitimate lighting and electrical contractors, motor specialists, etc., operate in a businesslike manner and enjoy the respect and financial reward their profession entitles them to. The P. A. contractor should, and rightly so, establish himself in a similar manner and not as an irresponsible, loose-talking genius.

(Continued on page 54)

AMPLIFIERS

By THORDARSON

Built to Meet Need - Not Price

Peer of a
Distinguished Line
The 60 WATT



Model No. T-20W60

Tone control permits attenuation and accentuation at both high and low frequencies by separate controls. • Expander Compressor circuit with two separate channels. • Three high impedance, high gain microphone channels. • High impedance phono channel (two may be arranged by almost instantaneous conversion of one microphone channel). • "Magic eye" volume indicator. • Control panel positioned for maximum convenience and illuminated for easy readability in dark installations. • Uses four 6L6's with inverse feedback. • Extreme flexibility makes it choice amplifier for large installations using a large number of loud speakers and microphones. See your jobber or write factory for catalog No. 600.

THORDARSON ELECTRIC MFG. CO.
Amplifier Division
500 W. HURON ST., CHICAGO, ILL.

ALL EYES ARE ON....



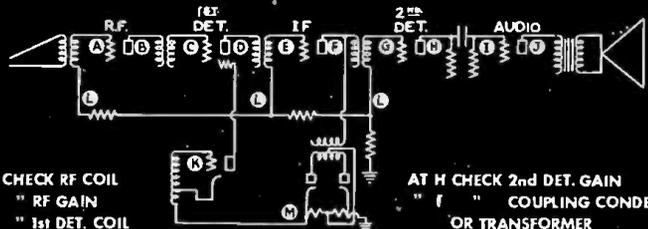
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or channel testing!*

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WESTON Vacuum Tube Voltmeter:



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" D " 1st " GAIN
" E " IF TRANSFORMER
" F " IF GAIN
" G " 2nd DET. COIL

AT H CHECK 2nd DET. GAIN
" I " COUPLING CONDENSER
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ARE YOU OVERLOOKING C.I.S.E.?



NEW SELLING PLAN HANDS BUSINESS BACK TO YOU

It makes no difference what your title may be—dealer, jobber, sound specialist. If your business is selling sound, then the C.I.S.E. plan is your dish! It was planned, conceived and engineered to give the sound business back to you lock, stock and barrel, enabling you to meet at once all competition—

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I want to belong. This, in no way obligates me,

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BROADENING THE SOUND MARKET

(From page 52)

Everybody wants it!

F. W. BELL

Bell Sound Systems, Columbus, Ohio

A New Day has dawned for sound dealers who have the ingenuity to see the possibilities in the sound horizon. Formerly you, as a sound man, had to buck tremendous sales-resistance. Today motion pictures, radio, and prospective television have made John Q. Public demand his rights. He wants to hear and to be heard at every public meeting—whether it's in the theater, the schoolroom or at outdoor gatherings.

Additional profits

L. G. PACENT

Pacent Eng. Corp., New York City

It is my considered opinion that all radio dealers should put themselves in a position to sell Sound in all its diversified phases. Sound equipment can be made to help the sale of more radio sets besides providing additional profit in itself, which is needed so badly in these days of tense competition.

Here is one way to keep the books in black ink. Stock investment in Sound can be held to a minimum without destroying the opportunity to do business or to effect the necessary turnover to make that business worthwhile.

SOUND BOOKLETS

"Clear as a bell" sound systems for some 20 types of public address prospects are presented in a new catalog issued by Bell Sound Systems, Inc., Columbus, Ohio. Belfone communicators are included.

Detailed specifications on the new Audak line of Microdyne Pickups, both the relayed frequency and the compensated types, are now available from Audak Co., 500 Fifth Ave., New York City. Sheets are suitable for filing in catalogs.

Transformer Corp. of America, 69 Wooster St., New York City, has released through its Clarion Institute of Sound Engineers a completely new 1939 fall catalog on Clarion sound systems and accessories. Lower list prices are featured. The catalog is free to those applying for Institute membership.

Buyers of loudspeakers are offered information on "the greatest variety of sizes, types and models ever presented" in a new 16-page catalog available free from Jensen Radio Mfg. Co., 6601 S. Laramie Ave., Chicago.

The "Bullet" electric dynamic microphone is featured in a new booklet released by Tilton Electric Corp., 15 E. 26th St., New York City. Tilton is representative for Transducer Corp. Stands and accessories are included in the publication.

ELECTION *SOUND* THAT YOU CAN USE THE YEAR ROUND UNIVERSITY REFLEXED STORMPROOF SPEAKERS

* Don't invest in a ONE PURPOSE sound equipment. Buy equipment that you can use AFTER Election too! For example, we suggest the SMR Reproducer. It lists at \$45.00 (a figure you can multiply during the Election Campaign alone). A pair of SMR Speakers is guaranteed to cover a gathering of 10,000 people with 50 watts continuous input! The SMR Single Speaker will handle 25 watts continuous input. Guaranteed breakdown proof.

FREE

technical and data sheets on the complete University line.

IF YOU'RE IN A HURRY see your Jobber. . . . He undoubtedly has the SMR in stock!!!

UNIVERSITY LABORATORIES

DEPT. RT

195 Chrystie Street, New York, N. Y.

What will
RADIO
TODAY
do in
1939
?

A radio publishing service — not available today — COMING!

DYNATESTING AUDIO AMPLIFIERS

(Continued from page 51)

output transformer cause the transformer to place a load on the tube even though the voice-coil circuit is open. Ordinarily the transformer can be considered as imposing a load resistance of about 50,000 ohms. If the tube has an internal impedance of 50,000 ohms, half of the total voltage will appear across output transformer under open circuit conditions.

As stated previously, the voltage across the plate is about 1/6 to 1/11th of the total voltage across the tube and the load. But with only half of the total voltage appearing for open circuit, 1/6 of the total voltage will be 1/3 of the open circuit voltage. Likewise 1/11th will be increased to 2/11ths or approximately 1/5th. Thus it appears that for measurements taken across the load, the load voltage will be between 1/5 and 1/3 of the no-load voltage.

No load vs. load voltage

Because of variations in different makes of output transformers, it is necessary to extend the 33 per cent value to 40 per cent. Thus the actual range of values is 20 to 40 per cent of the no-load voltage, with most of the tubes in use falling below 1/3rd.

To take these measurements, the voltage across the voice coil is measured with the voice coil opened, and then closed. The peak signal value applied to the grid of the tube should not exceed 1/10 of the grid bias value of the tube; this small signal is required so that the output signal will not be distorted.

The voltages referred to in Fig. 2 are peak values and should be multiplied by .707 to obtain the r.m.s. values measured by ordinary meters.

In order to avoid loading of the plate circuit, the voltage should be taken in the secondary circuit with a 1000 ohm per volt meter. The voltages naturally will be reduced by the ratio of the turns in the transformer, which are on the order of 30 to 1 for pentode tubes. A 1000 ohms per volt meter on the 50 volt range in the primary circuit presents a paralleled load of 50,000 ohms which may affect the accuracy of the readings on open circuit measurements. In the secondary circuit, the loading effect of the meter is decreased by a factor equal to the turns ratio of the transformer. If the ratio is 30:1, then the meter loading is reduced to 1/30th for equivalent deflections on the meter.

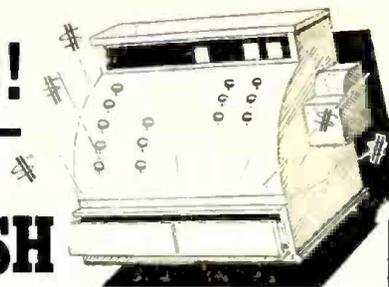
If it is necessary to take measurements in the primary circuit, care should be taken to use as high a voltage range as possible to avoid loading. Or a vacuum tube voltmeter can be used without regard to loading.

While it may appear that this meth-

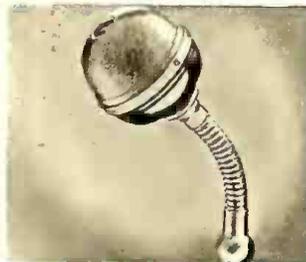
(Continued on page 57)

HERE THEY ARE!

Your new BRUSH Business Builders . . .



SELLING SOUND

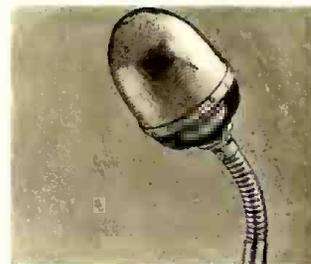


● **HIL MIKE**—A diaphragm type mike with level —46 db, it is excellent for P.A. work, amateur radio transmitters or any place where an inexpensive but efficient microphone is needed. It features the VARI-SWIV mounting, which permits the operator to take advantage of its directional characteristics. Little loss with longer cable lengths. List price, \$23.50 with 25' cable.



● **D-1 MIKE**—Especially recommended for better quality P.A., recording, and amateur applications, this high level soundcell type mike comes with VARI-SWIV mounting. Level —62 db with a response from 30 to 5,500 c.p.s. ±3 db. Popularly priced at \$23.50 with 25' cable.

● **HM MIKE**—A diaphragm type mike especially designed for low impedance operation, 50, 200 and 500 ohm lines. Its level is —46 db. VARI-SWIV mounting and 25' cable included—it makes a fast seller for you at \$32.50 list. Socket assembly optional in place of Vari-Swiv, on all models.



NEW BRUSH HEADPHONES

● **BJ HEADPHONE**—A brand new model featuring hermetically sealed headphones enclosed in rubber jackets, permitting good ear seal. Excellent for either amateur or commercial applications. Come equipped with all rubber cord. List price \$12.00 per pair.



● **A HEADPHONE** — An ideal headset for a wide variety of commercial, laboratory, and amateur applications. This set is serviceable, durable, and very light in weight, only 7 oz. Complete with 5' cord, list price \$9.00.

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TAKE A TIP FROM THESE YOUNG LIVE WIRE FARM RADIO MERCHANTS

THEY SELL FARM RADIOS THE E-Z PARRIS-DUNN WAY

Say Harold C. Cook and Charles Pfeiffer, graduates of a famous radio school: "We found, in starting out in radio business, that the service field and the AC radio field were decidedly flooded. However, through the E-Z Parris-Dunn selling plan, we discovered the Farm Market to be the ideal radio field. By displaying at fairs, 4H achievement shows, etc., the Parris-Dunn Complete Package Unit illustrated at the left, we secured an unlimited number of good prospects. Many of these were turned into quick, 4-profit sales by leaving with them overnight a 6-volt radio, heavy duty battery and reading lamp, thus enabling the farmer to enjoy electric lights and modern radio reception. We usually found sales easy to make the next evening when we returned to close the deal. By following the E-Z Parris-Dunn plan, we have in a remarkably short time built up a good business with a most promising future." We helped these boys get started and we want to help you. Write us today.

DISPLAYING THE COMPLETE PACKAGE DEAL

PARRIS-DUNN CORPORATION
20 Years of Successful Manufacturing Experience
CLARINDA IOWA

BOGEN DP 615 "Universal" MOBILE SYSTEMS

15 WATTS
FOR DEMONSTRATION
SEE
YOUR
JOBBER



6 Volts DC and
110 AC
124 db Gain
PORTABLE
2 INPUT
CHANNELS
2, 4, 9, 15 and 500
ohm outputs

REMOTE
CONTROL
UNIT

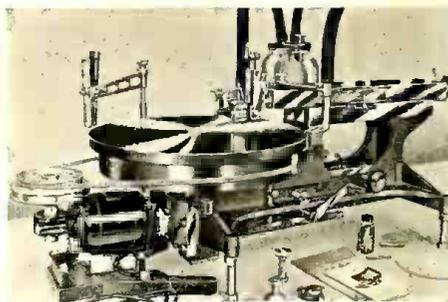
These units are furnished complete with tubes, choice of either Velotron or Dynamic Mike with 25 ft. of shielded cable 2 12-inch P.M. type speakers complete with plugs and 10 ft. cable. Provision is also made for remote wireless control for 2 channels.

<p>DP615D Complete System as described above with 07T Dynamic Mike less Phono Assembly. \$140.00</p>	<p>DP615VT Complete system as described above but with Model MB-HF. No voltage Velotron Mike, less Phono Assembly. \$140.00</p>	<p>D-615 Amplifier only complete with tubes less speakers, mike and Phono Assembly. \$87.50</p>	<p>UT-15 Phono Assembly as illustrated complete with Xtal pickup mounted on amplifier cover. \$45.00</p>
--	---	---	--

• Model SR Remote Control Unit—2 Channel Operation—\$6.75 •

DAVID BOGEN, INC., 663 Broadway, New York

UNIVERSAL RECORDERS



"Master" Recorder

• For high fidelity recording on wax and all types of instantaneous discs such as acetate and nitrate cellulose, gelatine and aluminum. It incorporates an efficient wax shaving mechanism for roughing and polishing wax blanks preparatory to recording.

Universal also manufactures other models, including portable, professional and other types, full frequency cutting heads, amplifiers, recording microphones, blank discs, needles, styli and complete line of other recording accessories.



Universal Microphone Co., Ltd.
INGLEWOOD, CALIFORNIA, U.S.A.

EXPORT AGENTS - FRAZAR & CO. 7 FRONT ST. SAN FRANCISCO

DYNATESTING AUDIO AMPLIFIERS

(Continued from page 55)

od of checking the proper load impedance is subject to errors, it is accurate enough for all practical purposes. In the first place, some manufacturers deviate from the recommended load values because of slight changes in operating voltages, and secondly sometimes set manufacturers use left-over speakers from previous models that are not intended for the tube used in the newer model. So even if precise measurements were made, they would not necessarily check with the recommended values.

Practical accuracy

The main purpose of the test for proper load impedance is to detect extremely bad conditions of load mismatching. If the conditions are approximately right, the performance of the set is usually satisfactory. The tests given here, for instance would immediately detect the wrong use of a triode output transformer and speaker in a pentode stage, or vice-versa. In this way the serviceman might discover an error made in a previous replacement of a speaker unit.

Transformers with the wrong turns ratios for the speaker used will be uncovered very quickly by this dynamic test. Likewise, improper voice coil impedances will be detected. And internal defects in the transformers and voice coils themselves, if serious can be located. A voice coil with part of the turns shorted will show up as too low a value of load impedance.

Naturally, the serviceman should have checked the voltages on the output tube or the plate current to see if they are somewhere near the proper values. This type of testing with small values of grid signal swing, is quite independent of minor variations in the tube voltages. In a future article the serviceman will be told how to accurately match the grid bias voltage of the output tube to the load impedance, for maximum output with minimum distortion. However, in order to avoid matching the tube to an entirely wrong value of load, it is necessary to first determine that the load is somewhere near correct.

In performing the work for dynamic testing, instruments made by the following manufacturers have been used in Radio Today's laboratory: Clough-Brengle, Hickok Electrical Instrument Corp., International Resistance Co., Monarch Mfg. Co., RCA Mfg. Co., Solar Mfg. Co., United Transformer Corp., and Weston Electrical Instrument Corp. The editors wish to thank these companies for their co-operation in helping further dynamic testing.

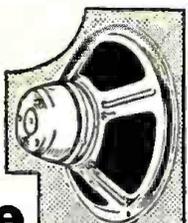
Catalog No. 200 has just been announced by the Insuline Corp. of America, 23-25 Park Place, New York City. Complete line of radio and electrical equipment is fully illustrated and described. A copy will be mailed free upon addressing Insuline.

Latest issue in the bulletin series being released by the Magnavox Co., Ft. Wayne, Ind., is one which gives detailed instructions for centering voice coils in Magnavox speakers. This will be sent to anyone interested.

Sales chances for the "Telfair Telephone," a voice-powered intercommunication system, are presented in a new folder titled "The Whys and Wherefores of Privately Owned Telephone Intercommunication," just released by Specialties Associates, Inc., Chrysler Bldg., New York City.

Universal Microphone Co., Inglewood, Calif., have issued two large-size 16-page catalogs, elaborately illustrated. One of them features microphones and accessories. The other carries complete dope on 5 types of recording machines, along with new amplifiers, accessories and supplies.

Garrard Engineering & Mfg. Co., with sales offices at 17 Warren St., New York, N. Y., have issued a 16-page booklet on their record playing equipment. Products include turntables, motors, stops, pick-ups, changers, motor grease, needles, etc.



**the big reason why
CINAUDAGRAPH is your best
speaker bet!**



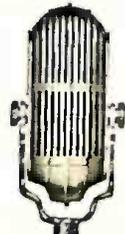
Precision engineering is the secret of Cinaudagraph's talk-of-the-industry performance. Now, at new competitive prices, the world's outstanding speaker becomes the outstanding speaker "buy"! You pay no more today for the quality, richness of tone and long-life dependability sealed into every Cinaudagraph unit. Investigate the new profit possibilities in this complete speaker line used so extensively by the country's foremost manufacturers of radio and Public Address equipment.

A complete line for both indoor and outdoor applications. Electro-dynamics (5" to 27"), and permanent magnet speakers (5" to 18") now available. Send for new catalog to...

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Unidirectional Dynamic D-9-T



BACK No Pickup
FRONT Full Coverage
VOLUME INCREASED
by Reducing Feedback

D9T, List \$37.50, High Imp. 25' Cable
D9, List \$35.00, Low Imp. 25' Cable

Write for Catalogue No. 29

Manufacturers Full Line Dynamic, Crystal and Carbon Microphones and Stands



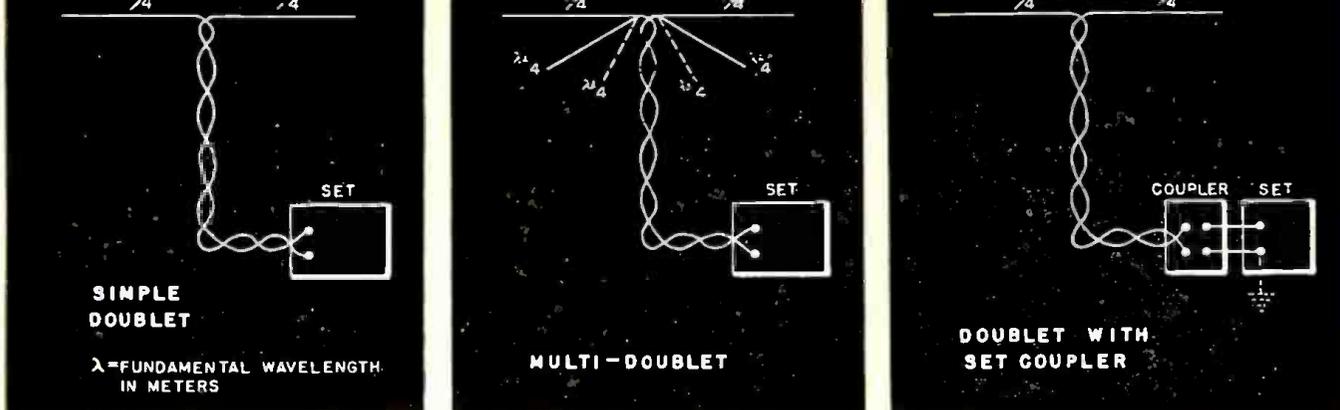
List \$22.50



List \$32.50

AMERICAN MICROPHONE CO., Inc.

1915 So. Western Ave. Los Angeles, Calif.



Figs. 1 to 3. All-wave antennas that are noise reducing on short-waves only.

BASIC ANTENNA SYSTEMS

Characteristics of the various types of aerials for home radios

"Because of the number of different types of antenna kits offered to the radio dealer and his trade, it is important to know the general characteristics of the various types so that the best antenna can be recommended for the particular circumstances," advises E. V. Amy of Amy, Aceves and King, Inc.

The simplest of all aerials is the "straight-wire" type that runs from the set to some distant point. Usually this wire is 20 to 100 feet long. Most often the wire runs outside to the highest practical point, or it may terminate in a vertical pole. This type of antenna picks up signals along its entire length, including the lead-in, and consequently gives noisy operation in a noisy location. Of itself, this antenna does not eliminate noise. Often, however, because of a strong radio signal pick-up by the wire, noise heard in the set is greatly reduced. This apparent decrease in the noise is noticed, not because the noise is reduced, but because the radio signal is so much stronger than the noise.

Simple doublet

The doublet type of aerial is shown diagrammatically in Fig. 1. This type of antenna is designed primarily for short-wave reception. Its operation is most effective for signals whose half-wave length is equal to the antenna. If each leg is one-quarter wave long (represented by $\frac{\lambda}{4}$), the antenna will give best signals and noise reduction for its fundamental wavelength (λ) and odd harmonics. Therefore a 50-meter doublet should have two legs,

each $12\frac{1}{2}$ meters long or 41 feet. For broadcast reception the antenna must be modified to operate as a T type aerial—the simplest way is to open the ground side of the transmission line. This type is noise reducing only on shortwaves.

Doublet antennas can be made either symmetrical with equal legs, or non-symmetrical with unequal legs. The systems with unequal legs respond best on two different wavelengths which are equal to four times the length of each leg. However, the noise reduction is usually a bit inferior to doublets with equal legs, because it is not symmetrical.

Set coupler increases signal

Where it is desired to have increased pick-up on additional wavelengths and maintain symmetry, multiple doublets are used as shown in Fig. 2. Two or more doublets of different lengths corresponding to quarter waves of the desired wavelengths are connected to the transmission line. The characteristics are similar to those of a simple doublet, except for increased pick-up on the resonant frequencies of the added doublets and their odd harmonics. For broadcast operation, the antenna must be converted to a T type aerial without noise-reducing properties.

When a set coupler added to the simple doublet of Fig. 1, the result is the system shown in Fig. 3. Usually the set coupler is so designed that for broadcast band frequencies, the antenna automatically changes over to a T type antenna without the use of switches. If properly designed, the transformer may be signal boosting

providing a step up on broadcast signals. Like the other doublets, it is noise-reducing only for short waves, and operates similar to that of Fig. 1 for shortwaves. Multiple doublets also can be used with set couplers.

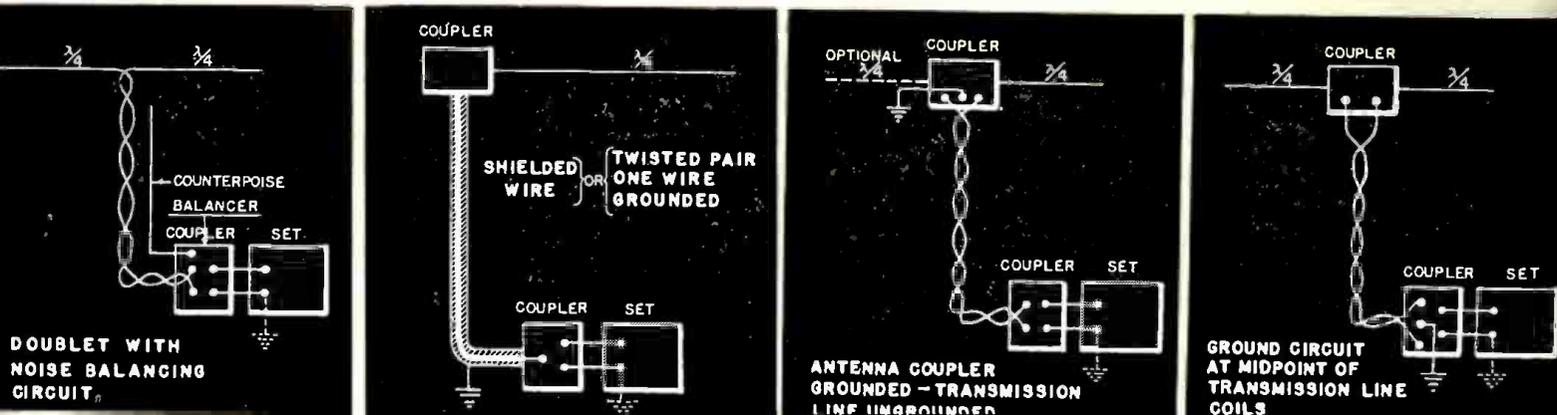
A variation of the doublet with set coupler is shown in Fig. 4. In this type, for noise reduction on broadcast frequencies, an opposing noise signal is introduced into the set coupler to oppose noise picked up by the antenna on the broadcast band. The doublet functions as a T antenna for broadcast wavelengths and a downlead counterpoise may be used to pick up the opposing noise. Instead of a counterpoise, it is possible to pick up the opposing noise from the ground circuit or power line circuit. On shortwaves, the device functions like the system in Fig. 3. By means of the counterpoise, when balanced for noise cancellation, the antenna is noise reducing for both broadcast and short waves.

Matched transmission line

One type of antenna having noise-reducing properties for the broadcast band is the type shown in Fig. 5. A shielded down lead is employed, usually with an impedance-matching transformer to match the aerial to the line and the line to the receiver, and thereby avoid excessive losses in the signal strength due to the capacity of the shielded wire. Instead of a shielded wire, twisted pair may be used, one of the pair being grounded and acting as a shield for the other wire. Its noise-reducing properties are slightly less than those of the completely shielded wire.

(Continued on page 61)

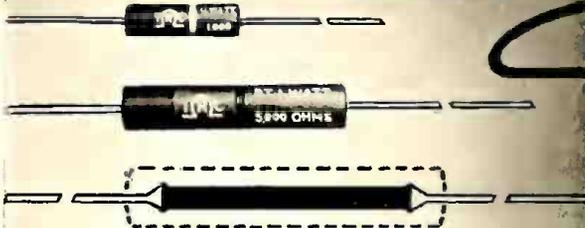
Figs. 4 to 7. Antenna systems that are noise reducing on both broadcast band and shortwaves.



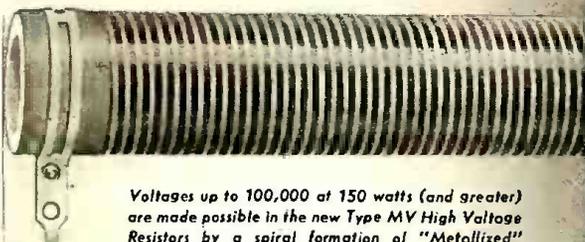
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Initiative — Resourcefulness — Cooperation
to advance the interests
of the industry



This Type BT Resistor is an example of the homogeneous "Metallized" resistance material bonded to the outer surface of a sturdy glass tube and encased in a protective covering.



Voltages up to 100,000 at 150 watts (and greater) are made possible in the new Type MV High Voltage Resistors by a spiral formation of "Metallized" resistance element on a ceramic base.



In IRC Type MP High Frequency Power Resistors, the "Metallized" element is applied solidly over a ceramic surface. Excellent characteristics of ultra-high frequencies of more than 75 mc. result.



Bonded to a phenolic base in IRC Controls, the "Metallized" element set new standards for quietness, smoothness and protection against moisture.

WHAT ARE "Metallized" RESISTORS?

"Metallized" Resistors differ from conventional units in that a homogeneous film of high resistance material is applied and bonded at high temperatures to insulating bases of various types. The result of this process is a resistance element of predetermined resistance value and accuracy. This process, time-tested throughout 16 years, has been utilized and perfected for seven distinctive types of resistors, each one internationally known for its exceptional quality:

The Type BT "Metallized" Resistors, completely insulated in phenolic, and the Type F protected by ceramic, are perhaps the best known for radio and high frequency service.

Types FH and MG, protected by ceramic or glass, are made from 100 to 100,000 megohms and have long been standard for certain kinds of scientific apparatus.

The Types C and CS (Silent Spiral Connector) "Metallized" Controls have established new standards for volume control, tone, and potentiometer applications wherever radios are made.

Type MP — a recently developed resistor for high frequency needs—is rapidly solving dummy load and rhombic problems for transmitting engineers in the ultra high frequency field.

The New Type MV, a high voltage "Metallized" Resistor, is capable of carrying 50,000 volts on a $10\frac{1}{2} \times 1\frac{1}{8}$ " tube with characteristics similar to that of a standard BT unit of low value. It opens new possibilities for the design of high voltage equipment.

The inherent characteristics of "Metallized" Resistors are stability, low noise level, uniformity, non-ageing, low voltage and temperature coefficient and freedom from major humidity effects.

No other type of resistance material holds such an outstanding record of success. None holds such broad possibilities for future development.

Write for new IRC Engineering Data
Bulletins Nos. 1 and 2.

INTERNATIONAL RESISTANCE COMPANY

401 NORTH BROAD STREET, PHILADELPHIA, PA.

Factories or Licensees in Canada, England, France, Germany, Italy, Denmark and Australia

MAKERS OF RESISTANCE UNITS OF MORE TYPES, IN MORE SHAPES, FOR
MORE APPLICATIONS THAN ANY OTHER MANUFACTURER IN THE WORLD

APPLIANCE DIVIDENDS

ELECTRICAL HOLIDAY

As home appliance dealers make their plans for Christmas merchandising, it appears that several new things are "in the cards" this year. The 1938-39 developments are moving toward plenty of "gray" for the retailer.

In the first place, manufacturers have started earlier and more seriously is helping the dealer with Christmas selling. One manufacturer, who is already under way with a huge holiday campaign, provides an example of the new technique by promising that "it is going to whisper into more than 33,000,000 predominately male ears its formula for satisfactory Christmas giving—a flower for sentiment and an electrical appliance for practical satisfaction."

Buying is under way

Next, a special improvement in general business promises to be a factor this year. Executive secretary J. R. Bohnen of the American Washer and Ironer Manufacturer's Association reports that "One large manufacturer is running two eight-hour shifts six days a week and has restored a 5 per cent wage cut made five months ago. Another reports that 'if anyone had told us a month ago that we could get so far behind on orders in such a short period of time and that the tide



New improved Zeph'r "Healthifier" by Lion Mfg. Co., 2701 Belmont Ave., Chicago, in utility cabinet. The unit circulates, washes and humidifies the air.



Tom Bolger has been named exec. secretary of Appliance Dealers Assn. of Brooklyn, N. Y., with offices at 44 Court St., Brooklyn.

of dealer interest could change from apathy to such intense enthusiasm, we would have said it was impossible.'

"Dealer orders, in fact, have staged such a general comeback that for the time being some suppliers are finding themselves in the happy predicament of being unable to keep up with manufacturers' demands."

More profit

Also, there is a tendency toward higher price levels this year, so that dealers will consider Christmas promotion to be more worth the effort. Here's an example. According to figures from the Vacuum Cleaner Manufacturers' Association, the average price for cleaners for the first eight months of this year was \$60.07, compared to \$54.91 in the same period of 1937.

RAZOR SALES WRINKLE

A new method that helps dealers to get their prospects conscious of electric razors is to suggest to the local barber that he use the new shavers rather than the old-fashioned razors. This procedure has a tendency to convince everybody that the new shavers are used and approved by the professional whisker-cutters—the men who know the most about razors. It improves consumer acceptance.

Many topnotch barbers are already using the electric item. An example is the barber at the Engineer's Club, in New York City. In spite of the fact that the customers at that shop are unusually critical about mechanical efficiency, this barber has reported

to the makers of the Packard Roto Shaver that idea has been altogether successful.

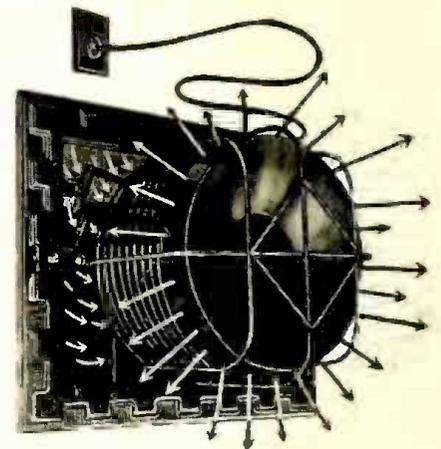
Problems and developments of the electrical and radio industry will be discussed at a meeting to be held in connection with the *National Foreign Trade Convention*, at the Commodore Hotel, New York City, Oct. 31 to Nov. 2. This electrical meeting will be held Tuesday p.m., with the help of the U.S. Bureau of Foreign and Domestic Commerce. *John H. Payne*, chief of the Bureau's electrical division, will be secretary, and *John W. White* of *Westinghouse* will be chairman.

Three sales training teams of *Bendix Home Appliances, Inc.*, led by *Judson S. Sayre*, *Vernon Calkins* and *W. H. Leininger* respectively, have started a 20,000-mile U. S. tour, to hold 50 retail sales and dealer meetings. Jobbers in each area will be the sponsors; a \$27,000 retail sales contest will be announced.

Norge news is that *Glenn O'Harra*, former sales manager for ranges, is now eastern sales manager for *Norge*, and *R. E. Densmore*, former refrigeration sales manager, is now western sales manager for the firm.

Kenneth C. Watson, who has directed the advertising of *Commercial Credit Co.*, Baltimore, has been named vice-president and director of *Chester H. McCall Co.*, advertising agency of New York City. With *McCall*, he will continue direction of *Commercial Credit* advertising.

At the Sept. 28 meeting of the *Electrical Appliance Dealers Association of Brooklyn, N. Y.*, it was announced that the Brooklyn dealer group, along with brother organizations of the adjacent Manhattan, Queens, Staten Island, Westchester and Bronx areas, was having new discussions with representatives of the chain stores *Vim*, *Davega*, etc. These discussions are aimed at further radio enforcement of *Feld-Crawford* regulations, as well as a similar clean-up in the refrigerator business.



A new device to attach to the register in "hard to heat" rooms, for improved air circulation—it's a *Deflecto Register* from *Kisco Co.*, 4414 W. Papin, St. Louis. Plugs into nearest outlet.

BASIC ANTENNA TYPES

(Continued from page 58)

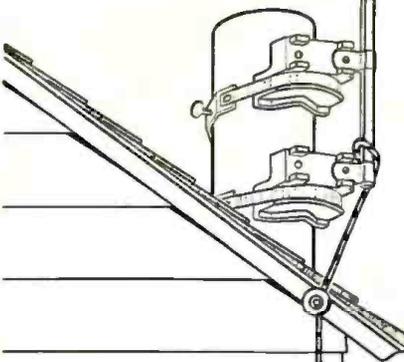
For all-wave reception, some means must be provided in the coupling transformers to allow for operation at short waves. Where a separate channel is desired for shortwaves, a second wire can be introduced into the shield and two couplers used at both the aerial and the set. Other modifications are the addition of another wire or leg to increase response at a frequency different from that of the main leg.

Another type of antenna uses a ground at the antenna transformer and an ungrounded transmission line to the set coupler. This type is illustrated in Fig. 6. It is noise reducing on all waves by virtue of the transmission line when proper transformers are employed. Instead of a horizontal wire, a vertical pole may be used with satisfactory results.

A variation of Fig. 6 is the symmetrical doublet with grounded transformer and ungrounded transmission line. This type is believed by some engineers to have superior noise reduction because of its symmetrical aspects and its isolated ground circuit. It is noise-reducing on both shortwaves and broadcast band.

In place of grounding the antenna transformer separately on the roof, many kits are available in which a ground is provided by the central or neutral point of the transmission line couplers. This type is illustrated in Fig. 7. This type of antenna performs as a doublet on shortwaves with usual noise-reducing properties. On the

Ward's vertical antenna is quickly erected on vent pipe or wall.



broadcast band it is also noise reducing, having an impedance match between the aerial and the line, and the line to the set.

In many types of all-wave aerials having set coupling transformers, it is usual to have a signal boosting circuit for broadcast band operation.

Since the appearance of the antenna kit may mean very little, the radio dealer and service man should ascertain exactly what the characteristics are. Junction boxes are not necessarily antenna transformers. When noise reduction is required for broadcast wavelengths, the service man should be sure to install an aerial having such properties in order to satisfy the customer's requirements and maintain the customer's good will. In some cases a power line filter may be needed to eliminate noise introduced from the power line. Preferably the filters should be located at the offending device.

ROD ANTENNAS, BETTER LOOKING, QUICKLY INSTALLED

Better appearance and ease of installation are two points in favor of the new vertical-rod home aerials which have caught home-owners' approval, and may soon obsolete the old unsightly "clothes-line" type. No poles, supports or guy-wires are needed, and the work of the serviceman or installer is greatly simplified. These rod antennas can be mounted on almost any suitable surface or roof object, such as soil-pipe, cornice, roof-frame, window frame, etc.

The new rod antenna introduced by the Ward Products Company, Cleveland, Ohio, is of nickel-plated super-

WILL NOT BURN OR SCORCH!
The Finest Fabrics!

JUST THE THING TO PEP UP HOLIDAY TRADE!

The newness—and practicability of the STEEM-electric iron—make it a most acceptable Christmas Gift!

MAIL THIS COUPON TODAY FOR FULL DETAILS

STEEM-ELECTRIC CORP.
1726 Lafayette Avenue, St. Louis, Mo.

Rush complete information to

Name

Address

City

State

—RT1038—

Going Over BIG!

SENSATIONAL NEW

STEEM

ELECTRIC IRON

LIST \$12.95

Complete with cord, asbestos stand, funnel—directions and guarantee.

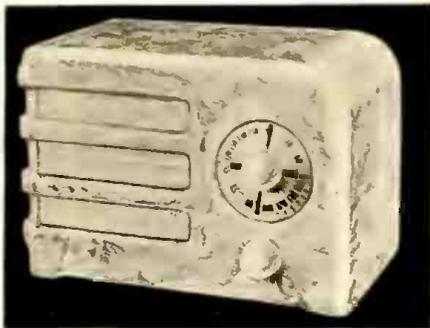
DEALERS ARE URGED TO INVESTIGATE THIS REAL MONEY-MAKER

STEEM-Electric Iron... a merchandising marvel... with unlimited possibilities. TRIED—TESTED—and PROVEN! Line up with STEEM-Electric and QUICK AND SUBSTANTIAL PROFITS will line up with YOU!

Approved by the Underwriters Laboratories, Inc.

14 AMAZING FEATURES

• No sprinkling or rolling	• No constant lifting	• Blocks felts—knitted wear
• No more mildewed clothes	• Safe to fine fabrics	• Sterilizes as it irons
• No burning or scorching	• Safe to synthetic fabrics	• Weight only 6 pounds
• No press cloths required	• Safe to heavy woolsens	• Operates on AC or DC
	• Rejuvenates pile fabrics	• Fully guaranteed



*The Sparkling Jewel of Radio
—no photo can do it justice*

KEEP YOUR CUSTOMERS

and MAKE BIGGER PROFITS with the

Halson

5 TUBE SUPER

"DWARF"

Fits into the palm of your hand

Have you any idea how many customers you have lost by selling them cheap, inferior sets? Or how many got away because you couldn't sell up?

That's the one big reason why Halson refuses to manufacture cheap sets.

With the new Halson "Dwarf," you have a greater margin of profit and you can steer your customers away from cheapness and trouble. For only a trifle more, you can sell them a set that is

Visibly better

Audibly better

Actually better

Stunning beauty, high performance and remarkable tone make Halson's latest triumph the great "buy" in the low priced field.

"The Dwarf" is a profit-leader. It is only one of a smart new line of table models, with big values in the best-selling price brackets.

5-tube AC-DC... Large dynamic speaker... Marvelous tone... Broadcast and police calls... Exclusive new onyx-like cabinets... Red, green or ivory, all priced the same!

Wire, phone or write today. Get ready for the big season that's now upon you.

\$18⁵⁰

LIST

HALSON

RADIO & TELEVISION CORP.
MERIDEN, CONN.

SERVICE NOTES

sized bronze tubing, four sectional, 12 ft. in height. Its lightning-arrester houses a 0.002 mfd condenser. Everything for mounting comes packed with the antenna, including low-loss porcelain insulators adaptable to all ordinary roof and structural conditions.

Another vertical type antenna, designed for use with a noise-reducing transmission line and suitable couplers, has been introduced by Premax Div., Chisholm-Rider Co., Niagara Falls, N. Y. This antenna which telescopes to a 6-foot length extends to 24 feet. One type has a ground post and insulator for mounting in the ground. The other type is designed for roof mounting.

HOW THE MYSTERY CONTROL WORKS

(From page 31)

voice coil to ground in the station selecting positions. A muting switch, which connects the plates of the output tubes together, is closed during the station selecting operation. The set, of course, is playing during changes in volume but it is muted as the secondary ratchet returns to its home position, and climbs to the station dialed. This means that whenever any of the 8 stations are dialed the set is muted as the secondary ratchet switch turns the "station tuning" switch contacts.

Failure of the primary switch to return home or the secondary ratchet arm to return home, failure of the receiver to mute during dialing would indicate trouble in the stepper assembly and would make it necessary to return it to Philadelphia for replacement. Dialing of an incorrect station, the skipping of stations or the galloping past of stations also indicates trouble in the stepper assembly.

Volume control assembly

The volume control and the on-off switch are motor driven. The motor has an automatic clutch which releases and drops back as soon as the volume control is released by the stepper primary switch. This prevents "overshooting" when changing volume and immediately stops the gear train which drives the volume control when the volume control lever is released on the mystery control box. There is also a clutch in the volume control itself, so that the mechanism will not jam if the volume control lever is held down after the set is shut off.

The primary switch is a single pole, double throw switch which connects the desired winding in the volume control motor to increase or decrease volume, as shown in Fig. 3. In parallel with this switch there is a single pole, double throw switch connected to the manual volume control. This switch is mounted directly beneath the receiver dial bezel. The pilot lamp cable is close to this switch. If any of the pilot lamp wires become tangled with the switch they might cause the motor to continue running and might possibly cut through the insulation of the pilot lamp lead, causing the lamp to stay lit. It is important when the chassis

has been removed, to check the location of the pilot lamp wiring cable to make certain that it is entirely clear of the volume control motor switch.

Setting up stations

The procedure for setting up stations on the mystery control sets is similar to the procedure followed in setting up electric automatic tuning Philcos, except that the eight stations are dialed by the remote box instead of by pushing the buttons in the set.

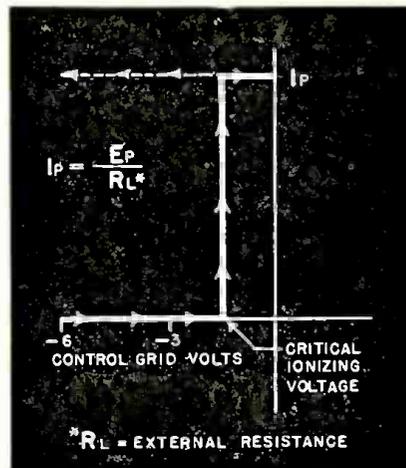
HOW THE THYRATRON TUBE WORKS

Newest addition to the radio set tube family is the thyatron tube, which in principle is different from any tube yet used in radio receivers. The thyatron itself is not new, having been used in industrial electronic apparatus for a number of years. The outstanding feature of the tube is its capability to handle or control large amounts of power.

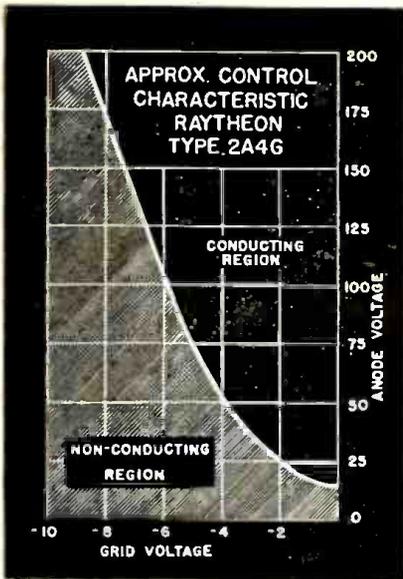
In its usual form the thyatron is a gas-filled triode and depends upon the ionization of the gas for operation. While the tube has a grid, this grid has an entirely different control characteristic from the usual radio tube. In ordinary tubes, the grid controls the amount of plate current that flows in the plate circuit; and for changes in control grid voltage, the plate current changes follow the grid voltage changes. Thus for ordinary tubes the plate current waveform follows the waveform of the grid voltage.

Plate current not controlled by grid

The grid of the thyatron, however, cannot control the amount of plate current that flows. The grid serves the function of preventing the plate current from flowing until the bias is reduced beyond a certain critical value. After the plate current has started, the control grid has no effect on the plate current for DC plate voltages, regardless of how it is varied. This is because the gas vapor has ionized or become ionized. After ionization takes place, the tube operates as a gas-filled diode tube.



After the thyatron tube has ionized, the grid no longer has any effect on the plate current.



The only way to stop the tube from passing a plate current, once it has ignited, is to remove the DC plate voltage.

The grid of the tube operates just like a plug on a high-pressure water pipe. As long as the plug is screwed in, no water can escape. If the plug is removed, it is impossible to replace the plug without first shutting off the water. In the water analogy, the reason for not being able to replace the plug is because the water pressure is so great at the opening as to make it impossible to hold the plug over the opening. In the thyatron tube, because the space in the glass envelope is filled with gas ions which can and do carry the plate current, the grid is unable to control the electron stream.

Removing the plate potential on the thyatron tube permits the gas in the envelope to go back to its un-ionized state. If at the time the plate circuit is opened, the control grid bias is made more negative than the critical control value for the applied plate voltage, then the tube will not conduct or ionize when the plate circuit is subsequently closed.

Automatic operation with AC voltages

If an alternating plate voltage is applied to the tube, the plate voltage is automatically removed from the tube for half a cycle. The tube becomes self-rectifying and operates on only the positive peaks of the AC voltage. In this way, the control is simplified because of the anode voltage reversal during each half cycle. So with AC, it is only necessary to reduce the grid potential below the critical voltage and conduction will cease in half a cycle or less.

Since the grid of the thyatron tube does not control the amount of plate current, but acts as a switch to close the circuit, the thyatron tube can be thought of as a power switch which can be operated by a very small voltage (on the grid). Incidentally, the plate current in the tube is controlled only by the external resistor and plate voltage.

The characteristic of a 2A4G type of thyatron is shown in the accompanying chart. Note that as the plate voltage is increased, it takes a larger

A Frank Statement ABOUT THE New 1939 UniveX Ciné "8"

Two years ago we predicted that a perfected, low-priced camera would cause the real swing to home movies! Today we announce the product that will do it . . . THE NEW 1939 UNIVEX.

Here are the facts—

FACT NO. 1—This new UniveX is fool-proof. It gets good movies even in the hands of inexperienced users. The mechanism has been entirely re-designed, with 60 major improvements.

FACT NO. 2—Four of these improvements practically eliminate any possibility of poor results. *First*, a built-in optical view-finder. *Second*, a new automatic shutter. *Third*, a new self-locking hinged cover. *Fourth*, jam-proof spools. Now UniveX movies are as easy to take as snapshots!

FACT NO. 3—The new UniveX includes nearly every essential feature found in high-priced cameras. At the low price of \$12.50, it has a ready market of millions!

FACT NO. 4—Now the path is cleared for widespread, continuous advertising! The new UniveX Ciné "8" at \$12.50 is the complete and practical movie camera. It deserves the dynamic advertising and sales promotion campaign we are going to give it. *Striking big-space ads in the nation's leading magazines will tell all America the story of the new 1939 UniveX—"the movie camera that couldn't wait for next year!"*

FACT NO. 5—Millions of ads will stress that "UniveX is the smart way to say Merry Christmas!" To you we stress that "UniveX is the smart way to say Merry Profits!"

FACT NO. 6—UniveX permits no 10% re-tail price cut! You receive your full margin of profit.

MOST IMPORTANT OF ALL

FACT NO. 7—For the first time, a Movie Camera makes this guarantee: "Satisfactory movies if instructions are followed or a new roll of film free."

And this insurance guarantee is packed with every new 1939 UniveX Ciné "8." Here truly is your answer to those who can not believe it possible for a \$12.50 camera to get perfect results!

Universal Camera Corporation
NEW YORK . . CHICAGO . . HOLLYWOOD

Check These Talking Points!

- New built-in optical view-finder.
- New improved governor.
- New automatic shutter.
- New snap-lock hinged cover.
- Improved F 5.6 lens, instantly interchangeable.

New quiet, powerful, smooth-running spring motor.

Just think! The new 1939 UniveX has all these important features—and many more! And, in addition, it's the only camera in the world that uses UniveX 69c Cine film and takes clear, sharp movies at less cost than snapshots!

ONLY 2 OF THE
60 GREAT NEW
FEATURES!



New built-in optical view-finder insures getting exactly what you see

\$12.50



New re-designed loading mechanism. Self-locking hinged cover simplifies loading; makes film jamming impossible

Fair Trade Protected In 43 States!

A GOOD NAME GOES A LONG WAY



The wise service man uses "good name" parts for necessary repair work. The dependability of KEN-RAD Radio Tubes is known the world over.

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

★ **KEN-RAD** ★
DEPENDABLE RADIO TUBES

PRESTO
announces
THE NEW ORANGE SEAL
DISC FOR HOME RECORDING



HERE is a home recording blank that will make real money for you. The net price to dealers is lower than that of any Presto disc sold in the past. The Presto policy of dealer protection and price maintenance will assure you of profitable sales.

The Orange Seal disc is packed ten of a size in an attractive three colored carton that makes an excellent window and counter display.

The Orange Seal disc is easier for the layman to use. Makes a quieter record. Gives longer playing life. Does not harden with age. You can safely stock a six months' supply.

Thousands of Presto owners all over the country are buying discs regularly. Be prepared to get this business in your community. Clip the attached coupon today.

PRESTO RECORDING CORP.
 137 W. 19 ST., N. Y. C.

PRESTO RECORDING CORP.
 137 W. 19TH ST., NEW YORK

Enclosed is money order for \$1.65
 check

Send us a sample order of Orange Seal discs and display cartons.

Name

Address

City State.....

SERVICING

value of grid bias to keep the tube from conducting. The anode or plate voltages are plotted in DC volts or peak AC volts—likewise is true of the grid potentials.

Since the tube is gas-filled, it has a very low internal voltage drop, or internal resistance. Because of this low internal resistance, it can handle a large amount of current (power) without developing an excessive amount of heat. In other words, the internal losses are low.

High power sensitivity

A thyatron tube is used in the Philco mystery control sets (see page 31). In this receiver, the output current of the thyatron is used to actuate a relay for station selection. The tube is used chiefly because of its high power sensitivity.

If a thyatron is biased $\frac{1}{10}$ of a volt beyond the critical control voltage, it takes only $\frac{1}{10}$ of a volt to cause the tube to operate. This operating voltage can be AC which instantaneously subtracts from the bias voltage and causes the tube to conduct.

If, when AC is used on the plate, as in the mystery control sets, the tube stops conducting as soon as the operating voltage or pulse has been removed from the grid of the tube.

Thyatron tubes cannot ionize and de-ionize fast enough to follow radio frequency impulses. Consequently, when an R.F. signal is applied to the grid of the tube, the grid follows the envelope of the R.F. wave. In the Philco receivers, this envelope is the same as the pulse caused by the dial-

ing unit. Thus, during the entire time of each pulse from the remote unit, the thyatron tube is conducting. When the pulse has ceased, the reversal of the AC on the plate of the thyatron causes the tube to de-ionize and become ready to operate on the next pulse.

USE OF THE CHANALYST

In order to illustrate to the serviceman how the Chanalyst may be used in radio service work, John Rider tells of an actual service problem solved with the aid of a Chanalyst by a radio serviceman. The case history is as follows:

A Graybar receiver after operating normally for some little time, showed a lessening of the volume. Various checks had been made, including a check on all the tubes in the receiver, and everything had stood inspection.

The RF-IF channel of the Chanalyst was used to trace the signal through the r-f and i-f portions of the receiver after it had been allowed to operate until the volume fell off. All indications on the Chanalyst showed the signal to be normal up to the second detector and at this point a decrease in the signal strength was noted. Using the electronic voltmeter, it was found that there was a slight positive potential on the grid of the second detector, which was unusual.

A by-pass condenser, which might have caused the trouble, was removed, but the positive potential on the grid persisted and so it was decided that the trouble lay in the tube itself, even though it had been previously checked in the regular way. It was re-checked in a tube checker and again found to be normal. However, as the trouble had been traced to the tube it was allowed to remain in the checker for about ten minutes, which was the approximate period of time that the receiver in which the tube had been used showed a lessening of the volume. After the ten minutes had passed, the tube was tapped sharply and the neon indicator on the checker showed a short. When another second detector tube was used in the receiver, the volume stayed constant.

The ordinary check of tubes would not have indicated anything wrong and without an instrument as sensitive as the Chanalyst to detect signal loss and measure voltages without upsetting the circuit, a serviceman would probably spend many hours of fruitless labor.

SURVEY OF RADIO SERVICE COSTS AND PROFITS

In order to help the radio serviceman make profits, RADIO TODAY is conducting a survey of operating costs and profits in order to analyze the service business. With the data obtained from this survey, RADIO TODAY will be in a position to show the servicemen how to make greater profits by overcoming the weaknesses in their businesses.

The editors of RADIO TODAY will figure out individually each questionnaire submitted and send each serviceman an analysis of his own figures. Please request questionnaire by means of the coupon below.

Information which you contribute will be treated in confidence and used only for the compilation of averages.

VINTON K. ULRICH, Service Editor,
 RADIO TODAY,
 480 Lexington Ave., New York, N. Y.

I wish to participate in RADIO TODAY's survey of costs and profits in Radio Servicing. Please send me a questionnaire so that I may send you figures pertaining to my costs.

Name

St. and No.

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

General Electric Co., Schenectady, N. Y., will send gratis to hams, two azimuthal world projection maps. Matters of signal paths and distances between points have been simplified.

"The Design of Dummy Loads for Use as Speaker Substitutes" is the subject of a new bulletin released by Wright-DeCoster, Inc., St. Paul, Minn. It is accompanied by an illustrative graph, and will be sent free on request.



Picked for president—D. R. Bittan, mfrs. representative, 53 Park Place, NYC, now heads "The Representatives."

NEW OFFICERS FOR "THE REPRESENTATIVES"

For the year 1938-39, "The Representatives" of radio parts manufacturers recently elected the following officers: D. R. Bittan, president; John Forshay, vice-president; David Sonkin, sec-treas.

A new board of governors includes Perry Saftler, chairman; Adolph Friedman, John DiBlasi, LeRoy Schenck and Leo Freed. On the membership committee are John Forshay, chairman; John Kopple, Adolph Friedman, Perry Saftler and I. Golden. Committee on entertainment is Matthew Camber, chairman, C. B. Cooper, and Jules Sussman.

As one of the most active industry-builders in the radio business, "The Representatives" organization has built its membership to about 135, including representatives from all sections of the U. S.

RADIO DEALERS FAVOR CLOSING JOBBER SHOWROOMS

"That radio distributors' show rooms should remain closed to consumers whether or not they are accompanied by dealers" was one of the motions favorably passed by the members of the Radio Dealers Association of New Orleans, at a recent meeting. After thorough investigation, it was considered unfair for small dealers with only a few sets to take a customer to these showrooms to inspect a number of models, while the large established dealers carry big inventories with about the same effect.

Also, the association went on record as opposing memorandum delivery or consignment; this kind of billing is not to be used for subterfuge. All sales are to be bona fide and not subject to return.

The New Orleans organization includes, besides the dealers, jobbers and utility representatives. Report of secretary A. B. Lindauer, 317 Baronne St., is that "in over a year there has been no violation of rulings on cut prices, misleading advertising, or inclusion of radio price with furniture pieces, as has been noted in other cities."

SEE for Yourself!

The RIDER Chanalyst



Sensational Trouble-Shooting Instrument Now Being Demonstrated By Your Jobber

See How you can check any point in the receiver, no matter what it may be, simply by placing the proper probes at the points under test!

See How you can determine the existent trouble, almost immediately, by merely moving the probes from one point to another!

See How you trace the passage of the signal through the receiver and establish the points where signal exists, becomes distorted, fades, dies, takes on hum, without interfering with the normal operation of the receiver!

See How any and every check of the operation of the audio-frequency channel is made with the use of a single probe!

See How the Electronic Voltmeter enables you to measure all d-c voltages in any part of the receiver by the use of only one probe in conjunction with a common ground.

See How you can conduct any and every test in the RF and IF channel, easily, quickly and accurately!

See How the oscillator channel is checked by placing the proper probe in contact with any portion of the oscillator tuned circuit and resonating the channel to the frequency of the signal being generated by the oscillator.

See How the Intermittent Problem is solved with the Rider Chanalyst... How you can, in effect, divide the receiver into five separate sections, and definitely localize the trouble as being in a certain part.

See The multitude of other tests you can conduct with the Rider Chanalyst. It involves no unknown principles of radiol

See This sensational new instrument demonstrated by your jobber.

SERVICE INSTRUMENTS, INC.
404 FOURTH AVENUE • NEW YORK CITY

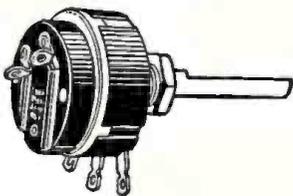
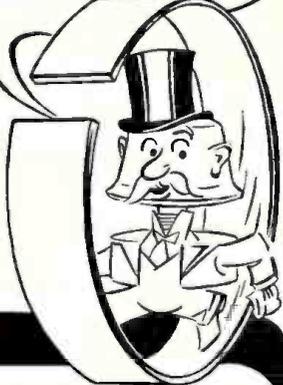


JOHN F. RIDER
in whose Successful
Service Laboratories
this revolutionary instrument
was developed.

Free
16-PAGE
DESCRIPTIVE
BOOKLET
SENT ON REQUEST

SEE IT DEMONSTRATED TODAY

HERE'S THE
'Inside Dope'



SERVICEMEN still prefer the wall type resistor element that hugs the inner circumference of the bakelite housing of the CENTRALAB STANDARD REPLACEMENT UNIT.

Here are some of the reasons Old Man Centralab's Volume Controls are the "favorite" with up and at 'em Servicemen . . .

- Maximum resistor length for case diameter
- Close uniformity between resistors
- Accurate tapers
- Uniform current distribution
- Lower specific resistance and attendant low noise level
- Better power dissipation
- Longer life.

Available in standard and special replacement types. The new 1938-39 Volume Control Guide (available at your jobber) now lists thousands of recommended replacements for all current and older receivers.

Centralab
Milwaukee, Wis.

BRITISH CENTRALAB, LTD.
Canterbury Rd., Kilburn
London N.W. 6, England

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

LETTERS TO THE EDITOR

(From page 24)

conditions, capped by a serious war scare just as sales possibilities were really improving at Labor Day, have been such that many dealers found that all they could sell were cheap compacts, is no reason at all why this today-obsolete belief should be held to. With general business turned up steadily since June, and only a bad one-month interlude during September from which things are steadily going forward, it is imperative for the dealer demanding a profit to realize that now is the time, not to double his compact volume because sales come easier, but to concentrate on the tremendous dollar increase in his profits possible from only a small increase in big set sales. If compact sales are easier, this fact itself is living proof that big sales can be made—and one \$200 sales is worth more than twenty \$10.00 compact sales.

But the wise dealer, realizing this fact and seeking to put it into practice, is once more confronted with the perennial good-times bugaboo of what big sales to work upon. If he be but an opportunist of today, neglecting his equally vital needs of tomorrow, his course is simple. He puts several models of five or ten makes in his store and runs ads saying substantially (because they are like every competitor's ads), "I've got Radios, Too." In walk the prospects, and out they walk to "shop," for every one of them knows that list prices are but "asking prices"—last season's cut-price "dumps" are too fresh in their memory. The old round is under way again—not "how good" but "how cheap," and the dealer is once more faced with the almost inescapable necessity of doing business at well below his legitimate profit. The public alone benefits from his competitors fighting tooth and nail for each good sale—when it is written up, the dollar sign looks nice on the sales slip, but only the jobber and manufacturer made a profit—the dealer's profit margin is pitifully small, if not frequently a net loss.

Horse-sense

As I have written above, conditions not fundamentally sound economically are self-corrective—but usually in an individually painful, because impersonal, sort of way. In this case one corrective is the bankruptcy of dealers, jobbers and manufacturers until supply only equals demand, and price cutting is no longer necessary to get sales. A less painful way is the application of horse-sense—the limitation of manufacturers' sales and production hopes to less than box-car figures, and the cutting down of each manufacturer's number of dealers. Somewhat lessened gross sales at a good profit is a condition much to be preferred to increased sales bought at the expense of no profit—a story too close to be true for the radio dealer to be at all amusing. So the dealer must carry several lines to be sure of every possible sale at any profit at all, no matter how small competition forces it to be.

But that is not an answer—except in extraordinary good times of "sellers,"

not "buyers," market. As our experience here at McMurdo Silver Corp. has been particularly successful in insuring each of our dealers that every sale made is made at full profit, it should be interesting. First, we don't build compacts, we build only relatively expensive—and for the dealer, especially profitable—radios. Quality first, last and always is the dealer's panacea for profitless pain. Giving him a line of quality so apparent it is self-selling to prospects who can afford good radios, demonstration of quality persuades them to buy. To this we add a rigorously limited dealer plan—never more than one single dealer to a city. This plan automatically appeals to the wise dealer, for it has come into being through his demand. He gets from it a line absolutely protected against price-cutting competition, and of quality that makes full profit sales (yielding never less than \$100 gross profit) relatively easy to get and well worth going after. So enthusiastically has this plan been received, and so successful has it been during a year of experiment and trial confined only to the biggest dealers in the largest cities that it is now being made available to one dealer in each city.

Such limitation of distribution to the point definitely conservative enough to eliminate price-cutting to get sales makes compact sales what they should be—plus-profit sales, and is insuring legitimate full profit on bigger sales to every exclusive dealer.

Cordially yours,

McMURDO SILVER.

McMurdo Silver Corp., Chicago, Ill.

TRIPLETT STAGES \$500 SERVICE-PUZZLER CONTEST

For servicemen who write the best letters on puzzling service problems and how they were solved with the aid of test equipment, the Triplett Electrical Instrument Co., Bluffton, Ohio, offers prizes of service equipment worth \$500. There will be six awards; the contest closes Nov. 15. Entrants must get entry blanks from jobbers.

TERRIFIC CELEBRATION OF RCA VICTOR'S 40TH BIRTHDAY

Anniversary merchandising program, as outlined by RCA Victor's advertising manager Tom Joyce, will include (1) nationwide contest to find oldest Victrolas, (2) promotion of a new 40th anniversary model Victrola, and (3) a feature sales program on a console grand radio to be sold with a special record album.

Studded with cash prizes, increased advertising, new promotions of recorded music, etc., the campaign is one which Mr. Joyce has planned so that "the public as well as our dealers and distributors will participate."

A check-up on the progress of the RCA Victor Record Society reveals that new members in all parts of the U.S. are being added at the rate of nearly 2,000 weekly. RCA has announced a new 110-volt, 25-cycle Victrola attachment which will extend Society activity to areas having that kind of current.

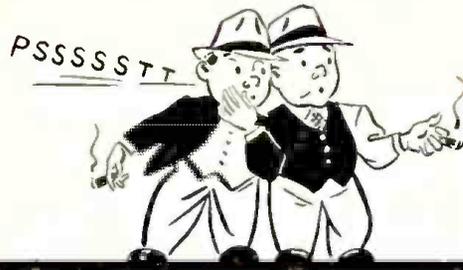


Silence for Sale!

• Filternoys units reduce or eliminate man-made static. Every buzz, snap, or crackle on a radio opens the path for the sale of noise elimination service and CONTINENTAL CARBON Filternoys suppressors and rejectors. They are simple to install and profitable to sell. Types FOIDH for quieting electric appliances and ROIDH for blocking line noise out of a radio are illustrated above. List price, \$1.00 each. Write for bulletin.

CONTINENTAL CARBON Inc.

13910 LORAIN AVENUE, CLEVELAND, OHIO
or Toronto, Ontario, Canada



THERE'S MORE SWITCHING TO STANCOR

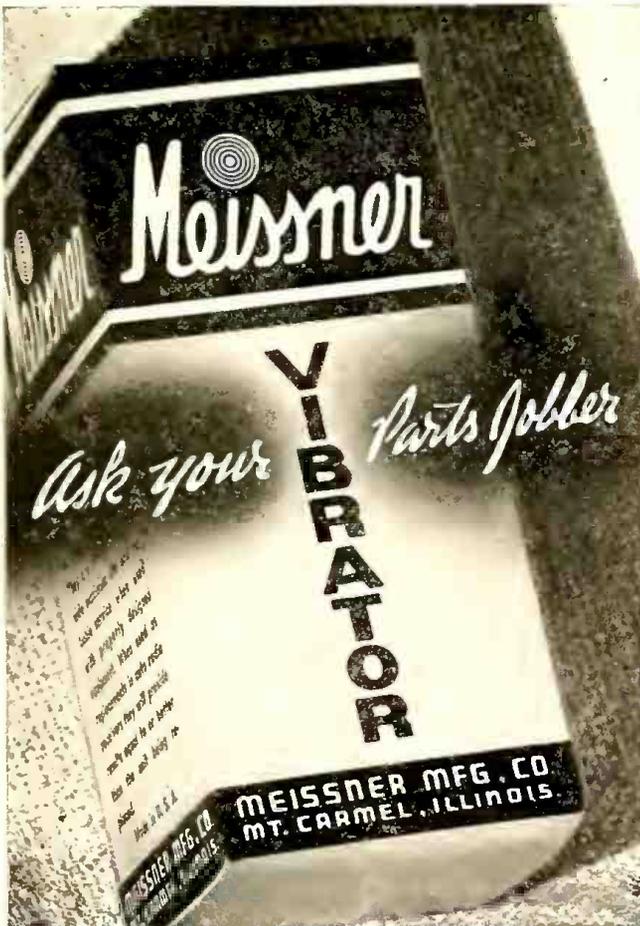
TODAY
THAN TO
ANY OTHER LINE
IN THE
TRANSFORMER
FIELD...

*There must
be a Reason!*

STANCOR

STANDARD TRANSFORMER
CORPORATION

1500 NORTH HALSTED ST. • CHICAGO



**QUALITY TESTERS
at LOWEST PRICES**



Positively Checks Radio Receiving Tubes According to Latest Recommendations of Tube Engineers.

NEW MODEL 432

TUBE TESTER Only \$21.60

- Separate Plate Tests on Diodes and Rectifiers
- Neon Short and Leakage Tests
- Ballast Tube Continuity Test
- Uses Attractive Triplet Direct Reading Instrument 3" size. (GOOD-BAD) Scale
- Line Voltage Adjustment
- New Improved Low Loss Switch

Complete in attractive, sturdy quartered-oak case; suitable for counter or portable use. Stopping etched panel of silver and black.

MODEL 431 \$15.90

Checks all receiving tubes. (No ballast test.) Tester uses dependable Readrite Meter. Quartered-oak case same as for Model 432.

A.C. and D.C. VOLT-OHM-MILLIAMMETER

Sturdy molded case with rounded corners, accessories included.



Pocket size

Model 736 only \$12.00

READRITE METER WORKS
1019 College Avenue, Bluffton, Ohio
Please send me more information on
 Model 432; Model 736;
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Name

Address

City State

RSA WIDENS SCOPE

RSA is working out a guarantee service plan whereby the public and the industry will be absolutely guaranteed as far as the work and the material which individual RSA members use in the repair of any radio set. The RSA feels that providing this type of serviceman will result in a large increase in business for its own members, and will be of inestimable value to the public.

The Board of Directors of RSA announces that the annual membership dues as of Jan. 1, 1939, will be \$3, plus \$1 initiation fee. Increase in dues was voted in order to insure the independence and self-support of the RSA. All applicants are urged to send in their applications before Jan. 1, to save on membership costs.

Chapter news

Allentown, Pa., and Hartford, Conn., have voted to affiliate with the RSA.

Alton, Pa.—A special dinner meeting was held on Sept. 13th. Local Charter was presented by Mr. Joe Marty, Jr., Executive Secretary, RSA. A. G. Mohaupt of the RSA National Speakers Bureau lectured on "Test Instruments and Their Uses." Several reels of movie film were shown.

Binghamton, N. Y.—Planning for the coming fall season. A ladies' night and supper meeting is planned for early in November. One of the outstanding September meetings had Stahlman of Ithaca presenting Rider's Chanalyst.

Dallas, Tex.—Several meetings in the last two weeks. Chapter will take full advantage of the national fall program. Under the leadership of T. P. Robinson, who is also National President of the RSA, Dallas is set for a top season.

Chicago, Ill.—Most successful meeting in its history on Sept. 28th, with manufacturers in a Round Table Discussion. Fifteen outstanding test equipment manufacturers, such as John Rider, Paul Jackson, John Meck, displayed their latest test equipment. Local jobbers in Chicago cooperated by sending out invitations to their servicemen lists. This Test Equipment Show will become an annual feature of the Chicago Chapter of RSA. More than 350 men attended this meeting. More of this type meeting is planned soon.

Cleveland, Ohio—Huge annual picnic held on Sept. 25th. Also a meeting was held Sept. 21st, with Bill Akers of the local Philco distributors giving a complete story of the Philco Mystery Control. The Cleveland Chapter has planned for early fall a large number of interesting meetings, the first to be a talk on Rider's Chanalyst by two of the local group.

Danville—A recent educational discussion on "Automatic Frequency Control" led by Mr. Cummings.

Duluth, Minn.—Jamboree and a dinner meeting Sept. 24th. Servicemen within an area of one hundred miles attended. At the Speakers' Table was the Mayor of Duluth, the executive secretary of the RSA, John



H. J. Bernard has started manufacture of a new line of radio test equipment. For 14 years editor of "Radio World", he now has factory and offices at 319 Third Ave., Brooklyn, N. Y., where the new project is under way.

Potts, and A. G. Mohaupt. Lectures and talks after dinner. The Charter of the Duluth Chapter was presented.

Metropolitan N. Y.—At a joint meeting of the five local chapters in the Metropolitan area, Charters were presented to each group by Joe Marty, Jr. John F. Rider was a speaker at the same meeting, emphasizing the value of the RSA and the necessity for backing up the officers. Problems of servicing and selling were discussed at length; plans were laid for a membership drive, under the direction of Art Rhine.

Sept. 19th, the following committee chairmen were appointed: Membership, A. E. Rhine; Grievance, E. McD. Bendheim; Education and Technical, E. P. Mandeville; Special Relations, Charles H. Yocum; Library, Fred Horman.

The set-up of the Governing Board was completed by election of Sidney Bloch. Frank Cassidy, Vincent Campbell and Joseph Breyer.

Freeport—Sept. 27th discussion was held on obtaining a larger meeting place for service meetings. Subject of Chapter Library was discussed and plans laid for such a position to be part of the regular chapter set-up. Dale Foy, a member, gave a talk on the Philco Mystery Control, followed by a demonstration at the local Philco dealer in Freeport.

Green Bay, Wis.—On Sept. 23rd the Chapter received its Charter from the National Office of the RSA and heard A. G. Mohaupt lecture on the Signal Generator.

Holyoke—At a recent meeting, the Chapter received its Charter from the National Office and laid plans for a very active fall series of meetings.

Peoria, Ill.—First fall meeting Oct. 6th with a large turn-out. John Stoll, local member, held a very successful Radio Show in his place of business Sept. 29th.

Southern N. H.—Outing held by both the amateurs and the servicemen on Lake Sunapee, with games, swimming, contests, boat races, etc. Cash prizes were given each winner. Recently a new meeting place was decided upon at the Library in Manchester. A discussion was held concerning dues and local dues cut to twenty-five cents a month.

JOBBERS

Sanford Samuel Corp., distributors for *Admiral* radios at 136 Liberty St., New York City, have announced that over 200 dealers have been lined up for the line in three weeks. According to sales manager *Charles Ollstein* of the jobber firm, the dealers in the area are attracted by *Admiral 1939* features, and by the fact that *Continental Radio & Television Corp.* stresses the higher priced merchandise in which there is more profit for the retailer. Manager *Ollstein* points out that this practice results in dealer enthusiasm for the line, and subsequently a nice volume of sales to the public. He believes in the combination of "a good line and a good margin for the dealer."

Baldwin-Hall Co., Syracuse, N. Y., are now distributors for *Stromberg-Carlson* in the central New York area adjacent to Syracuse. *Fred S. Baldwin* is president; *H. B. King* is radio sales sales director.

In the Charleston, W. Va., area, the new jobber for *Stromberg* is *Charles-ton Electrical Supply Co.*

The Stock Boy Cabinet for servicemen, a business fixture from *Hygrade Sylvania Corp.*, which is nationally popular, has been improved. For one of the large drawers in the cabinet, a cash box is now available, and the other new feature is a set of metal book ends which attach to the cabinet roof for holding technical books and trade magazines.

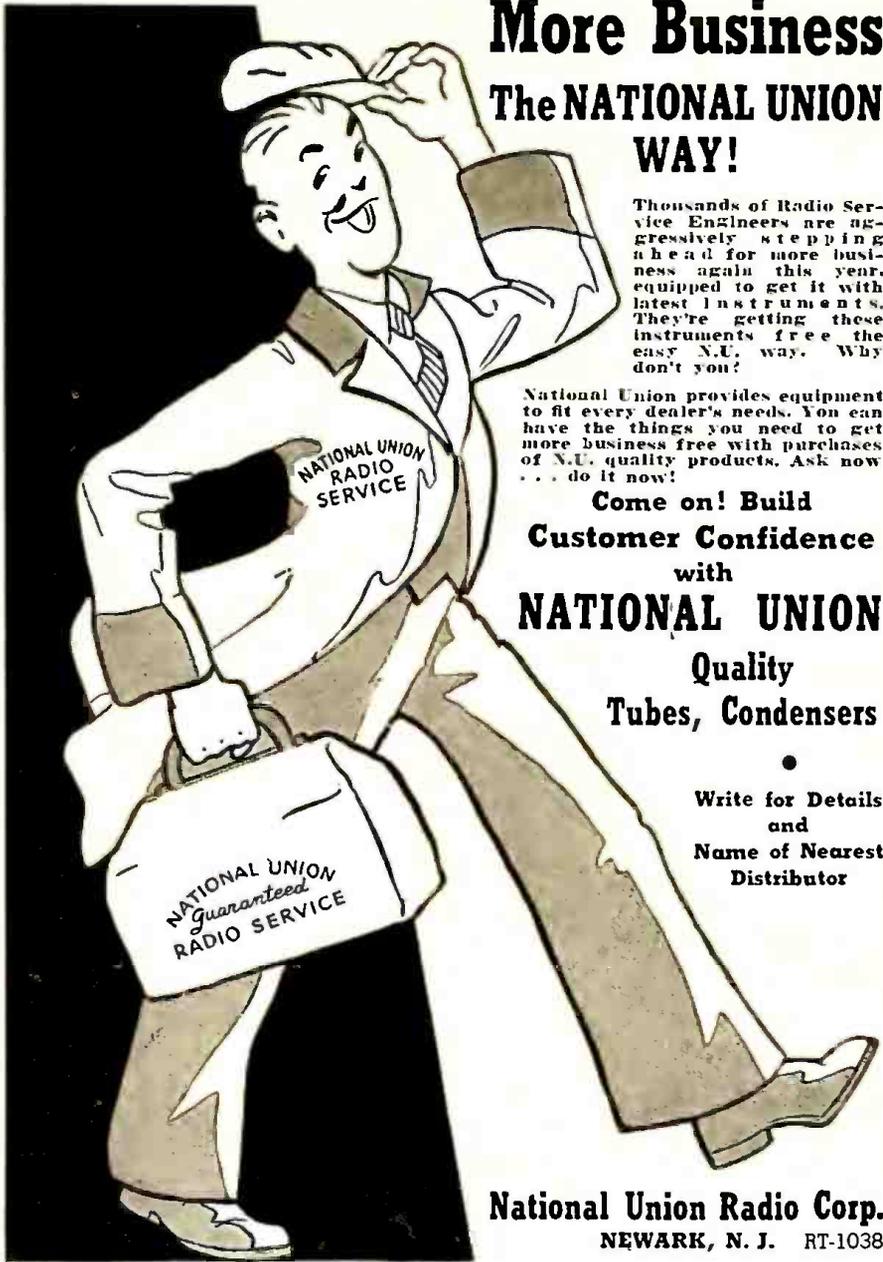
A big Florida radio party will be held Oct. 17 at 925 W. Flagler St., Miami, where *Major Appliances, Inc.*, will celebrate their second birthday in a new store. The firm recently expanded into the new quarters from 839 W. Flagler; combined sales rooms and warehouse facilities are more extensive at the new site. Prize tickets are being distributed to Florida dealers, to add interest to the birthday event. The company distributes *RCA* instruments, sound equipment and tubes; *Leonard* refrigerators, etc. Branch offices are at 222 E. Bay St., Jacksonville, and at 12th and Whiting, Tampa. *George B. Gray* is sales manager.

Four new jobbers for *Motorola* are: *Kierulff & Co.*, 1838 S. Flower St., Los Angeles, Calif., for home sets only in southern California; *Mills-Morris Co.*, Memphis, Tenn., exclusive in the area; *Straus-Frank Co.*, San Antonio, Tex., where *Ray Simpson* is in charge for *Motorola*; and *City Service Oil Co.*, Bristol, Virginia-Tennessee, who have been re-appointed for western Virginia and eastern Tennessee.

Stoll Radio Co., Peoria, Ill., held their first annual radio show Sept. 29, with *Admiral* radios, parts, sound apparatus and testing equipment on display. Prizes, gifts and bargain packages of radio parts were featured.

Announced for jobbers show rooms is a 60 x 30 x 17 inches display unit, designed to show off seven of *RCA's* test instruments. The unit has space for catalogs, as well as for wiring.

Step Up! . . . Equip Yourself for More Business The NATIONAL UNION WAY!



Thousands of Radio Service Engineers are aggressively stepping ahead for more business again this year, equipped to get it with latest instruments. They're getting these instruments free the easy N.U. way. Why don't you?

National Union provides equipment to fit every dealer's needs. You can have the things you need to get more business free with purchases of N.U. quality products. Ask now . . . do it now!

Come on! Build Customer Confidence with NATIONAL UNION Quality Tubes, Condensers

Write for Details and Name of Nearest Distributor

National Union Radio Corp.
NEWARK, N. J. RT-1038

Sell BETTER ANTENNAS

—and don't risk your reputation with cheap, unlicensed outfits.

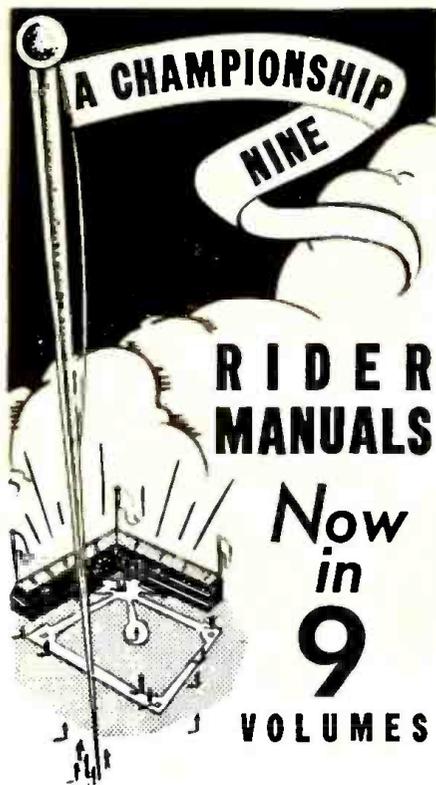
The National Antenna Check-up Campaign will stimulate demand for better antennas. Get behind it—and be doubly sure you sell originals; not cheap imitations. When your kits are marked "Licensed by Amy, Aceves & King, Inc.," they are authentic and dependable.

All antenna manufacturers operating under our patents furnish two major types:

- 1—All Wave Full Noise Reduction.
- 2—All Wave Signal Boosting, but not noise-reducing on broadcast waves.

Be sure to sell the right one for the job. Full noise-reduction costs a little more and is worth the cost, but cheap kits do not actually provide it. You and your customers are protected when your antennas are licensed by

AMY, ACEVES & KING, Inc., 11 WEST 42nd ST., NEW YORK



RIDER MANUALS

Now
in
9

VOLUMES

It takes nine men to make a championship baseball team

And in radio it takes all NINE Rider Manuals to make a "big league" outfit of a radio servicing business. The New Rider Manual Vol. IX will hurl you right into the money class. This great Manual gives you 1650 pages of the most complete and authentic compilation of servicing data available in the industry. Thousands of facts and easy-to-understand diagrams and explanations are given, plus an entirely new, 64-page "How It Works" Section—the most "talked of" feature of Vol. VIII. There is also a 140-page easy-find index on all NINE Volumes, now containing a total of 11,270 pages. You need the new Rider Manual Vol. IX with all its extra features.

Place your order with your jobber today.

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VOLUME IX
Out Nov. 19th
1650 Pages
New "How it Works" Section
140-page Index



DID YOU SAY 9?

YOU NEED ALL **9**
Rider
MANUALS

YES, I SAID 9!

A MESSAGE TO RADIO PARTS JOBBERS

George Barbey, Secretary N.R.P.D.A., points need for active organization. What it can accomplish

As secretary of the National Radio Parts Distributors Association, a number of letters have come to my desk asking "What is the N.R.P.D.A.?" "What has the Association done?" "Why doesn't the Association do something about this or something about that?" etc., etc. As many jobbers are thinking the same questions, I would like to deliver, through RADIO TODAY, the following personal message to all Parts Distributors:

As you probably know, a very small group of jobbers gathered in Chicago in June, 1937, to start an organization. The meetings were never very well attended. All of the work that has been done, has been accomplished by a small group of earnest men who are doing all they can to build an Association, with the resources available. All of these men are so busy running their own businesses and trying to stay out of the red that they can devote very little time to the Association. But they have been planning and building—and definite accomplishments are in sight.

The membership at this time is still small, and most of the money collected for dues has been spent in necessary legal expenses getting a charter, constitution, by-laws, and for printing, postage, etc.

Build membership first

Last June at Chicago a ten-point program for this year was adopted. The first and most important project must necessarily be a membership drive, for without the prestige of a large membership and sufficient funds, nothing substantial can be accomplished. At a recent meeting of the board of directors, the plans for the membership drive were approved and the campaign will be under way when this magazine reaches your desk.

But please remember that all of this work is being done by men who are just as busy as you are, with the added handicap of being located from 300 to 3,000 miles apart. If you jobbers really want an association and will respond heartily to the coming membership

campaign, you will then have the men and the money to do the things that all of us know should be done. I am asking that you do not expect too much from the association before you have established a membership and a treasury sufficient to open an office with a full time paid executive secretary to do the work.

The officers of the association certainly do not have the time to conduct a personally solicited membership campaign among a list of jobbers scattered all over the United States. If you jobbers realize the importance of this fact and join the association voluntarily and pay your dues promptly some of our objectives will be accomplished this year. If you sit back and wait to see whether the other fellow joins, or what is accomplished before you join, the association will not get very far. And with the manufacturers, sales managers, representatives, dealers and service men all organized, it is going to be very tough for a distributors' organization lacking numbers and money.

A profitable investment

Last month RADIO TODAY carried a heading, "Parts Jobbers Need Help." We certainly do. But while we are asking for it and waiting for it let us remember the old adage "God helps those who help themselves." And the best way to help ourselves is to quickly build a strong association consisting of at least 500 of the leading distributors, and representing at least 75 per cent of the purchasing power of the parts business.

And just one more thought. Don't consider your membership dues as an expense. It is an *investment* that will bring you greater returns than any merchandise you can put on your shelves. As an illustration of an instance where a strong association would have saved you money, just recall the headaches in the condenser business during the past year—a situation that cost every small distributor at least \$100 and the large distributors more than \$1,000. With the help



The New England hurricane didn't blow hard enough to wreck the good spirits of parts jobbers C. E. Beckman Co., New Bedford, Mass. Left to right, M. J. Szulik, P. W. Gifford (manager), shown with Charles Golenpaul of Aerovox.

and cooperation of a strong jobber organization the situation could have been easily straightened out. The fact is that *most of these problems will not even develop* after the N.R.P.D.A. really represents the majority of the buying power of the Parts Business. You owe it to the radio industry, you owe it to the men who have been doing the pioneer organization work, and you owe it to yourself to join the N.R.P.D.A. at once.

Geo. W. Russell, sales manager, *Sentinel Radio Corp.*, recently announced two new distributors for the Sentinel AC and battery radio line. In Little Rock, Ark., the *Jones Bros. Hardware Co.* will handle the Sentinel line, and in Meridian, Miss., *Milton-Brooks Co., Inc.*, has been added to the distributor list.

RCA distributors *Bruno-New York* and *Kirch-Radisco* were hosts to dealers of the N. Y. metropolitan and New Jersey areas in New York City recently, to launch the new phonograph-radio combination listing at \$175 (less \$40 trade-in allowance). RCA execs *Lou Roth, Al Blakslee* and *Tom Joyce* were on the program, along with jobbers *Max Krich* and *Irving Sarnoff*. A smashing promotion program for the set was announced, including a big cash prize contest called "Find the Oldest Victrola." It was presented to the dealers as a slice of RCA's 40th birthday cake.

Recently named by *Howard Radio Co.* as new distributors *Dunham, Carrigan & Hayden*, San Francisco; *Seattle Radio Supply Co.*, Seattle; *Glasgow-Stewart Co.*, Charlotte, N. C.; (*Freck Radio & Supply Co.* of Asheville and High Point, along with *Clinard Electric Co.*, Winston-Salem, continue in respective areas) and *Standard Battery & Electric Co.*, Waterloo, Iowa.



The smile is by Gordon Volkenant of Marshall-Wells Co., Duluth, Minn., but the fish is by Ross Siragusa of Continental Radio & Television Corp. The Admiral president landed the 16 lb. salmon at Lake Saganaga in Minnesota.

World's Lowest-Priced Quality Test Units

• • PUSH-BUTTON TUBE TESTER • •

AN up-to-the-minute push-button tube tester and tube seller for direct readings on all tubes, both metal and glass, AC or battery types. Tests for quality, individual element leakage (both hot and cold); shorts, opens, noise and gas, all in accordance with highest engineering standards for emission testers.

A line-voltage control is included. Individual switch control of all elements takes care of "floating filaments" and other non-standard tube arrangements. Extra socket facilities and other ample provisions guard against obsolescence.

Fast, accurate, simple, the BERNARD TUBE TESTER uses no adapters.

Large 4" square illuminated meter, with provision for external use of the meter alone (0-1 ma).

Tests include all the new tubes, among them the new television tubes, e.g., 1851; the 1.4-volt 50 ma and other battery tubes; gas tubes, such as 2A4G, 0A4G, 884, etc.; ballasts, magic eyes etc.

Bernard Tube Tester, Model 387, shipping weight 9 lbs. \$20⁹⁰
Net price, with handle....



The impressive appearance inspires customer confidence; the rugged construction assures dependable service and long life. Removable cover makes same instrument applicable to counter or portable use.

POCKET-SIZED 5,000-OHMS-PER VOLTER

A POCKET-SIZED micro-multimeter, 14 ranges, using a 0-200 microammeter of 2% accuracy, in a 3" square Bakelite case, and housed in a black crinkle-finished cabinet, **METERETTE JR.** is an accurate, reliable instrument and the world's lowest-priced 5,000-ohms-per-volter! The meter scale is unusually extended for quick, easy reading.

With only 3 volts of self-contained flashlight battery (10c renewal cost), resistance is measured all the way to 2,000,000 ohms, and on the low-ohm scale, down to one ohm.



METERETTE JR. provides the following ranges: 0-10-50-250-2,500 volts d.c., all at 5,000 ohms per volt; 0-10-100-1,000 volts a.c., all at 1,200 ohms per volt; 0-200 microamperes (reads second detector diode current) and 0-10-100-1,000 milliamperes (one amp.) d.c.; 0-2,000 ohms and 0-2,000,000 ohms. Bernard Meterette Jr., Model 381-J. Shipping weight 3 lbs. Net price **\$10⁹⁰**

Attractive appearance is combined with attractive price in **METERETTE JR.** There are only two controls, a feature of all Bernard multimeters.

3 7/8 INCH MULTIMETER WITH REMOTE CONTROL

The BERNARD ATLAS, with GIANT-sized meter, costs around \$10 less than other apparatus using a large meter, yet ATLAS provides far more services.



Outstanding in both price and performance, the Bernard Atlas uses a meter so large you can read it at a distance.

Unusual, highly-desired ranges are included, e.g., 150 millivolt a.c. output meter for connection across voice coils, so receivers may be aligned before the a.c. starts. You can see before you can hear. The tiniest hum can be read directly. One selector switch, one combination ohms-mfd.-henry adjuster, only two input posts. Meter hangs on wall, stands on shelf, lies flat or stands upright on bench. RANGES: 0-10-50-250-500-2500 volts d.c., all at 1,000 ohms per volt; 0-1-10-100-1,000 ma (one amp) d.c.; 0-40 ohms (5 ohms center, reads directly to .2 ohm); 0-400-25,000-250,000 ohms, with self-contained battery; 0-2,500,000 ohms with external 45-volt battery (not supplied); 0-150 millivolts a.c. output meter; 0-15-150 volts a.c. output meter (condenser self-contained); 0-15-150-1,500 volts a.c.; (00.2-2 mfd.) (.02-2 mfd.) (1-100 mfd.); (.07-7 henries) (3.5-350 henries) (35-3,500 henries); 0-150 watts for a-c line, 0-1.3 amperes a.c.; 3 db ranges, -10 to +58.

Model 388 Giant Multimeter, the Bernard Atlas; shipping weight 6 lbs. Net price..... **\$29⁹⁰**

Treasure at the Price of Trash
See Your Jobber or Write for Catalogue "T"

BERNARD

H. J. BERNARD, 319-T THIRD AVE., BROOKLYN, NEW YORK
Export Representatives Pan-Mar Corp., 1270, B'way, New York, N. Y. USA

NEW BOOKLET

The Institute of Radio Engineers, with headquarters at 330 W. 42nd St., New York City, have published three new booklets on radio standards, at 50c per. Covered separately are "Radio Receivers," "Electroacoustics" and "Electronics."

More business and better business, with prompt increase in profits, is the theme of the new 102-page sales manual provided for jobbers and jobber salesmen by National Union Radio Corp., 57 State St., Newark, N. J.



NEW CATALOG #161

JUST OFF THE PRESS

May we send you a copy?

CORNELL - DUBILIER
ELECTRIC CORPORATION

1022 Hamilton Blvd.,
So. Plainfield, N. J.
Cable Address: "CORDU"

Special presentation of the Cornell-Dubilier line of capacitors is found in a new type catalog now available free from CD at 1000 Hamilton Blvd., South Plainfield, N. J. Many of the capacitor types in this elaborately illustrated 40-page book are new. Large pictures accompany the lists and descriptions, in a plan which makes the matter easy to read and convenient for the reader who looks for a particular item.

"Test Standards for Condensers" is an 8-page booklet with dope on when to replace condensers and how to tell which brand is best, just prepared by John Meck Instruments, 164 N. May St., Chicago, Ill. The booklet is free to those writing on letterheads.

For engineers and manufacturers of radio and electrical equipment, a frequently-issued series of bulletins are available from Clarostat Mfg. Co., Inc., 285 N. Sixth St., Brooklyn, N. Y. For this data on resistors and resistance devices, loose leaf binders are issued.

"How to Choose a Radio" is a 20-page booklet issued for customer distribution by Stromberg-Carlson. What prospects should consider is carefully outlined in material accompanied by special pictures.

A "new way to health" via short waves is described in a new catalog issued by Scientific Diathermy Corp., 200 W. 34th St., New York City. The firm's new portable diathermy machine for home use is included.

Detailed information on all Atlas resistors from the 5-watt pigtail to the 200-watt transmitting size is carried in a new catalog No. 9, available on request from Atlas Resistor Co., 423 Broome St., New York City.

"Inventory Control—A Buying Guide to Profits" is the title of new bulletins released by Hytron Corp., 76 Lafayette St., Salem, Mass. Detailed data on tube turnover is presented.

Announcing and explaining the special annual release of European Red Seal records, a 24-page booklet has been released by RCA Victor to help dealers merchandise the disc sets. Prepared by Peter Hugh Reed, it has notes on each recording.

Annual Radio Parts Catalog—No. 1038R—has been issued by L. C. Brach Mfg. Corp., 55 Dickerson St., Newark, N. J. It includes new designs in home and multiple antennas and accessories, auto aerials, and miscellaneous specialties; an electric fence controller is also offered. The catalog is free to readers.

Ideas for the selection of gifts for all members of the family, and for all occasions, are elaborately presented in a new 64-page rotogravure catalog released by Wholesale Radio Survey Co., 100 Sixth Ave., New York City. Item is free from headquarters or from branches.

Complete presentation of transformer components is now available from United Transformer Corp., 72 Spring St., New York City, or from jobbers. Includes new Ouncer series, Varitran voltage control units, transmitter and amplifier kits; transformers for broadcast, aircraft, industrial, amateur and replacement service.

A new 1938 vertical home antenna, with universal bracket, is featured in a new catalog supplement issued by J. F. D. Mfg. Co., 4111 Ft. Hamilton Parkway, Brooklyn, N. Y. Phono pickup coils and dampers, field coils, ballast tubes, resistance line cords, unbreakable test prods. etc, are included.

"Vipower" is the title of a new illustrated bulletin released by The Radiart Corp., Shaw Ave. at 133rd St., Cleveland, Ohio. It has complete data on "Vibrator power at its best—and most powerful."

Loose leaf sheets on the new microphones of Universal Microphone Co., Ltd., Inglewood, Calif., are now available in a new series.

A new circular, No. 507, has been released by Ward Leonard Electric Co., Mt. Vernon, N. Y. It includes information on a new product, the "parasitic suppressor," besides listings of wire wound resistors, vitrohmm ring type rheostats, adjustohm resistors and plaque resistors.

A new folder on electrolytic and paper condensers has been released by American Condenser Corp., 2508 S. Michigan Ave., Chicago, Ill.

Illustrated catalog with 16 pages on "Temco Transmitters for Every Requirement of Amateur, Commercial and Experimental Communications Service" has been issued by Transmitter Equipment Manufacturing Co., Inc., 130 Cedar St., New York, N. Y.

Enlarged catalog on Ohmite Rheostats and Resistance Units for the Industrial, Radio and Electronic fields is now available from Ohmite Mfg. Co., 4835 W. Flournoy St., Chicago, Ill. Complete tables of ratings and a long series of values in this booklet No. 17 make selection an easy matter.

Smartly styled pocket-size salesman's book, for customer distribution or for counter use, has been prepared by Stromberg-Carlson. Special illustrations and descriptions are given for all SC 1939 sets and features.

Janette Rotary Converters



FOR CONVERTING D.C. TO A.C.

● Built especially for radio and sound apparatus—capacities 110 to 3250 volt amperes—with or without all wave filters. Dynamotor construction—economical to operate—ruggedly built for years of trouble-free service—used or recommended by the largest manufacturers of radio and sound apparatus throughout the world ●

WHY EXPERIMENT — INSIST ON A JANETTE

ASK FOR BULLETIN 13-1

Janette Manufacturing Company

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

TWO GUARANTEES



It takes two guarantees to insure a profitable tube sale. Guarantee of quality protects the customer, but that's only half of it. The dealer, too, must be guaranteed against unnecessary investment, dead stock, obsolescence, cut price competition, all of which make losses instead of profits.

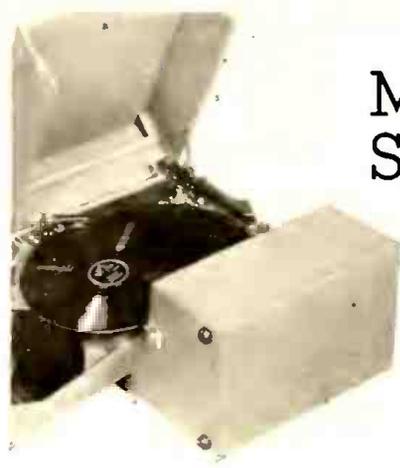


Dealers, who have qualified, know that the Tung-Sol Commission Plan insures their continued Tung-Sol Tubes insure their customers continued satisfaction. Any Tung-Sol jobber or branch office will gladly give you details.

TUNG-SOL
Flow Radio Tubes

TUNG-SOL LAMP WORKS, INC.
Radio Tube Division
Dept. C

Sales Offices: Atlanta • Chicago • Dallas • Denver • Detroit
Kansas City • Los Angeles • New York • General Offices: Newark, N. J.



The MUSIC SCOOP of the YEAR

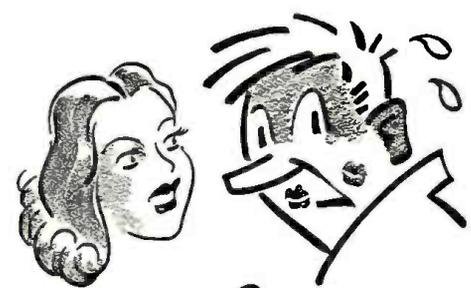
PORT-O-MATIC
A.E.D. U.S. PAT. OFF.

PORTABLE AUTOMATIC ELECTRIC PHONOGRAPH

Write for details of this magnificent instrument and complete line of portable combinations, etc.

Plays and changes 10 or 12 inch records automatically. Unbelievable tone. 8 unusual features. AC-DC. List Price **\$99.50**

THE PORT-O-MATIC CORPORATION
1013 MADISON AVE. NEW YORK CITY



Just Charge It,

Your work must stand up if you expect to make prompt collections. The sure way is to use dependable Ward Leonard Replacement Parts. They are made right and are conservatively rated. Send for the Servicemen's Data Sheet and Price List.

WARD LEONARD ELECTRIC CO.
40 SOUTH STREET, MOUNT VERNON, N. Y.
Please send me Price List Circular 507-A.

Name

Address

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

Jobber's Name.....

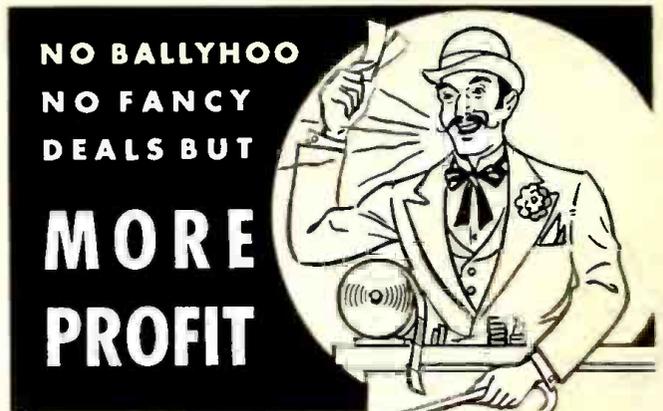


Investigate This New "EVEN SPEED" PHONOGRAPH MOTOR

THE new, more compact Alliance "Even Speed" motor is way ahead of anything in its field. Alliance engineers have eliminated the need of a governor yet the "Even Speed" motor maintains constant speed regardless of variations in record drag, line voltage or operating temperature. Large bearings with ample oil reserves and laminated bakelite helical cut gears assure a long life of smooth, silent operation. The "Even Speed" motor (110 volt-60 cycle) is available with 9", 10", or 12" turn-tables and is furnished complete with 5' cord and rubber spools for mounting.

Write today for sensational low prices and more complete information.

ALLIANCE MFG. CO.
ALLIANCE, OHIO



Triad "peaked" tubes not only give you a larger installation profit but they cut down unprofitable call backs.

Pre-tested elements and rigid inspection and intermediate tests make TRIAD a uniformly long life tube that *must* satisfy! No wonder TRIAD Tubes are initial equipment with over 20 leading set manufacturers.

DEALERS! SERVICEMEN!

Write For Our New Profit Making Proposition!

TRIAD THE QUALITY NAME
IN RADIO TUBES
MANUFACTURING CO., INC.
PAWTUCKET, RHODE ISLAND

DO IT NOW!

*DUES WILL BE INCREASED JANUARY 1, 1939
\$1.00 of 1938 dues will be credited on 1939 dues
if you join before January 1, 1939.

MAIL THIS COUPON!

RADIO SERVICEMEN OF AMERICA, INC.
304 South Dearborn St., Chicago, Ill.

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

Name

Home Address

City

Firm Name

Address

I am enclosing \$2.00 National Yearly Dues (Plus Nominal Local Chapter Dues).
Bill me \$2.00 National Yearly Dues.

Servicemen must keep abreast of the times. Membership in RSA helps servicemen to be better business men. It provides advance technical information, it lets you know what other servicemen are doing, it provides an organization composed only of qualified servicemen, its membership reaches every state in the union, it has the sponsorship and backing of the entire industry. We want you as a member if you are a good serviceman.

**The best \$2.00
YOU EVER INVESTED**

RADIO SERVICEMEN OF AMERICA, INC.
Joe Marty, Jr., Executive Sec'y, 304 S. Dearborn St., Chicago

SALES AID

TRIPLE APPEAL



Three new die cut displays printed in red, yellow, blue and black, have been prepared by Triad Mfg. Co., Pawtucket, R. I., and are available from the Sales Promotion Dept. there, or from Triad jobbers.

Largest of the three is for window or floor use, 14" x 17". The second is suggested for counter use, and the third is the Triad dealer authorization notice.

FRESH DISPLAYS

Four window cards, a window trim set of three streamers, and four other pieces of smaller design, are included in a brand new series of point-of-sale display materials now available from Ken-Rad Tuhe & Lamp Corp., Owensboro, Ky. Jobbers and dealers will find the whole set lithographed in lively colors.

A CHEER FOR TUBES; NOVEL SALES HELP

A lively 8-color window display, featuring RCA Radiotrons and their connection with the football season, is now available to dealers. A large 9-sheet football schedule pad is attached, presented so that dealers will find it convenient to stage prediction contests among customers.



Another football display, also appropriate for contests, plugs Cunningham tubes in an 8-color piece depicting a tense moment in gridiron scrimmage.

Among other RCA merchandising helps is a noise-generator kit which will allow dealers and servicemen to show customers the tangible results of using the Master Noise Eliminator and the Master Antenna System.

Also, papier-mache reproductions of the famous terrier, Nipper, have been prepared by RCA for store or window use. The 40-inch figure has concealed loudspeakers so that broadcasts or records may be played through it.

"SHE WAS ONLY A FARMER'S DAUGHTER"

Booklets containing one-act plays, with appropriate titles like the one above, are being offered by Presto Recording Corp., 139 W. 19th St., New York City, along with home recording machines, or with blank records.

It was found that one of the newest forms of home entertainment is the recording of short dramas, where groups of people are in the mood for special fun. A microphone is placed in the center of a family group or among party guests, and the "players" read their parts. The complete recording of the production can then be played back.

BLACK-AND-GOLD SALESMEN

Attached to the control knobs of Stromberg Carlson radios now being shipped are a series of new tags, explaining for the prospect and for the salesman the various features of the sets. The tags are designed to attract those who browse around in radio shops; they offer an unforgettable sales summary for everyone concerned in marketing the set. Tags are illustrated and printed in black and gold.

NEW NEON

A modern style neon sign with green and blue tubes has been introduced by Stromberg-Carlson for identifying authorized dealers. The words used are Stromberg-Carlson Labyrinth Radio.

TRAFFIC-STOPPER

★ One part of Zenith's store display service on auto radio is a series of adhesive posters, sent out to dealers with a white protective backing which is stripped off when used. These "Mystik" pieces come in nine different designs, forming a set of colored displays presented as a new device to stop traffic and get prospects into the store.

Zenith suggests that the stickers be used in the following plan: (1) Install a new 1938 auto radio in your car, (2) Have your car washed and polished, (3) Place the "Mystik Markers" on both sides of the car, (4) Park your car in front of your store, (5) Open the car windows and turn the volume up so that the radio may be heard by passers-by.

for example, take
LIGHTNING

You've seen it zip across the sky at night. Well, our delivery system works like that. Only much faster, of course. You see, we learned that time is mighty important—especially to men like you. So we set up a delivery service system that never shuts down. Very often orders go out the same day we receive them. Size of the order makes no difference. Try us and see.

WHOLESALE RADIO SERVICE CO. INC.
100 SIXTH AVE., NEW YORK, N. Y.
CHICAGO, ILL. • ATLANTA, GA. • BOSTON, MASS.
BRONX, N. Y. • NEWARK, N. J. • JAMAICA, L. I.

FLASH!

To **JOBBERS** and **DEALERS**—

**YOU CAN SELL THE
SENSATIONAL NEW**

RALSTON CODE COURSE

without investment!

● Take advantage of the ever-widening world of hams, the growing public interest in their work and the present boom in record players and combinations. This new method of learning the code, or increasing speed, is complete in three double side records with accompanying instruction book. Signals are clear and crisp; slow or fast as desired—and playable on ANY phonograph or record player.

Demonstrated at the ARRL National Convention in Chicago, the Ralston Code Course took the hams by storm. Thousands who have hesitated to begin can now learn in half the time, under the recorded teaching of experts.

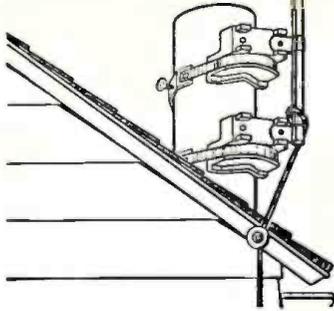
As an introductory measure, we will supply a limited number of dealers on a straight consignment basis. You can't lose. Write today for complete details.

RALSTON RECORD COMPANY

5433 Willows Ave., Philadelphia, Pa.
Subsidiary of Poinsettia, Inc., Pitman, N. J.

NEW!

WARD'S DE LUXE HOME AERIAL MAST



- Can be sold to replacement market as well as with new sets
- Provides better reception, better pickup than old style "clothes-line" aerials
- Made of attractive, rustproof, nickel-plated bronze tubing; 4 sectional; 12 ft. high
- Easy to mount to soil pipe, or against chimney, window frame, garage, etc.

FREE! Write today for free catalog of WARD'S complete line of aerials for car and home.

The WARD PRODUCTS Corp.
WARD BUILDING CLEVELAND, OHIO

Halldorson

Vacuum Sealed Transformers

Two Models
Fit 1250 Receivers

Do You Know that eight Halldorson models will take care of all replacement demands for both power and audio transformers in more than 90% of all makes of radio sets? For better, more satisfactory results, specify Halldorson.

Ask Your Jobber
Write for New Catalog



The VARI-VOLT Exclusively HALLDORSON
0 to 286 v. in 1-volt steps; 0-128 in 1/2-volt steps. Simplifies radio service work.

FREE to Servicemen on Halldorson Deal

THE HALLDORSON CO., RT-1038
4500 Ravenswood Ave., Chicago, Ill.

Please send me—
 New Catalog;
 Information on Free Vari-Volt Deal.

Name
Address
City
State



Tangible returns are reported by New Orleans Auto Supply Co. as a result of formal sales training of personnel. The course came from LaSalle Extension University, Chicago. Starting at third from left, front row, left to right, are the executives, J. L. Schultz, Louise Shedler, president R. E. Zerlin, Archie Kiefsky, J. McVickers (LaSalle) and N. H. Palmer. Others are salesmen who took the training.

TALK OF THE TRADE

McMurdo Silver Corp., Chicago, Ill., makers of custom-built radios, in line with its policy of never more than one dealer to a city, has just appointed *Famous-Barr* exclusively for the St. Louise trading area, and *Shryock Radio Co.* likewise exclusively for Philadelphia. A quick check of Philadelphia activity on McMurdo Silver showed that *Shryock* during the twenty days immediately following their appointment just after Labor Day sold about \$2,500 of these custom-built radios and combinations, all without a single ad! *Joseph Hergeshelmer*, famous novelist, was among their first customers—while *Lyon & Healy* out in Chicago are reported to have just sold a McMurdo Silver to Rudy Vallee. Which seems to prove the maker's contention that "thar's gold in them thar expensive radio sales" when the line is exclusive.

F. Behrendt of *Recoton Corp.*, 178 Prince St., New York City, has returned from a 2-month tour of England, Holland, France and Switzerland. Mr. Behrendt made a study of recording processes and recording equipment, and will shortly market a new recorder here. Meanwhile he has announced additional merchandising helps for dealers handling the highly successful *Recoton* phonograph needle.

Radio Guild of Indiana, with 28 members under the direction of secretary *Joe Lannan*, recently chartered a bus and went to Owensboro, Ky., for a visit to the plants of *Ken-Rad Tube & Lamp Corp.*

A recent check-up on the visitors who have showed up at the television demonstrations held by *American Television Corp.*, 130 W. 56th St., New York City, reveals that the thousands of guests came from 38 states. President *Samuel M. Saltzman* of ATC collected data on program preferences, and found that televised films were popular, that drama is watched for its own sake, and that pick-ups of news events will be important.

Hygrade Sylvania Corp. was recently cited by the National Safety Council for a record of 3,497,842 man-hours worked without a disabling injury between Nov. 1, 1936, and June 1, 1938. The Sylvania plant at Emporium, Pa., was awarded an honor roll position.

Now to represent the *Meissner* jobbing line in North and South Dakota, Minnesota, Nebraska, western Wisconsin, northern and western Iowa, is the *Foster Co.*, 601 S. Cedar Lake Road, Minneapolis, Minn.

EVERYTHING IN RADIO!

A COMPLETE SOURCE FOR YOUR RADIO NEEDS!

Our immense stock of radio sets, parts and supplies enables you to purchase your entire needs on one order. The Big BA catalog is an encyclopedia of the Radio Industry. You will find all your Nationally Known Favorites shown in this Book and it's FREE for the asking. BA service is better than ever—practically every order is shipped the same day it is received.

Write for Big New Wholesale Catalog

BURSTEIN-APPLEBEE CO. 1012-14 MCGEE STREET
KANSAS CITY, MISSOURI





President John W. Million, Jr., right, of Millon Radio & Television Labs, is shown with the firm's new chief engineer, H. D. Von Jenef. Latter has had long experience with Wells-Gardner, Continental, Littlefuse and others.

Sales director *Herbert L. Weisburgh* of *Brunswick Radio*, who recently stirred up radio trade interest by introducing a complete line of radios in authentic period-style cabinets, has announced the appointment of *Sidney Vorzimar* as Brunswick sales representative in New York City. Mr. Vorzimar, a veteran N. Y. radio dealer, will have offices at Brunswick executive headquarters at 206 Lexington Ave., New York City.

General sales manager *Walter F. Marsh* of *Meissner Mfg. Co.*, Mt. Carmel, Ill., has completed a tour through northern Illinois, Iowa and Wisconsin. He reports widespread enthusiasm among jobbers for Meissners new 1, 2 and 3-tube kits.

Howard Radio Co. managed to outwit the truck strikers in California, and actually got nearly three carloads of radios into hands of dealers, according to Howard sales manager *Charles B. Shapiro*.

New York transmitter *W2XBF*, which will try out the matter of broadcasting regular signals as well as facsimile programs on a single channel, is about ready to go on the air, according to the owners, *Finch Telecommunications Labs., Inc.*, 37 W. 57th St., New York City. Dealers in the area may then have a chance to sell the Finch facsimile receivers to the public. Manufacture of the receivers now

awaits the taking of Finch licenses by radio manufacturers.

In the area of Chicago, northern Illinois, eastern Wisconsin, and southeastern Iowa area, the *Meissner Mfg. Co.*, Mt. Carmel, Ill., has a new representative: *Instrument Sales Co.*, 325 W. Huron St., Chicago.

Octave Blake, president of *Cornell-Dubilier Electric Corp.*, South Plainfield, N. J., announces a dividend of 10 cents per share on all common stock of the company. Mr. Blake pointed out that profitable operation of the organization during the current period of economic stress has been due principally to the introduction of new products, and the development of new fields of application for these products. As a direct result, Cornell-Dubilier sales have showed an increase, compared with the rest of the industry. Continued modernization of C-D equipment has, of course, played a part in more economical plant operation, while prices in the industry were reduced as much as 40 per cent during 1938.

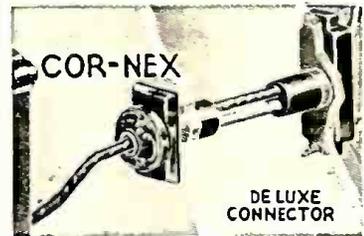
Vice president *Howard Briggs* of *Howard Radio Co.*, is now in the New England area helping jobbers with problems arising from hurricane and flood damage.

F. Howard Waite, Ohio representative for *Stromberg-Carlson*, was the winner of the company's "Spread the Base" contest. Prize for annexing the most new dealers since June 1st was a new SC model.

A prominent manufacturers' representative in New York City is interested in handling new lines of test equipment, soldering irons, auto-radio vibrators, theater sound equipment, and crystal mikes. Interested manufacturers may reach him through Reader Service Dept., *RADIO TODAY*, 480 Lexington Ave., New York City.

Latest addition to the 1939 line of *Halson Radio & Television Corp.*, Meriden, Conn., as announced by *Capt. Eric Storm*, sales manager, is a 5-tube superhet in the midget series. It is called *Super Dwarf* and lists at \$18.50. Cabinets are smartly styled in onyx-like material, in a variety of colors.

CORWICO recommends



The above illustration shows both the inside and the outside view of COR-NEX, installed on the job and ready to function—a superb invention by a practical serviceman, which eliminates for all time the sloppy, dangerous connections housewives have for too long put up with. You make a real profit on this one! And how your customers will thank you! Easy to install. Hoiled by Servicemen as the greatest innovation in years.

COMPLETE—with DOUBLET lighting orrester, decorative inside plate with leads and polarized plug with cords...\$2.50 list



A masterly A. A. & K. licensed system that abolishes man-made static on broadcast as well as short-wave bands. Improves reception in ANY location. Gives your set a CHANCE! Several units at attractive prices.

Distributed Through Jobbers

CORNISH WIRE CO., Inc.
30 CHURCH STREET, NEW YORK CITY

JFD WOVEN FABRIC RADIO DIAL BELTS



SERVICEMEN'S KIT

Exactly the same as originally used on Zenith, Emerson, Crosley, Grunow, Sparion, RCA Victor, Fada, Stromberg-Carlson, Detrola, Silvertone (Sears Roebuck & Co.), Airline (Montgomery Ward), Acra-test, Admiral, American Bosch, Belmont, Capehart, Fairbanks-Morse, Garod, Lafayette, Majestic, Simplex, Wells-Gardner, Westinghouse and Wilcox & Gay.

Packed in individual envelopes and put up in attractive kits of 25, 100 and 300 belts.

Measurement chart, free with each kit, immediately identifies any belt submitted for replacement.

Send for complete schedule

J. F. D. MANUFACTURING CO.

4111 Ft. Hamilton Parkway

Brooklyn, N. Y.



JOBBER'S KIT



... Sell MORE Automatic Combinations

WORK into a bigger volume, bigger profit demand, with popular-priced radio-phonographs equipped for record changers. Install General Industries Record Changer Units—thoroughly established high-dependability of operation and high-fidelity reproduction.

Ready Assembled, Easily Installed

Model "M," latest improved type, plays and changes eight 10-inch or seven 12-inch records. Model "K" plays and changes seven 10-inch records, plays 12-inch records changed by hand. . . .

ORDER SAMPLES AND TEST THEM OUT IN YOUR OWN CABINETS.

In ordering, specify exact voltage and frequency of current you use.

The GENERAL INDUSTRIES CO.
3838 Taylor Street, Elyria, Ohio

DON'T LET SERVICE WORK GET YOUR GOAT!

Equip yourself to MASTER THE JOB—

EVERY service man who is on his toes and who expects to make anything out of service work, needs the backing of Simpson testing equipment. Here are instruments that take all guesswork out of the most complex service jobs. You ought to have the latest information on the many new Simpson developments that are making such a tremendous hit among service men everywhere. We shall be glad to send you the latest Simpson bulletins. Why not write for them?

Simpson Electric Co., 5202 Kinzie St., Chicago

—And now the New 333

Tube Tester—a smaller tube tester built to highest standards of Simpson quality, with a lot of new features, at the remarkably low price of \$26.50. Write for new circular on this amazing little tube tester.

—and the new super all-service, tube and set tester

—the Model 440 "Test-master" There is truly nothing that you can ask for or find in any instrument that is not covered in the Model 440. No other tester selling at any price provides as many tests and ranges! At \$59.00 service men say it's the best buy on the market.

—the smallest "Pocket Type" A. C. and D. C. service Volt-Ohm Milliammeter on the market—the Model 230

At \$14.25 this is an instrument that every service man will want in his kit.

ASK YOUR JOBBER **SIMPSON**
Instruments that STAY accurate

TRADE TALK

Ernest P. Scott, Cleveland, Ohio, has been appointed representative for Meissner Mfg. Co., in Indiana and Kentucky.

American Lava Corp., Chattanooga, Tenn., has taken over all equipment and good will of American Ceramics & Specialties Corp., Jackson, Mich. Manager Carl R. Hower and production manager O. D. Riseden of the latter firm will be retained by American Lava for sales and engineering posts.

Capt. Eric F. Storm, sales head of Halson Radio & Television, Inc., Meriden, Conn., came to the rescue of a stalled train when flood water at Providence, R. I., isolated passengers and railroad crew from the outside world. Capt. Storm who happened to be aboard, hooked up a sample Model S-5 Super radio receiver to a bank of storage batteries in the office of the chief dispatcher, and news broadcasts were received all night.

STEEM-ELECTRIC WILL PROSECUTE PATENT INFRINGERS

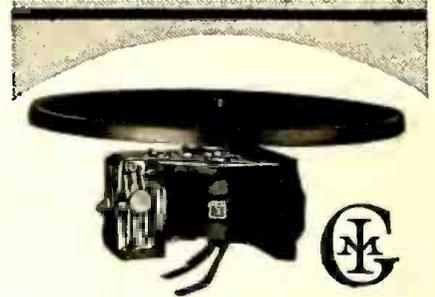
The Steem-Electric Corp., maker of the patented Steem-Electric iron, has announced that it will prosecute to the fullest extent of the law, any firm or corporation making, using, or selling any iron that infringes upon its patented and trade-marked "Steem-Electric Iron." U.S. patent No. 2027767 and trade mark registered.

Ohmite Mfg. Co., Chicago, points with pride to the fact that Howard Hughes' Lockheed plane, in which he made his famous flight around the world in 91 hours, was equipped with Ohmite vitreous-enameled rheostats and resistors.

James H. "Jim" Clements, one of radio's old timers, has been put in charge of equipment business for Hytron Corp. in the states of Michigan and Indiana. His offices are at Detroit, Mich.



Plastered with promotion, here's Art Wegert of GE Supply Corp., Allentown, Pa. The sticker, worn at sales huddles, says, "Buy GE Tubes."



Flyer Motors Help You Sell Combinations and Records

STEP UP your output of combinations and your sales of records by selling combination sets equipped with Flyer Motors. Dependable for high-fidelity playing. Because made by America's leading phonograph motor specialists and having superior basic design. Precision-built. Constant speed, accurately controlled. Easily installed. Low cost. Every set is a better set that has a Flyer Motor in it.

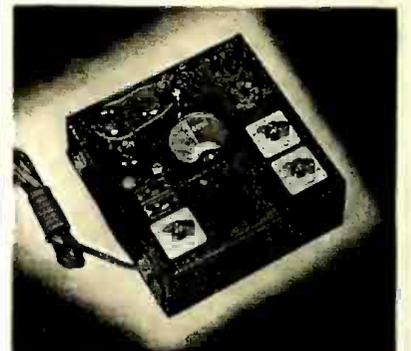
Model "V"

Order a Sample to Test

Range of styles and choice of equipment. In ordering, give exact voltage and frequency of current used.

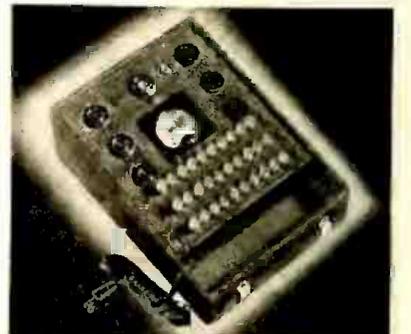
The GENERAL INDUSTRIES CO.
3838 Taylor Street, Elyria, Ohio

MILLION TUBE TESTERS



MODEL CP—Gives quick, positive test on all tubes. Accurate and dependable.

\$13.95



MODEL MO—Universal "Push Button" test for all tubes. A leader in value.

\$18.95

MILLION RADIO & TEL. LAB.
647 W. Ohio Street Chicago, Ill.

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While every precaution is taken to insure accuracy, we cannot guarantee against the possibility of an occasional change or omission in the preparation of this index.

Special guest at a recent radio showing at *George Worthington Co.*, Cleveland, Ohio, was *Ed. May*, from Chicago headquarters of *Sentinel Radio Corp.* Mr. May presented the 1939 Sentinel line to 700 enthusiastic Worthington salesmen, after an extensive trip through Michigan, Ohio and Upper New York.

E. G. Perkins of the engineering department of *Supreme Instruments Corp.*, Greenwood, Miss., is now in charge of the company's High Frequency Test Instrument design. Former chief engineer *Floyd Fausett* is no longer connected with the firm.

Soft ball teams of *The American Steel Export Co.*, *Philco's* export dept., and of *Lafayette Radio Mfg. Co.*, recently started a series of ball games at Central Park, New York City. *William Green* of *Philco* and *L. M. Braun* of *Lafayette* were managers. *Lafayette* won the first game, 7 to 3.

Now to cover the New England states for *Meissner Mfg. Co.*, is the *Ralph H. Clawson Co.*, 55 Kilby St., Boston, Mass.

Dealers' salesmen who are the winners in *Stromberg-Carlson's* Fourth Better Salesmanship Contest have been announced. Highest men in their locality, and winners of Labyrinth radios are: *Francis T. White, Chickering & Sons*, Boston; *Stanley Lersch, Tri Par Radio*, Chicago; *A. L. Cavette, Grinnell Bros.*, Bay City, Mich.; *Roscoe C. Larkin, Larkin Radio*, Los Angeles; *John J. Larkin, Hickson Electric Co.*, Rochester, N. Y.; *Herbert J. Konen, Noll Piano Co.*, Milwaukee; *W. J. Dalton, G. Fox & Co.*, Hartford, Conn.; *Frank Krasa, Altenberg Piano House*, Elizabeth, N. J.; *Fred Sobel, Fred's Radio*, Forest Hills, L. I.; *Joseph Holzman, Sun Radio Co.*, New York; *Joseph Krause, Isidore Schiller*, and *Irving Walker*, all of *Davega City Co.*, New York.

In the new downtown Los Angeles sales offices of *Universal Microphone Co.*, Inglewood, Calif., a complete display of *Universal* microphone and recording products has been set up. Located in the *Beaux Arts* building, the exhibition is in charge of factory representative *S. E. Shapiro*.

The national distributing organization for *Stewart Warner* has been strengthened by the appointment of additional distributors: *Griffith Distributing Corp.*, Indianapolis, Ind.; *The Ridge Co.*, South Bend, Ind.; *B. J. DeJarnatt*, Fresno, Calif.; *W. R. Moore Dry Goods Co.*, Memphis, Tenn.; *Kemper & Barrett*, San Francisco, Calif.; *Peaslee-Gaulbert Corp.*, Louisville, Ky.; *Hughes-Bozarth-Anderson Co.*, Oklahoma City, Okla.; *Air-Ola Co., Inc.*, Huntington, W. Va.; *Graybar Electric Co.*, Los Angeles, Calif.; *Colen-Gruhn Co., Inc.*, New York City, and *Reitz Sales & Service*, Omaha, Neb.

The complete line of test instruments made by *Radio City Products Co.*, 88 Park Place, New York City, will get the benefit of a big promotional campaign this Fall. Direct mail and snappy displays are part of the drive.

INTER-COMMUNICATION SET

Plug-in and Talk • No Installation • Fool Proof

Fully Licensed and Guaranteed



Room to Room
Upstairs and
Down

Home to Home
Children's
Playroom

Nursery or
Playroom

House or Garage

#47 Master Unit
and Sub-Station
Complete with

Wire READY-TO-USE. Will operate efficiently with added wire up to 500 feet without additional attachments.

Weight 5 lbs. complete in air-cushioned cartons.

LIST PRICE

\$ 9⁹⁵

COMPLETE

Send for catalogue showing complete line up to \$79.50 list price.



REGAL AMPLIFIER MFG. CORP.

14-16 W. 17th St., New York
Cable Address "Ramcoamp"



Everything in Public Address

• Radolek's P.A. line is complete! High-gain, high-fidelity amplifiers. Complete portable, permanent and mobile systems. Record playing systems. Outputs of 5 to 90 watts for every installation. Quality construction. Lowest prices. Entire line described fully in the new 1939 Radolek Profit Guide.

Most Complete Radio Parts Catalog

• Radolek has over 12,000 items in stock for immediate shipment. Radolek's prices are lowest. Send for the new 1939 Radolek Profit Guide now. It contains over 3,000 new items over the previous edition. It will give you new ideas in conducting your radio business on a more profitable basis.

The **RADOLEK Co.**

601 W. Randolph, Chicago, Dept. D-24

Send me the new 1939 Radolek Profit Guide FREE.

Name

Address

Serviceman? Dealer? Experimenter?

It's
here
!



POWER for all 2 volt BATTERY SETS

in the home and in store
demonstrations with the new

Electro SILENT A-B ELIMINATOR!

- Clear, humless reception.
- Operates from 110 volt 60 cycle.
- Convenient, low-cost demonstration in stores.
- Eliminates all charging and replacements.
- A-voltage adjustable 0 to 2 volts—1 ampere.
- B-voltage 45, 67, 90, 135, 180.
- Tube filaments protected against burn-out.
- Rich black and chrome finish.
- Size, 9½ x 6½ x 6½; wt. packed, 16½ lbs.
- Finest quality—should give lifetime service.
- Sold with a money back guarantee.

See your jobber or write at
once for complete details

\$14.95
NET

ELECTRO PRODUCTS LABORATORIES

549 W. RANDOLPH ST., CHICAGO, ILL.

What
will
RADIO
TODAY
do in
1939
?

A radio publishing
service — not available
today — COMING!



Paul Westberg, Chicago manager for Weston, congratulates winner of Weston "50th Anniversary Contest," Alfred Kilian of Chicago. From left to right: Joe Marty, Jr., executive secretary, RSA; Ray L. Mason, president Chicago RSA; Mr. Kilian, Mr. Westberg, and W. C. Braun, president Radolek Co., Chicago.

KILIAN WINS WESTON CONTEST

First prize in the Weston "50th Anniversary Contest," consisting of a complete service man's radio bench equipped with analyzer, tube checker, oscillator and other equipment, has been awarded to Alfred Kilian, radio service man of Chicago. Awards in the contest were based on the most practical and interesting answers to the question, "How modern test equipment helped me to solve a difficult servicing problem."

Second prize, a combination high-sensitivity analyzer and tube checker unit, was awarded to Francis Troiani, Jamaica, L. I. The winner of the third prize, Earl O. Piety, Lampasas, Texas, received a Weston Model 776 Oscillator. Others among the 25 prize winners were:

Herbert Bussewitz, Chicago, Ill.; Dependable Radio Service, Great Falls, Mont.; Harvey H. Schock, Reading, Pa.; Floyd A. Martin, Columbus, Ohio; O. R. Sullivan, Jasper, Ala.; Homer C. Buck, Detroit, Mich.; H. E. Gille, Jersey City, N. J.

SERVICEMEN HAVE TILL OCT. 31 FOR SYLVANIA PRIZES

The service shop modernization contest being sponsored by Hygrade Sylvania Corp. will be continued to Oct. 31, according to a new announcement from the firm. Prizes worth \$100 will be awarded the winners soon after that date.

Radio service men who revamp their shops in the neatest, most efficient and most appropriate manner, as revealed in submitted photos, will be given the awards. Suggestions and ideas on shop modernization are available in a Model Shop booklet available from Hygrade Sylvania Corp., Emporium, Pa.

Shapiro Sporting Goods Co., RCA jobbers of Newburgh, N. Y., have been named winners in the national contest recently sponsored by RCA. Prizes were awarded at a big birthday party celebrating the RCA 40th anniversary, with Camden, N. J., officials on hand.

New distributor for *Stromberg Carlson* throughout eastern and southeastern Pennsylvania is *Motor Parts Co.*, 17th and Indiana Ave., Philadelphia. *Stuart F. Louchheim* and *Carl Wilkening* of the jobber firm look forward to excellent profits under the SC franchise.

In Colorado, Wyoming and New Mexico, the new representative for *Meissner* is the *Mountain State Sales Co.*, 2610 Dexter St., Denver, Colo.

Renier Radio & Television Co., Dubuque, Iowa, jobbers who cover north-eastern Iowa, northwestern Illinois and southwestern Wisconsin, have steadily expanded their activities until the firm now wholesales the following lines: *Emerson* and *Stromberg Carlson* radios, *Ken-Rad* tubes, *Gibson* refrigerators, *One-Minute* washers, *Radiart* vibrators, *Shure* microphones and pickups, *Wright-DeCoster* speakers, *Presto* recorders, *Cornish Wire* aerials, *Snyder* auto aerials, *Burgess* dry batteries, *Oridite* wet batteries, *Aerovox* condensers and resistors, *Meissner* prod-

BOOK REVIEW

ELECTROLYTIC CAPACITORS

By PAUL MCKNIGHT DEELEY

To quote the author, "*Electrolytic Capacitors* was prepared in the hope of making available, to the radio and electrical engineering fraternity, a fairly complete source of technical information on the theory, construction, characteristics and application of electrolytic capacitors of all types."

Commencing with atoms, molecules and electrons the types of condenser are explained in simple language, and the electrolytic is shown basically to be similar to any other type. Because of the great difference in wet and dry electrolytics, they are handled separately. Chapters on the fabrication, formation or treatment of the materials, and aging are included. All the types of both dry and wet electrolytics are discussed.

In addition to data on the characteristics of the two types, a chapter is devoted to testing of the units. Another section deals with rectifiers and filter circuits as applied to electrolytics.

AC electrolytic capacitors are included for those interested in motor condensers. The concluding chapter is an appendix of useful information.

Published by *Cornell-Dubilier Electric Corp.*, S. Plainfield, N. J.—**RADIO TODAY.**

The **AMPERITE**

ACOUSTIC COMPENSATOR

(pat. pend.)

gives you

HIGH OR LOW PITCH

WITH THE SAME MICROPHONE

BIGGER PROFITS To be ahead of competition, and realize a larger profit on each job, you must offer added value in new features. Realizing this, *Amperite gives you The Acoustic Compensator . . . at no extra cost to you!*

This is an exclusive feature which enables you to (1) lower or raise the response of the microphone; (2) adjust for close talking or distant pickup; (3) adapt microphone to varied conditions.

THESE 4 MODELS HAVE THE ACOUSTIC COMPENSATOR

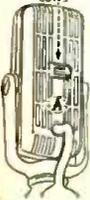
MODEL RBHk (hi-imp); **RBMk** (200 ohms) Frequency range 40 to 11000 CPS. Output -65 db. . . . Chrome or Gunmetal . . \$42.00 LIST

NEW! MODEL RSHk (hi-imp); **RBSk** (200 ohms) Frequency range 60 to 8000 CPS. Output -68 db. . . . Chrome or Gunmetal . . \$32.00 LIST

All of the above are complete with Acoustic Compensator, Switch, Cable Connector, and cable.

NOTE: Roth Sound Service writes. . . "Your mikes are certainly rugged. I've used them in rain, wind, and on the hottest days, but they've always stood up perfectly".

PUSH UP TO INCREASE HIGHS, PUSH DOWN TO INCREASE LOWS



IMPROVES ANY "LOW-COST" INSTALLATION ON 4 COUNTS!

P.A. Men, you can improve those "price" jobs by using the popular Amperite Model

RAH (or **RAL**). You will get better results because: (1) it is excellent for both speech and music; (2) has flat response without undesirable peaks; (3) reduces feedback; (4) stands up under rain, wind, heat, and rough handling . . . Frequency range 60 to 7500 CPS. Output -68 db. **MODEL RAH** (hi-imp); with 12' of cable; **MODEL RAL** (200 ohms) with 8' of cable. . . . \$22.00 LIST

MAKE EXTRA SALES WITH CONTACT MIKES...\$12.00 LIST

Professional and amateur musicians are delighted with the Amperite Contact Microphone. It "makes an ordinary violin sound like a Strad" . . . gives a small piano the tone of a grand. And yet, there is no distortion. No unnatural effects. No "fingering noises" . . . Frequency response 40 to 9000 CPS. Output -40 db. 20' of cable.

Models listed below can be used on most radio sets since 1935 and on all P.A. Systems. They operate with either high or low gain amplifiers. Installation is simple . . . no changes in strings or instruments . . . attached without tools.

MODEL SKH (Hi-imp); **SKL** (200 ohms) \$12.00 LIST
SKH or **SKL** with foot-operated volume control \$20.00 LIST
 Professional Model **KTH** (or **KTL**) \$22.00 LIST

A COMPACT VELOCITY for hand or stand

Though only a little larger than a match box, this Amperite Velocity has the features of the larger microphones. Good for speech and music. Designed for use on stand but also makes an excellent hand microphone with comfortable pistol grip.

Frequency response 60 to 7500 CPS. Output -70 db. Complete with switch, cable connector, and 25' of cable.

MODEL ACH (hi-imp) or **ACL** (200 ohms) . . . \$25.00 LIST

Sales Aids for the P. A. Man Amperite offers the following co-operation to P.A. Men,

- (1) FREE Window Decal . . . using your Sound Service Size 5 1/4 x 9 1/4 finished in 4 striking colors.
- (2) FREE Window Display, 11 x 17
- (3) Special Sound Equipment Letterheads. Samples and prices on request
- (4) FREE use of cut for printing business cards, etc.

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

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

Better Systems Specify Amperite



VELOCITY

AMPERITE

MICROPHONES

Every dealer's "sales team" needs these profit scorin'

All American

ARVIN RADIO S



AC-DC Model 58A \$19⁹⁵ LIST
Beautiful Ivory Plastic Cabinet.
Dial Tuning.

A full-sized superhet using 5 tubes plus ballast tube. Provides splendid station coverage and fine quality reception. Two companion models, same style as above: AC-DC Model 58, 5 tubes plus ballast. Ebony block plastic. Dial tuning. \$16.95. AC Model 68, 5 tubes with six push button automatic tuning and Station Variator. Walnut plastic. \$24.95.

AC MODEL 88 \$39⁹⁵ LIST
Fully Enclosed Radio-Phonograph. 6 tubes.

Reproduces radio broadcasts and phonograph recordings beautifully. Fine quality superheterodyne using 5 tubes plus ballast tube. Fully enclosed walnut wood cabinet. Plays 10" and 12" records.



Right: Lid raised to show phonograph of Model 88.

Modern, Snappy Gold Foil
Display FREE

with the Arvin No. 30 Deal

Set up your sales drive on the new Arvins with this "eye appealing" window-counter display. It is free with an order for any three Arvin table radios. Ask your tabber.



• With these new Arvin table radios your "sales team" will have the profit-punch to roll up volume and extra earnings. They're "All-Americans" in every way. Full-sized radios that bring in American stations, with fine selectivity and good tone quality.

These new Arvins are styled so beautifully—built so well—and priced so reasonably—they appeal to "All-Americans" from high school freshman to college senior, from housewife to business man.

Plastic and walnut wood cabinets have the value-plus sales appeal of push button tuning, dial tuning or a combination of both. See your Arvin catalog for full details on these and all the fine quality radios in the complete Arvin line.

NOBLITT-SPARKS INDUSTRIES, Inc. • COLUMBUS, INDIANA

Prices slightly higher in extreme south and west.