

RADIO *and Television* TODAY

IN TWO PARTS
PART 1



The New Television Sets—How to Sell, Install, Service
"Selling Sound"—Sales Ammunition and Equipment

APRIL



Philo T. Farnsworth, Pioneer in Television and Founder of Farnsworth Television and Radio Corporation.

TK 6540
R 28

THE MOST SIGNIFICANT NAME IN TELEVISION!

FARNSWORTH

The only organization which has devoted its entire attention to ELECTRONIC TELEVISION RESEARCH and DEVELOPMENT over a period of 13 YEARS.

- 1922 — Farnsworth conceives the basic principles of modern Electronic Television.
- 1926 — Farnsworth laboratories for developing Electronic Television established. (October)
- 1927 — Farnsworth transmits a wholly Electronic Television picture.
- 1928 — Farnsworth transmits motion pictures by Electronic means.
- 1929 — Farnsworth Television Incorporated is formed. (March)
- 1934 — Farnsworth gives general public demonstration of Electronic Television at Franklin Institute in Philadelphia. (August)
- 1938 — Farnsworth Television & Radio Corporation formed, succeeding Farnsworth Television Incorporated. (December)
- 1939 — Farnsworth acquires factories to manufacture television transmitters, receivers and allied products. (March)

TODAY, with the advantage of 13 years of unrivaled research and development, Farnsworth enters the field of manufacturing, prepared to create a position in the new industry commensurate with its leadership in research.

Organization is rapidly nearing completion at the Farnsworth factories in Fort Wayne and Marion, Indiana, for production of television transmitters and receivers, radio sets, radio-phonograph and other allied products.

FURTHER ANNOUNCEMENTS will be made which will be of vital interest to forward-looking **DISTRIBUTORS and DEALERS.**

FARNSWORTH TELEVISION & RADIO CORPORATION

3700 Pontiac Street Extended
FORT WAYNE, INDIANA

ERBL26 Ja 43

Look Inside this FREE Booklet

The New

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

Replacement Vibrator Guide Gives All the Answers on Auto Radio Installation and Service

- ★ Complete and up-to-date vibrator replacement chart for all makes and models of auto radio and battery operated household receivers.
- ★ Complete cross-reference of Mallory Vibrators by make and model of receiver.
- ★ Practical vibrator servicing and testing information with 'scope pictures.
- ★ Auto radio installation and interference elimination in 1939 cars.
- ★ Vibrator connection charts.

See your distributor for a
FREE COPY TODAY

and remember . . .

Only the Second Edition Mallory-Yaxley Radio Encyclopedia gives you complete replacement data on controls, condensers, vibrators, tubes and transformers. It covers every servicing problem...you cannot afford to be without it. Ask your distributor.



MARCH 1, 1939



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

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YAXLEY
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VOLUME CONTROLS

NW 65/4

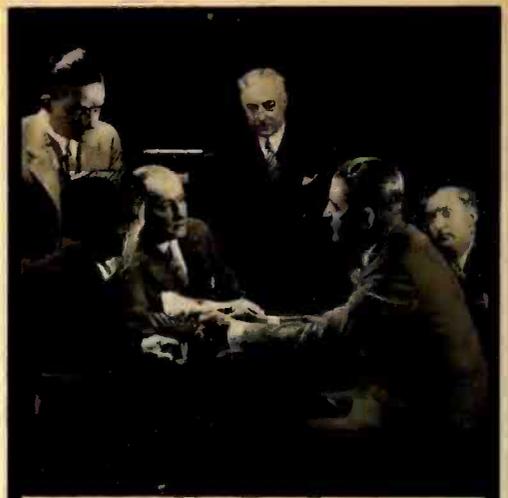
1-2-3 DEPENDABILITY

SYLVANIA RADIO TUBES occupy a prominent place on the shelves of thousands of modern radio stores and service shops throughout the United States.

The reason? 3-way dependabil-

ity! Today's progressive retailers know what the name "Sylvania" signifies: a dependable *company* . . . that manufactures a dependable *product* . . . that sells at a dependable *profit*.

HERE'S THE PROOF: —————>



1. COMPANY DEPENDABILITY: Sylvania's owners are actively engaged in the company's management! Sylvania does business in 121 countries! Sylvania maintains one of the industry's largest and finest engineering staffs!



2. PRODUCT DEPENDABILITY: Every Sylvania tube is the result of scientific design and development! All Sylvania materials are critically analyzed before use! Experienced engineers supervise every step of Sylvania manufacture!

3. PROFIT DEPENDABILITY: Sylvania is one of the world's largest-selling tube lines! Sylvania policies tend to establish freedom from price cutting! And Sylvania's complete line means no lost sales!

SELL SYLVANIA

SET-TESTED RADIO TUBES

• D E P E N D A B L E A L L W A Y S •

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

Riding the Crest of a Great New Trend...

Emerson

... Comes Through with 3 New Leaders!



All America is going "Portable"—and Emerson is in the lead with Style, Performance, Value and Profit-Making Promotion for the trade. Look over these "bonanzas" and get in touch with your Emerson distributor NOW!

Self-Powered Portable At a New Low Price

MODEL CT-275 (at left). 5-tube Superheterodyne—7-tube performance—Automatic Volume Control—Full-vision Dial—Entirely Self-contained Loop Antenna—Cabinet of durable luggage fabric with leather handle. 6¾ in. high, 8¾ in. wide, 8 in. deep. Weighs only 13½ lbs. with batteries.

COMPLETE
WITH
BATTERIES

\$19.95
LIST
PRICE



EMERSON "Inter-Scope" PORTABLE

MODEL CM-266 (at left). 5-tube, AC-DC Superheterodyne—7-tube performance. Self-contained Loop Antenna—"Miracle Tone Chamber." Rugged Case covered with durable luggage fabric—leather handle. 7½ in. high.

\$17.95
List
Price



MODEL CE-263. 5-tube Superheterodyne—7-tube performance. With "Miracle Tone Chamber"—Recessed Full-vision Dial and Controls—Automatic Volume Control—Entirely Self-contained Loop Antenna. Size 9 in. high, 12½ in. wide, 6⅝ in. deep. Durable case covered with attractive luggage fabric. Weighs only 16¼ lbs. with batteries.

COMPLETE
WITH
BATTERIES

\$24.95
List
Price

Ask Your Emerson Distributor for Complete Details.

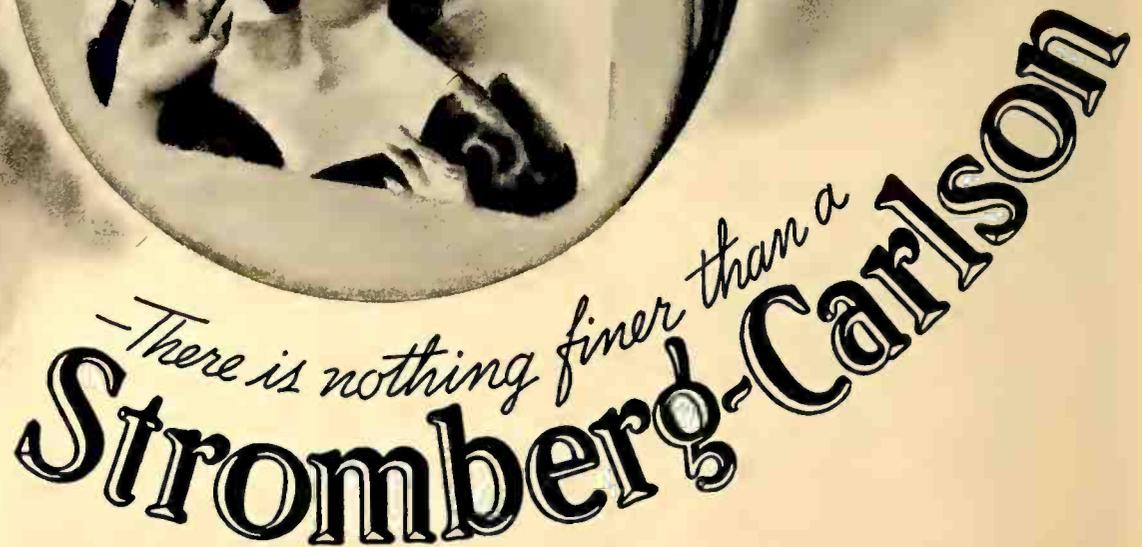
Other Emerson Models from \$6.95 to \$219.95.



EMERSON RADIO AND PHONOGRAPH CORPORATION • 111 Eighth Avenue, NEW YORK, N. Y.
World's Largest Maker of Small Radios

STROMBERG-CARLSON HAS BEEN MANUFACTURING HIGH GRADE VOICE TRANSMISSION AND RECEPTION APPARATUS FOR 45 YEARS . . .

**NOW..IN
TELEVISION**



—There is nothing finer than a
Stromberg-Carlson

SINCE 1894, Stromberg-Carlson has been preeminent in the manufacture of telephone and radio apparatus. Today, Stromberg-Carlson is proud to announce its new Television Receivers . . . engineered to the same high standards, tested to the same exacting requirements, and merchandised with the same respect for dealer profits for which Stromberg-Carlson is well known.

Stromberg-Carlson Dealers will have a real Television selling feature in the Labyrinth, for the size and number of parts in a console type Television Receiver necessitate a roomy cabinet, so big that, without the Labyrinth, booming sound vibrations spoil tone and rattle delicately adjusted components. Showings of the actual Stromberg-Carlson models are now being scheduled.

STROMBERG-CARLSON TELEPHONE MFG. CO., 100 CARLSON ROAD, ROCHESTER, N. Y.

Dependable Both...

**UNITED STATES
LIGHTHOUSE
SERVICE**

RAYTHEON RADIO TUBES

The beacon light is always flashing from the lighthouse—that is the basic tradition of the Service. The captains of windjammers and luxury liners know they can *depend* upon these warnings.

For that reason the U. S. Lighthouse Service takes no chances. Its gear and equipment is all tested and retested, time after time, to *prove* that it will uphold the reputation of the Service. Nothing but the best can get inside a lighthouse!

For that reason, we are proud that RAYTHEON is the tube you will find in communications receivers the Service depends upon!

That same quality and dependability are the reasons why the better servicemen—those who are in business to stay—feature RAYTHEONS in their service work. *And they cost no more than the second-best tube!*

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



"WORLD'S LARGEST EXCLUSIVE RADIO TUBE MANUFACTURERS"

CROSLEY "Special" SHELVADORS

are the easiest refrigerators to sell this season because customers easily see they are the BEST values on the market!!



LA9-60
6 cu. ft.
SPECIAL
SHELVADOR
\$132⁵⁰*

A "Leader" Line
Dealers who consistently promote this SPECIAL CROSLEY line will obtain a LARGER and CONSTANT flow of prospects because PRICE plus the Shelvador is and always will be the greatest of all refrigerator sales stimulants!

LA9-50
5 cu. ft.
\$122⁵⁰*

LA9-40
4 cu. ft.
\$112⁵⁰*

LA9-30
3 cu. ft.
\$99⁵⁰*

* DELIVERED AND INSTALLED... 5 YEAR PROTECTION PLAN \$5.00 ADDITIONAL... PRICES SLIGHTLY HIGHER IN SOUTH AND WEST.

Crosley Special Shelvadors are an achievement in quality refrigeration, designed and manufactured to give STANDARD service at lowest possible prices. The hermetically sealed Electrosaver insures minimum operating cost. The Shelvador assures greatest efficiency in use—savings in steps, food and energy—long and lasting satisfaction—to which thousands of women are testifying throughout the world.

THE CROSLEY CORPORATION
POWEL CROSLEY, Jr., Pres. CINCINNATI

IT'S READY FOR YOU-



THE *New* REPLACEMENT PARTS *Catalog*

Now, you can get the *complete* new Utah catalog. 32 pages of illustrations and descriptions of Utah SPEAKERS—VIBRATORS—TRANSFORMERS and UTAH-CARTER PARTS, *just off the press.*

The new Utah catalog is packed with important

information, from cover to cover. *Every* active radio dealer, serviceman and jobber should have a copy.

It may cost you time and money to be without it —don't take the chance. Mail the coupon *today* for your **FREE** copy.

UTAH RADIO PRODUCTS CO.

CHICAGO, ILL.

CABLE ADDRESS: UTARADIO—CHICAGO

Utah Radio Products Co., 816 Orleans St., Chicago, Ill.

Please send me without obligation a copy of the new Utah catalog.

Name.....

Address.....

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

PHILCO

*will present SHORTLY,
to a Convention of its Distributors,
a complete New Line of*

TELEVISION RECEIVERS

PHILCO has announced Television. Since February 16th, Philco dealers and their friends at various key centers of the country have witnessed demonstrations of the mobile television transmitter and television receivers developed by Philco. These instruments are the result of many years of pioneer research in the field of television which has been conducted in the vast Philco laboratories.

Philco television receivers have been sufficiently advanced for practical demonstrations since 1936. At that time, over two thousand Philco dealers and distributors had the opportunity to view in Philadelphia a television picture whose superiority was even then widely acclaimed in the press. Much progress has been made since that time. The results being demonstrated throughout the country today are evidence of the fact that Philco still remains at the forefront of television research.

But, the television receivers which will be announced to Philco distributors at their convention—in June—will be news to them, news to the trade and news to the world. We refer to them as a *new line* in relation to those which are on demonstration today, and which represent the limit of achievement thus far announced in the industry. **THEY WILL BE NEW IN PERFORMANCE, NEW IN APPEARANCE AND WILL PRESENT A DEFINITE ADVANCE IN THE ART OF TELEVISION.**

In television research, Philco has given evidence of the same characteristics which have made it the leader in the scientific progress of radio. The art of television today bears the definite impress of Philco engineering. Philco believes in television as an industry . . . and *as a*

The present Philco television receiver and mobile broadcasting transmitter were first exhibited to Philco distributors at Palm Beach, Florida on February 16th. Since then, demonstrations have been held through Philco Distributors for dealers and their friends in New York, Philadelphia, Baltimore, Washington, Boston, Pittsburgh, Cleveland, Detroit and Chicago. The demonstrations are continuing now and will shortly be held in Milwaukee, Minneapolis, St. Paul and many other key points in the United States.

BUSINESS for the radio dealers of America.

Philco focuses its attention on the fact that the radio dealer will be the medium through which television will reach the consumer. For that reason, the dealer must be the first to see, know and understand it. And because television can become a true source of profit to the dealer only with the spread of broadcasting to the large centers of population, Philco feels that the best way to promote action toward that end is to bring television to those cities . . . to create a desire for television service among the civic leaders of those communities by allowing them to see it *locally* in actual operation.

That's why Philco is showing television to the radio dealers in the key centers of America today. That's why Philco distributors, assembled in Convention—in June—will be the first to see Philco's new line and new developments in television.

PHILCO RADIO & TELEVISION CORPORATION

APR 21 1939

RADIO *and Television* TODAY

Let's Sell Television Right!

"Experimental television service to the public"—as defined by RMA—begins in the New York area this month. Its coming brings two distinct sets of problems to the radio trade—one set for dealers in television areas; another lot of problems for the larger part of the trade *beyond* television transmissions.

Most radio dealers inside the limited television areas see in television a stimulating new business opportunity for expanding sales of larger units, under the glamour of intense public interest. Yet even here, a note of caution is sounded in RADIO TODAY's survey of the plans of metropolitan merchandisers which appears on following pages.

TELEVISIONLESS TERRITORIES

But to the three-quarters of our radio dealers who will be *without* television broadcasting for some time to come, television talk in the newspapers and popular magazines, is bringing an immediate hazard to radio-set sales. People will want to "wait." Then it will be the dealer's job to urge such buyers not to hold off getting a radio, but to enjoy the good things that are on the present broadcast channels. To show the customer that a good radio is still as good an investment in home entertainment as it ever was.

It will require skill and convincing argument to point out the limitations of television transmission. In televisionless Omaha one dealer has even bought a television set for his salesroom to clinch this point. When customers start talking about "waiting for television," he leads them to this dark and silent television set. "There you see, we have a set—but try it for yourself," says the salesman. "Well, if that's all it will do," concludes the customer after a minute's fiddling with dials, "I guess you'd better show me a nice radio console." That incident sounds the keynote: In areas without television, *radio* sales must still go on!

KNOW THE FULL FACTS

Yet, even radio dealers and distributors in televisionless territories will want to inform themselves all about the new art. For that reason they will find especially valuable the pages that follow, showing the new television sets, the television channels, and plans for selling and servicing television receivers. Eventually, these problems of television service will be theirs also. But how soon, nobody knows.

RADIO TODAY believes that television eventually will be a nationwide service, and that, as in the case of present broadcasting, the way will be found to make television economically sound for all involved—television broadcasters, manufacturers, distributors and dealers.

"RADIO BUSINESS AS USUAL"

But at the moment, the press, manufacturers, and distributors have a double duty:

1. In the television areas, to push the "public-television" experiment to a sound conclusion enlisting the widest possible purchases of televisions, in order to test television on an adequate scale.
2. In televisionless areas (which still far outnumber video areas) all hands must cooperate in telling the truth to public and trade, and push *regular radio sales* to the limit! Future articles in these columns will tell results of aggressive selling of radio in the face of television. RADIO TODAY proposes to keep radio sales going ahead full steam, also. "Radio business as usual."

Television is coming. But radio is here to stay!

It is in such terms that we mean: "Let's sell television right."

Father's day for extra sales

Father's Day, June 18, will offer dealers a tie-in with a national publicity campaign and a chance to boom sales. A doting family can be readily interested in an office or bed-room radio for its breadwinner, and there is always the possibility of a console sale. For a true music lover, nothing could be more appropriate than a phonograph combination or attachment. Record albums of "his" favorite composer should be a big seller too.

In cooperation with this campaign, Henry C. Bonfig of RCA Mfg. Co. is the co-chairman for the radio industry. Dealer posters and other helps can be obtained from the Nat'l Council for the Promotion of Father's Day, 32 E. Fifty-seventh St., N. Y. C.

Rural radio in use

Sixty-nine per cent of America's 13,721,000 rural families own radios, according to the Joint Committee Study of Rural Radio Ownership and Use. Over 20 thousand interviews were made with farmers and residents of towns under 2,500 in population (also classed as rural).

Rural Radio Ownership		
Total rural families	13,721,000	100 %
Total radio families	9,470,900	69 %
Radio homes with 2 or more sets	549,312	5.8%
Median no. of years radio families owned sets		7 years
Radio families owning Auto-Radios	1,269,101	13.4%
Median hours of daily use of radio		
Based on all sets owned	4.47 hours	
Based on sets in use some time during total day	5.18 hours	



Ernest H. Vogel who becomes general sales manager of Farnsworth Radio & Television.



George K. Throckmorton, RCA-Victor president inspects first Camden television receiver, while executive vp Robert Shannon looks on.

Amplifier sales boost seen in tag plan

Amplifiers made by members of RMA soon will carry a "certificate approval." Plans were made by Chairman J. McWilliams Stone of the sound system committee and approved by the directors at a recent Chicago meeting.

Performance of amplifiers will be checked at a testing laboratory chosen by RMA, following which a tag of approval will be given. Great things are expected of this scheme to up PA sales, since the tag will assure buyers that the amplifier is true to specifications and ad claims.

Television witnessed coast-to-coast

A television caravan is making a cross-country tour of the United States in an attempt to acquaint the entire country with both television receiving and broadcasting at first hand.

The traveling demonstration is made possible through the development of Philco's new portable television transmitter which stands less than six feet high and is completely mobile.

In most of the cities scheduled for visits the demonstrations will be the first television witnessed by the public.

An itinerary is planned which would take the television caravan through the Western and Southern areas of the U. S., with journey's end

at the Pacific Coast. The itinerary included Washington, Baltimore, Boston, Pittsburgh, Cleveland, Miami, New York and Philadelphia. Some future stops are:

April 18-21	.....	Detroit
April 25-28	.....	Chicago
May 2	.....	Milwaukee
May 5	.....	Minneapolis
May 9	.....	St. Louis

Demonstrations will be given in collaboration with the local distributor for Philco dealers and guests throughout the distributor's territory.

Dealers asked to help "sell radio"

Radio dealers are to play important roles in the big new industry promotion campaign being developed by the National Association of Broadcasters with the help of an RMA committee made up of Sayre Ramsdell, Philco; Frank Mullen, RCA, and Bond Geddes, RMA executive.

Purpose of the all-radio campaign is to enlist co-operation of all radio manufacturers, distributors, and retailers, broadcasters and networks—to increase listening, increase number of sets in use, improve reception, and "sell" present programs and "the American system of broadcasting."

Networks will contribute one program a week to the campaign, and transcriptions will be furnished non-network stations. Through manufacturer co-operation, dealers are asked to distribute NAB literature, such as new "ABC of Radio", with all sets sold, and to develop special window displays. Radio advertising will coordinate with retail efforts. Details of campaign are now being explained at dealer meetings.



W. Keene Jackson, president of new Keene Appliance Co., of Ann Arbor, Mich., which is bringing out radios.

How many television sets will be sold in '39?

No question posed in radio has caused more discussion or resulted in a wider variety of answers than that which appears on our front cover, and also at the head of this item. How fast will the curve on the cover rise, and where will it stand by the end of 1939?

Answers have ranged all the way from 10,000 receivers—up to 75,000 and 100,000 receivers. Middle-of-the-roaders strike a figure somewhere around 28,000 to 40,000. Those who have inspected English television, think that 10,000 receivers can be absorbed by the New York area to supply restaurants, bars, hotels and stores, alone—with many more going into homes and apartments. Others who see the installation problem, say the limit is not the number of willing purchasers nor even the production lines of the factories, but is set by the difficulty of training service men to make antenna installations which will give satisfaction.

Because of the interest in the final result, the publishers of *Radio & Television Today* propose a contest in connection with this figure, details of which will be announced later.

Farnsworth getting ready at Fort Wayne, Ind.

The Farnsworth Television and Radio Corporation has opened factory headquarters at 3700 Pontiac street, Fort Wayne, Ind., where it will begin the manufacture of television and radio transmitters and receivers, radio-phonographs, and other products.

The company takes its name from inventor Philo Farnsworth who first conceived electronic television while



Perry Hadlock who has been appointed radio sales manager for the General Electric Company, Bridgeport, Conn., succeeding Ernest Vogel.



Stromberg-Carlson's production control board. From left to right around the table: F. C. Young, mgr. engineering; G. E. Eyer, genl. superintendent; Lee McCanne, secretary and radio sales manager; L. L. Spencer, general sales manager; G. A. Scoville, vice president and general manager; E. A. Hanover, vice president; W. M. Angle, president; S. R. Curtis, purch. agt.; Dr. R. H. Manson, vp, chief engineer; W. F. Cotter, chief radio engineer.

a student in high school in 1922. His development laboratory was established in 1926, and in 1928 he made the first demonstration of television by means of an electron discharge. He has taken out many patents and has contributed many articles to the scientific press on television topics.

A second Farnsworth factory is located at Marion, Ind. E. A. Nicholas is president of the company, and Philo Farnsworth is vice-president in charge of research, Ernest H. Vogel has just been appointed general sales manager, after a long merchandising experience in radio with both RCA-Victor and General Electric Co.

Schools fine prospects for quality sets

Robert Herr, Philco's parts and service division manager, believes schools and students offer a fertile sales field for radio. Educational programs have made schools more radio conscious, while students are sold on the entertainment values of a receiver, he believes.

"A vast number of schools would be open to sales of radio-phonograph combinations if they knew how good they are these days for the price," he says. "That is the dealer's job. He can show it is no longer necessary to think in terms of \$500 for one set for music appreciation."

Quality, looks and performance can be obtained in a set for \$150, Mr. Herr holds, and an enterprising dealer can sell three of these instead of one at \$500. Thus, schools can be sold on four or five combinations, especially where there are more than 500 students.

Hours for Chicago parts show

Following is a schedule of the show hours at the 1939 National Radio Parts Trade Show at the Stevens Hotel, in Chicago, June 14-17, inclusive:

Wednesday and Thursday, June 14 and 15, 10:00 a.m. to 6:00 p.m.

Friday, June 16, 2:00 p.m. to 11:00 p.m.

Saturday, June 17, 2:00 p.m. to 10:00 p.m.

Closing the trade show at 6:00 p.m. on Jobber Days will open the way for the manufacturers and their jobbers to attend the RMA banquet on Wednesday evening; and to participate in various festivities and business conferences.



Sayre Ramsdell, Philco vp, announces that Philco's television line will be shown at French Lick, Ind., Philco convention in June.



29-tube General Electric model HM-226 television set with 12-inch tube and all-wave radio.



Stewart-Warner television set with high-fidelity sound channel. Uses 12-inch picture tube.



Videor receiver by American Television with 5-inch tube and 3-band sound unit.

New Television Receivers

Just in time for the official television debut on May first comes the announcement of some twenty-odd television receivers by half as many manufacturers.

Models range from kits with a 5-inch tube for the amateur and experimenter to consoles with 14-inch tubes

providing an 8 x 10 inch picture. Sight receivers utilizing the audio system of a standard broadcast receiver are offered in the lower-priced brackets, while sight-and-sound sets with all-wave pick-up on sound await those willing to pay the higher prices.

Tuning to stations is accomplished

generally by pre-tuned circuits that are selected by push-button or rotary switches. A trimmer condenser often is employed to permit exact adjustment of the circuits to resonance. Three or more television channels are provided for.

Both mirror-reflected and direct-



Andrea's model 1F5 sight and sound receiver with 5-inch tube is available wired or as a kit. Tunes 2 bands—in table cabinet \$189.50.

RCA-Victor model TRK-12 receiver with 12-inch tube giving $7\frac{1}{8}$ x $9\frac{3}{4}$ picture. Image reflected by mirror on lid. Electric tuning for 9 stations. Uses 36 tubes.

GE VISION!

● When General Electric maintains the largest
 World's Fair organization in the entire electrical
 makes its contribution to the new art of television-
 new art of television-receivers includes
 for seven models, four of which are illus-
 Alexander the Great, the General Electric Television
 program, General Electric Building,
 Research, General Electric Building,
 World's Fair.

During the
 begins the
 of televis-
 ket—the
 grams will
 When
 ready to
 serve you

**TELEVISION
 TO G-E!**



CONSOLE MODEL

High Definition Television Receiver with
 12" Picture Tube. Cabinet—height 20 3/8"—
 depth 20 3/8". 30 tubes (including picture tube).

TABLE MODEL HM-171

High Definition Picture Receiver with Sound Converter.
 5" Picture Tube. Cabinet—height 14 1/16"—width 20 3/8"—
 depth 18 3/4". 17 tubes (including picture tube).



ELECTRIC





LOOK TO IN

● When the curtain rises on the New York World's Fair, April 30, General Electric makes its public debut in television. In this new act G.E. has carried on intensive research for seventeen years — since 1922. In 1926 Dr. Alexanderson presented the first television program ever produced in America in the G-E Research Laboratories at Schenectady.

During the month of May, General Electric begins the distribution of its outstanding line of television receivers in the New York market—the only market where television programs will be available at this time.

When television transmission facilities are ready to serve your market, G.E. is ready to serve you with a complete line of receivers—

backed by a unique and effective sales and merchandising program.

Unlike radio broadcasts, television programs cannot be sent out over network hook-ups. The effective range of a television transmitter is only forty to fifty miles. Hence, vast areas of the country must wait for years, perhaps, before television programs are available.

Even when programs are available everywhere, television will not supplant radio. It is distinctly a supplementary service. It can no more replace radio than could radio displace the theatre and motion picture.

It may even be reasonable to predict that radio sales volume may be maintained and actually increased as television is better under-

G-E TELEVISION!

stood by the public. Intriguing as television is, radio dealers must depend upon radio for their real profits perhaps for a long period to come.

Those dealers who can qualify to sell television sets this year will find the G-E line unsurpassed in performance, cabinet styling and dollar values.

In this new field the public will choose those products in which it has greatest confidence.

General Electric Television receivers carry the best known trademark in the entire electrical world.

And television, remember, is a product of electrical science. Television depends upon re-

search. General Electric maintains the largest research organization in the entire electrical world.

The G-E line of television-receivers includes five standard models, four of which are illustrated. See the General Electric Television demonstration, General Electric Building, New York World's Fair.

IN TELEVISION
LOOK TO G-E!



CONSOLE MODEL HM-275

High Definition Television Receiver and All-wave Radio. 12" Picture Tube. Cabinet—height 38½" —width 42" —depth 20¾". 30 tubes (including picture tube).



CONSOLE MODEL HM-225

High Definition Television Receiver. 9" Picture Tube. Cabinet—height 40½" —width 28¾" —depth 17¾". 22 tubes (including picture tube).



CONSOLE MODEL HM-185

High Definition Television Receiver. 5" Picture Tube. Cabinet—height 38" —width 23" —depth 17¾". 18 tubes (including picture tube).



TABLE MODEL HM-171

High Definition Picture Receiver with Sound Converter. 5" Picture Tube. Cabinet—height 14½" —width 20¾" —depth 18¾". 17 tubes (including picture tube).



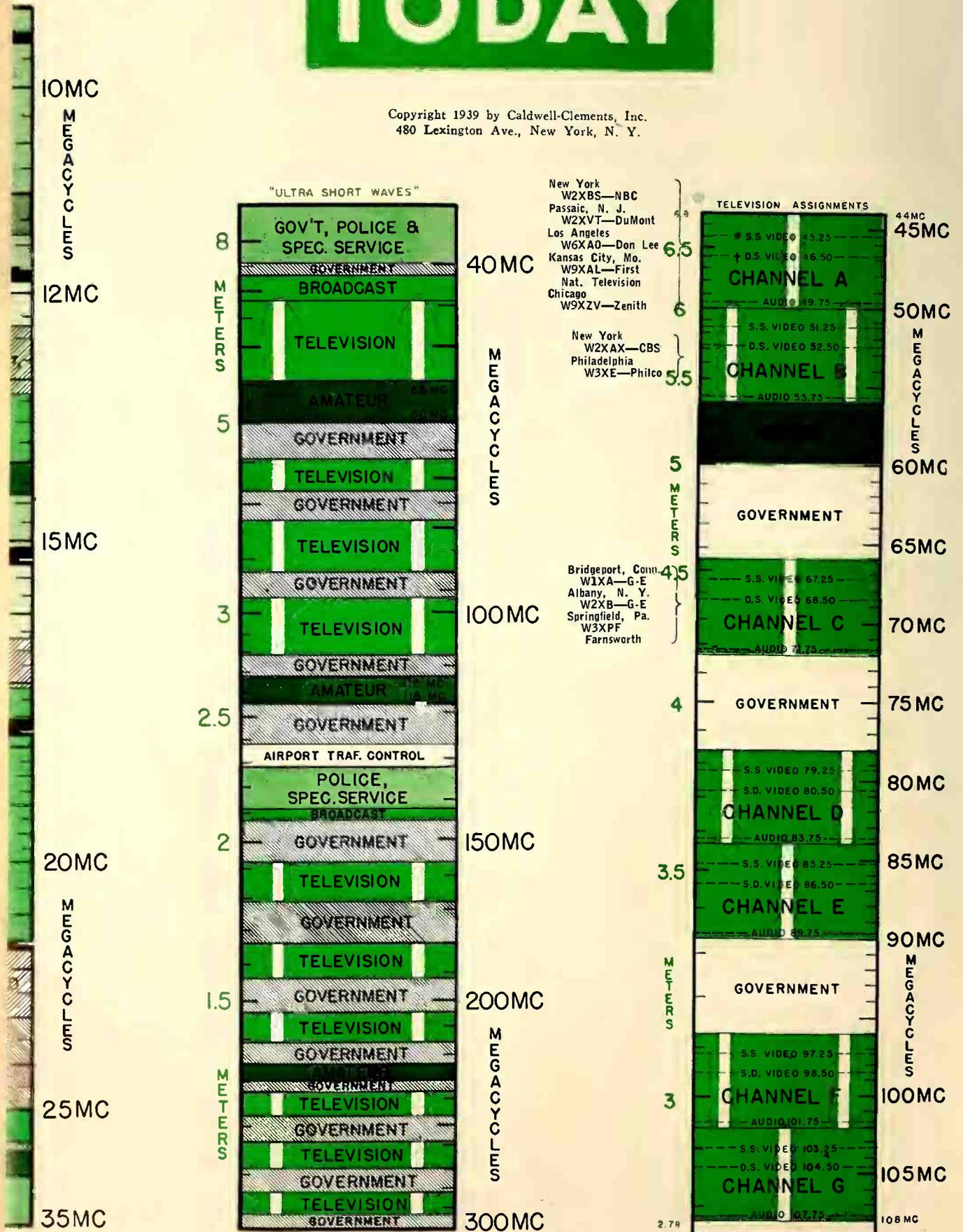
GENERAL  ELECTRIC

APRIL
1939

RADIO *and Television* TODAY

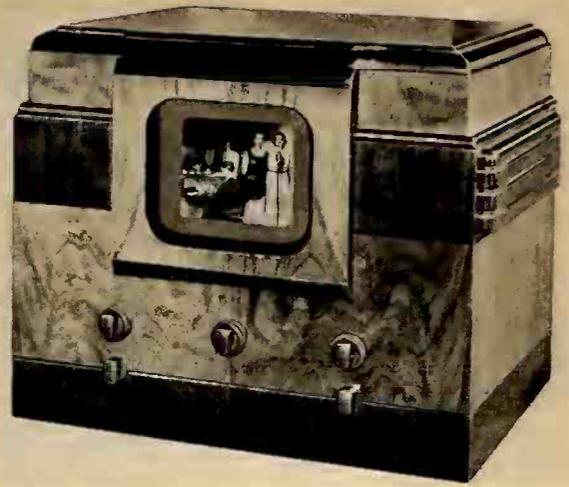
IN TWO PARTS
PART 2

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480 Lexington Ave., New York, N. Y.



* S.S.—RMA RECOMMENDATION FOR SINGLE-SIDEBAND OPERATION † D.S.—RMA RECOMMENDATION FOR DOUBLE-SIDEBAND OPERATION

HM-171 table receiver with sound converter featured by G-E. Set has 17 tubes including 5-inch cathode ray.



viewing models are being featured. With the larger picture sizes, the use of a mirror permits vertical mounting of the tubes, thereby decreasing the depth of the set.

Upwards of 16 tubes are used in the tele-sets. Several units without a sound channel use 17-19 tubes. The receivers having 12-inch or larger cathode-ray tubes have 22 or more tubes, and when an all-wave receiver is included the number swells to as high as 32.

The sensitivity of the receivers ranges from 100 to 500 microvolts. It is expected that television signal strengths many times greater than this value will be obtainable in most locations.

Pictured on these pages and page 22 are television receivers that have been announced to date. They are as follows: American Television, Andrea, DuMont, Garod, General Electric, Meissner, Pilot, RCA-Victor, Stewart-Warner, and Westinghouse.

Additional announcements that will

Westinghouse's model WRT-700 with 5-inch kinescope makes use of the audio section of a standard set for sound.

be included in future issues are Farnsworth, National Television, Philco, Stromberg Carlson.

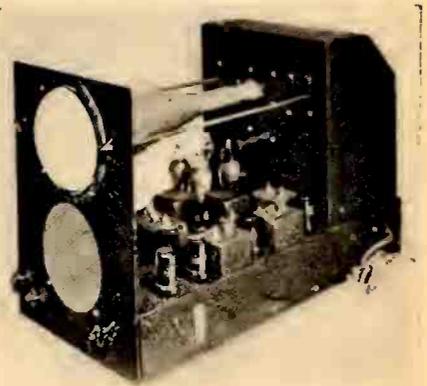
To date definite prices have not been generally established, nor have the discount schedules.

Lowest prices range from about \$125 (net) for the experimenter's kits to \$200-\$250 for sight receivers with sound converters. Complete sight and sound receivers start around \$300-\$350 and continue up to around \$1,000.

More pictures of television receivers appear on page 22.



Above is RCA's table model TT-5 television attachment. Has 5-inch picture tube—uses audio amplifier of regular radio.



Meissner's television kit is available with metal or wooden cabinet. Uses 17 tubes including 5-inch cathray. Net \$125 complete.

Major Bowes on the right poses with his new DuMont television console, using a 14-inch tube. Allen DuMont on left, Len Cramer center.



RADIO and TELEVISION CHANNELS

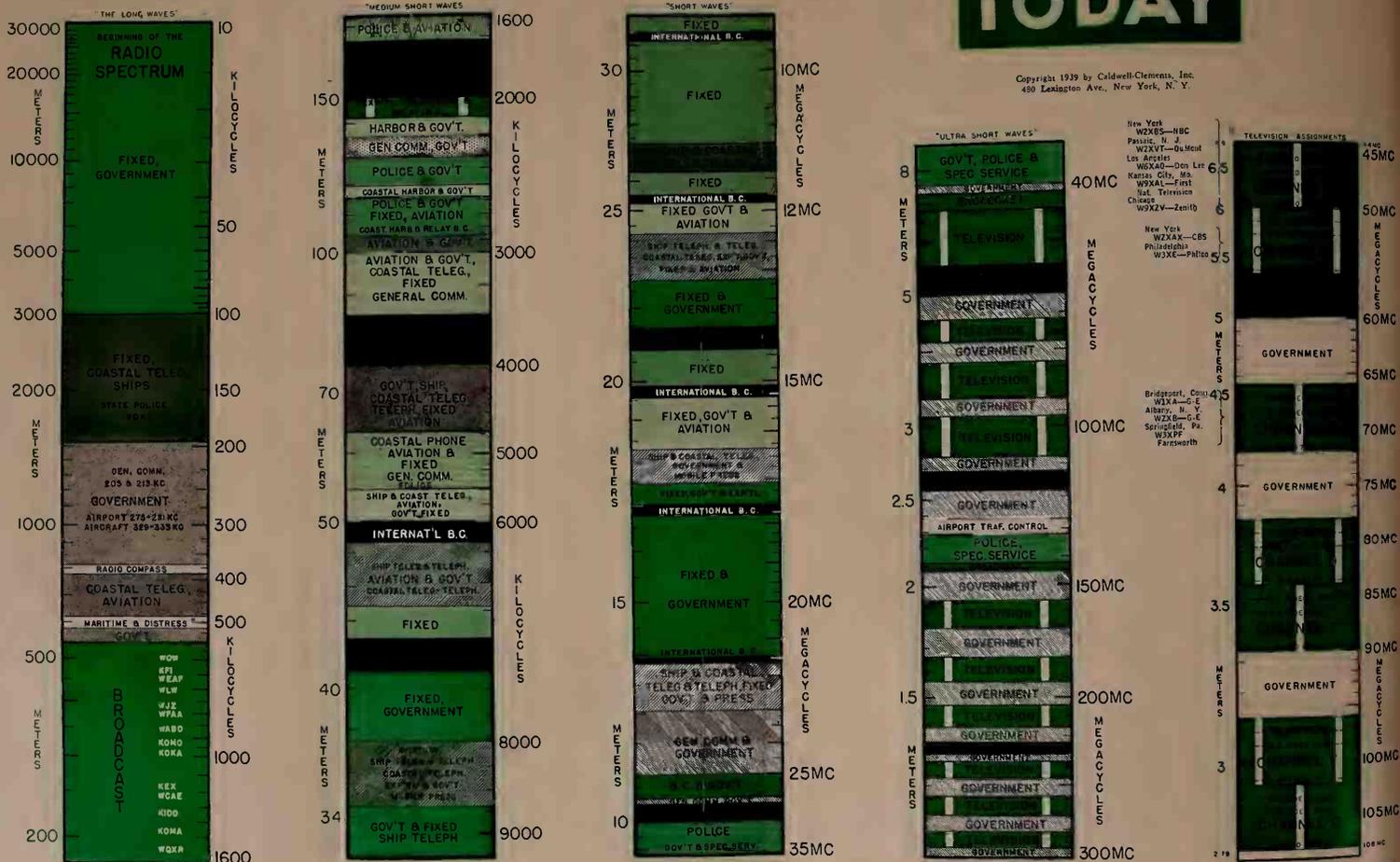
As allocated by the Federal Communications Commission



APRIL 1939

IN TWO PARTS
PART 2

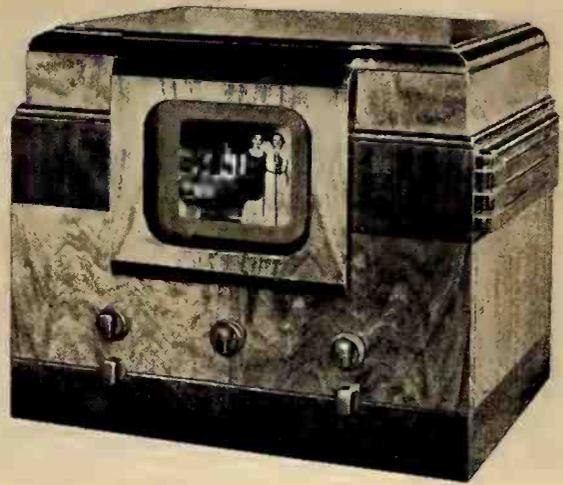
Copyright 1939 by Caldwell-Clements, Inc.
480 Lexington Ave., New York, N. Y.



U.S. GOVERNMENT PRINTING OFFICE: 1939



HM-171 table receiver with sound converter featured by G-E. Set has 17 tubes including 5-inch cathode ray.



viewing models are being featured. With the larger picture sizes, the use of a mirror permits vertical mounting of the tubes, thereby decreasing the depth of the set.

Upwards of 16 tubes are used in the tele-sets. Several units without a sound channel use 17-19 tubes. The receivers having 12-inch or larger cathode-ray tubes have 22 or more tubes, and when an all-wave receiver is included the number swells to as high as 32.

The sensitivity of the receivers ranges from 100 to 500 microvolts. It is expected that television signal strengths many times greater than this value will be obtainable in most locations.

Pictured on these pages and page 22 are television receivers that have been announced to date. They are as follows: American Television, Andrea, DuMont, Garod, General Electric, Meissner, Pilot, RCA-Victor, Stewart-Warner, and Westinghouse.

Additional announcements that will

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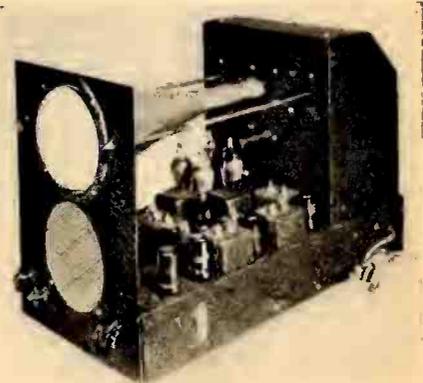
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Selling Radio Up

Practical pointers on pushing up unit sales, from the experience of H. L. M. Capron, former Wanamaker and Macy store executive, now merchandising editor of Radio Today.

With radio prices seeking new low levels, with margins shrinking, and the "cost of doing business" standing still, or increasing, we've got to "sell up" or "close up."

So much of the actual expense of small dealers is fixed in dollars, that as the unit price of radio goes down, the "expense per cent of sales" will go up fast, if the number of units sold is not greatly increased.

The \$9.95 and \$6.95 radio does have a place in our trade by popular demand. But we have got to sell up from these units, in every way we can, to prevent them from becoming the first, or even the second, radio in the home, and thus reducing the radio business to an over-the-counter package business.

These sets will go into the hands of countless children, and in many bedrooms, where there would otherwise be no radio, and as such, represent an expanded market which we can use to advantage, as plus business.

SHOW COSTLIER SETS

In the store, compacts selling for under \$20, should be displayed side by side with those priced from \$15 to \$35, that is—show \$6.95 and \$9.95 with \$12 and \$15 sets—\$15 and \$20 with \$25 to \$35 sets—so that no customer can even see the low-priced job without also seeing the better ones.

In demonstrating these low-priced sets, make sure the customer hears the higher priced ones also.

Refer to these little sets as "cute," and "not bad at all, considering their price." Bring home to every purchaser that they are *little radio* in more ways than one, and more people will buy a better radio.

A "wireless" record player is a good unit to build up any sale with, except a combination of course, and can be sold with a surprising number of compacts. Keep the microphone connected, let the customer hear her own voice through a radio, and you have made the sale much easier, for the customer can see lots of uses for such a versatile unit.

GROUP DISPLAYS

Display compacts and consoles in groups of one low, two medium, and one higher priced units, so that every customer must see the higher priced units, and every higher priced console purchaser is exposed to a compact as a second set.

Keep your lowest priced compacts displayed in the rear of the store, so that every prospect for these sets is exposed to your selling displays of better sets.

Show your better radio first, and work down if you have to, because when you have sold a low priced unit it will be much harder to go up than

Women Want Something Different . . . and Here it is

"Most small radios are purchased by women," says Harley R. Wall—Spartan sales manager, "and to satisfy their desire for distinctive, exclusive, better things, of which they can be proud—we offer Limited Editions, a distinctive radio with a new merchandising appeal."

Limited Editions offer these merchandising advantages:

1. Cabinetry of rare and exotic woods—styled to appeal strongly to the woman of discriminating taste.
2. Tiny Limited Editions booklet 1½" x 2" attached to each cabinet by a silken cord, giving the story of the radio—and the country of origin of the cabinet woods, to appeal to woman's pride of possession.
3. Production definitely limited—to appeal to woman's desire for exclusiveness—in "keeping ahead of the Joneses."
4. Carefully engineered for better performance.
5. Simple—dignified—appealing display stand—to focus attention on these distinctive little radios.

These points offer means for the smart radio merchant to "sell up" from price appeal alone.

Distinctive sets colored and initialed to order



General Electric's jobber in Oklahoma City found out that customers liked personalized sets. Pictured are some of the sets that were decorated.

to come down when a customer can't afford, or doesn't want the higher priced unit you want to sell.

Learn all the advantages of appearance, quality, performance, tone, service, of your better sets, and appeal to pride of possession or these points of superiority in selling up from the lowest priced sets.

"PORTABLE DAYS" COMING

Particularly, during the summer months, show a battery portable to every prospect, for the picnic, for the vacation, for the beach, or mountain week-end. Point out the many places where this set can bring music, news and other favorite programs where there is no current to operate the other compacts. Play up the return of the battery operated portable by popular demand to meet these many uses where no other radio will operate, and many a prospect will be converted

(Continued on page 55)

Announcing
Westinghouse
 TELEVISION

The fundamental idea of television was first recorded in 1873. Yet here is one of the first announcements of *marketable* television receivers. In 66 years uncounted millions of dollars and the tireless efforts of American genius have been expended to make new horizons practical over the electrical waves.

Westinghouse Electric Supply Company enters the marketing of television sets conservatively. We are more

concerned to have each single customer a permanent friend of television than we are to seek volume sales and broad dealer coverage. Therefore, initial televisions will be limited in quantity and found only at responsible retailers.

The first four models bearing the Westinghouse name stand in the forefront of the industry today and represent quality in every particular. Here they are—

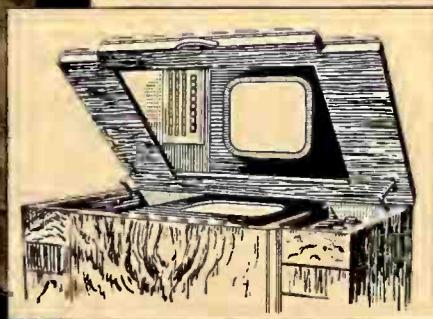
4 HIGH QUALITY TELEVISION SETS

WRT-703—De Luxe Televisor, at left. An indirect-viewing console. Mirror in lid reflects television picture from 12" kinescope. Model includes Westinghouse 12-tube, 3-wave-band, 8-push-button radio receiver.

WRT-702—Direct-viewing Console Televisor. Casts pictures directly to front of cabinet from 9" kinescope. Includes 12-tube radio, as above.

WRT-701—Direct-viewing Console Televisor with 5" kinescope. Includes 8-tube, 3-band radio receiver. Otherwise similar to WRT-703.

WRT-700—Model below with 5" kinescope is table model *attachment* for operation with radioreceiver. Broadcast is viewed from WRT-700 and heard from radio receiver.



These Authorized Distributors in Metropolitan New York Area Offer Complete Sales and Service Information

TIMES APPLIANCE CO.
 333 W. 52nd St., N. Y. City

R. H. McMANN, INC.
 12 Warren St., N. Y. City

WESTINGHOUSE ELECTRIC SUPPLY CO.
 49 Liberty St., Newark, N. J.

Merchandise Headquarters—Westinghouse Television—150 Varick Street—New York City

Westinghouse TELEVISION

How Television Will Be Sold

Plans of leading New York radio outlets for handling new video merchandise. Urge caution against overselling public. Using television to sell radios.

With television an actual reality in New York on April 30 and interest rampant all over the country, men in the metropolitan field are thinking and planning methods and means of best handling the sale of this newest of radio merchandise.

RADIO TODAY has made an intensive survey among those who will sell television in Metropolitan New York, including independent dealers large and small, chain and department stores.

Radio men who remember the birth pangs of radio, and experienced the growing pains attendant upon the phenomenal growth of broadcasting, all feel that television can be the answer to many prayers, and hope it will not bring a crop of headaches.

The general consensus of these practical opinions may be summarized:

1. Television has tremendous public interest—but public buying demand may be slow to develop.
2. Dealers will capitalize on the public interest to attract attention and build store traffic with demonstrations and window displays.
3. Price will not be used as a factor to increase sales.
4. Home demonstrations are "out".
5. Television must not be oversold.
6. Television must not interfere with radio sales.

Many dealers, and customers too, remembering radio's infancy, have the fear that some radically better models, some distinct improvement in method, may be put on the market soon, and so obsolete early receivers.

Conservative dealers are taking such possible factors,—with the resultant effect on their time-payment paper, and consumer goodwill—into consideration in formulating their selling plans.

All local outlets agree they are going to capitalize on the public interest and squeeze out the last drop of indirect sales advantage.

DEMONSTRATION ROOMS

Store demonstrations are the rule, with many special rooms being prepared. And at least one store is building an air-conditioned room, the better to demonstrate television, under comfortable conditions for the customer, and with a minimum of conflict with the display, demonstration and sale of radio.

Some stores are planning hooded shadow-box window demonstrations and displays. At least one department store is seriously thinking of having several demonstrations in various parts of the store. And one outstand-



Demonstrations before audiences can whet public interest in television, in areas where program service is available. Here, Philco' engineer, A. F. Murray, presides at an auditorium showing of the new art.

"Cap" Says—

Television is new.

It involves new principles, new equipment, new merchandising, new installation methods, new servicing technique, even new thinking, and new training of those who will sell and service it. It's not radio; it's radio PLUS! And all associated with the new art, from manufacturer to dealer, must keep pace with it—or be LEFT BEHIND!

*H. L. M. Capron, merchandising editor of RADIO & TELEVISION TODAY.

ing independent dealer is planning to hold public demonstrations by invitation, at intervals, in various suburban locations, entirely independent of his store.

PRICE CUTTING DEFERRED

Most store owners, sales managers, and company executives are of the opinion that in the early months of selling television there will be no price cutting to force sales volume, but many dealers express the view that there may be plenty of cut prices later, and worse headaches, resulting from changes in transmission methods or picture size, which would obsolete not only those televisions sold, but those in stock as well.

As a result, the almost unanimous feeling is that dealers should buy very cautiously, and turn their stock over as frequently as possible, keeping their demonstration sets going into the hands of consumers at very short intervals. In fact, several expressed the intention of buying only demonstration sets without supporting stock for deliveries,—rebuying only to replace the demonstrator when sold.

NO HOME DEMONSTRATIONS

Because of the great problems of installation in apartment houses, and the time and cost involved in locating the best spot for the antenna, so as to deliver the signal to the television strong and free of interference, almost every dealer turned thumbs down on home demonstrations.

With the very limited program service now scheduled, and the basic requirement that the television program have undivided attention, it was the general feeling that the first flush of enthusiasm and pride of possession



Popular curiosity to "see television" is evident in the crowds which daily inspect these RCA receivers in the Television Tour at NBC studios, Radio City, New York.

might soon wear off the new customer, and it was the common feeling that television should not be oversold. In fact most dealers questioned were of the opinion that positive action would have to be taken to *undersell* the merits, not the price, if dissatisfied customers were to be avoided.

Many dealers felt radio manufacturers and wholesalers should unite, to advertise to the public the real facts of the limitations of television, as well as what to expect. All were agreed that television must not be permitted to interfere with radio sales. This too, seemed to call for a manufacturers' advertising campaign to point out that television complements, but does not supersede, present audio broadcasting or receivers.

WANAMAKER PLANS

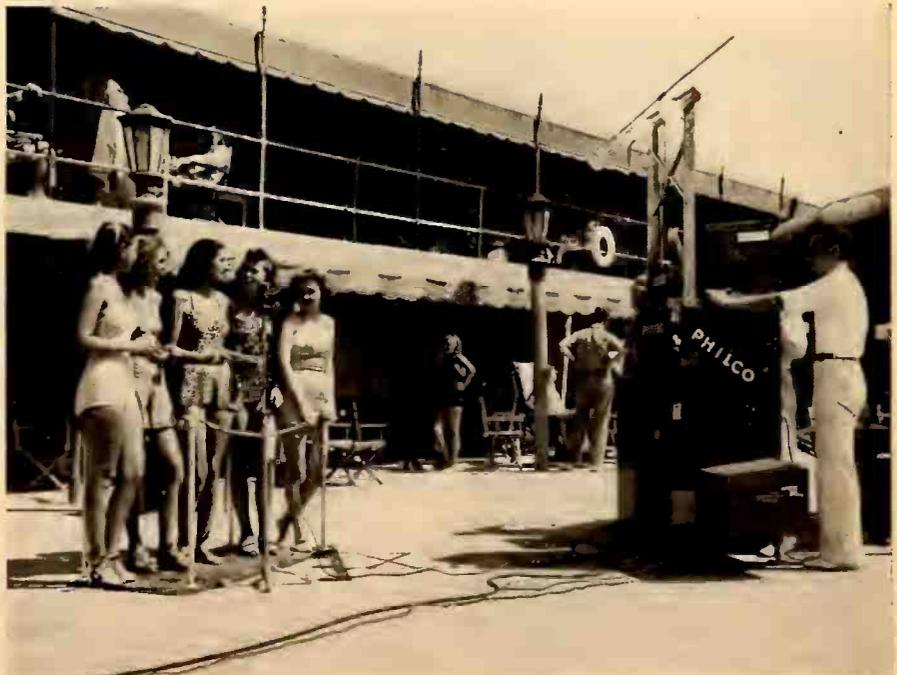
Wanamaker's plan to use the RCA program service to demonstrate television sets to the public, with newspaper space and direct mail calling them to public attention. Television will be displayed and demonstrated in a separate section of the radio department where the room can be darkened, and there will be no interference with the sound.

Mr. Simpson, the department manager said. "When we invite the public, it probably will be necessary to schedule the demonstrations to take care of the interest already manifested. Dealers will find," continued Mr. Simpson, "that small radio, including battery portables and radio-phono combinations will be the big sellers in the next few months, but when programs, installation, and selling methods are perfected, the outlook for television is extremely optimistic."

"Television will no doubt help the radio industry," said Henry Benjamin, v.p. Davega-City chain of stores, "but people must not be misinformed.

People must understand that it will not make other radios obsolete. If television is oversold, it will hurt the sale of radio and do more harm than good. Be honest about television, promote it, but make sure the very name does not become a disappointment because of overanxiousness, or hasty and unfulfillable promises."

Bamberger's, who were one of the real pioneers in merchandising radio, already have a display of television and facsimile sets. They plan to give demonstrations of both, using the facsimile programs of their own WOR, and thus, to build up a dual interest which they hope to translate into sales for themselves through word-of-



And when it comes to this sort of thing, television hath charms all its own—which no mere audio receiver can rival!

mouth publicity. The department manager could not be quoted, but it is certain that newspaper space, direct mail, and window displays will invite people to witness these dual demonstrations.

KEEP ON WITH RADIO

Percy Peters, a large radio dealer in Brooklyn, expressed the opinion that he was going right on selling radio as hard as he could, with store demonstrations of television perhaps, but no real promotional efforts until the problems of programs, installation, and service were better understood.

One manufacturer who is supplying knock-down kits, as well as complete receivers, is finding a ready market among service men, and dealers themselves, who feel they will be in a better position to honestly sell television after they have actually put a set together, and played with it.

USE TELE TO PUSH RADIO

C. W. Perdue, head of an exclusive, high-class radio store in Northern New Jersey, says, "I can pack my store with television demonstrations, as I did with the Philco mystery-control demonstrations; public interest is very high. At least in the next few months, I am going to invite my own customers in particular, and the public in general to witness store demonstrations at stated times and expose them also, to my displays of summer radio, battery portables, compacts, record players, portable combinations, etc. I'll change my selling policies as experience may indicate, but during the summer I'm going to keep right on selling radio."

Installation of Television Sets

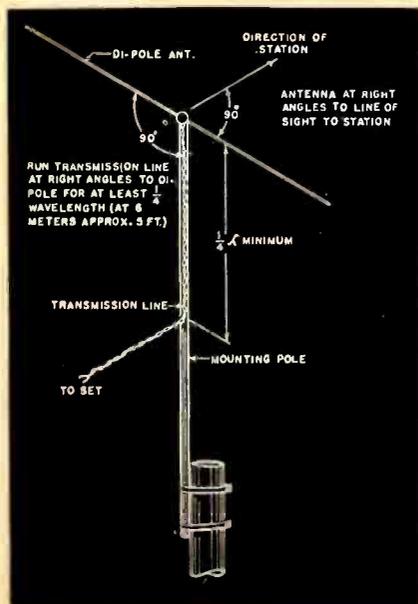
Basic principles to be followed when setting up and installing television receivers. Correct antenna an absolute necessity. Recognizing common forms of interference.

So important is proper installation of a television set that one of the leading manufacturers made the following statement, "The best receiver we know how to build can easily prove unsatisfactory, unless the receiver installation is equipped with the *correct type of antenna properly installed.*"

Correct installation of a television set is not generally so difficult as commonly thought—in most cases it is merely the application of straight-forward engineering principles. Occasionally, there will be some tough nuts to crack, and the serviceman should be prepared to handle them. While this article will in general apply to all receivers, the serviceman is urged to follow the manufacturer's instructions insofar as specific procedure is concerned.

INITIAL SET-UP

First of all is the initial adjustment of the television receiver after it has been unpacked. Some manufacturers will be shipping the picture tubes separately to guard against breakage. If the tube is enclosed in a protective sleeving, the sleeve should not be removed until the tube is ready for placement in the receiver. One type of sleeve that is being used is so designed that the sleeve remains on the tube after installation in the set. The top portion or cover is removed after the tube is fitted into the socket thus insuring maximum protection against injury from breakage.



The antenna should be placed as high as is practical. Di-pole is rotated for best signal pick-up, usually at 90° to station.

Some manufacturers are suggesting that the serviceman wear gloves and goggles whenever handling the picture tubes.

After the tube has been inserted in the socket, the high-voltage lead or leads should be clipped into place according to manufacturers' instructions.

KEEPING PIC CLEAN

When the tube has been installed, the viewing end or screen should be wiped clean of all fingerprints. "Windex" or similar preparation and a soft cloth are recommended.

Before the protective glass over the viewing end of the tube is set in place, the inside surface should be cleaned and polished. Likewise, before the set is put into operation, the outer surface of the glass should be cleaned. If a mirror is employed, that too must be kept clean so as to insure clear pictures.

Before the receiver is tuned in on a signal, there are several preliminary adjustments that should be made on the receiver. In the case of a set using a magnetic deflecting yoke, there is a yoke adjustment that might have to be made. With the set turned on, the sweep signals will paint an image of lines that is suitable for preliminary adjustments.

PRELIMINARY ADJUSTMENTS

Movement of the yoke along the axis of the tube affects the size of the image on the screen. The further the yoke is away from the screen, the smaller the image will be. If the yoke is too near the screen, there may be cutting at the corners of the picture. Generally speaking, the yoke should be as near the screen as possible without cutting of corners.

The horizontal and vertical size controls also affect the size of the image. These controls should be adjusted so that the image almost fills the screen. The yoke is rotated so that the edges of the image are square with the mask. This is known as orientation. In the case of electrostatic deflection, the tube itself is turned.

The centering controls will permit placement of the image in the center of the tube. With an image slightly smaller than the mask, the image is centered so that the margin at the top equals that at the bottom. Also the margins on the side should be equal.

TESTS WITH RECEIVED SIGNAL

The size controls are later adjusted so that the image just fills the screen when a signal from the television station is tuned in. The image from a television signal will be slightly less in size than the image painted by the sweep circuits alone.

The installation up to this point has been handled without the aid of a signal from the air. Whether or not the dealer does this work in the store or the customer's home is a matter of choice. If it is done at the store, the serviceman will have a chance to test the receiver connected up to an aerial, thereby checking the entire receiver before delivery to the customer's home. Then, if there is any trouble at the home in getting a good picture, the serviceman will know definitely that the trouble is external to the receiver.

ROOM ILLUMINATION

Wherever possible the receiver should be so placed in the home that a direct glare from either natural or artificial light does not fall upon the face of the cathode-ray tube. The received pictures may be viewed under a variety of conditions where it is not always convenient to darken the room completely. Adjustments made to meet these conditions will not cause damage to the receiver. Viewing the pictures in as dark a room as possible is always at an advantage as it permits the setting of the Intensity and Contrast controls in a manner that will give picture tone values more correctly relating to those actually used in the studio from which the picture is transmitted.

ANTENNA INSTALLATION

The antenna installation is the greatest unknown. Only by actual trial will one discover whether or not satisfactory pick-up can be obtained at a particular location. When a line of sight to the transmitter antenna is obtainable, it is generally possible to obtain good pictures. In certain instances reflections may occur that cause more than one picture to appear on the screen from one station.

The cure for the reflected signals that cause ghost images is to place the antenna in such a position that only the main signal gets to the receiver. Elimination of ghosts will be discussed further along in this article.

The first step in locating the aerial, which generally will be the di-pole or doublet type, is to find a high point on the roof from which the television transmitting aerial is visible. The receiving antenna is placed so that the di-pole is at right angles with the line of sight to the transmitter. If visibility is poor or there are obstructions, the directions can be determined from a map.

After the aerial has been placed and the transmission line run to the receiver, the next step is check the image on the receiver. The image should be sharp. The size controls

should be adjusted so that the transmitted picture just fills the screen on the tube. Adjustment of the vertical and horizontal hold (synchronizing controls) should produce a steady picture.

With the receiver picking up a signal from the transmitter, the antenna should be rotated for the best possible picture—which is maximum signal when no ghosts are present.

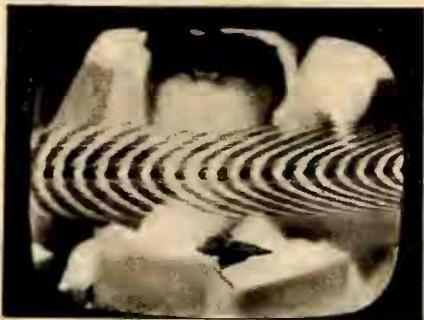
If ghosts or multiple images are present, rotation of the di-pole may eliminate the difficulty. More generally, it will be necessary to move the antenna about on the roof, in an effort to find a location where reflected signals are non-existent.

ELIMINATING GHOSTS

Since it is essential to watch the picture on the receiver while moving the aerial, two servicemen using a telephone may be necessary. Where the distances are short, it will probably be possible to shout back and forth. When it is impossible to eliminate the ghost by positioning the aerial, directive arrays may be necessary. These types of aerials are extremely directional and will cut down reflections arriving at large angles to the line of sight and at the rear.

If a single image is obtained that seems weak, it may be necessary to find another location on the house where a stronger signal is obtained. Because of these "ifs", it is best to make the installation temporary, until it has been determined that a satisfactory (and best possible) image is obtained.

Haywire installations will not be satisfactory for television. The lead-in cable or transmission line should be securely fastened for swaying may have an adverse effect on the picture. In order to keep the transmission line out of the field of the doublet, the lead-in should run down at right angles to the doublet for at least $\frac{1}{4}$ wave-



Diathermy interference produces the pattern shown above. The wavy lines drift across the picture.

length. For a 6 meter signal, this is about five feet.

CONFORM WITH LOCAL LAWS

In many cities there are local ordinances that require that all wires be 7 or 8 feet off the roof. Care should be taken that the antenna and transmission line be kept high enough off the roof so as to conform with the law and prevent damage.

At the window where the transmission line enters the room, a double type lightning arrestor makes an excellent terminal block as well as conforming with the Underwriters' regulations. Inside the home, light-colored wire may be used to harmonize with the surroundings. Because of the extremely high frequencies of 44 to 108 megacycles, care should be taken to use nothing but the highest grade of transmission line, in order to keep line losses at a minimum.

When the manufacturer supplies a ground terminal on the set, the serviceman should be sure to provide a ground for the receiver. Neat triple sockets and plugs are available that accommodate the two aerial wires and the ground connection thus making it simple to disconnect the house receiver when it is necessary to move the set for house cleaning, etc.

TYPES OF INTERFERENCE

After the set has been installed, it is possible, but not likely, that various forms of interference may be present at certain times. The serviceman should be able to recognize the common forms of external interference.

Diathermy is the one form of interference for which there is no cure, unless the offending machine can be located. It makes its appearance in the form of wavy streaks of varying widths that may move up and down on the image. Illustrated herewith are two conditions of diathermy interference. One is when the diathermy

signal is comparatively strong, and the other when it is extremely bad. The interfering patterns move about on the screen.

A second form of interference is auto ignition. It creates globs of white on the image. Placement of the antenna as far away from the travelled roads may reduce the interference. The only cure is to equip all cars with suppressors, an impossible procedure unless laws are passed to this effect.

Tube hiss on a weak signal gives a snowstorm effect when viewing the image. The cure is to increase the signal strength.

Beats from an amateur transmitting station cause the formation of fine bars, a sort of cross-hatch pattern—that drifts across the picture.

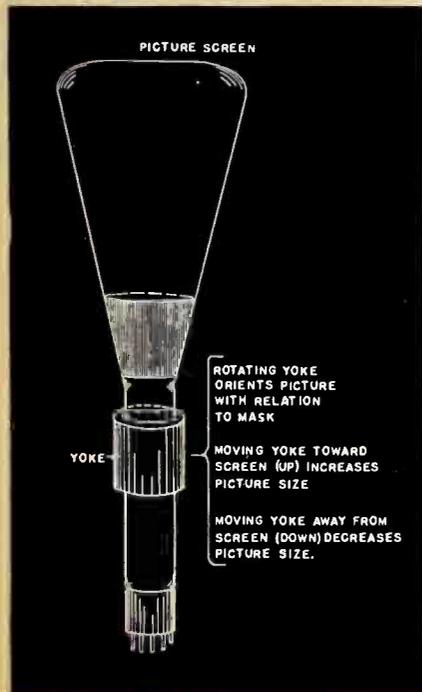
When the receiver is improperly tuned, the video tuned between the sound and picture carriers—a fine cross-hatch pattern is the result. Cure is to properly tune the receiver.

Cross talk between the sound and picture signals causes relatively coarse black and white horizontal bars.

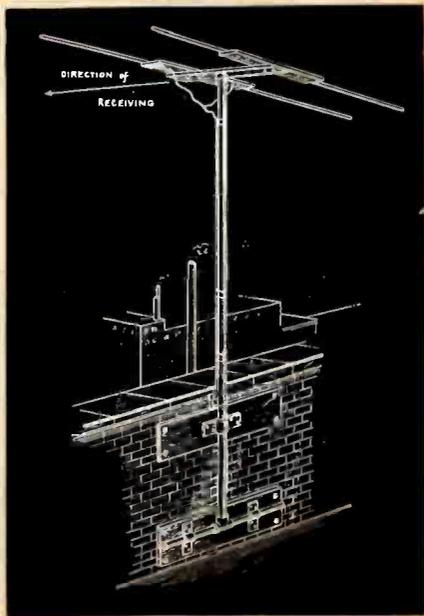
When tuning the receiver the sound channel of the station is tuned in. The sound channel is fairly broad in tuning, so it is possible to adjust the receiver slightly for the best possible picture.

DANGER—HIGH VOLTAGE

Because of the high voltage in these receivers—it is urged that servicemen do not make adjustments inside the receiver while the power is on. Protective interlocks that remove the primary power when back is removed will be used on most sets. And on the service bench, the servicemen should be extremely careful not to contact the high-voltage circuits. If voltage measurements are necessary, be sure the insulation in the test leads and instruments is adequate. A good procedure to follow would be to check circuit continuity and parts values with no power on when loss of supply voltages to the picture tube is suspected.



The position of yoke in a set having magnetic deflection determines the size of the picture and its position with relation to mask.



Di-pole antenna with reflector suggested by DuMont for reduction of ghosts and increasing the received signal strength.

Looking Ahead in Television

Statements from well-known radio-industry figures define problems and policies in connection with the new art. Sales and technical situations.

TELEVISION WAITS ON BROADCASTERS

Sayre Ramsdell, Vice-president,
Philco Radio & Television Corp.

Reception is not the chief problem confronting television as an industry. The real problem is largely in the hands of those concerned with television broadcasting. Television, from the point of view of reception and receivers, is ready to assume its role as the giant industry it should become. However, the problems of broadcasting television have been slower in solution, and the progress in the broadcasting end has fallen behind that attained in reception.

Television receivers will be sold to the public through radio dealers, whose experience and facilities, from both a merchandising and technical standpoint, make them an ideal medium on a nationwide basis. Television receivers can be sold on such a nationwide basis, but as yet, television broadcasting cannot follow them and so is limited to a handful of metropolitan centers. Television as an industry must wait for the broadcasters.

MIDDLE ROAD ON PRICES AND DISCOUNTS

Geo. A. Scoville, General Manager,
Stromberg-Carlson Telephone Mfg. Co.

With respect to RADIO TODAY's question whether television discounts should be reasonably short. I would recommend a middle road.

Prices should not be held too low. Frankly, I do not believe that the price being high or low will prevent newcomers or over-production.

Our policy, of course, is to work

through selected high-type dealers, and we believe that would be the right move.

It is all right to include an antenna in the price of the receiver, if you know what you are doing. However, I am confident that we don't know enough about antenna costs to include them and, above all, I would vote against installation being included in the price. The installation should be on the normal cost basis. After we know what the antenna and installation problem is, then, if somebody wants to include them, they would have some facts with which to work.

CONSTRUCTIVE COOPERATION DESIRABLE

B. Abrams, President,
Emerson Radio & Phonograph Corp.

The matter of discounts will, in my opinion, be largely predicated upon the service the dealer is called upon to perform with respect to selling television sets. For example, if the dealer is required to make his own installations and to do his own servicing, the discounts must of course be greater than otherwise. The price to the consumer will naturally be predicated upon the discount fixed for the dealer.

Distribution will necessarily have to be limited to certain types of dealers by reason of the fact that television involves a high unit sale and an instrument which requires handling by an experienced radio dealer.

The inclusion of the antenna and installation in the price of the receiver is, in my opinion, the most desirable way of handling the sale of television sets until more experience is gained by dealers.

RADIO TODAY's suggestion that manufacturers get together and determine policies for the merchandising of television sets is an excellent one, but in the light of past experience, is a little too much to hope for. Emerson would be glad to cooperate with any constructive program which would tend to start this great new industry on a sound and profitable basis for all concerned.

NOT YET READY FOR PUBLIC

Commander E. F. McDonald, Jr., Pres.
Zenith Radio Corporation.

Zenith has television sets, but today Zenith's television receivers are loaned . . . not sold.

Zenith believes it is unfair to the public and knows it is unfair to dealers to ask them to finance the television industry's experiments.

Radio dealers have been penalized and punished by premature television publicity starting last Fall.

Prospects were led to believe that television would cover the country overnight.

Zenith will not break faith with its dealers.

When Zenith believes television is ready for general use in the store and the home . . . Zenith will supply dealers with television receivers and not before.

HOLD DOWN DISCOUNTS, QUALITY DEALERS

F. A. D. Andrea, President,
Andrea Radio Corp.

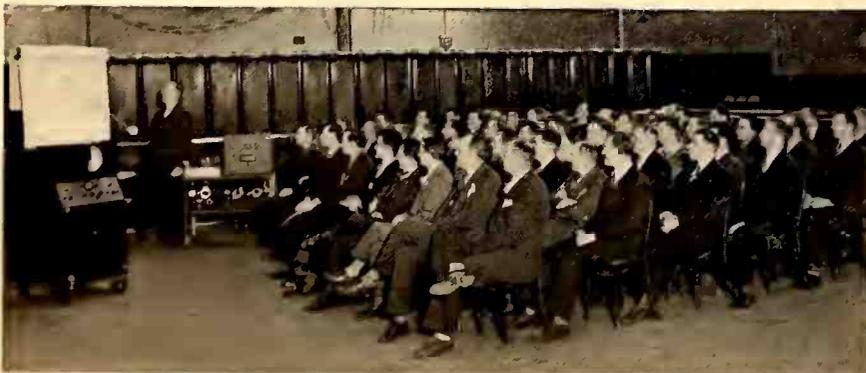
Our discounts on television equipment are much shorter than the discounts which have prevailed in the trade on broadcast receivers. We feel there is no need for quoting large discounts in order that discounts can be granted to retail customers. In fact, our Feld-Crawford contract calls for resale at full list prices, without trade-in allowances or discounts. The contract gives us the right to cancel the dealer's contract within ten days and, at our option, to remove Andrea equipment from his store, by repurchase, at the time the notice of cancellation is served.

Prices to consumers should be held as low as possible, but that is a relative matter, and one which will be determined to a considerable extent by the rate at which the individual manufacturer charges off his investment in research and development.

Our own plan is to limit retail distribution to the highest type of dealers. By that I mean those of strong financial standing, and those who are really merchandisers.

(Continued on page 42)

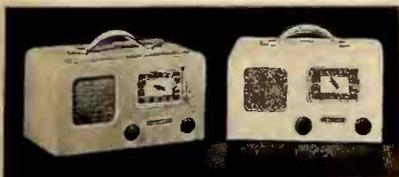
Stromberg-Carlson stages television school at factory



Twice a week for an hour's session, Stromberg's engineers become "profs" and instruct the foremen and workers in the intricacies of television theory, alignment, and adjustment. Artificial respiration is also taught in case any accidental shock should occur.

New Portable Receivers

Latest summer merchandise offerings of radio manufacturers provide opportunity for extra profits.



Leather portables

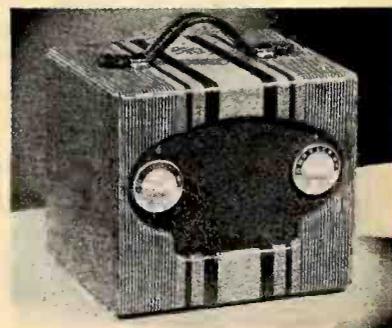
"Pick-Me-Up" battery portable radios now available in three types of leather-covered cases. 4-tube super-het chassis. Aniline cowhide covered model lists at \$39.95. Dark brown, genuine shrunken buffalo leather \$42.50 and cream colored natural rawhide \$44.50. RCA Mfg. Co., Camden, N. J.—RADIO TODAY.

ground connections, and a battery life of 300 hours. Model WR-675. Westinghouse Elec. Supply Co., 150 Varick St., New York, N. Y.—RADIO TODAY.

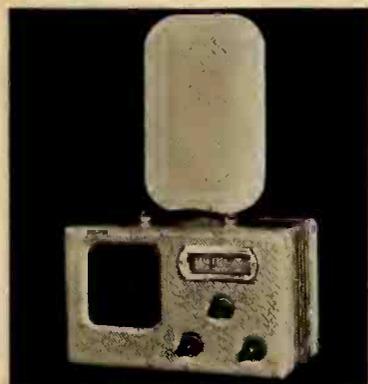


Highly-styled portables

★ Five 1½ volt portable battery sets in fine luggage motif. Equipped with hinged cover, sturdy handle and modern luggage hardware. Three models have airplane cloth covers, one has synthetic white rawhide and the other in genuine top grain cow-hide. All have built-in aerials. Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.—RADIO TODAY.



mate" with larger case and hinged lid, vertical slide-rule dial. Sonora Radio & Television Corp., 2626 W. Washington Blvd., Chicago.—RADIO TODAY.



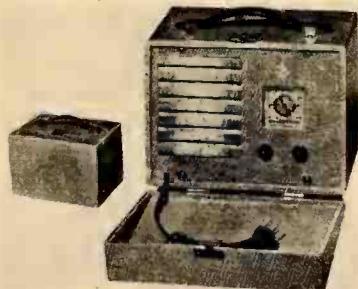
Portable with movable loop

★ Five-tube portable operates either self-contained batteries or on AC. Has directional loop antenna, adjustable away from batteries. Tunes two bands and comes with dynamic speaker in weather-proof aero-luggage case. Setchell-Carlson, Inc., 2233 University Ave., St. Paul, Minn.—RADIO TODAY.



Majestic portable

★ Self-contained portable with 4 tubes, 1½ volt operation; 5 inch electro-dynamic speaker, slide-rule dial, AVC, built-in aerial. A battery drain, only ¼ amp., B battery drain 12 milliamp. Majestic Radio & Television Corp., 2600 W. 50th St., Chicago.—RADIO TODAY.



AC-DC portable

★ 5-tube AC-DC super-het portable with built-in loop antenna. Electro dynamic speaker, AVC, power-line noise filter and completely shielded chassis. Model CN-266—\$17.95 list. Emerson Radio & Phonograph Corp., 111 Eighth Ave., New York, N. Y.—RADIO TODAY.



Portable and carrying case

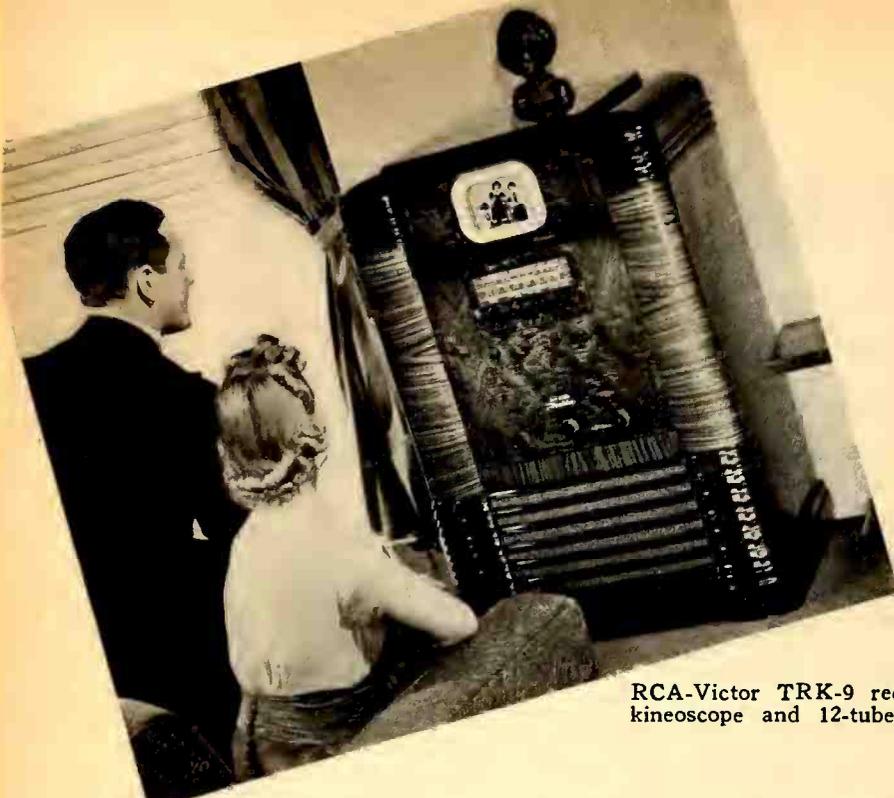
★ Four-tube portable super-het features AVC, built-in loop, 5 in. P.M. dynamic speaker, 12 to 1 ratio vernier drive, on-off indicator, terminals for outside aerial and

Sonora portables

★ Small super-het portable "Playboy" using 1½ v. tubes, built-in power pack with 150 hours battery life. Has built-in loop, AVC, PM dynamic speaker. Weight 9½ lbs. Also available, de luxe "Play-



Bob Hope and Shirley Ross, film stars, prefer this Philco 504 portable combination to the piano.



RCA-Victor TRK-9 receiver with 9-inch kinescope and 12-tube all-wave chassis.



20-tube Pilot model T-90 set using 9-inch tube with black and white picture.



G-E model HM-225 for sight and sound. Uses 22 tubes including 9-inch cathode ray.



18-tube General Electric model HM - 185 with 5 - inch tube.



Model WRT-703 by Westinghouse has a 12-tube sound set and video chassis.



5-inch kinescope featured in this RCA model TRK-5 sight and sound set.



American Television's Kinet is an extension type unit.

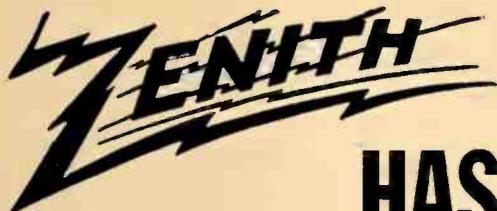


Dumont's table model features a 14-inch tube giving an 8 x 10 inch picture.



Garod model 100 televisior using a 5-inch tube. Also in kit form.

RADIO DEALERS!



HAS TELEVISION SETS

ZENITH'S television transmitting station W9XZV is operating daily and is the *only* television transmitter licensed by the Federal Communications Commission in the whole Chicago area.

Today ZENITH'S television receivers are *loaned . . . not sold.*

ZENITH IS READY-- BUT TELEVISION IS NOT

Even government television standards are *not yet* established.

The Federal Communications Commission, in its annual report to Congress in January this year, stated: "However, it is generally agreed that television is not ready for standardization or commercial use by the general public."

ZENITH believes it is UNFAIR to the public and KNOWS it is UNFAIR to the dealers to ask them to finance the television industry's experiments.

RADIO DEALERS have been *penalized and punished* by premature television publicity starting last Fall.

Prospects were led to believe that television would cover the country overnight.

ZENITH will not break faith with its dealers.

When ZENITH believes television is ready for general use in the *store and the home . . .* ZENITH will supply you with television receivers and *not before.*

President,
Zenith Radio Corporation

April 5, 1939

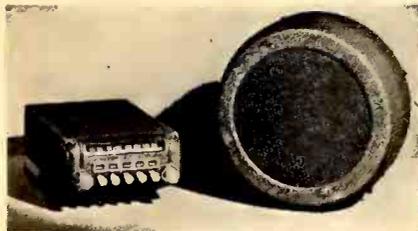
Auto Radio Selling Tips

Radio men have edge on car dealers. Displays to boost tube and antenna replacements.

Optimistic 1939 predictions of soaring auto-radio sales are now becoming fact. Equally important and encouraging are the reports of increased income from sale of accessories, servicing and installation.

While the trend of auto-radio sales has been much in favor of car dealers, many radio men believe that they can wean much of this business away by concerted effort and ingenious sales ideas. After all, when the car is sold, the automobile dealer has little contact with the owner, since he is not equipped to service the set should trouble develop.

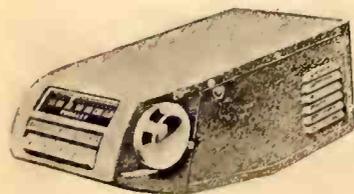
The auto-radio man is then in a position to advise standard installations



RCA-Victor's model M-70 has a combined speaker and power unit thus reducing size of control unit to a minimum.



ABC Lab's short-wave police converter tuning 1,600-2,500 KC for use with standard set.



Crosley's 5-tube Roamio features Magnatone push-button control and lists at \$19.99.

rather than a custom built radio when the next car or set is purchased. He can back this advice up by proving to customers that custom-built sets cannot be transferred to a different car without an expensive change-over; that he has a much wider variety of models from which to choose; and that, in some instances, he may get more features for less money. Add to this the guarantee of expert service and a prospect is hit with a pretty powerful sales story.

Several far-seeing radio men have gone into the field not only extensively, but exclusively; catering only to the market for auto-radio sales, service, installation, parts and accessories. A good representative of the trade is "Mac" McCullough, of the MacAdams Equipment Co., New York City, one of the leading auto-radio specialists for many years. He is at present chairman of a newly formed Auto-Radio Dealers Association in New York and outlines for RADIO TODAY some of the necessities for the successful auto-radio dealer.

FLAT-RATE SERVICE CHARGES

Service charges must be fixed and adhered to. A good basis to work on is a \$1 charge for removing the set and replacing it in the car. This charge is made for every repair job, large or small. The customer can actually be shown that removing the set will cost him less money than a haphazard, time-consuming job in the car. The serviceman is also in a better position to sell him necessary parts when the job is on the bench.

Further standard service charges may be obtained by adding seventy-five cents for a minor repair job (such as tubes or a vibrator), and \$1.75 to \$2.00 for a major repair (such as volume control or transformer), to the \$1.00 removal and replacement charge. To each of these charges is added the cost of parts. With a good selling job customers won't feel this is too much.

GRAPHIC DISPLAYS SELL SERVICE

The supplying of parts and equipment is a sweet market if plugged right. Seventy-five per cent of auto-radios, one year old or over, need one or more new tubes or a new vibrator, and antennas become inoperative due to wear and tear. The cue here is to sell a *new* antenna, rather than repairing the old one—selling the cus-

tomers on better performance over a long period—not the cost.

Graphic methods of showing customers the need for tube check-ups and antenna inspection are used by MacAdams. A large crate with the slogan "Worn-out tubes, watch the pile grow," contains over 2,000 old tubes, and is used to point out to prospects that so many radios need new tubes that it would be wise to have theirs checked. Antennas are promoted by the display of an old auto aerial with the worn-out parts made plainly visible. Customers are shown how their antenna may be worn and the advisability of replacing it with one of the excellent new rods now on the market.

News of another alert auto-radio dealer comes from Evanston, Ill. William J. Becker of that town has established a business that keeps three men busy selling radios at wholesale to local auto-dealers, then paying them a small commission for each installation job which they send him. This has proved a profitable method of capitalizing on the trend of buying radios through car dealers, and aided by emphasis on his ability to service and install auto-radios, has catapulted Mr. Becker into a profitable, specialized business. He now takes care of Evanston automobile dealers and four radio stores not equipped to handle installation and service themselves.



"Teeny-Weeny" 5-tube auto set by Sonora is the smallest one yet built.

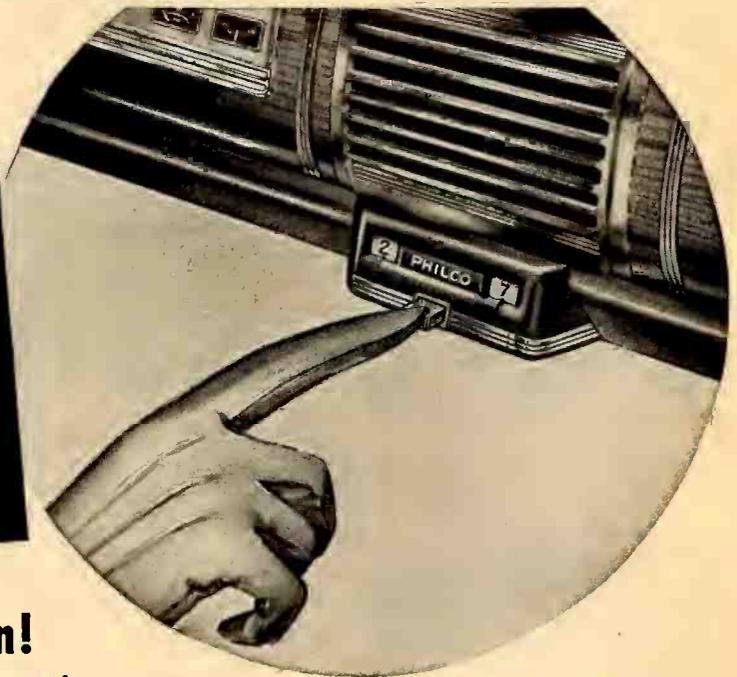


7 in 1 socket wrench manufactured by Star Machine for auto-radio installation.

PHILCO *creates* a new kind of AUTO RADIO!

Again Philco leads in radio progress.
Engineers develop New Convenience
in Auto Radio Tuning.

**ONE Push-
Button Tunes
5 Stations!**



New Sales-Making Invention!

At last, the perfect way to tune a radio in a car! Instead of several push-buttons, you *tune in five favorite stations with just a single button!* Each time you push the button, a new program comes in *instantly* . . . and you choose the one you want to hear. Not even a glance at the dial. Quick, simple, effortless. No fumbling, no groping. The easiest, most convenient auto radio tuning ever invented!

Here's your opportunity to put pep, punch, novelty—and dollars into your auto radio sales. Feature the new Philco Model 933 with this sensational new invention. It's a perfect "step-up" weapon to increase your unit sale and boost your auto radio profits. Get full details from your Philco distributor today—*write, wire or phone!*

PHILCO
AUTO RADIO
MODEL 933

\$39⁹⁵

Single Push-Button Tuning for 5 stations. Regular dial tuning of all stations. 6 newly-invented Loktal tubes. Powerful Superheterodyne. Electro-Dynamic Speaker. Automatic Volume Control. Bass Compensation. Tone Control. Full-Wave Vibrator. Choice of 3 speakers, for built-in speaker grilles, for under dash mounting, for Chevrolet cars.

Other New Auto Radios—\$29.95 to \$69.95



PHILCO ALL YEAR 'ROUND

More New Things

Latest news of radio products from manufacturers



Lightweight portable

★ Four-tube 1½ volt battery super-het portable with self-contained loop, AVC, on-off indicator and 5 inch PM speaker. Comes in tweed-effect luggage case. Shipping weight with batteries—13 lbs. Continental Radio & Television Corp., 3800 W. Cortland St., Chicago.—RADIO TODAY.



Compact "B" batteries

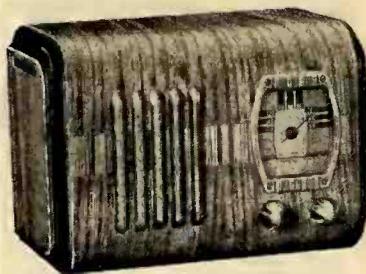
★ Portable "B" batteries equipped with 5-hole Duplex plug-in sockets to fit all standard types of 1.4 volt portable battery receivers. Combined "A & B" power pack also available, giving 90 volts of B power and 1½ volts of A power—plug-in sockets. U. S. Electric Mfg. Corp., 222-228 W. 14th St., New York, N. Y.—RADIO TODAY.



Regulated power supply

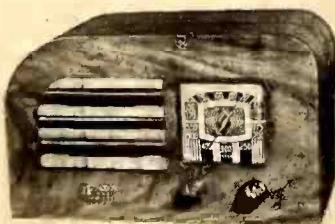
★ A regulated power supply designed to replace batteries in test work. Has two continuously va-

riable voltage outputs, 90 to 160 volts at 40 milliamperes maximum load and 160 to 300 volts with a 100 milliampere maximum load. Internal AC impedance is 0.1 ohm. Has voltmeter on front panel. Supplied in either table or rack mounting. Model 40-B. National Television Corp., 480 Lexington Ave., New York, N. Y.—RADIO TODAY.



"Limited Editions" models

★ 5-tube AC-DC super with AVC has dial light, 4-inch electro dynamic speaker. 1,700 KC to 525 KC. New Bantam type tubes. Cabinet is New Guinea wood with rare Zebra wood inlay. Concealed grill opening. Model 500 DG. Sparks-Withington Co., Jackson, Mich.—RADIO TODAY.

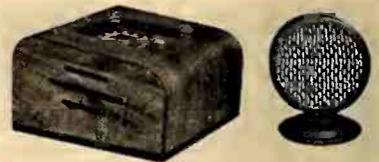


New Fada models

★ Five-tube super-het in Burl walnut with new grille innovation. List \$16.95. Model F55T. Other models are: F55W—five-tube super in walnut bakelite—\$9.95; Ivory. \$12.95; F55C—five-tube super in Catalins at \$17.95. Fada Radio & Electric Co., 30-20 Thomson Ave., L. I. City, N. Y.—RADIO TODAY.

Battery bantams

★ Bantam radio tubes are now available in 1.4 volt series for use in portable where space economy is more essential than in home sets. Obtainable in types necessary for portable operation. Hytron Corp., 76 Lafayette St., Salem, Mass.—RADIO TODAY.



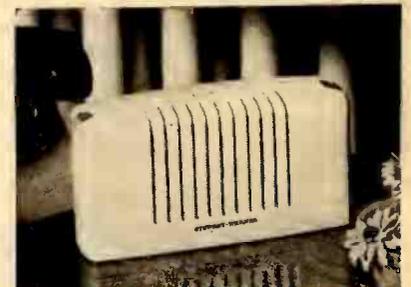
Wireless remote control

★ "Mystic Tuner" operates any radio without attachments or adjustments. Complete selection of the standard broadcast stations and control of volume are possible. \$19.95 list. Dynamic, high-impedance mike for home broadcasting available for additional \$3.00. Pathe Radio & Television Corp., 2241 Indiana Ave., Chicago, Ill.—RADIO TODAY.



Midget Arvinet

★ Small AC-DC receiver with two double-purpose tubes, electro dynamic speaker, unbreakable cabinet in ivory or walnut enamel. Power output 1½ watts. 20 ft. aerial attached. \$6.95 list. Good dealer profit margin. Noblitt-Sparks Industries, Inc., Columbus, Ind.—RADIO TODAY.



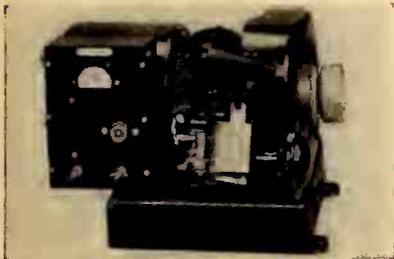
Air-Pal radio

★ AC-DC super-het with built-in antenna and full dynamic speaker. The set is 9 in. wide and 3 in. deep, finished in walnut and ivory. Stewart Warner Corp., 1826 Diversey Pkwy., Chicago.—RADIO TODAY.



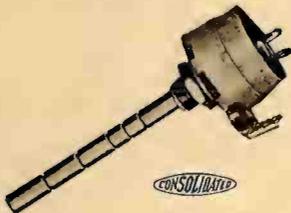
Personal radios

★ Five tube AC-DC super-hets. Receivers weighing only 4½ lbs. Feature built-in antenna, 4 inch electro dynamic speaker, AVC, 6 to 1 vernier drive, illuminated dial, streamlined cabinets. All in different colors. WR-166-I illustrated. Westinghouse Elec. Supply Co., 150 Varick St., New York, N. Y.—RADIO TODAY.



Gas-engine generator

★ Type 3AP6 light plant will light twelve 25-watt lamps or operate AC radio and 8 lamps. Can be used to charge 6-volt batteries. 4-cycle, single cylinder, air-cooled ½ h.p. High-tension magneto ignition, push-button starter. Eicor, Inc., 515 S. Lafin St., Chicago.—RADIO TODAY.



Volume, tone controls

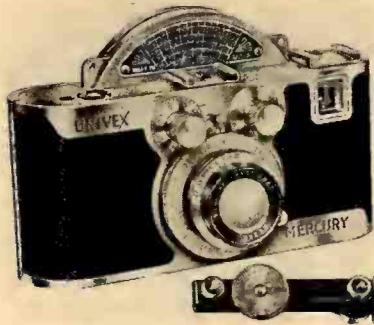
★ Controls for 90 per cent of replacement requirements. Resistance ranges from 5,000 to 1,000,000 ohms in 5 types, including topped units. Illustrated is model VTC—with S.P.S.T. switch. Consolidated Wire & Assoc. Corps., 516 Peoria St., Chicago, Ill.—RADIO TODAY.

Hearing aid

★ Personal hearing amplification system plugs into any lamp socket and enables listener to judge direction. Frequency and volume controls adjustable by listener at will—requires no laboratory adjustment. Ravox Div., Zenith Radio Corp., 680 N. Michigan Ave., Chicago.—RADIO TODAY.

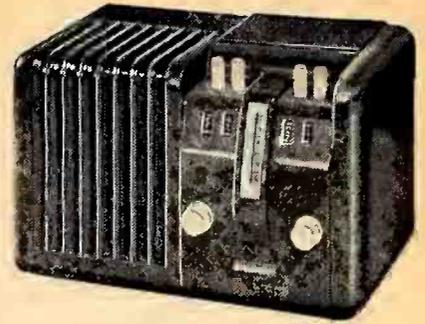
Auto aerials

★ Telescopic auto antennas have newly patented "anti-rattle" feature to improve set performance and end "customer comebacks." Now standard on all Ward auto-aerials, no extra cost. Ward Products Corp., 1523 E. 45th St., Cleveland, Ohio.—RADIO TODAY.



Candid camera and range finder

★ American-made candid camera with 1/1000th second shutter and F:2 lens has automatic film transport and built in photo flash synchronizer. Swing-base range finder fits any camera with standard clip. Accurate readings from 1 ft. 6 in. to infinity with 13 graduations. Also available: color film for candid camera at 90 cents for 18 exposure roll; complete line of filters including polarized type. Universal Camera Corp., 28-30 W. 23rd St., New York, N. Y.—RADIO TODAY.



Push-button radio

★ 5-tube AC-DC super with built-in loop tunes 535-1,760 kc. and 175 meter police band. Four push-buttons, AVC, 5-inch electro-dynamic speaker and plastic cabinet are other features. Walnut, \$17.95; Ivory, \$19.95. Warwick Mfg. Corp., 1700 W. Washington Blvd., Chicago, Ill.—RADIO TODAY.



Facsimile kit

★ Kit containing all parts necessary to build Reado facsimile printer. Uses Finch method. Operates in connection with radio receiver, Crosley Corp., 1329 Arlington St., Cincinnati, Ohio.—RADIO TODAY.

Radio Library

★ Receiver covered with imitation leather creates illusion of set of books. Measures 10½ x 7½ inches. Halson Radio & Television, Inc., Cambridge & Tremont Sts., Meriden, Conn.—RADIO TODAY.



Philco's new model 31-XX features inclined panel, dual-band coverage and push-button tuning for 8 stations.

New Things



5000-volt multiplier

★ Unit for converting Weston 772 multi-range meter for use at potentials up to 5000 volts at 20,000 ohms per volt. Multiplier unit mounts in compartment of tester—total resistance of 100 megohms in circuit. Supplied with test leads insulated to withstand 11,000 volts in accordance with AIEE safety standards. Televerter available from Weston Elec. Instrument Corp., Newark, N. J.—RADIO TODAY.



Rack and panel Chanalyst

★ Rider Chanalyst in steel rack and panel assembly, black rippled finish, size 19 x 12 inches. Furnished complete with connecting accessories, \$122.50 list. Rack and panel assembly alone \$15.00. Service Instruments, Inc., 404 Fourth Ave., New York, N. Y.—RADIO TODAY.



Quietone filter unit

★ All wave filter for use on 110 volts AC or DC, 5 amp. maximum capacity. Replaces old CD type IF-1. May be used to eliminate interference carried by power line. Equipped with metal case and binding post for ground connection. Catalog

165A on request. Cornell-Dubilier Electric Corp., S. Plainfield, N. J.—RADIO TODAY.

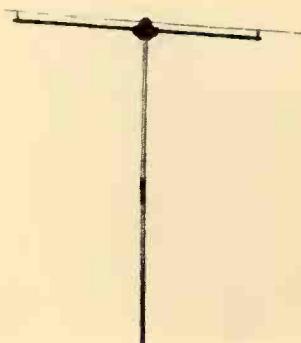
Ferrule terminal resistors

★ Ferrule clip terminal-type resistors now available in wire-wound power resistor line. Inorganic cement-coated. Use spring clips like cartridge-fuse blocks. 10-200 watts rating, all standard values. Clarostat Mfg. Co., Inc., 285 N. 6th St., Brooklyn, N. Y.—RADIO TODAY.



Poly-pedance transformers

★ Line of matching transformers include 2-line to grid transformers and six modulation 15-600 watt transformers. All units tapped for wide-range impedance. Excellent frequency response. Described in catalog 160. Standard Transformer Corp., 1500 N. Halsted St., Chicago.—RADIO TODAY.

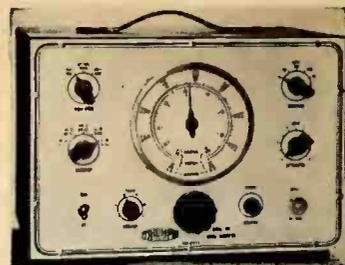


Television antenna system

★ Andrea teleceptor features climate-sealed coupler with attached antenna rods to form legs of a $\frac{1}{4}$ wave doublet and 75 ft. rubber jacketed transmission line with matched impedance to doublet and antenna circuit of tele-receiver. Unit comes complete. Measures 8 $\frac{1}{2}$ ft. high with spread of 10 ft. when assembled. Instructions included. Andrea Radio Corp., 48-02 48th Ave., Woodside, L. I., N. Y.—RADIO TODAY.

Signal generator

★ Features of Triumph signal generator include: 2 calibrated scales for all six bands, ten to one vernier. 100 K.C. to 96 M.C., expanded scales 350° rotation, straight line freq., 400 cycle modulation, variable from 0 to 75 per



cent. May be modulated externally. 400 cycle audio 0 to 2.5 volts. R.F. output from 0 to approx. $\frac{1}{4}$ volt. Removable output plug. Single-ended tubes. Model 130, net price \$29.95. Triumph Mfg. Co., 4017 W. Lake St., Chicago.—RADIO TODAY.

Television tube

★ Stubby 5-inch cathode-ray television tube for adaptation to small cabinets. Electrostatic deflection is utilized, images reproduced in black and white. Videotron is 13-inches long ($3\frac{1}{2}$ inches shorter than usual), lined with aquadag coating to prevent reflection and assure clean-cut picture tones. No. 1805-P4. National Union Radio Corp., Newark, N. J.—RADIO TODAY.



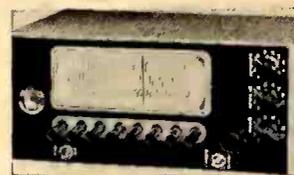
No 7817

Electric shaver-filter

★ Filter consisting of two dual-lateral wound chokes of 3MH inductance and condenser of .03 mfd. Circuit provides exceptionally-high degree of attenuation and eliminates need for ground connection. Moulded rubber enclosure makes filter unbreakable and prevents shock to user. J. W. Miller Co., 5917 S. Main St., Los Angeles, Cal.—RADIO TODAY.

Television tube fluorescent material

★ Silicates and tungstates in all colors available for immediate delivery. For details contact Cal-lite Prod. Div. of Eisler Elec. Corp., 544-39th St., Union City, N. J.—RADIO TODAY.



P.A. tuner kit

★ T.R.F. broadcast tuner covering 540 to 1,700 kc. Self-contained including AC-DC power supply. Triple-point tone control. Completely assembled but not wired, \$35.00 list. Edw. L. Guthman & Co., Inc., 400 S. Peoria St., Chicago.—RADIO TODAY.



*Sell the
Meissner*

TELEVISION KIT!

THERE'S a tidal wave of interest and enthusiasm about Television just getting started, a wave that will sweep extra profits into the pockets of the alert dealer! Be prepared for it with the first practical *Television Kit*—designed and offered by MEISSNER!

For years Meissner has worked with Television, just to be prepared when Real Television arrived. It's **HERE NOW**—and the MEISSNER Television Kit is Ready for your rapidly growing Television market, with Meissner quality at a moderate price!

Be prepared for the Television market! See it at your parts jobber or mail the coupon today for complete information and dealer prices!

SEE YOUR PARTS JOBBER OR WRITE

DEPT. T-4
MT. CARMEL,
ILLINOIS

Meissner

THE FIRST PRACTICAL TELEVISION KIT!

- *Sound as well as Video—both in one unit!*
- *New SHOCK PROOF Design! ● 5-inch tube!*
- *Walnut Cabinet available at slight additional cost.*
- *Meissner Quality at a price any one can afford to pay!*

FOR COMPLETE DETAILS

MAIL COUPON!

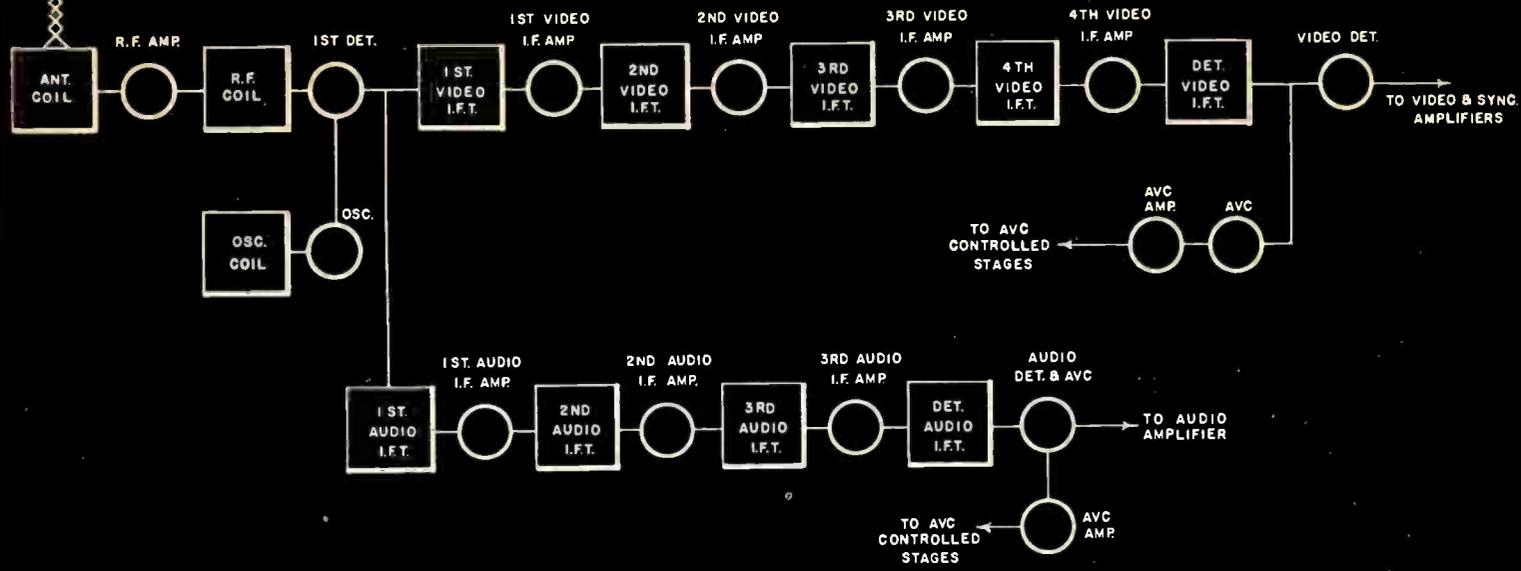
MEISSNER MFG. CO., Dept. T-4, Mt. Carmel, Ill.
Please rush me complete information on Television Kits with dealer prices.

Name

Address

City State

A F A M O U S N A M E F O R T W O D E C A D E S
APRIL, 1939



VIDEO & AUDIO R.F. & I.F. CIRCUITS

Block diagram showing the high-frequency circuits in a video and audio receiver.

Television Dynamic Testing

Dynatesting of video sets same as audio in basic principles. Quality and magnitude of signals in television sets equally as important in audio receivers.

By VINTON K. ULRICH, *Managing Editor*

Basically there is no difference between dynatesting a sound receiver and a sight receiver. In both cases the serviceman is confronted with the problem: "Is the voltage output of a stage great enough to meet the requirements of the following stage or device—and is the quality (waveform) suitable for the desired purposes?"

From some viewpoints television dynamic servicing is simpler than corresponding tests in a sound set. This is because of the presence of the cathode-ray picture tube, and because the eye is more critical and has a better memory than the ear.

CHECKING OPERATION BY EYE

When listening to a sound receiver, it is extremely difficult to determine what sort of distortion is present, if any; and where it might occur without staging a series of tests. With video, on the other hand, it is often possible just by viewing the picture to tell what sort of trouble is present and where it occurs.

In future issues of RADIO TODAY, it is planned to publish a series of television images with the standard test patterns to illustrate various difficulties that may occur.

Two block diagrams of television sets are shown on these pages. One diagram is for the radio frequency and intermediate frequency circuits and

includes all circuit elements up to the video and audio second detectors. The other is the video section comprised of the video voltage amplifier and the sweep circuits. The two high-voltage power supplies have been omitted.

TEST FROM TUBE TO ANTENNA

As in audio dynamic testing, the writer prefers to work backward from the cathode-ray tube in video testing. First all, by adjustment of the brightness control, it should be possible to illuminate the screen without any signal being fed into the set. If this is possible, it indicates that the high voltage is present as well as sweep frequencies.

If a single vertical trace is obtainable, it means the horizontal sweep is not being applied to the tube. Likewise if a horizontal trace is the only image, the vertical sweep is absent. If only a white spot near the center of the tube is present, no sweep voltages are available. Incidentally, these tests for sweep voltages are identical to those used with any cathode-ray oscilloscope.

If a perfect image is obtainable on the screen when tuned to a station, the set can be pronounced perfect, without further tests. Should the image slide around on the screen, then something is wrong with the synchronizing circuits (or even the transmitted signals).

SWEEP OSCILLATORS

Referring to the block diagram of the deflection chassis, one sees that the video signal is fed into the sync amplifiers. After being amplified, the sync pulses are separated into the 60 (vertical) and 13,230 (horizontal) channels by means of filter circuits. The synchronizing signal is then applied to the respective sweep oscillators to hold them in step with the oscillators at the transmitter.

So if difficulty is had in keeping the picture synchronized, the stages between the video input and the sweep oscillator are checked.

When the picture is completely absent, the two most obvious troubles are absence of proper voltages on the tube or a defective tube.

A quick method of checking the video amplifier, when no picture can be obtained, is to tune in the audio signal on the audio circuits, and then tie the two second detectors together. If the video amplifier is operating the sound signals will be fed into the picture tube and form some sort of a rapidly moving pattern. If no image results, this is a sure sign that the video amplifier is inoperative.

CHECKING VIDEO AMPLIFIER

With a dead video amplifier, the dynamic testing procedure is similar to that used in the audio amplifier and described in previous issues of RADIO

TODAY. Of course, the video amplifier must be capable of handling signals whose frequencies range from a few cycles to several megacycles. More about the specific procedure in future issues.

While three video amplifier stages are shown, it is likely that the small sets will use less. Likewise is true of the amplifiers in the synchronizing and sweep circuits.

Naturally sets using large picture tubes, will have more amplifier tubes, since higher deflection voltages are required when higher accelerating voltages are applied to the tube. Consequently, the step from a 5-inch tube with 2,000 volts to a 12-inch tube with some 5,000 or more volts involves much more than just changing the tube and increasing the voltage on it.

MAGNETIC AND ELECTROSTATIC DEFLECTION

Both magnetic and electrostatic deflection are being used in the receivers that have been just announced. In the magnetic type, the deflecting voltages are applied to coils that have a magnetic effect on the electron beam, thereby causing deflection. The electrostatic sets have plates inside the tube, to which the deflection voltages are applied. Incidentally, electrostatic is the type of deflection used in all commercial test oscillographs.

The deflection of a tube and deflecting yoke if used, can be easily checked by applying AC voltages of proper magnitude to the deflecting coils or plates of the picture tube.

The I.F. circuits can be checked by working backward from the detector as in the case of a sound receiver. Some variations in the procedure will be necessary since the I.F. frequency for the video signal is on the order of 13 megacycles. The audio I.F. will be exactly $4\frac{1}{2}$ megacycles away for single-sideband transmissions or $3\frac{1}{4}$ megacycles for double-sideband signals. If the high-frequency oscillator is higher in frequency than the signal, the audio

I.F. will be lower in frequency than the video I.F.—and vice-versa.

SINGLE H.F. OSCILLATOR FOR VIDEO AND AUDIO

Working back to the first detector, one finds that the output divides into two channels. One for the video, the other the audio. A single oscillator is used to provide the two I.F. signals from the two transmitted carriers.

Ahead of the first detector, both the video and audio carriers and modulation are amplified by the same circuits simultaneously. In some sets an R.F. amplifier stage will be used, so it is shown on the block diagram. Since the signal frequencies range from 44 megacycles to 108 megacycles (channels A to G), special signal generators will be needed. For overall set testing independent of transmitted signals, some sort of a special modulator is also essential.

For a discussion of the types of interference that may create havoc with telecasts, the serviceman is referred to page 19 of this issue.

For a proper understanding of television circuits and how they work, the reader is urged to study and master basic principles. With a thorough understanding of such concepts, television is not so hard—in fact, as the writer sees it, television is merely the same old principles expanded and applied in new ways.

Television terms explained

With the birth of commercial television, the radioman, either technical or sales-minded must learn the new lingo. Dozens of new terms or words are being added to the radioman's vocabulary—and many other words are being given new meanings by television. At present many manufacturers have their own exclusive names for certain developments. As a beginning on the list of television terms we present those compiled by Allen B. Dumont Labs.

Audio—Pertaining to the sound section of the receiver.

Amplitude—A term synonymous with gain or size.

Axis—In television the horizontal plane is called the X Axis and the vertical the Y Axis.

Cathode-Ray Tube—An evacuated glass tube comprised of a structure for producing and focusing a stream of electrons upon an internal screen.

Coaxial Cable (or line)—A special cable for conveying television signals with as little loss as possible.

Contrast Control—A control on the receiver adjusting the contrast between high lights and shadows in the picture.

Deflection (Magnetic)—A system where the motion of the spot in producing the picture is controlled by magnetic fields.

Deflection (Electrostatic)—A system where the motion of the spot in producing the picture is controlled by the static action of the deflection plates.

Deflection (Plates)—These plates are located inside a cathode-ray tube and provide for electrostatic deflection of the beam.

Deflection (Coils)—Coils mounted externally about the cathode-ray tube to produce magnetic deflection of the beam.

Dipole—An aerial comprised of two separate rods.

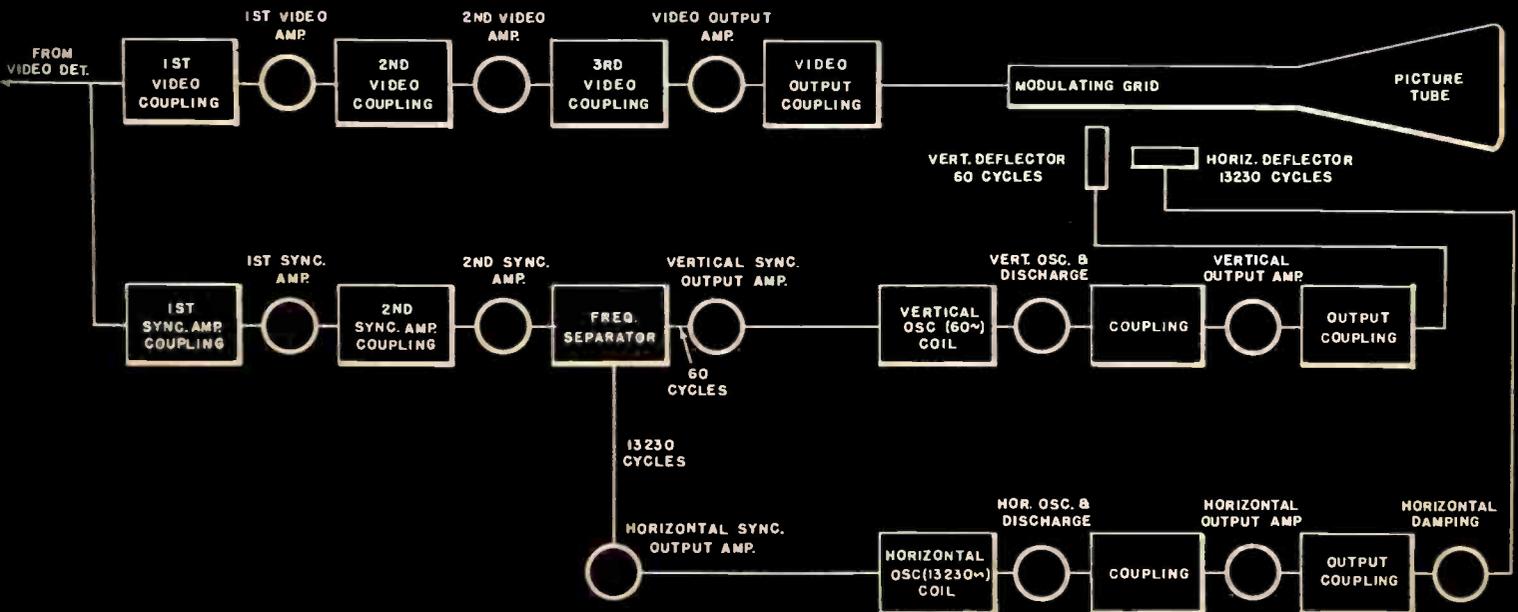
Double Image—Where two images appear separately on the screen, one of the sweep circuits is adjusted to half its correct speed. If the horizontal is at fault the images will appear side by side, conversely if the images are vertically displaced the vertical sweep is at fault.

Field—In the RMA Television System there are two fields to each frame. In other words each picture is comprised of two fields scanning alternate lines.

Frame—One complete picture, thirty of these a second are thrown on the screen.

(Continued on page 56)

The video low-frequency circuits are comprised of the video amplifiers, synchronizing amplifiers, sweep oscillators, and deflection voltage amplifiers.



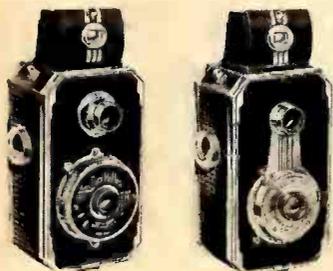
VIDEO SYNCHRONIZING & DEFLECTION CIRCUITS

New Things



Battery table set

★ 4-tube super operates with single pack batteries and 1½ volt tubes. Covers standard broadcast and police calls, has full AVC and 6-inch P.M. speaker. Set is manually tuned. Walnut cabinet. Continental Radio & Television Corp., 3800 Cortland St., Chicago.—RADIO TODAY.



Reflex cameras

★ Dual reflex camera, pocket size, may be used as candid camera. R511 equipped with 5mm. Eyvar

lens \$4.95 list: 512 with 50mm. Eyvar lens and three diaphragm openings—\$5.95: 513 with F7.7 lens and 4 diaphragm openings—\$7.50.

Tri-reflex camera has automatic lens adjustment, time bulb, and instant shutter speeds to 1/200th of a second; choice of F3.5 or F4.5 lenses. Model R514 \$19.95, R515 \$25.00. Use 127 film—16 exposures. Irwin Corp., 27-33 W. 20th St., New York, N. Y.—RADIO TODAY.

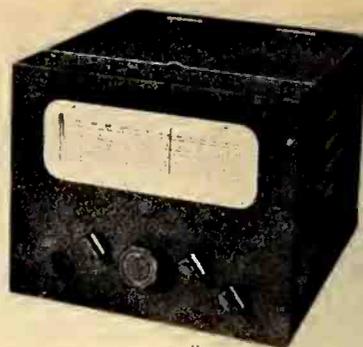


2-inch speaker

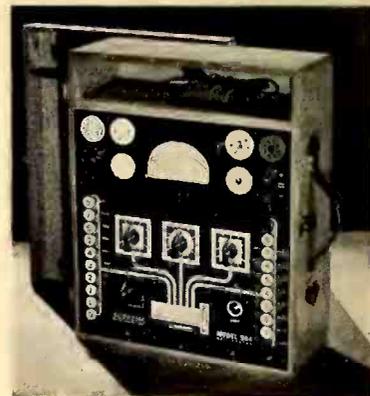
★ "Little General" 2-inch Permag speaker scientifically constructed and test-proven. Over-all size 2½ inches. Oxford Tartak Radio Corp., 15 W. Van Buren St., Chicago.—RADIO TODAY.

Two-stage preselector

★ Two-stage preselector designed for use with any communications receiver. Uses two 6K7 RF amplifiers. Three tuned circuits on



each of five bands with coverage of 530 KC to 32.4 MC. Sensitivity control and antenna-switch provided. Also available are two conversion kits for midget battery receiver, containing all necessary parts for changing one-tube set to two-tube (No. 10-1125, \$.75) and everything to convert two-tube receiver to three tube set (No. 10-1127, \$1.85) Meissner Mfg. Co., Mt. Carmel, Ill.—RADIO TODAY.



Supreme tube & set tester

★ Portable 4-in-1 tester including roll-chart tube tester, 29-range multi-meter, electrolytic condenser and electrostatic leakage testers. Checks all tubes including 1.4, 35, and 50 volt. AC-DC volts to 2500. 2% on DC, 3% on AC. Model 504. Supreme Instruments Corp., Greenwood, Miss.—RADIO TODAY.

Panel lamps

★ Miniature lamps in 14 most popular types. Screw and bayonet bases, spheroid and tapered bulbs available. Packaged in carton containing 10 lamps. Hygrade Sylvania Corp., 500 Fifth Ave., New York, N. Y.—RADIO TODAY.

Detrola candid cameras

★ Model A \$3.95 list, features provision for extra roll of film, Ilex meniscus lens, optical view finder. Model B \$9.50, features Achromat F-7.9 lens, telescoping lens mount, exposure indicator. Provisions for cable release and tripod mounting. Model D, \$15.00, Model E \$19.50; both feature exposure meter, Wollensak "Deltax" shutter with fast lenses. All models chromium plated, 16 photos on standard film. Detrola Corp., 1501 Beard Ave., Detroit, Mich.—RADIO TODAY.



8-tube Victrola model U-26 with gentle-action record changer, crystal pick-up, record album storage, radio with electric tuning and 12-inch speaker.

NATIONAL TELEVISION CORPORATION

*has blazed its own trail in
television*

YEARS of intensive, independent research have brought important developments in transmission and reception.

The extent of our preparedness for television today, is shown by these products, now available, singly or together.

- **CAMERA CHAINS** for transmitting stations, schools, colleges, etc.
- **SYNCHRONIZING GENERATOR** for transmitting stations.
- **SPECIAL TYPE SWEEP CIRCUITS.**
- **SPECIAL TEST EQUIPMENT** for television receiver manufacturers.
- **TEST EQUIPMENT** for television service.
- **TELEVISION VIDEO VOLUME CONTROLS.**
- **REGULATED POWER SUPPLIES** especially adapted for television transmission, schools, laboratories, etc., where very accurate DC voltage regulation is required.
- **HORIZONTAL DEFLECTING TRANSFORMERS.**
- **BLANK OUT GENERATORS.**
- **SQUARE WAVE GENERATORS.**
- **TEST EQUIPMENT** for radio and service.
- **TELEVISION RECEIVERS.**

Few have gone as far as National Television Corporation

In the television products of this company there is a great backlog of development. Years before television showed promise of becoming an industry, we had started our original research.

Continuously since 1931, when the company was incorporated, we have had a staff of engineers at work on various phases of television research and we maintain well-equipped laboratories at this address.

This research has intensively covered the field of both mechanical and electronic television.

Numerous patents have been granted to this corporation—and numerous others are pending in the Patent Office.

In recent years we have had complete camera chains in operation and, throughout the past year, have produced regular programs showing 441-line high definition pictures, using special transmitting equipment, designed and built by us, and specially designed receivers embodying our own inventions and development work.

While the company is now prepared to supply any or all of the units listed above, a further announcement will be made in the near future, relating to *A LINE* of television receivers.

When announced, these products will incorporate what we believe to be a very valuable improvement, developed by this corporation, to simplify operation and servicing and to make television receiver-performance even more reliable.

Inquiries Invited from Broadcasters, Manufacturers, Distributors and Dealers

NATIONAL TELEVISION CORPORATION

Offices: 480 Lexington Avenue, New York

On the Record

Children's dept. to boost record sales

Taking a tip from the cereal manufacturers who have boosted sales by appealing to parents through their children, The Boston Store, Milwaukee, has established a record department solely for children.

Naming it "The Little Record Shop," Mrs. Lela Hansen, who is in charge, has worked out a program to amuse as well as musically educate children from two to ten years. Starting with musical nursery rhymes and progressing to semi-classics and children's operas, Mrs. Hansen has built up an excellent repeat business.

The newspaper list of births and a scrapbook signed by all the little visitors are used for direct mail promotion. This is supplemented by an advertisement in the Sunday edition of the leading newspaper. Hundreds of records have been sold after only three months of operation.

Hotel man records voices of his noted guests

Manager Bud Morriss of Los Angeles' Clark Hotel uses a portable recording machine from Universal Microphone Co. to build up a library of remarks and speeches by his notable guests. In years to come, he believes, historians can turn to the guest register for famous signatures, then go through his collection of disks and hear actual voices.

Bluebird in first swing album; Shaw shines

There'll be no pshawes for Artie Shaw's rendition of ten standard swing classics in the newly-famous young maestro's matchless style. Due to swingsters' increasing demand for Shaw records, RCA-Victor has combined the favorites Carioca, Bill, The Donkey Serenade, My Heart Stood Still, Lover Come Back to Me, Rosalie, Zigeuner, Supper Time, the Man I Love and Vilia, into the first swing album. The five-record Bluebird set sells for \$2.25.

For the record

Three news notes of interest to record sellers come from the up and coming CBS affiliate, American Record Corp., makers of Columbia, Brunswick and Vocalion discs.

Vocalion will re-issue "hot" records that were favorites years ago. First of them is "Dinah" and "Indiana" as played by Red Nichols and his Five Pennies. That was when the Pennies included Benny Goodman, Gene Krupa and Jackson Teagarden, all well-known band leaders today and favorites of the jitterbugs.

Second, John Henry Hammond, noted but youthful authority on "le jazz hot" has been named talent scout



Kiddies wait in line to hear favorite selections at Milwaukee Boston Store's Little Record Shop.

and associate recording director. Third, Jimmy Lunceford's ace 15-piece band has been signed, and his first recording "Taint What You Do But the Way that You Do It" has just been released.

Wax worth watching

EDDIE DELANGE and his orchestra playing Simple Simon, with VR by Elisse Cooper, and Ad-De-Dey, with VR by Miss Cooper and chorus—Bluebird 10163.

RICHARD HIMBER and his Rhythmic Pyramids playing I Promise You and Blame It on My Last Affair with VR by Stuart Allen—Victor 26177.

JIMMY DORSEY and his orchestra playing Thrs Is It with VC by Bob Eberly and chorus, and It's All Yours with VC by Helen O'Connell and chorus—Decca 2332.

COUNT BASIE at the piano playing Boogie Woogie and How Long How Long Blues, with guitar, bass and drums—Decca 2355.

DICK ROBERTSON and his orchestra playing Penny Serenade and I Promise You, both with VC by Mr. Robertson—Decca 2354.

NANO RODRIGO and his Havana-Madrid orchestra playing Begin the Beguine and Oye Tu, with VR by Arturo Cortes—Victor 26203.

"FATS" WALLER and his Rhythm, 'Taint What You Do and Some Rainy Day—Bluebird 10192.

HAL KEMP and his orchestra playing Three Little Fishes, with VR by "Saxie" Dowell, and The Chestnut Tree, with VR by The Smoothies—Victor 26204.

Leonard Joy, conductor-arranger, is new RCA Victor Artist Mgr.

Albert Bates brings 20 years of recording experience to his new job as N. Y. Mgr. with American Record Corp.

Ansley Radio Corp., 4377 Bronx Blvd., New York City—19 models are listed in 24-page illustrated brochure. Radios and combinations in console and table sets are shown in period and modern styles.



Attractive record department and Victrola display of the Homer L. Kitt Co., Washington, D. C. Firm handles entire Victor record catalog and album sets.

The Radio Corporation of America Tells *What* **TELEVISION** *will* *mean to you!*



The NBC-RCA Television
Antenna on the Empire
State Building, New York.

RCA TELEVISION will be introduced this month in the New York metropolitan area. Television programs, broadcast from the lofty NBC mast at the top of the Empire State Building, will cover an area approximately fifty miles in all directions from that building. Programs from NBC television studios will be sent out initially for an hour at a time, twice a week. In addition, there will be pick-ups of news events, sporting events, interviews with visiting celebrities, and other programs of wide interest.

How Television will be received!

To provide for the reception of television programs, RCA Laboratories have developed several receiving sets which are now ready for you to sell. These instruments, built by RCA Victor, which you will see on ensuing pages include two of the three models for reception of television pictures and sound, as well as regular radio programs. There is also an attachment for present radio sets. This latter provides for seeing television pictures, while the sound is heard through the radio itself. The pictures seen on these various models will differ only in size.

Television—A new opportunity for dealers

RCA believes that as television grows it will offer dealers an ever expanding opportunity for profits. You, who are in a position to cash in on its present development, will find that television goes hand in hand with your radio business.

In Radio and Television—It's RCA All the Way



Radio Corporation of America

RADIO CITY, NEW YORK

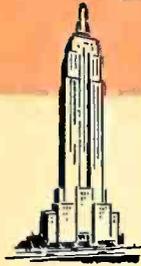
RCA MFG. CO., INC. • RADIOMARINE CORP. OF AMERICA • NATIONAL BROADCASTING CO. • R.C.A. COMMUNICATIONS, INC. • RCA INSTITUTES, INC.

A New Industry is Born as RCA and NBC Present

TELEVISION

Television Broadcasting Begins on April 30 in New York Area

...and *RCA Victor* Television Receivers are Ready!



Years of patient effort in RCA Laboratories . . . millions spent on research . . . now convert a fantastic dream into a splendid reality.

April 30th marks the birth of a new industry—television. On that day radio will take on another dimension. Sight will join with sound to bring the public a wealth of new experiences.

Television is something everyone wants. Those living in the New York metropolitan area can have it right now. No prediction can be made as to how soon it will be available throughout the country, but RCA is bending every effort to meet the nationwide desire as soon as possible.

The development of television by RCA and its various subsidiary companies is an example of RCA's policy of always looking ahead. About ten years ago, RCA established experimental television station W2XBS. Shortly thereafter, television research laboratories were set up in Camden, N. J., so that all of the resources of RCA in transmission, broadcasting,

reception and sound reproduction could be applied to this new art.

Out of this RCA television research came the Iconoscope, the "eye" of television, and the Kinescope, the "screen." These are the bases of RCA electronic television, and have been made available to the entire industry. RCA has also spent more than two million dollars in practical field tests

of television in New York alone over the past three years. Thus, RCA and its various subsidiary companies have been and are engaged in every phase of television—research, engineering, manufacturing, installation, broadcasting and service. This experience is unmatched. This is an important sales feature that RCA Victor dealers should remember and use in selling current and future merchandise.

RCA Victor "look ahead"

planning did not stop at the scientific development of television. It covered the sales end—your end—of the picture, too. As a result, RCA Victor Television Receivers not only perform with sales-compelling perfection but are priced lower than might be expected. In addition, RCA also looked ahead in the development of the RCA Victor Television Attachment for use with present radios, which offers you an opportunity for volume profits when television reaches your city.

The ability of RCA Victor to *look ahead* has been demonstrated before! The long chain of improvements in RCA Victrolas and in recording processes . . . the ceaseless promotion of RCA Victrolas . . . the introduction of the Record Player . . . the formation of the Victor Record Society—all are examples of RCA Victor "look ahead" planning that has meant profits for dealers.

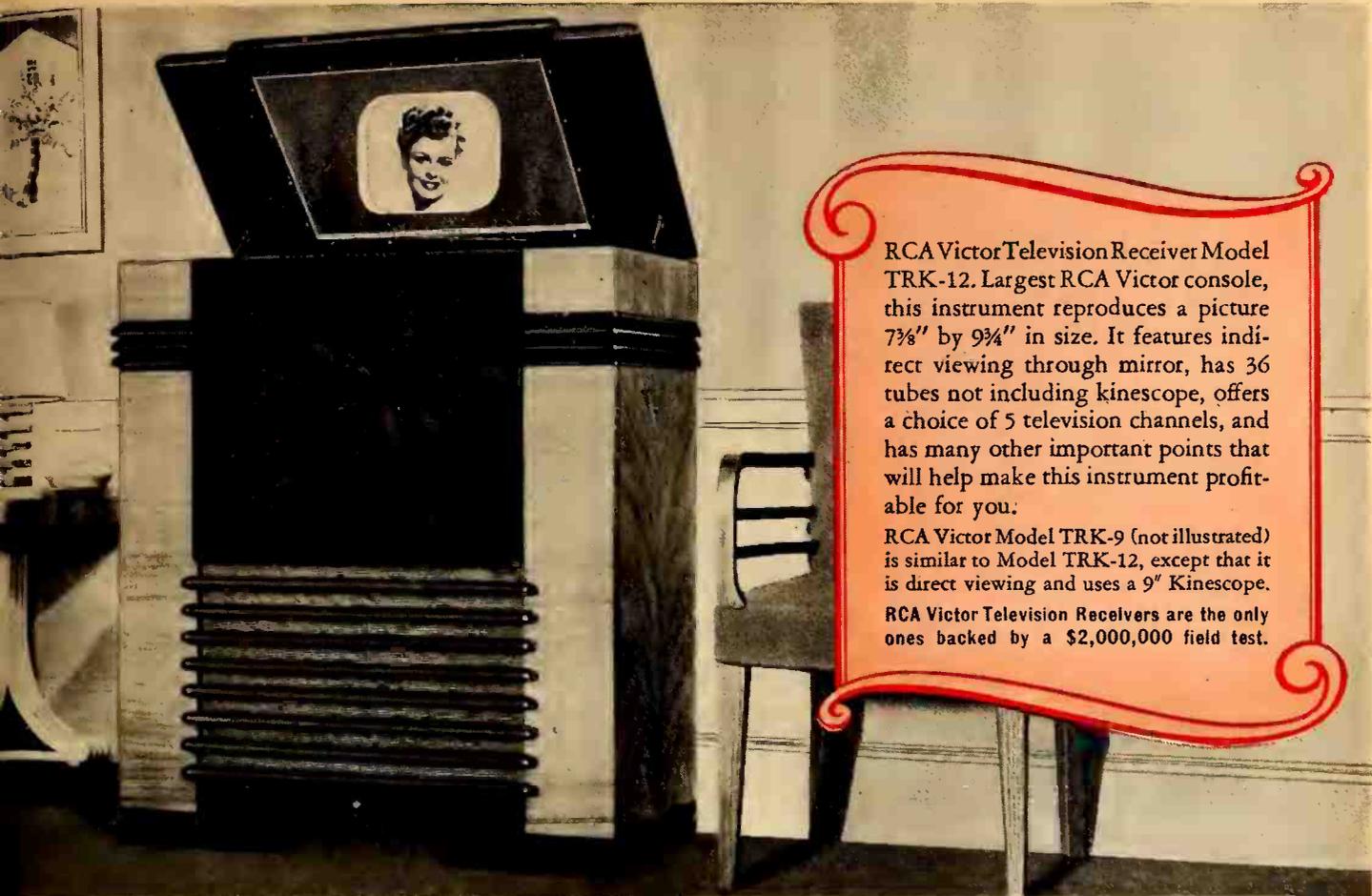
And now RCA Victor opens a new era of profits for you. Look ahead yourself. *Start now to grow with RCA Victor Television!*



FACTS YOUR CUSTOMERS WILL WANT TO KNOW ABOUT TELEVISION!

1. *How many television stations are now in operation?* In the near future indications point to the operation of three stations in the New York area. Also one at Schenectady, N. Y., and one at Los Angeles, Calif. 2. *Can a radio receiver be used to reproduce television sound?* Yes, most new RCA Victor sets are designed so that they can be connected to an RCA Victor Television Attachment. 3. *What is the cost of operating a television receiver?* At the average price of electricity about 1 cent an hour. 4. *How do television pictures compare in quality with a home movie?* An RCA Victor television picture compares

favorably. 5. *How many hours a day will television programs be available?* In New York, NBC, in addition to two one-hour studio programs per week, starting April 30, will provide special pick-ups of sport events, visiting celebrities, etc. 6. *Will television take the place of radio?* No. You will continue to enjoy your radio just as before. Radio reception is an integral part of RCA Victor Television Receivers, or if you select an RCA Victor Television Attachment your present radio will continue to bring you radio programs as usual.



RCA Victor Television Receiver Model TRK-12. Largest RCA Victor console, this instrument reproduces a picture 7 $\frac{3}{8}$ " by 9 $\frac{3}{4}$ " in size. It features indirect viewing through mirror, has 36 tubes not including kinescope, offers a choice of 5 television channels, and has many other important points that will help make this instrument profitable for you:

RCA Victor Model TRK-9 (not illustrated) is similar to Model TRK-12, except that it is direct viewing and uses a 9" Kinescope.

RCA Victor Television Receivers are the only ones backed by a \$2,000,000 field test.



RCA Victor Television Model TRK-5 is the lowest priced console in this new line. Will reproduce a picture 3 $\frac{3}{8}$ " by 4 $\frac{3}{8}$ " in size, using direct method of viewing. It has 24 tubes exclusive of the kinescope and offers choice of 5 television channels. Among its many other excellent features is a 12" loudspeaker, a standard 3-band radio receiver with 8 tubes, and push-button tuning. Not only does it provide excellent performance—but its cabinet is one of unusual beauty. Backed by \$2,000,000 field test. In radio and television — it's RCA All the Way. Your customers can buy RCA Victor Television Receivers on C.I.T. easy payment plan. For finer radio and television performance—RCA Victor Radio Tubes.



RCA Victor Model TT-5 Television Attachment, a sensational instrument that provides television *sight*—while the *sound* is heard through radio loudspeaker. It is attached to radio by simply plugging it into television jack, an important part of RCA Victor models for the past two years. (Same jack as used for Victrola Attachment.) This television attachment reproduces a picture 3 $\frac{3}{8}$ " by 4 $\frac{3}{8}$ " in size. Other important features include direct viewing of picture, 16 tubes plus kinescope, and 5 television channels. Backed by \$2,000,000 field test.

Trademarks "RCA Victor," "Victrola," "Victor," Reg. U. S. Pat. Off. by RCA Manufacturing Company, Inc.



RCA Victor

TELEVISION RECEIVERS

RCA Manufacturing Company, Inc., Camden, New Jersey • A Service of the Radio Corporation of America

New RCA Victor Radios and Victrolas

NEW RCA VICTOR RADIOS

On these pages are presented two of the new RCA Victor Radios — and three new Victrolas — all designed for use with television

RCA Victor's new sales policy discards the old method of an *annual* introduction of new radios and Victrolas . . . eliminates usual big push and dealer loading and assures you A YEAR 'ROUND MERCHANDISING, SALES AND ADVERTISING PROGRAM THAT WILL BRING YOU NEW MERCHANDISE VALUES, NEW SALES AND ADVERTISING PROGRAMS EVERY MONTH OF THE YEAR! That's why now—more than ever—it will pay you to push RCA Victor!



DESIGNED FOR USE WITH TELEVISION! Model 98K2...an 8-tube, 3-band instrument with Electric Tuning, Magic Eye, RCA Victor Metal Tubes, Plug-in for Victrola or Television Attachment, and many other features. Only **\$8995***

Don't let the arrival of television worry you over your radio and Victrola business. "Look ahead" planning by RCA Victor enables you to offer television as an extra attraction in new radio and Victrola models.

ON THE TWO PRECEDING PAGES RCA Victor has announced its first television receiving models. One of these, the Television Attachment, is designed to operate with the new RCA Victor Radios and Victrolas. As a result, your customers will not hesitate to buy these new instruments now. Because they can add television to them at low cost when telecasts are available in your locality. How? It's easy! The Television Attachment illustrated on the preceding pages can be readily attached to these new models—and presto—! A telecast may be received. The picture appears on the Television Attachment . . . the sound comes from the radio's loudspeaker.

"Look ahead" planning by RCA Victor enables you to offer the amazing Television Jack in these new instruments. It is planning that reflects RCA Victor's constant efforts to make more money for you. Planning that really "looked ahead" when the new models were merely blueprints many months ago. Planning that now makes the advent of television *profitable* for you.

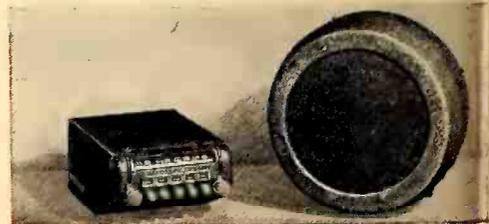
The Television Jack is a great sales feature—will help your RCA Victor sales. Feature it!

DESIGNED FOR USE WITH TELEVISION! Little Nipper Model 9TX31...New edge-lighted dial, Plug-in for Victrola or Television Attachment, new low drain RCA Victor Tubes, powerful superheterodyne circuit, built-in antenna, AC-DC operation, electro-dynamic speaker, only **\$995***



New RCA Victor Money Maker!

New RCA Victor Auto Radio Model M-70 will pep up your Spring and Summer sales! Fits any car—regardless of make, model or year . . . may be easily transferred from one car to another—and is loaded with sales features which include push-button and manual tuning, 8" speaker, 7 RCA Victor Tubes, and many others. Requires no special plates. Only **\$4495***



For finer radio performance—RCA Victor radio tubes. *All prices f.o.b. Camden, N. J., subject to change without notice. Trademarks "RCA Victor," "Victrola," "Victor," "Magic Eye," Registered U. S. Patent Office by RCA Manufacturing Company, Inc.



RCA Victor RADIOS AND

RCA Manufacturing Co., Inc., Camden, N. J.

Designed for Use with Television!

A Double

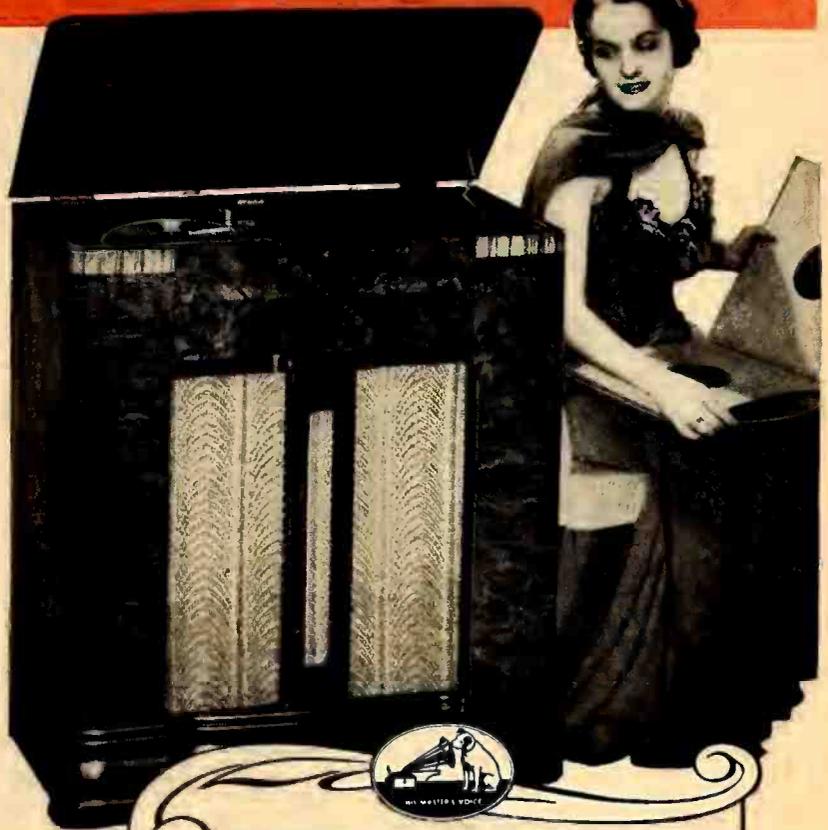
RCA Victrola

Attraction!

1. Designed for use with Television
2. Powerful new promotion

One of the greatest values in RCA Victor history, yet this RCA Victrola Model U-123 is offered you at full dealer discount! Ordinarily you wouldn't be able to offer such an active model until June . . . but RCA Victor's new sales policy brings it to you now. This means many added weeks of selling.

Here's a promotion that promises even more profits than resulted from last year's sensational sales. Get behind it . . . and push the other great RCA Victrolas featured here, too. They also are designed, styled and priced to make this your big RCA Victrola year.



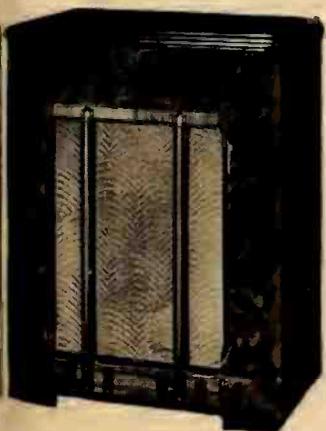
RCA VICTROLA MODEL U-123

\$129⁹⁵*

You can offer your customers
3 Savings on
The Greatest Value in History!

- 1 All-Time Low Price for RCA Victrola with Automatic Record Changer.
- 2 Bonus of \$17.50 in Victor or Bluebird Records plus benefits of Victor Record Society membership and subscription to Victor Record Review.
- 3 Extra Liberal Trade-in.

RCA Victrola Model U-123. Has Gentle Action Automatic Record Changer for 10" and 12" records, Feather-touch Crystal Pick-up, New Top-loading Needle Socket. Radio has RCA Victor Electric Tuning . . . Push a Button—there's your station... 12" Dynamic Speaker . . . and many other features.



DESIGNED FOR USE WITH TELEVISION! RCA Victrola Model U-121. An outstanding instrument with Feather-touch Crystal Pick-up, True-Tracking Tone Arm, RCA Victor Electric Tuning, and many other features. A value that creates a real sensation at the amazingly low price of only **\$79⁹⁵***



DESIGNED FOR USE WITH TELEVISION! RCA Victrola Model U-129. A glorious instrument in superb cabinet of modified modern design. Offers such outstanding features as Gentle Action Automatic Record Changer, Crystal Pick-up with Top-loading Needle Socket. Has a 10-tube, 3-band radio with Electric Tuning. **\$185***

Victrolas

A Service of the Radio Corporation of America

RCA VICTOR RADIO TUBES

Engineered and
Made by the Same
Organization that
Brings Television
to America!

Your customers will have confidence
in these tubes that come from Radio
and Television Headquarters!

Here's a radio tube sales story that will bring you extra
RCA Victor Tube business! Tell it to your customers
—and they'll buy!

RCA Victor Radio Tubes are made by the same men
who now bring television to America. To create today's
television, RCA tube engineers had to conceive and
build the complicated tubes that are the basis of the art.
It took years of research, sound thinking and skillful
engineering to do this. But it was done. And this same
research, thought and skill is applied to the manufac-
ture of every tube bearing the RCA Victor name. As a
result, your customers will accept the idea that they will
naturally get better quality, finer performance, when
they use RCA Victor Tubes in their radio.

Tell this story. It will pay you.



You are cordially invited to visit
the RCA Building at the New York
World's Fair

Trademark "RCA Victor" Reg. U. S. Pat. Off. by
RCA Manufacturing Company, Inc.



RCA Victor RADIO TUBES

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

Methods That Clicked

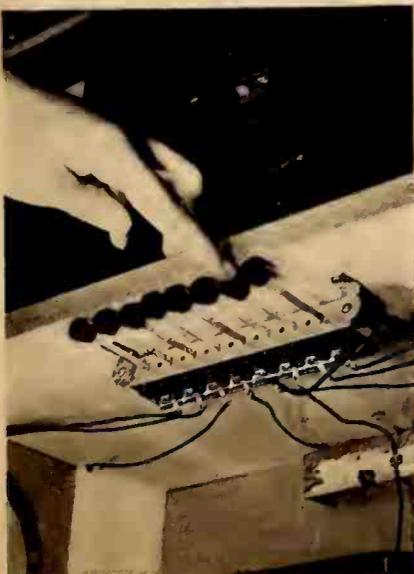
What successful dealers are doing to promote the sale of more and better radio sets

Street car advertising sells small sets

A major selling job on miniature radio receivers for the six Wieboldt department stores, scattered through Chicago and suburbs, is credited to "bulkhead" advertising in Chicago street cars during the entire month of March. Offering two models of the Aeroscope line of the Admiral radios, at \$9.95 and \$16.95 on payment of \$1.00 down and \$1.00 per week, the big "ads" helped to push up the total sales for the month to unexpected levels, according to R. L. Hirsch, radio sales and advertising manager.

Not content with using the ordinary car card placed in the customary lineup of cards above the windows of a street car, the Wieboldt stores adopted a large vertical card (almost twice the area of the ordinary horizontal card and reproduced on this page) to be hung against the "bulkhead" partition separating the main interior of the car and passengers from the front or rear platform. Passengers facing the partition could not fail to see and read the big cards, attractively illustrated and worded with a brief message certain to stick in one's memory.

During the month, these "bulkhead" cards were displayed in 1,100 street cars (40 per cent of all Chicago's cars)



With this simple selector, Roy Chandler connects eight sets to one antenna for demonstration in his store.

and were seen by an estimated riding population of 1,500,000 daily. Under present advertising policies, the Wieboldt stores run newspaper "ads" every week in the entire year, but do not carry newspaper copy and car cards on the same merchandise at the same time. Additional copies of the "bulkhead" cards were displayed in all departments of all the stores during the month's drive to sell the radios.

"About 65 per cent of our total radio sales are the smaller receivers," said Mr. Hirsch. "Console types of receivers run about 35 per cent. We find a ready market for the smaller radios, like those of the Admiral Aeroscope line. It is not difficult to sell console receivers priced from \$60 to \$95 but we do not find a ready market for receivers that sell for more than \$100. We handle three lines of the larger radio receivers and their sales are satisfactory. It is quite evident, however, that the appeal of "no aerial, no ground" has stepped up sales on the smaller radios.

"Practically all of our sales are made in the stores, since we do not maintain outside sales crews on radios or other electrical appliances. Some of our salesmen may occasionally make outside sales but they do it on their own time and to prospects first contacted in the store."

8 sets on one antenna helps buyer choose

Roy Chandler of Delake, Oregon, has worked out a plan to help display radio sets with little fuss in shifting antenna. He reports that customers are much pleased with it. Chandler uses a Philco 8-station push-button selector switch as shown in the picture herewith. Press one button to connect any one of eight sets to the antenna; push another to connect a second set and automatically disconnect the first.

"This affords a convenient method of comparing various models," says Chandler, "as sets can be tuned to the same station, the volume adjusted. Then, by merely pressing the correct buttons, the change can be made instantly and the customer can readily decide."

Wireless player brings 'em into store

Several dealers in the New York area have found the new RCA wireless Victrola attachment a booster for floor traffic and general interest leading to sales. Priced at \$17.95, it is a tiny transmitter which permits the record to be played within a radius of 20 feet of any radio set and the music to come directly from the radio without any wires or connections.

One stunt being used is to set the reproducer up just outside the store entrance, weather permitting, and invite the curious to come inside and hear the music coming from a set in the store.

Another dealer took a unit into a next door delicatessen, and with one of his clerks operating it, was successful in getting a number of potential customers from the delicatessen to come into the radio store. Looks like a natural to us!

WIEBOLDT'S
ADMIRAL RADIOS

6-TUBE
SUPERHETERODYNE
AC-DC
Gets police calls
Electro-dynamic
speaker

\$9.95
DOWN \$1.00
1 WEEK

Admiral
AEROSCOPE
magic self-contained aerial

NO AERIAL—NO GROUND

No Dangling Wires
Static Reducing
Interference
Shield

\$16.95
DOWN \$1.00
1 WEEK

AUTOMATIC TUNING
"Streamliner"
OVERSIZE AEROSCOPE
SUPER-POWER
SUPER-SENSITIVITY

SIX BIG NEIGHBORLY STORES
Store at 1100 N. Halsted • Midwest at 1100 N. Halsted • Addition at 1100 N. Halsted
Lynch at 1100 N. Halsted • Oak Park-Lake St. & Madison Ave. • Franklin at 1100 N. Halsted
STORES OPEN UNTIL 9:30 P. M. THURSDAY AND SATURDAY

Reproduction of the card used by Wieboldt's for street car advertising in Chicago.

It's Your Turn TO STAKE A CLAIM-



**- IN THE MOST PROFITABLE OUTLOOK
IN RADIO HISTORY**



ATC NOW PRESENTS VIDEOR, THE MASTER SIGHT-AND-SOUND RECEIVER FOR HOME USE, THAT DREW THOUSANDS OF NEW YORKERS TO SHOWROOMS OF TOP-NOTCH DEPARTMENT STORES FOR THEIR FIRST LOOK AT TELEVISION. FOUR MODELS.

AS AN ADDED FEATURE ATC ANNOUNCES ITS KINET, REMARKABLE PORTABLE TELEVISION EXTENSION, THAT MAKES THE PICTURE VISIBLE AT ANY DISTANCE IN THE HOME AWAY FROM THE MASTER CONSOLE ITSELF.

CROSS-COUNTRY HEADLINES PROCLAIM THE TRIUMPH OF TELEVISION AS APPLIED BY ENGINEERS OF THE AMERICAN TELEVISION CORPORATION TO SCIENTIFIC EDUCATION AND VISUAL MERCHANDISING.

IMAGINE! SURGEONS PERFORM A DELICATE OPERATION AS STUDENT DOCTORS LOOK ON IN ANOTHER BUILDING 500 FEET AWAY!

ONE OF THE NATION'S LARGEST DEPARTMENT STORES SHOWS THRILLED CROWDS ITS WARES BY TELEVISIONING THEM FROM A CENTRAL STUDIO!

BOTH SYSTEMS ARE ATC ACHIEVEMENTS. BOTH TESTS PROVE TO THE WORLD THAT TELEVISION IS READY FOR THE HOME. 1939 IS TELEVISION'S YEAR—YOUR YEAR!



ALL THE WORLD'S A STAGE FOR
VIDEOR
A MIRACLE IN TELEVISION

DETAILS, PRICES AND FACTS ABOUT TELEVISION ON REQUEST

American Television Corporation
130 WEST 56TH STREET NEW YORK, N. Y.

Looking ahead in television

(Continued from page 20)

TRAINED MEN NEEDED IN FIELD

J. E. Smith, President,
National Radio Institute

Guess-and-try methods for servicing television receivers are definitely out. Television receivers have from twelve to twenty-five or more tubes, plus a cathode-ray tube which requires electrode voltages in the order of thousands of volts. Each part and circuit is carefully designed to give the highly complex circuit action required to make an electron beam create an acceptable picture. All this means that an un-informed technician can do more harm to a television receiver in five minutes than a trained man can correct in an equal number of hours. Furthermore, this same tinkerer can do more harm to himself in a split second than all the doctors in the world can correct in an infinite number of hours. Yes, television is no place for untrained men.

Effect-to-cause reasoning, sometimes called dynamic testing, will be the backbone of the techniques employed by N.R.I.-trained Teletricians for servicing television receivers. To these men, each observable fault in the reproduced image will tell its own story, pointing to trouble in a particular section, stage or part.

More about frequency modulation

Editor, RADIO TODAY:

In your issue of February, under the heading "Frequency Modulation Still Experimental," you publish an article in which some very serious errors of fact are made.

Referring to the use of frequencies of greater than 30,000 kilocycles by this system, the statement is made:

"Use of these frequencies restricts operation to the limit of the horizon as with television. Antenna installations are absolute necessities and involve many of the problems found in television."

This statement is not true.

None of the difficulties involved in television have been encountered in the transmissions from my station at Alpine, nor is reception in any sense limited to the horizon. Several observers located at distances ranging between two or three horizons from the Alpine transmitter have obtained uninterrupted reception at all times for the past year (three horizons is approximately 100 miles). The service is vastly superior to that rendered by the existing 50-kw. broadcast stations.

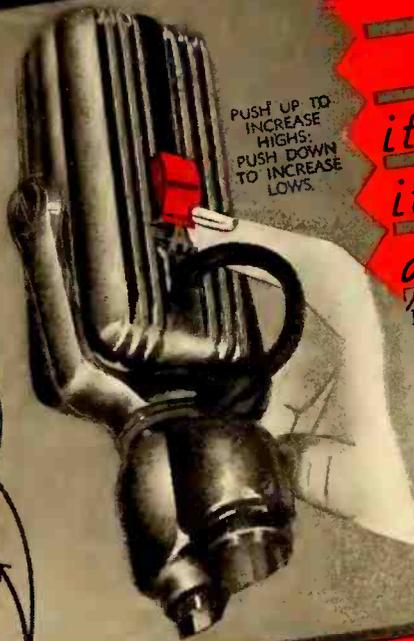
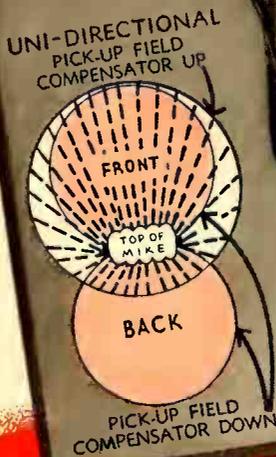
The statement that antenna installations are absolute necessities as in television transmission is likewise not in accord with the facts. Perhaps the best answer to this assertion is the demonstration which was made on March 23rd, 1939, before the Radio Club of America, where a few feet of wire lying on the desk of the lecture hall gave perfectly quiet reception.

Yours very truly,
Edwin H. Armstrong.

Columbia University, New York

Now...

5 VITAL FEATURES COMBINED AND UNIFIED IN THE AMPERITE VELOCITY WITH ACOUSTIC COMPENSATOR



PUSH UP TO INCREASE HIGHS; PUSH DOWN TO INCREASE LOWS.

- it's a VELOCITY
- it's a DYNAMIC
- it's UNI-DIRECTIONAL
- it's NON-DIRECTIONAL
- gives HIGH OR LOW PITCH

By moving up the Acoustic Compensator, you change the Amperite Velocity Microphone to dynamic operation—without peaks. At the same time you reduce the back pickup, making the microphone practically uni-directional.

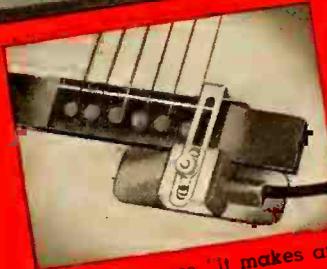
With the Acoustic Compensator down, the microphone is bi-directional... 120 degrees front and back without frequency discrimination. Rotating the microphone until it parallels the ceiling makes the microphone non-directional.

THE ACOUSTIC COMPENSATOR is a regular feature of these models: RBHk (hi-imp); RBMk (200 ohms) LIST \$42.00. RSHk (hi-imp); RBSk (200 ohms), \$32.00 LIST



FOR TOP-NOTCH QUALITY, AND AMAZING RUGGEDNESS, AT LOW COST specify Model RAH (or RAL).

Here's why this popular Amperite Velocity Microphone leads the low-price field: (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.



SELL "CONTACT MIKES" to Professional and Amateur Musicians. New high output model can be used in the home.

Professional musicians are buying Amperite "Contact Mikes" because "It makes an ordinary violin sound like a Strad." Now amateurs, too, can benefit by the "Contact Mike." The new HIGH OUTPUT MODEL SKH can be used in the home. It operates on most radio sets made since 1935. It is connected to the phono-input, or to grid ground of detector tube, or across the volume control. Note new clamp, making the mike easy to attach to guitars, ukes, etc. MODEL SKH (hi-imp); SKL (200 ohms) \$12.00 LIST. Any number up to 5 SKH's can be put in parallel and fed into one input. NEW FOOT PEDAL, \$12.00 LIST. CLAMP for Contact Mike, \$1.00 LIST.

Sales Aids for the P. A. Man

- (1.) FREE Window Decal advertising your Sound Service. Size 5 1/4 x 9 1/4, finished in 4 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.

Dept. P. A.

AMPERITE CO. 561 BROADWAY, N. Y., U. S. A. CABLE ADDRESS ALKEM, NEW YORK

"Better Systems Specify Amperite"



VELOCITY **AMPERITE** MICROPHONES

Sound Installation Requirements

Checklist for all types of sound systems. What equipment to use, what accessories to suggest, so as to insure more profits and satisfied customers.

With sound embracing an ever-widening field, it is desirable that the sound and radio men have an equipment checklist that will help in specifying the proper units for each type of installation.

The accompanying chart of sound installation requirements was compiled with the idea that it suggest the various types of apparatus that might be sold. To show the relative sales possibility or need of the various units, the codes A, B, C are employed—A signifying absolute necessity or first choice, B indicating probable need or second choice. C is indicative of a rather remote possibility.

As in any chart where items are grouped together, the interpretation is in the term of averages. For example, the requirements for a school are the average of those found in typical cities. Naturally any specific school has its unique problems that will vary from the average. This chart, however, will help the sound man determine the exact requirements since it supplies the basis on which to make the survey.

Some sound systems will be a combination of several of the locations listed on the chart. A school may have the classroom system, an auditorium system, one for the gymnasium, and possibly sound on the athletic field. Depending on the needs and the physical layouts, some of the systems may be combined so as to use the same amplifiers and pick-up equipment.

By using this chart the sound specialist and radioman will be sure that he is suggesting a complete amplifier installation—resulting in more profits and better customer satisfaction.

Central address system as school aid

A plan to provide classrooms of 90,000 pupils of the New York area with amplifiers is being tested by the administration of the 240 parochial schools of the Roman Catholic Archdiocese of New York.

The sound systems will be connected by telephone circuits to a broadcasting studio. Addresses, lessons, announcements and musical programs are some of the uses to which the system will be put.

While the installation and maintenance cost of such a system would be high for one school, it is made comparatively low by having many schools use the facilities. It is expected that sponsors will be found to defray the expense and that a high grade of programs can be provided.

Dealer sells every garage in town

"When I go into a place of business, I do not try to sell sound systems at all—I just try to get a demonstration and let the customers sell themselves."

With this kind of an attitude, L. I. Spicer of Spicer Sound Co., Monmouth, Ill., went out and successfully sold every garage in his town on the

idea of using a combined paging and intercommunicating system. Mr. Spicer convinced the garage men that the system was a money-saver, that he was the man to install it properly, and that the price was appropriate. He showed the auto houses that it was a smart idea to provide dependable and economical communication between the various departments of the business—specifically, the stock room, the parking lot, the mechanic on the floor.

EQUIPMENT →	TYPE OF INSTALLATION																						
	Microphone	Extra mikes	Contact mike	Stands for mikes	Permanent amplifier	Portable amplifier	Mobile amplifier	Pre-amplifier	Remote amplifier control	Centralized control-distribution system	Horn speakers	Cabinet speakers	Built-in speakers	Stands for speakers	Paging system	2-way intercommunicator	Chimes	Turntable and pick-up	Recording machine	Radio	Wireless record player	Gas engine generator	
Advertising trucks	A					A					A		B					A				B	
Airports	A	B		B	A	C				A	A	A	B		A	B	C	B		C		A	
Alarm systems	A			B	A						B		A			B							
Athletic fields	A	B		B	A			B	B		A							A		B			
Auction rooms	A			B		A						A											
Audition studios	A	A	B	A	A			B				A	B					A	A				
Auditoriums	A	A	B	A	A			B	B		B	B	B					B		C			
Band stands	A	B	B	A	A	B		B			A	B											
Bathing beaches	A			B	A						A				A								
Beer gardens	A	C		A	A						A							A		B			
Cabarets	A	C	C	A	A			B			A	B						A		B			
Cemeteries					A						A							A		B			
Churches	A	B	B	A	A	C		A			B	A	B				B			C			
Civic centers	A	A		A	A	C			B	B	A	A	B		C	C		B	B	B			
Colleges	A	A	A	A	A	A		B	A	A	A	A	A		B	B		A	A	A			
Court rooms	A	A		A	A						B	A								B			
Dance halls	A	B	C	A	A						B	A	B					B		C			
Eating places	A			A	A							A	B				B	A		B			
Exchanges	A			A	A					B	A	A			A	C							
Exhibitions	A	A	C	A	B	A					B	A		B									
Factories	A			A	A						A	B				B	C		B	C			
Fairs	A	A	C	A	C	A	B				A	B		B	B			A	C		A		
Gymnasiums	A			A	A						A	B						C	C				
Hospitals	A	B		A	A			B	A		B	A	A		A	B		A	A				
Hotels	A	A		A	A			B	A		A	A		C	B			A	C	A			
Lawn fetes	A			A	A	A	B				A	B		B				B		B			
Lodges	A	A		A	A	B					B	A	C		C			B		A			
Markets	A			A	A	B					A	B			B	C		C	C				
Military posts	A	A		A	A	B	A		A	A	A	B	B		A	C		B	B				
Naval bases	A	A		A	A	B	A		A	A	A	B	B		A	C		B					
Offices																A							
Orchestras	A	B	A	A		A	C				C	A		B				B	B	B			
Playgrounds	A			A	A						A	C			B	C	C		B				
Prisons	A	B		A	A					A	A	A			B			B		A		B	
Race tracks	A	A		A	A					A	A	B			A			B		C			
Schools (classrooms)	A	A	B	A	A			B	A	A	A	A	A		B	B		A	A				
Ships	A	B		A	A					A	A	B			C	C				B			
Skating rinks	A			A	A						A	B			B			A	C	C			
Sound trailers	A	B		A				A	B		A			B				A		B			
Sporting clubs	A	A		A	A					C	A	B	B		B	C		B		B			
Stadiums	A	A		A	A					B	A	A	C		A	C		B		C			
Steamship piers	A			A							A				B								
Stores				A	A	C				B	B	A	B		B	C		B		C			
Swimming pools	A			A	A						A	B			B			B		C			
Talking displays					A						A										B		
Theaters	A	A	B	A	A	B		B	B		B	A	B		B	C		A					
Transportation terminals	A			A	A						A	B	C		B	C							
Undertaking parlors	A			A	A						A	B						A		A			
Weighing stations	A			B	A						A					C							
Yacht clubs	A	A		A	A			B			C	A	B	B		B		B		C		C	
Yards	A			B	A						A				B			B					

A—Necessary equipment; B—Probable equipment; C—Possible equipment.

© 1939 - SELLING SOUND

Sound at N.Y. World's Fair

Network of 16 sound outlets provides regular program service. Centralized distribution gives unusual control. Unique installations in Perisphere and Lagoon of Nations.

The almost miraculous accomplishments of Sound at the New York World's Fair are but a few indications of future sound developments. After hearing the successful application of sound, millions of persons will become "sound" conscious, thereby greatly increasing the demand for amplification in all fields.

Soundmen everywhere can obtain tips from the installations at the fair. While a few of the features to be described are too complex for usual sound systems, simplified versions will find many applications.

The sound system installed at the World's Fair will be capable of the simultaneous origination, monitoring, volume control and switching of six independent programs, with separate distribution to four public-address channels and two radio channels. It will be capable of picking up either electrical transcriptions, radio programs, or remote pickups and will transmit these programs through the four studios to the 16 outlets on the Fair grounds, one of which is illustrated on opposite page.

The Center is located in the Communications Building and consists of

four studios and a master control room. The entire center is enclosed in glass so that it will also serve as a functioning exhibit.

MASTER CONTROL

A master control console contains all the operation controls for program selection, control, and the distribution to the sound system. There are five individual panels—one for program distribution, one for program selection and one for program control, plus an order wire panel and a secondary program distribution panel.

The program selection panel contains controls and indicators for an automatic pre-set relay system which permits independent switching to any of six program channels, and any of ten console input lines. The relay system is designed so that a desired program line may be pre-set on the controls prior to actual switching, without disturbing a previous input line which may still be in use and switched by means of a master key.

The pre-setting and switching op-

erations are entirely independent for each of the six channels. The grand master key provides for changeover of the desired channels simultaneously. "On" indicator lamps show on which line each channel is operating, while "Pre-set" indicator lamps show which line is pre-set.

PROGRAM CONTROL

The program panel contains controls and volume indicators for the six program channels. Each of these channels is of the bridging type, providing individual means for amplification, level control, level indication and monitoring. The busses of four channels may be used to feed any combination of 50 P.A. program lines. These lines serve the various public address outlet stations at the Fair. Each of the 50 program lines has an individual control panel with a four-point selector switch for connecting it to Channels 1, 2, 3, 4.

CENTRALIZED DISTRIBUTION CONTROL

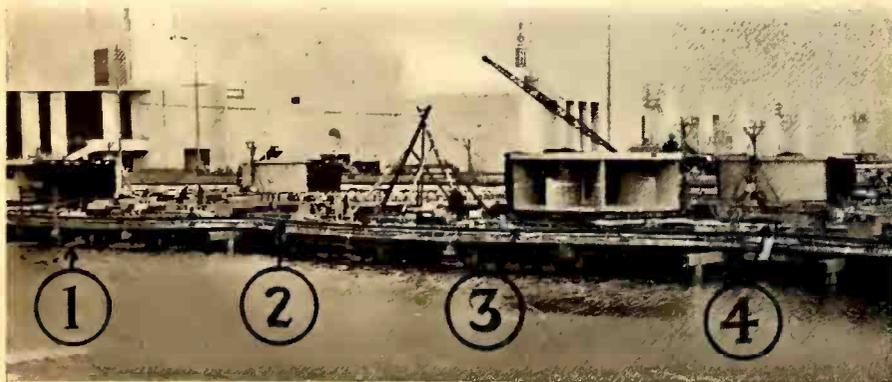
These panels each contain 25 individual P.A. outlet control panels. The total of 50 panels controls level and AC power to various remote P.A. outlets. A switch operates a relay installed at the sound outlets, opening the circuit when the pointer reaches zero. The relay turns off the AC to the equipment at that point.

The output fidelity of the New York World's Fair sound equipment will be of the highest quality obtainable. The frequency response from the input of any console to the output is within plus or minus 2db. from 30 to 10,000 cycles without frequency compensations. The total harmonic amplitude distortion will be less than 1 per cent.

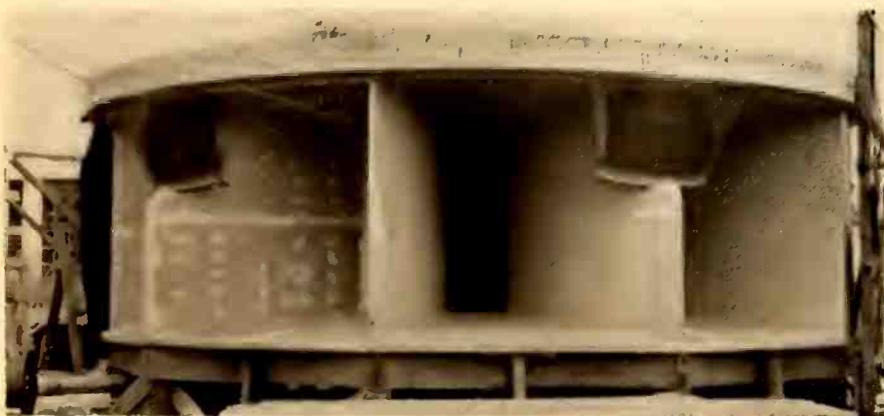
Each P.A. outlet consists of a loudspeaker system and an amplifying system. The average length of the lines running to the loudspeakers is a mile and a half, and the longest distance is three miles. The volume of each loudspeaker of the various groups is adjustable by means of an individual volume control, recessed in the front panel.

A typical outlet embodies two specially developed RCA cube loudspeakers driven by four 50-watt amplifiers. The new cube loudspeaker measures 36 in. on each side and contains separate low and high frequency driving units and an associated crossover network. Both units are of the permanent magnet type.

The most spectacular aspect of the sound program at the New York World's Fair lies in the fact that for



Four speaker units are used in the lagoon for 360° stereophonic sound reproduction.



A close-up of one of the 500-watt stereophonic speakers. High-frequency reproducers shown in upper section. Entire unit about 5 feet high used for low-frequency sound distribution.



Concealed speakers are the motif at the N. Y. World's Fair—note grille between flag poles.

the Fair theme, sound will issue from the mouth of a horn formed by the outer curving surface of the 200-foot Perisphere and the flat surface of a 320-foot pool of water beneath the giant globe. In effect this arrangement provides an extraordinary "horn" with an unprecedented sound coverage around a horizontal angle of 360 degrees.

The "horn" works from a throat and driving mechanism especially designed and located beneath the Perisphere in an acoustical pit, 12 ft. deep and 22 ft. in diameter. This is the first exponential reflex horn ever constructed from concrete and 4 in. x 8 in. planking. Mounted on a wooden baffle erected in this sound chamber are 24 100-watt low-frequency horns, and 12 25-watt high-frequency horns.—See illustration.

2,700-WATT REPRODUCER

Pointed downwards, the low-frequency horns project their sound into the bottom of the pit. From this point the waves are deflected up and outwards, mingling with the high-frequency waves at a middle-point in space between the bottom of the Perisphere and the top of the grill which covers the pit. The high-frequency horns face directly outwards and emit waves at a tangent to the sphere's curve. The illusion this produces as the sound is sprayed out in every direction is that of sound originating in space without any apparent source, as the grill on the pit is so constructed as to simulate the appearance of the surrounding water-surface. This illusion was held vital to the dramatic quality of the "Music of the Spheres" which will be reproduced by this sound system.

This unique system is capable of the highest quality and widest range of sound reproduction, having an over-all acoustic response flat over the frequency range from 20 to 8,000 cycles.

The pyrotechnic display which takes place nightly over the Lagoon of Nations, is really a symphony of smoke, fire, water, and light in rhythmic motion with a music or sound accompaniment. A closer correlation between the sound and the other elements of the display is

developed only when all the elements have a common source or point of origin. Obviously musicians could not be located in the midst of the fountains, gas jets, and fireworks, mortars. The sound of the musical ensemble must therefore be electrically transferred from the auditorium where the musicians perform to the area surrounding the Lagoon.

A huge sound projector, second only to the Perisphere horn in power, has been installed in four circu-

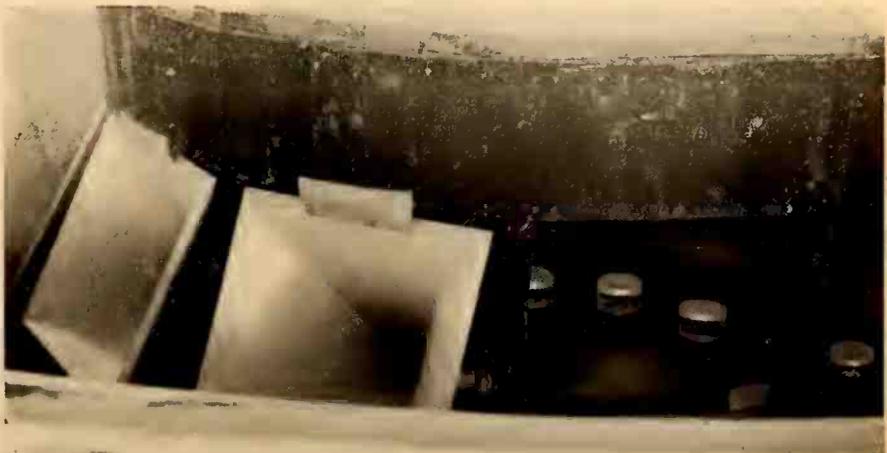
lar structures located two on each side of the center fountain ring. The four elements taken together are equivalent to a horn with a mouth opening 30 ft. square. There are eight speakers in the sound projector which are capable of reproducing faithfully the lowest fundamental musical tones, and the highest audible harmonics. Each reproducer is comprised of a separate low-register and high-register element. The audible spectrum is divided into two parts, the separation occurring at about middle "C". Separate amplifiers are employed to drive the units of the two registers in order that the reproduction be so faithful that it cannot be distinguished from the original.

The four bass loud speakers combined, are equivalent to a horn with a mouth opening thirty feet square. This huge bass loudspeaker is actuated by eight 125-watt loudspeaker units with 24-inch diameter diaphragms and field magnets which weigh 500 lbs. each. The treble units are smaller but handle an equivalent amount of electrical energy. The total energy required to drive the sound projector is 2,000 watts. This tremendous audio energy is required to produce the natural volume level of a large pipe organ or a band, so that it may be heard above the noise of the fountains and fireworks.

(Continued on page 49)



Buried underneath the huge perisphere is a vertical reflex horn handling 2,700 watts. Sphere deflects sound outward providing 360° distribution. The housing for the units in the center is shown below.



Close-up of the speaker units in the center of the horn unit. Two of the high frequency horns have been removed to show the inside and placement of the low-frequency units that connect to the central part of the reflex column.

STREAMLINED FOR YOU



The Mighty 1959 Radio Parts Industry Show

It's your show ... this year more than ever! ... A mighty gathering of the Radio Parts Industry ... planned for you and streamlined for action ... up and down the streets of Radio Parts City and its exhibits.

Two days will be devoted to Iobbers—and two days to Servicemen, Retailers, Amateurs and others in the trade ... insuring fullest attention and maximum benefit for each of you.

JOBBER DAYS ... Wednesday, June 14 and Thursday, June 15. In cooperation with all branches of the Industry, these two days will be devoted to Iobbers only.

SERVICEMEN DAYS ... Friday, June 16 and Saturday, June 17. The Convention of the Radio Servicemen of America will open on Friday, June 16—with special lectures, meetings, and exhibits of new parts and apparatus for the Servicemen.

AMATEUR DAY ... Saturday, June 17. This will be a big day for all the Hams. There'll be new Ham Gear to see, new developments to discuss with factory men, engineers, and fellow-hams. Booths manned by technical men on Servicemen and Amateur Days.

NEW PRODUCTS ... NEW IDEAS ... NEW EXHIBITS

It's your one and only opportunity of the year to meet the complete Parts Industry—face to face ... to make personal contacts with Manufacturers, Iobbers, Engineers, Sound Specialists, Servicemen and Amateurs—from all parts of the world ... to see all the very latest developments in Parts and Apparatus, Public Address, Ham Gear ... and get valuable ideas you can use in your own field.

IT PAYS TO ATTEND THE TRADE SHOW
This is your Annual Homecoming. You owe it to yourself to come. Make your plans now—and don't let anything stop you!

Stevens Hotel-Chicago

1939 JUNE 1939			
WED	THU	FRI	SAT
14	15	16	17
<p>OPEN these two days to Jobbers, Manufacturers, Manufacturers' Agents, and Manufacturers' Engineers only.</p>		<p>OPEN on these two days to Servicemen, Amateurs, Retailers, Students and others in the trade.</p>	



National Radio Parts Trade Show

Sponsored by Radio Manufacturers Association and Sales Managers Club

★Executive Office—53 West Jackson Boulevard, Chicago, Illinois

Sound at the N. Y. World's Fair

(Continued from page 47)

360° STEREOPHONIC SOUND REPRODUCTION

The four elements of the sound projector and the associated amplifiers are so arranged that the distribution is stereophonic, which is an extraordinary effect with sound, comparable to that which is observed in viewing stereoscopic pictures. The listener hears music of the band exactly as he would if the band itself were present and the relative location of the various instruments is plainly discernible because of special effect peculiar to stereophonic reproduction. This presentation is the first known example of acoustic perspective of stereophonic distribution outdoors in four directions, or over a 360 degree area. The microphones and amplifiers are arranged in two or four distinct channels.

In the control room on the top of one of the Government Buildings, located near the southeast edge of the Lagoon, a control desk and four separate 500 watt amplifiers are located. The specially constructed amplifiers were laboratory designed and built throughout, and employ a laboratory precision circuit commonly known as balanced resistance-coupling with two tubes, per-stage, amplifying both sides of the electric wave picture. Each of the 4 amplifiers comprises two separate output amplifiers, so that the bass and treble may be amplified separately and with a minimum of distortion. There is so little distortion that only the highest trained ear could distinguish the difference between the original and electrically transferred sound.

A radio receiver and two synchronized studio-type transcription turntables and the associated pick-ups for both vertical and lateral recordings are built into the control desk. Eight mixers are employed to regulate and segregate the many electrical pictures of sound from any one of eight different sources, including a special Hammond electronic organ. Four master gain controls, are interlocked so that they may be operated as a unit or in two groups of two each. This provision makes possible the production of echo and antiphonal musical effects in the area surrounding the "Lagoon of Nations."

Future of sound bright

Editor, RADIO TODAY:

I've been thinking about the Sound Business trends during the next five years. Here are some of the conclusions I've come to:

1. Wherever groups of a hundred or more people gather, whether for work, amusement or instruction, Sound will be as essential five years from now as electricity is today.
2. I look for Sound to do its greatest expanding among the "little businessmen"—operators of retail shops.
3. There are many persons excellently equipped to act as Sound distributors. I believe the next five years will see them climb on the Sound bandwagon, at a nice profit.

We are approaching this group now through advertising. We are expanding our P.A. facilities . . . streamlining our line. We are going to be ready for the Dawn of a New Day in P.A.!

H. J. TAUBER

Wholesale Radio Service Co.,
New York, N. Y.

Music on a menu

Cafeterias, lunch rooms or dining halls operated by manufacturing concerns for their employees, have appeared as likely prospects for sound salesmen to work on. For the 3,000 employees who dine at the Westclox Mfg. Co., Peoria, Ill., a big PA system has been installed to feed recorded music and amateur talent into the lunch quarters. This system, by RCA; uses a 50-watt amplifier and has 14 loudspeakers.

The idea is also working successfully at RCA's own plant in Camden, N. J., where five "high fidelity" sound reproducers were recently installed in the company's big lunch room. Here, popular music, classical recordings, speeches and announcements are amplified for the employees.

MAKE REAL PROFITS

Selling Loud Speaker Inter Communication Equipment

It's not difficult to sell an Extension of a Known and Valued Existing Service! That's the relationship in any Going Business between their telephone service and selling them Inter Communication Equipment! It's a simple, valuable and easy-to-understand Extension of the Known and Established Service they already enjoy!

AN OPPORTUNITY FOR RADIO SET and PARTS JOBBERS—DEALERS—and SERVICE MEN!

Let us show you how simply and easily you can get into the profitable Loud Speaker Inter Communication Business! Under the Bank's Plan you need make only a small cash investment! And we show you every step of the way to develop a Substantially Profitable New Business! Easy to learn because it is so closely related to your present work!

IF YOU NEED NEW SOURCES of PROFIT—

Where Profit Margins can be maintained—write now for the Bank's Profit Plan! If you're a worker and will follow the Easily Understood Plan we offer—Substantial and Maintained Profits are assured. Write Today!

PRESENT LICENSEES UNDER THE BANK PATENT

The following firms are licensed to build Inter Communicating Loud Speaker Systems under the Bank Patent.

Bank's Mfg. Company, Chicago, Ill.
Lake Mfg. Company, Oakland, Calif.
National Multiphone Company, Chicago, Ill.
Operadio Mfg. Company, St. Charles, Ill.
Pathe Radio & Television Corp., Chicago, Ill.
Talk-A-Phone Mfg. Company, Chicago, Ill.
Transformer Corp. of America, New York, N. Y.
United Pressed Products Corp., Chicago, Ill.
United Sound Eng. Co., St. Paul, Minn.
Interoffice Communications, Inc., Chicago, Ill.
The Webster Company, Chicago, Ill.
Webster Electric Company, Racine, Wis.

Other firms manufacturing and retailing two-way Loud Speaker Systems should be licensed. CONSULT US IMMEDIATELY.

BANK'S MANUFACTURING COMPANY

Maurice Bank, Consulting Engineer, Licensor
Manufacturers of Quality Intercommunication Systems

5019 North Winthrop Ave., Chicago, Ill.

FILL IN, PASTE ON
PENNY POSTCARD
AND MAIL TODAY!

BANK'S MFG. COMPANY
5019 North Winthrop Avenue
Chicago, Ill.

Without obligation, send me your Bank's Profit Plan. I'm interested in New Ways to Make Money.

NAME

STREET ADDRESS

CITY and STATE

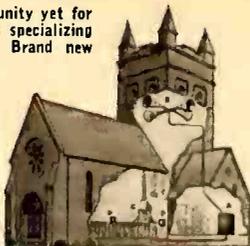
I am Jobber Dealer Service Man



At the National Corn Husking contest last fall a 100-watt Webster amplifier and six University reflex trumpet speakers were used for covering a square mile with 126,000 persons. Power City Radio Co. of Sioux Falls, S. D., set up the sound system.

MUSICAL TOWERS BELFRY CHIMES • CARILLON

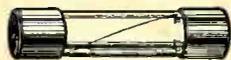
Biggest PROFIT opportunity yet for established organizations specializing in sound installations. Brand new field! Market hasn't been touched! Sell and service complete amplifying systems for tower, belfry chime installations. NEW Sunco MASTER finest quality custom-built instrument made.



Broadcasts chimes, organ recordings. Powered for 2, 6 and 12 mile diameter coverage. Used as P.A. unit indoors. Automatic record changer. Plays 10" and 12" records mixed, either 78 or 33 R.P.M. We furnish everything—speakers, accessories, installation directions. Sales help. Special low-noise records for church service on acetate discs. PROTECTED TERRITORY. Be first in this big profit field. Write today.

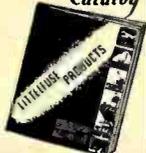
SUNDT ENGINEERING COMPANY
4260 Lincoln Ave. Chicago, Ill.

Sell & Use LITTELFUSES



For radio instruments, meters, transmitters, rectifiers, etc. FUSE MOUNTING—ALL KINDS. See your jobber or write today for catalog and prices.

Write for Catalog



LITTELFUSE INCORPORATED
4260 LINCOLN AVE. CHICAGO, ILL.

New! Atlas 8" Power Projector



If you are Selling Sound . . .

Don't overlook the new Atlas "Super-Power" cone projector . . . for all applications where power and controlled sound distribution are required. An all-purpose P. A. projector for indoor, outdoor, and mobile application. The G-8 can take it . . . it's made of non-resonant steel and aluminum finished in battleship gray. Three feet in length, bell 24". Model G-8 for 8" Speakers . . . List \$22.00 Model ST-9 Bracket and Base . . . List \$4.00

Write for New Sound Catalog!

New 1939 Spring & Summer Catalog F-39 brings you the newest P. A. developments. Baffles, Enclosures, Mike Stands, P. M. Units and other accessories. Send for this helpful catalog now.

ATLAS SOUND CORPORATION
1453-A 39th Street Brooklyn, N. Y.

New Sound Products



Shure dynamic mikes

★ Unidyne Dynamic microphone with cardioid uni-directional characteristics. Pick-up uniform at front and sides with deadspot at rear. Model 55 at left—high and low impedances. List \$42.50 to \$45.

Rocket unit provides quality pick-up from 70 to 7,000 cycles. Semi-directional characteristics. Directional baffle available. Model 50—list \$27.50. Shure Bros., 225 W. Huron St., Chicago, Ill.—RADIO TODAY.



Tone equalizer

★ Adjustable tone-compensation network for crystal phonograph reproducer varies response characteristics to suit. Equalizer with small loss of power, has four position dial, threaded mounting shaft. Rotary switch controls different equalizing circuits; weighs only 2 ounces. Model E4P, \$3.25 list. Astatic Microphone Lab., Inc., Youngstown, Ohio.—RADIO TODAY.



Kontakt unit

★ A unit with hand control may be connected in parallel in numbers up to five. Volume of any instrument may be varied with no effect on others. Output is -40 db. Can be operated into any standard amplifier, electrical guitar amplifier and most radio sets. Model KKH \$18 list. Amperite Co., 561 B'way, New York, N. Y.—RADIO TODAY.

Instantaneous recorders

De luxe console and low-cost portable recording and instantaneous play-back instruments. Console records and reproducers at 78 or 33 1/3 r.p.m., uses 10, 12, 16-inch records, outside-in or inside-out; has visual indicator meter, high-fidelity amplifier and loudspeaker, volume and tone controls, specially-designed motor eliminating "wows." MI-2700, \$475 list. Portable takes 10 or 12-



inch records at 78 r.p.m., outside-in recording. Comes complete with amplifier, loudspeaker, visual indicator and microphone. MI-2170L, \$179. Broad frequency range both models. RCA Mfg. Div., Camden, N. J.—RADIO TODAY.

Now . . . a low priced

"TOKFONE"

INTER-COMMUNICATION SET

Plug-in and Talk • No Installation

Fool Proof
Fully Licensed
Guaranteed



Room to Room
Upstairs and
Down
House to House
Children's
Playroom
Nursery or
Sleeping Quarters
House or Garage

Operates on 110 volts AC or DC #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 8 lbs. complete in air-cushioned cartons.

LIST PRICE

\$995

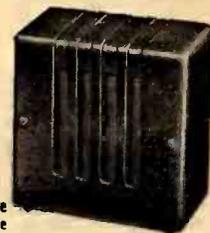
COMPLETE

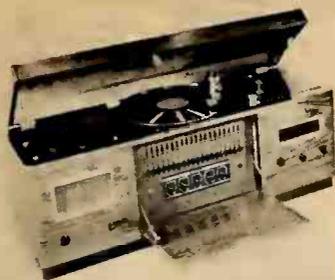
Send for catalogue showing complete line up to \$79.50 list price.

REGAL AMPLIFIER MFG. CORP.

14-16 W. 17th St., New York

Cable Address "Ramcomp"





Radio and talk-back system

★ Desk-type radio and talk-back system embodying 8-inch monitor speaker, 25-watt amplifier, radio tuner and phonograph turntable. Outlets are controlled by key-type individual switches with a master switch for emergency use. Amplifier has bass and treble compensation. Unit can be furnished with any type of phono equipment. Bell Sound Systems, Inc., 1183 Essex Ave., Columbus, Ohio.—RADIO TODAY.



Streamline amplifier

★ Amplifier with high-low tone control, provision for remote control input channels. Push-pull output 6L6G tubes—cascade inverse feedback. Output impedances, 2, 4, 8, 16, 250, 500 ohms. Model A-50-R—list \$63.40. Other models from 5-100 watts. Transformer Corp. of America, 69 Wooster St., New York, N. Y.—RADIO TODAY.



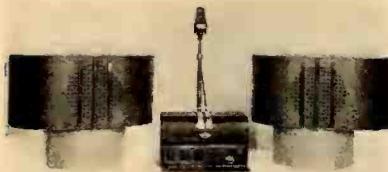
Home recorder

★ Unit to make recordings from microphone or radio. May be used as electric reproducer or p.a. system. Recorder comes complete with amplifier, speaker, crystal mike, collapsible floor stand, diamond needle for aluminum and steel recording and steel needle for "acetate" discs.

Model 1-50, list \$150.00. Speak-O-Phone Recording & Equip. Co., 23 W. 60th St., New York, N. Y.—RADIO TODAY.

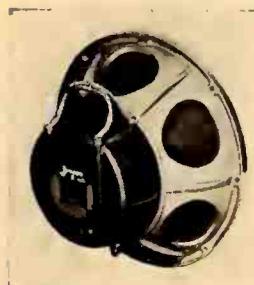
Instantaneous recording disc

★ Light-weight plastic flexible recording disc not affected by moisture or reasonable change in temperature. Shavings are non-inflammable. Steel, sapphire, or stellite cutting style may be used. Flex Record Co., 9 Rockefeller Plaza, New York, N. Y.—RADIO TODAY.



Auditorium—night club system

★ Ten watt amplifier with two electronic mixed inputs, high gain, beam power design. Velocity microphone and floor stand, with one or two 10-inch permanent magnet speakers in modernistic acoustic speaker chambers. One speaker Model RR102N1, \$115.00. Two speaker Model RR102N2, \$132.50. Ray-Lab, Inc., 211 Railroad Ave., Elmira, N. Y.—RADIO TODAY.



Auditorium speakers

★ 18-inch permanent-magnet auditorium speakers are offered with four types of response characteristics to meet all needs. Model BR-18 peri-dynamic enclosure available for the new units. Literature available. Jensen Radio Mfg. Co., 6601 S. Laramie St., Chicago, Ill.—RADIO TODAY.

NEW LOW PRICE

Mobile

P.A. SYSTEM



FOR SMALL SOUND CARS
OR TRUCKS **\$160.00**

MODEL 164 identifies the newest, low priced MOBILE Public Address System the market affords. Built to exacting Operadio standards, it is the answer to a demand for an efficient, low priced unit for small sound cars or trucks. An A.C. and D.C. combination, Model 164 features the Operadio "Economizer Control" which conserves battery supply, increasing useful length of charge from 25% to 50%. You just must know more about this Mobile job. Write for New General Catalog No. 16. Address Dept. RT.

OPERADIO

MANUFACTURING COMPANY

Dept. RT. - - - ST. CHARLES, ILLINOIS

Export Division: 145 W. 45th St., New York



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.

D-6-T DYNAMIC Microphone

A sturdy, Multi-use, Quality Microphone with Higher Output and advantageous Directivity Characteristics.



B-9
Crystal

List \$22.50



D-6-T

Output level—46, usable range—30-7000 cps.

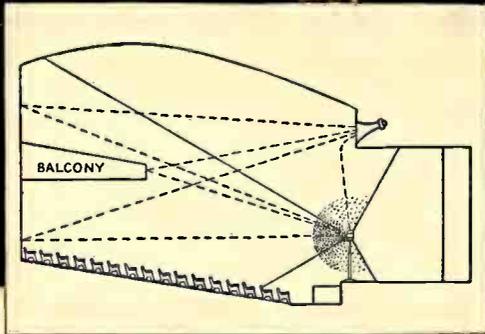
D-6-T High Imp. \$2750	D-6 Low Imp. \$2500
Including Cable.	

General catalog describes other attractive models. Request copy.

AMERICAN MICROPHONE CO., Inc.

1915 SO. WESTERN AVE. LOS ANGELES, CALIF.

NEW MIKE



No feedback from rear of room

gives new Pick-up Control

IT'S the Western Electric 639A Cardioid Directional Mike—combining dynamic and ribbon units in one mike—giving you clarity, fidelity and control unmatched by either type alone! With both units in operation, its pick-up is equally good through 120°. By turning the 3-way switch, you make it either a dynamic or a ribbon mike. In addition to its recognized superiority for studio pick-up, it is also particularly good for Public Address work because it reduces feedback. Send for full details.

Western Electric CARDIOID DIRECTIONAL MIKE

GRAYBAR ELECTRIC CO., Graybar Building, New York, N. Y. RT-4-39
Please send booklet describing Western Electric's New 639A Mike.

NAME
ADDRESS
CITY STATE.....

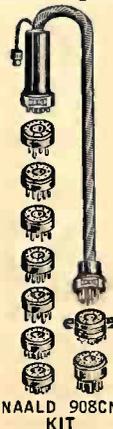
*please
stand by!*

Make no advertising commitment until you know about Radio Today's June TRADE SHOW and ANNOUNCEMENT NUMBER, with RADIO PRODUCT PARADE. Announcement coming in a few days. Watch for it.

QUALITY SOCKETS and ADAPTORS FOR NEW LOCTAL TUBES



Dependable sockets and adaptors are more important than ever before because of the increased demands on the octal and loctal tubes. Naald Patented Parallel Precision contacts meet the demands of this increased service placed on test equipment.



NAALD 908CN
KIT

NAALD Toggle-Lock Analyzer Plug and associate adaptors provide the most sturdy, compact kit available.

Its smaller size is appreciated; its dependability insures perfect operation over long life period.

Write for special offer on this kit, including loctal adaptors for analyzer plug and panel socket.

Use Naald adaptors to replace any sockets on your present equipment which do not function properly.

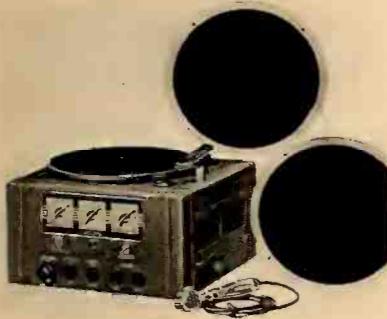
NAALD Parallel Precision Contacts provide for easy insertion and dependable sure contact—they have met test of more than 1,750,000 repeated insertions without contact failure.

Place your order with your jobber, or direct, stating what checker or analyzer you are using.

ALDEN PRODUCTS COMPANY
Dept. RT-5 Brockton, Mass.

More Sound Products

(Continued from page 51)



Mobile p.a. system

★ Universal combination in one case with all controls on one dial plate. Adapter plug throws genemotor into operation for battery use, completes circuit for AC operation. Three switches are used for battery economy. One each for tube filaments, genemotor battery supply and phono-motor battery supply. Operadio Mfg. Co., 13th and Indiana Sts., St. Charles, Ill.—RADIO TODAY.

puts provided for two microphones, and one phono or R.F. tuner. All may be mixed and controlled independently. Brushed steel control panel. Catalog 600-D for complete details. Thordarson Electric Mfg. Co., 500 W. Huron St., Chicago.—RADIO TODAY.

Electric etcher

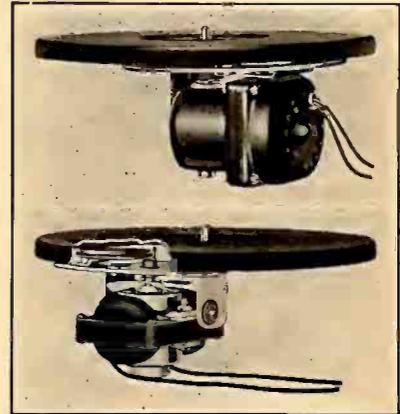
★ Tool for making permanent markings on all materials. Uses diamond point which permits markings on materials up to 60 Rockwell hardness. Cuts on steel, glass, bakelite, ceramics, etc. Ideal Commutator Dresser Co., 4033 Park Ave., Sycamore, Ill.—RADIO TODAY.

ten tubes, push-pull 6V6 beam power drivers, automatic volume expansion and compression. Universal output for 500 to .3 ohms. 5 stages; 135 db max. gain; response ± 1 db 20 to 20,000 cycles; noise 60 db below max. output. Available for all power line voltages or frequencies, also with remote control feature. \$175, list. Amplifier Co. of America, P.A. Div., 19 W. 20th St., New York, N. Y.—RADIO TODAY.



34 watt amplifier

★ High-fidelity beam-power amplifier incorporates high and low frequency equalization. Features



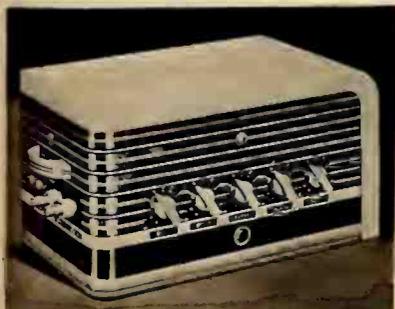
Phono-motors

★ Phonograph motors for operation on 110 or 220 volt, 50 or 60 cycle source. Model 60 (14 watts) is self-starting, has large bearings, bakelite helical-cut gears completely enclosed. Model 70 (15 watts) has friction rim drive, shock-mounted motor. Alliance Mfg. Co., Alliance, Ohio.—RADIO TODAY.



Electric carillons

★ An electric carillon system to reproduce music equal to 5-note Westminster chime that is compact, easily operated from keyboard. May be installed with any p.a. system or electric organ amplifying unit. 26-note electric carillon system also available. RCA Mfg. Co., Camden, N. J.—RADIO TODAY.



Modernistic 20-watt amplifier

★ Streamlined 20-watt amplifier using beam-power tubes has gain of 114 db. Frequency response ± 1 db from 30 to 15,000 c.p.s. Less than 5 per cent distortion. Output impedances of 2, 4, 6, 8, 250 or 500. In-

MAKE A
Satisfied Customer
WITH EVERY SALE!

Cinaudagraph

**PERMANENT MAGNET AND
ELECTRO-DYNAMIC SPEAKERS
FOR EVERY "REPLACEMENT" AND
"SOUND RE-ENFORCING" APPLICATION**

Cinaudagraph Speakers are available from 5" to 27". Details on request. Also circular on the New York World's Fair Cinaudagraph Speaker installation.

**CINAUDAGRAPH
CORPORATION
STAMFORD, CONNECTICUT**

S E L L I N G S O C I E T Y

More sound products

(Continued from page 53)



Rim-drive phono-motors

★ Rim-drive type of turntable motor operates at relatively low speed, drives turntable rim through larger pulley acquiring lower angle of velocity. Eliminates turntable vibration due to resonance. Turntable covered with "flock" is obtainable in variety of colors to match cabinets. Webster-Chicago, 5622 Bloomingdale Ave., Chicago.—RADIO TODAY.

20 watt amplifier

★ 7-tube amplifier with current consumption of 115 watts for output of 20 watts. T.H.D. at max. output 2 per cent. Gain 131 db-high, 78db-low. Output taps 2/4-8/15/500 ohms. Comes with AC on and off switch and 8 ft. cord. Available for all voltages and frequencies. Model MC35. \$75 list amplifier only. Morlen Electric Co., Inc., 60 W. 15th St., New York, N. Y.—RADIO TODAY.

Frequency test record

★ 12-inch pressing recorded at 78 rpm with recording in three parts; a glide frequency run with breaks at frequent intervals when the freq. is announced; a 1,000 note in 2 db. steps from plus 8 to plus 18, breaks between steps; a 400 cycle note at plus 18 db. level. Zero reference is background level of recording when using standard playback needle. Universal Microphone, Ltd., 424 Warren Lane, Inglewood, Cal.—RADIO TODAY.



Beat frequency audio oscillator

★ Kit for the construction of a variable-frequency audio oscillator. Output from 20 to 15,000 cycles flat within 1 DB. Employs cathode-ray indicator for calibration indicator. Electron-coupled type oscillator for stability. Model CCA. Carron Mfg. Co., 415 S. Aberdeen St., Chicago, Ill.—RADIO TODAY.



Radial cone projector

★ Non-directional type projector spreading sound uniformly over 360°. Utilizes dynamic cone type speaker. Maximum diameter of 30 inches and height of 14. Weighs only 5 lbs. less speaker. Model RCP. University Labs., 195 Crystie St., New York, N. Y.—RADIO TODAY.

3-way microphone

★ Switch at base makes mike uni-directional, bi-directional or non-directional. Uniform frequency response 40-10,000 cycles; sensitivity of minus 62 db for 10 bar signal. RCA Mfg. Co., Camden, N. J.—RADIO TODAY.

Portable playback

★ AC-DC operated unit with two-speed motor, takes discs up to 17¼ inches. Crystal pick-up, 10 inch PM dynamic speaker and amplifier using six tubes with output of 6 watts are other features. Microphone Jack provided. Terminal Radio Corp., 68 W. 45th St., New York, N. Y.—RADIO TODAY.

THORDARSON AMPLIFIERS for 1939

Let your EYE and EAR decide—

NEW 20-WATT
A Jewel in Steel



- Quality at . . . \$
 - Beauty at . . . \$
 - Performance at . . .
 - Compactness at . . .
- 75⁰⁰ LIST

Model T-25W20

Controls: Two microphone, one phono, one treble and one bass.

See your parts distributor or write factory direct for free Catalog No. 600-D on the full line. Lists eight models including a new 28-watt mobile unit.

THORDARSON
ELECTRIC MANUFACTURING COMPANY
AMPLIFIER DIVISION
500 W. HURON STREET CHICAGO, ILLINOIS

Selling radio up

(Continued from page 14)

to this higher priced unit. Build attractive window displays around this merchandise and these uses.

Selling up is, after all, just the art of selling. By display, by assortment, by your demonstration, by your selling talk, create the desire to own the better radio, because it is better, show your enthusiasm with demonstrable points which the customer can see, hear and recognize.

DEALER CAN GUIDE SALE

Because there is a demand for lower priced small sets, you must expect customers to be interested in them. Show your interest in your customers by showing them these low-priced units in your windows, and in your store, but *don't let them buy one until they have seen, heard, and know about the better ones.* Most customers will be guided to a large extent by your opinions, and advice.

You will have to take orders for these low priced sets, because there is a demand for them, and by the same token, you have got to *sell the higher priced ones harder*, and more scientifically because you are selling up from the demand.

Non-directional speaker hangs from ceiling



Chandelier baffles (Atlas) provided uniform sound coverage at a recent dance at Rensselaer Polytech. Dolly Dawn, vocalist, for George Hall's ork was very pleased with results of the installation.



The Kind of Letters Manufacturers Dream About But Seldom Get:

"The Chanalyst will do all you claim for it and also the following things. In conjunction with the instruction book the Chanalyst affords the best education in aligning and tracking, in all its phases, that I have yet encountered. It also clarifies all those mysterious circuits which were so much of a headache to servicemen, such as various oscillator circuits, A.F.C. circuits, audio degeneration and regeneration, inverse feedback, phase inversion, etc. One can test all these circuits, their effects, defects, components, etc., just as easily as he can check an ordinary T.R.F. set. The instrument is so simple to use that in a short time a serviceman can become quite adept with it and, as he goes about measuring voltages and checking circuits he never dreamed possible, it's so natural and easy he just takes it for granted that all this has come to pass. I like the Chanalyst and don't

know how I got along without it before and would never do without it now. It is not only an instrument, it's an education."—Walter Stepanovich, Steubenville, Ohio.

"This instrument will be the only thing that will not become obsolete. Sure can find intermittent and noise quickly."—Carl Becker, Scotland, S.D.

"The speed with which trouble can be located with the Chanalyst and the ease of operation is amazing."—Leonard Roberts, Jr., Precision Radio Service, Steubenville, Ohio.

"It has taken the nightmare out of my radio servicing.

Have seen nothing to equal it in my twenty years of servicing."

—R. H. Reed, Waco, Tex. "The best instrument in my shop, it becomes more useful as I learn more about it."—John A. Thoma, Emsworth, Pa.

"The Rider Chanalyst is the instrument of today and tomorrow. I like every part of it and all the channel circuits are very good."—Joseph Uzdarwin, Nashua, N. H.

"I do not see how anyone could do without a Chanalyst. It certainly is a big time saver. Your instruction book is the most complete I have ever seen with any instrument."—C. L. Vannerstrom, Highland Park, Mich.

Net Price **\$107.50**

With Rack-Panel Assembly **\$122.50**
Rack-Panel Assembly (sold separately) **\$15.00**



Send 25c for 80-Page Book

Completely explaining performance, ease of operation of the Chanalyst.

GO TO YOUR JOBBER AND DEMONSTRATE IT TO YOURSELF

The RIDER Chanalyst



The RIDER VoltOhmyst

The VoltOhmyst is unlike anything heretofore available to the servicing industry. It will remain useful for years to come in the servicing of radio receivers, television, facsimile, sound and such equipment.

This New Electronic D-C Voltmeter-Ohmmeter measures voltage wherever you wish, without your being concerned with its value and irrespective of circuit complications. For, the Rider VoltOhmyst has one scale—one zero adjustment. You just put the proper probe at the point to be measured and look at the single scale.

The VoltOhmyst has an extremely wide range—0.05 volt to 5000 volts d-c. 0.1 ohm to 1,000,000,000 ohms.

Send today for complete specifications and literature. See your jobber for a demonstration.

Net Price **\$57.50** 25-60 cycle. Power consumption 12 watts.

SERVICE INSTRUMENTS, INC., 404 Fourth Avenue, New York City
FOREIGN DIVISION, 145 W. 45th Street, N. Y. C., Cables — "Servicin"

Service Notes

(Continued from page 31)

Framing Control—A control for centering the picture.

Focusing Control—A control on the receiver to bring out definition; it actually controls the width and sharpness of the individual lines on the cathode-ray tube.

Focusing (Action)—This is the action of the gun of the cathode-ray tube which concentrates the stream of electrons to a small spot. (This can be accomplished by either electrostatic or magnetic methods.)

Ghost—An unwanted image in the picture which is usually caused by signal reflection.

Gun (Cathode Ray)—The structure or mount inside the cathode-ray tube that produces, accelerates and focuses the electron beam.

Horizontal Tearout—This term describes the breaking up of the upper part of the picture, either to the right or left. The cause is usually poor low frequency response in the sweep circuits or video amplifier.

Interlacing—This refers to the technique of dividing the frame into two fields with displaced lines to eliminate flicker.

Interaction—A term usually used by designers indicating leakage or the mixing of a signal into another circuit.

Line—A single line of the 441 comprising the television picture.

Linearity—Means uniform rate of motion. This is required as the picture will be distorted in non-linear portions.

Modulation—A process of applying the video signal to the modulating or

control electrode (or grid) of a cathode-ray tube so as to produce the lights or shadows of a picture.

Paraphase—A term used in television and English books which is equivalent to the American "push pull."

Phasmajector—A tube for generating television picture signals.

Reflectors—Additional rod or rods placed near the antenna to reinforce signals.

Sawtooth—A saw shaped wave of electric current or voltage employed to scan or sweep a cathode-ray tube.

Scanning—(See Sweep.)

Separator—The circuit used to separate the horizontal and vertical synchronizing pulses from each other and the video signal.

Spot—A visible spot of light formed by the impact of the electron beam upon the screen.

Sweep—The action of an electron beam in tracing lines across the screen.

Synchronization—A process of producing synchronism between circuits.

Television—A general term for the transmission or reproduction of visual images by radio.

Teletron—A receiving cathode-ray tube.

Video—Pertaining to the picture section of the receiver or transmitter.

Replace panel lamps

"Make complete replacement of all receiver panel lamps at one time when the customer's set is being serviced," Hygrade Sylvania Corp. urges servicemen. "You'll make extra profit and

win a satisfied customer, because panel lamp life is unpredictable and the old one you leave in the socket may expire just after you've reinstalled the chassis in the cabinet."

Arvin 9-A auto receiver

The Arvin 9-A auto receiver utilizes a rather conventional 6-tube superhet circuit. A pentode R-F amplifier is used to provide increased sensitivity and image selectivity.

Dual purpose tubes are employed in the first and second detector circuits.

I.F. alignment takes place at 170 KC. Location of high-frequency trimmers shown on chassis layout with proper frequencies for alignment.

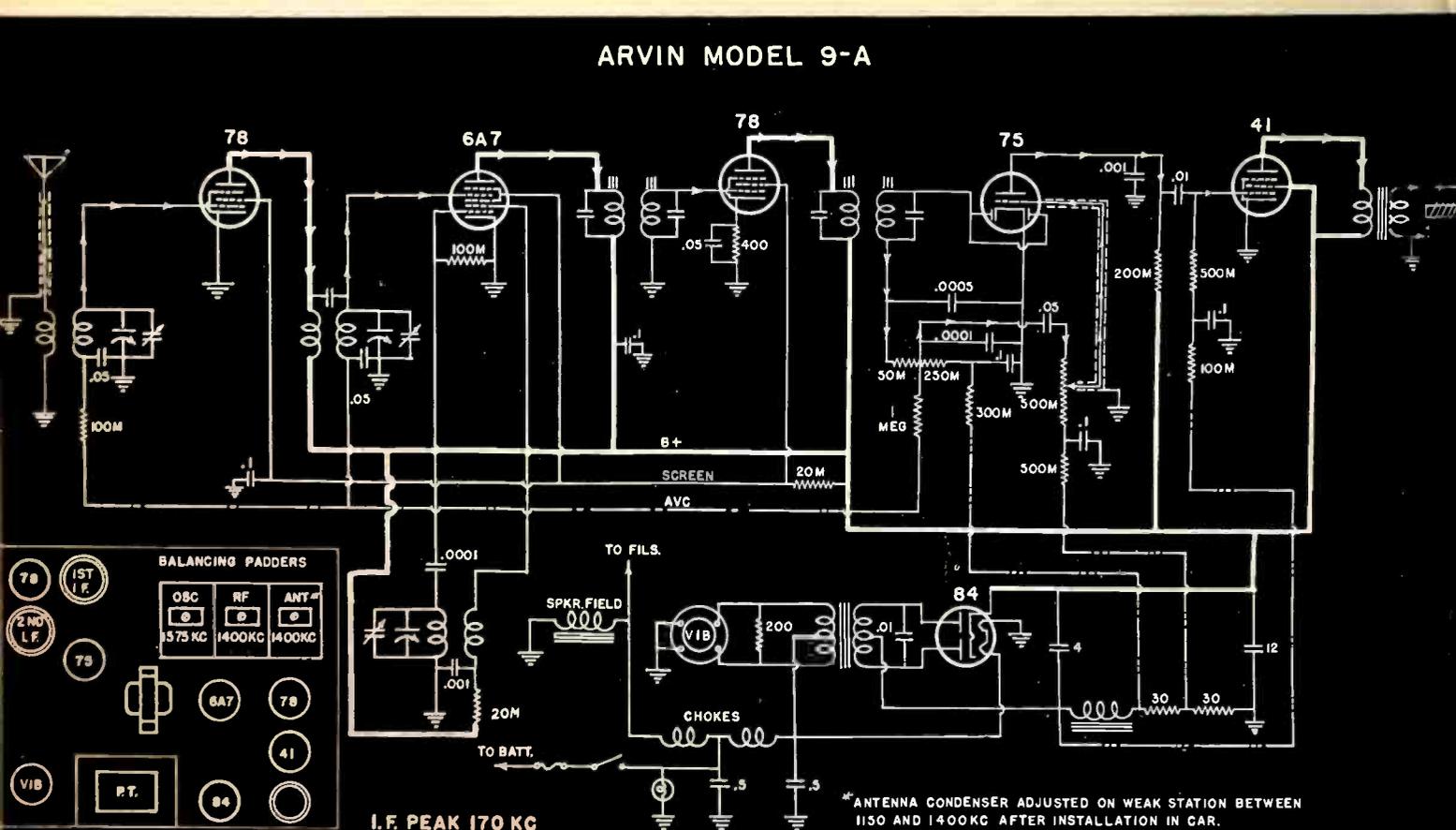
High-voltage circuits shown in accompanying diagram in extra heavy lines. Arrowheads indicate signal path through set.

Tuning indicator types consolidated

Because of the great similarity among several of the types of tuning indicator tubes, it has been decided to discontinue some of the less popular types in cases where these older types are directly interchangeable with some of the newer, more popular types.

The original tuning indicator tube was type 6E5 which consisted of a cathode ray tuning indicator section combined in one bulb with a sharp cut-off triode amplifier section.

Soon after this, the type 6G5 was introduced. This type was similar to the type 6E5 except that the amplifier section has a remote cutoff or variable mu characteristic so that the tuning indicator could be more conveniently used in sets employing variable mu



What Are Your Chances of Getting a Job in Television?

Let's Be Frank

WHEN I started training men for Radio 25 years ago, Radio was regarded only as means of long-distance communication. Since then, I have seen Radio expand in many different directions—into broadcasting, aviation, police, transatlantic telephone service, direction-finding, loudspeaker systems, automobile Radio, industrial electronic devices, and now Television is Radio's newest development.

Many sensational claims have been made for Television—so many that I feel a frank discussion of Television and how to get ready for the opportunities it offers, is advisable.

Are There Opportunities in Television Today?

Yes! There are opportunities in the large manufacturing plants which make television transmitters and other video equipment. There are opportunities in some stations planning to broadcast Television programs. There are opportunities in companies now making or planning to make Television receivers. There are opportunities installing and servicing Television receivers in New York and a few other cities where Television programs are now being broadcast. But there are not many of these opportunities today and they are going to men with long technical training and experience. However, this DOES NOT MEAN THAT TELEVISION IS NOT CREATING OPPORTUNITIES EVEN NOW. It is—for trained men qualified to take over the Radio jobs formerly held by the men who have gone and are going into Television.

When Will Television Offer More Opportunities?

Very soon, most informed persons believe. Just as soon as Television transmissions start in any city—opportunities will come in that city. There will be opportunities in the Television transmitting stations—opportunities for installing, servicing, repairing and adjusting Television receivers. These opportunities will continue to grow but nobody knows how far or how fast Television will develop. It's almost a certainty, however, that it will eventually reach tremendous proportions.

Who Will Benefit From Television's Opportunities?

Only men with good, sound Radio training and experience. Many of the men who will get the early good jobs in Television will be men now in Radio. Others will be men who have Radio training and experience—plus special training in Television. It is safe to say that a MAN WHO DOES NOT KNOW RADIO will not get into Television. Television, after all, is a DEVELOPMENT OF RADIO, far more complicated and far more technical than Radio, but still a DEVELOPMENT of it. When men now in Radio shift into Television, that will MAKE OPPORTUNITIES IN RADIO—opportunities which may later lead to opportunities in Television.

What Can You Do NOW to Get Ready for Television?

First—you must Train for Radio. You'll need a working knowledge of fundamental Radio principles to understand Television. Second you'll need SPE-

I have been training men for Radio for twenty-five years. I am proud of the records being made by N. R. I. graduates. They are in every major branch of Radio. I am prepared to train men for Television, so I believe my discussion on this page should interest every man who is considering getting into Radio's newest branch—Television.



J. E. SMITH, Pres. National Radio Inst.

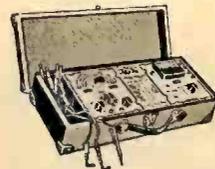
Many Men I Trained Make \$30, \$50 and More a Week in Radio NOW

My Training covers all you need to know to get a good job in Radio RIGHT NOW—the type of position which can LEAD RIGHT INTO TELEVISION when Television develops further. Best of all, you DO NOT HAVE TO WAIT for Television TO MAKE MONEY through my Training. Broadcasting Stations, Radio Repair Work, Radio factories, automobile Radio, commercial, aviation, police Radio, Loudspeaker systems ALL OFFER OPPORTUNITIES TO WELL TRAINED MEN—opportunities for good jobs—opportunities which may soon lead you into Television.

Many Make \$5, \$10, \$15 a Week Extra in Spare Time While Learning

The day you enroll I start sending you Extra Money Job Sheets. They show you how to do Radio repair jobs, how to cash in quickly. They show you how to start making money quickly—and to continue MAKING MONEY UNTIL TELEVISION OFFERS BETTER OPPORTUNITIES in the future.

I Give You This Professional Servicing Instrument



Here is the type of instrument every Radio expert needs—an All-Wave, All-Purpose Set Servicing Instrument. It contains everything necessary to measure A.C. and D.C. voltages and currents; check resistances; adjust or align any set old or new, and make modern dynamic receiver analysis. It satisfies your need for professional servicing after you graduate—can help you make extra money servicing sets while training.

Mail Coupon for Television Lesson and 64-Page Book Free

Act Today. Mail the coupon now for Sample Lesson "Requirements of a Television Receiver," and 64-page book "Rich Rewards in Radio." They're free to you if you are over 16. They point out Radio's spare time and full time opportunities and those coming in Television; tell about my training in Radio and Television; show letters from men I trained, telling what they are doing and earning. MAIL COUPON in an envelope or paste on a postcard.

J. E. SMITH, President, Dept. 9DFI National Radio Institute, Washington, D. C.

SPECIALIZED TRAINING IN TELEVISION, over and above your knowledge of Radio to grasp Television's opportunities. To prepare for Television—the sensible thing to do is to START TRAINING FOR RADIO NOW.

How I Train You for Radio and Television

For more than 25 years I've been training men for Radio. Men I trained have enjoyed success and good pay in practically every branch of Radio—in nearly every country in the world. The N. R. I. Course has included training in Television principles FOR MORE THAN FIVE YEARS. Yes, for more than five years I have been preparing men for Television insofar as technical information available at the time would permit.

My Course Contains Up-to-Date Television Information

My training gives you the fundamentals of Radio you must have to get into either Radio or Television. These fundamentals are treated specially for Television in every instance. My text on superheterodynes has contained information about the wider frequency circuits needed for Television reception for many years now—and my training in sweep circuits, synchronizing, cathode ray tubes is just as complete. My texts have just been revised to include UP-TO-DATE INFORMATION on today's Television's developments, as well as developments in ALL BRANCHES OF RADIO.

J. E. SMITH, President, National Radio Institute, Dept. 9DFI, Washington, D. C.

Without obligating me, please send sample Television lesson "Requirements of a Television Receiver" and your 64-page book which points out the spare time and full time opportunities in Radio and those coming in Television, and explains your method of training at home for them. (Please write plainly.)

Name..... Age.....
 Address

City..... State..... 55RHI



● For all-round use, especially for rush jobs that cannot wait for an AEROVOX exact-duplicate replacement, your logical choice is the PBS line of electrolytics. Here's why:

- Cardboard-case units of utmost compactness consistent with full rated capacity and working voltage, and economical life.
- Provided with Adjustmount metal flanges to fit any mounting-hole spacing, or for flat, upright, or stacked mounting.
- Single, dual and triple sections.
- In 25, 50, 100, 250, 450 and 600 v. D.C. working. Standard capacities.
- More for your money. More value for your customers. More good will for your future.

Ask Your Jobber for an assortment of PBS electrolytics. Have them on hand as "first-aid" units. Ask for latest catalog—write us direct.



Buy antenna first, radio afterwards

★ My friends are continually asking me what make and type of radio they should buy, since with an engineering background and years of practical radio experience they feel I should know what's best.

Almost invariably, states RADIO TODAY's Service Editor, Vinton K. Ulrich, I have startled them by saying that they should be more concerned with what kind of an antenna to buy and install. In fact I go so far as to advise buying a good antenna (plus installation) and spending the balance for a receiver of any reliable make.

Experience in crowded cities has time and time again shown that a noise reducing aerial is the most important part of a radio set up—it is far more essential than a high-priced receiver. Even the \$250 sets perform badly in a noisy building unless a noise-reducing antenna is employed. And it must be properly installed to be effective. Figuring say \$7.50 list for the aerial and \$7.50 for the installation—and a good job is worth at least that much—means that the customer will have to pay \$15 for his signal collector. My preference in a noisy location is a \$35 midget with a \$15 antenna in preference to a \$50 to \$100 set with just a wire thrown out the window—after all, isn't clear, noiseless reception important for real enjoyment?

SUBURBAN REQUIREMENTS

In suburban areas where noise isn't usually an acute problem, an ordinary outside wire about 50 to 100 feet long with suitable lead-in and *properly soldered* connections is usually satisfactory. Since signal strengths are usually rather high, a short wire is all that is needed. And contrary to talk in some quarters, an ordinary wire will work okay on short-waves if the noise level is low.

Remote sections—some 40 or more miles from the nearest station need more pick-up than locations near the stations. Usual solution is to use an antenna some 100-200 feet long of the ordinary wire. If short-waves are used frequently, a doublet type antenna will give peak efficiency on these wavelengths as well as keeping the lead-in from picking up noises in the house. With just a little experience any serviceman can determine how simple an antenna will work okay in his neighborhood. By concentrating on that type of antenna the customer will be well pleased since he is getting optimum reception at the least cost. (Continued on page 61)



Examine any one of our products INTERNALLY as well as externally. . . . Ask your jobber to open one for you. . . . Note the craftsmanship and the infinite care in construction and wiring. . . .



PRECISION Series 900 "Laboratory Electronometer"

Tests all tubes, including the new LOKTAL and SINGLE ENDED types. A MODERN "push-button" operated dynamic mutual conductance tube tester. . . . Combined with a 25 multi-range A.C. and D.C. volt-ohm-decibel-milliammeter . . . plus a ten ampere range for complete point to point set analysis . . . includes ballast test facilities. . . . A complete laboratory in compact form. Size only 12x12x6. Net price \$49.95



ELECTRONOMETER Series 510

An efficient modern tube analyzer capable of testing all types, including the new LOKTAL and SINGLE ENDED tubes . . . incorporates ballast test facilities. Usual PRECISION Standard of Accuracy and ability to accommodate FUTURE tube releases. Portable hardwood case. Size 12x12x6. Net price \$29.95

All "PRECISION" testers include telephone cabling, wire wound shunts and matched metallized multipliers of 1% accuracy . . . INDIVIDUALLY calibrated and checked against laboratory standards to maintain CLOSE ACCURACY. Catalog describing 12 models available upon request.



Service Notes

(Continued from page 59)

RSA news

Members are urged to be present at the Second RSA Convention at the 1939 National Radio Parts Show in Chicago, June 16 and 17.

New Chapters—Denver, Colo. Being formed—Lewiston and Pekin, Ill.; Scranton, Pa.; Toledo, Ohio.

Election of Directors to serve on National Board of Directors is now being held. Ballots have been sent to qualified members.

Chicago—Arranged with RCA Institutes of Chicago for exclusive RSA course in television servicing.

Interesting speakers held forth at:

Binghamton, N. Y.—John Rose: "Multi-Vibrator and Uses."

Chicago—Jean Brand, E. E. IRE: "Merry-Go-Round With the High Frequencies"; and Ernest Kohler, Ken-Rad: "Recent Development in Single-Ended-Metal-Tubes."

Cleveland—George Jelinek and Mr. McCall, Galvin: Motorola technical features.

Colorado Springs—Cozy Strang, KVOR: "Modern Broadcast Transmitters."

Danville, Ill.—Mr. Longer: Causes of intermittent operation on AC receiver; and Mr. Hagley: Car Radios.

Detroit—Ernest Marks: Electronic relays and radio tube outlets in industry.

Duluth—Joe Brier: Unlawful radio interference.

Freeport, Ill.—Don Stover: Vacuum-tube-voltmeter and uses.

Jamestown, N. Y.—Jack Simberkoff, Aerovox: Condensers; Jim Vawter, representative: Business Methods, local tubes, auto aerials and vibrators.

Lansing, Mich.—Joe Cole, RSA Dist. Dir.: "Cost Accounting and Bookkeeping for Servicemen."

New York City—J. R. Poppele, WOR: Facsimile and Paraphone.

Oklahoma City—Third Annual Short Radio Course through University of Oklahoma included demonstrations and lectures on facsimile and television, Business Law in Radio Servicing, Audio Speech Amplifiers.

Springfield, Ill.—With cooperation of State Police Radio and local newspaper serious source of radio interference was remedied.

Williamsport, Pa.—Radio topics will be furnished to local station in return for RSA "plugs."

Green Bay, Wis.—"Call an RSA Man" is slogan being used in campaign to tell people about RSA. Radio time, newspaper articles and advertisements are methods utilized.

Refrigeration and air-conditioning service course

A special refrigeration and air-conditioning training course has been prepared exclusively for Philco dealers,

servicemen and members of Radio Manufacturers Service. Through a cooperative arrangement between the Philco Radio and Television Corporation and Utilities Engineering Institute of Chicago this specialized educational program in domestic refrigeration and air conditioning is available to members of R.M.S. at special terms.

This educational home study course consists of 62 selected practical lessons covering the principles of electric refrigeration and air-conditioning and their application to all types of allied equipment. The course, complete in every detail, will give the serviceman a technical knowledge of these two subjects that is vitally necessary for good, sound service work on these modern appliances.

Interference ordinance passed

The city of York, Pa., has passed an ordinance prohibiting operation of any electrical apparatus that would cause radio interference and a citizen's committee has been formed to devise ways and means of operating this law. The local radio station has offered fifteen minutes per week for talks on interference.

Edison models R1, R2, C2

★ First look for opening of the grid suppressors. Sometimes they will short to the trimmer condensers on the gang. To localize this trouble, tune in a station, turning the volume to maximum, and then move each trimmer slightly as well as the suppressors noting any change in reception which will indicate this trouble. No reception will often result from an open three mfd. filter condenser. Check the screws connecting the speaker voice coil to the output transformer making sure that they are tightened. Weak reception may be also due to weak 26's, too short an antenna, or improper alignment. See that the nut holding the lug to the antenna binding post is tight as it sometimes comes loose causing considerable trouble.

Book Review

Sprayberry dictionary of radio

The Morse Code, a parallel resistance chart, trouble shooting, resistor and sound charts are included in the handy dictionary of radio, television and electronic terms. It contains over 90 pages of definitions of technical terms used in radio studies, conversion and pi-function tables, and lists of radio drafting and Greek symbols. Tagged at \$2.00 it measures 5½ x 8 inches for easy carrying. Published by Sprayberry Academy of Radio, 2548 University Pl., N.W., Washington, D. C.—RADIO TODAY.

Bigger Profits for You
IN SELLING SOUND WITH
Clarion EQUIPMENT

The big money in Sound is being made by members of the Clarion Institute of Sound Engineers. C.I.S.E. is a merchandising plan designed to help you! Find out today how you can join . . . remember, it costs nothing.

The System behind the Plan



In Clarion you have 1939's outstanding line of Sound equipment—modern, streamlined, thoroughly engineered and dependable. Clarion "Unified" Sound systems are compact, easy to install, ready-to-operate.

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To anyone qualifying, C.I.S.E. offers

- 1 Direct factory purchasing power . . . meet all competition!
- 2 Exclusive sales territory . . . no one can "muscle in" on you!
- 3 Free engineering and consulting service—no job too big or too complicated for the C.I.S.E. members.
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Eye-compelling window streamers identify you as the recognized C.I.S.E. member in your territory . . . deliver customers to your door. It's the No. 1 value in P.A. today—and your biggest chance to profit!



SEND for new FREE Clarion catalog. Discover the profit-possibilities in P.A. when you sell under the C.I.S.E. banner. NOW—mail coupon for your copy! Get the money-making Clarion story FREE!

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Please send a C.I.S.E. application immediately. This, in no way obligates me of course.

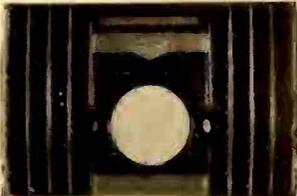
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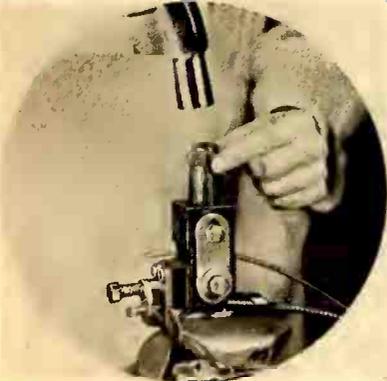
City..... State.....

The Outstanding AUTO RADIO CONTROL LINE for 1939

NEW SPECIAL CHEVROLET PLATE



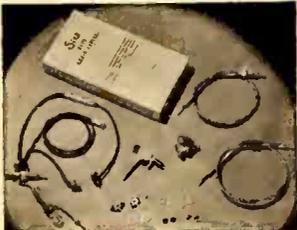
For re-installation of any 1936-37-38 Delco, United Motors, or Chevrolet custom radio in 1939 Chevrolet, only this plate is necessary UTILIZING ORIGINAL CONTROL. Heavy die casting—exact duplicate of original dummy plate makes excellent custom matched installation.



NEW SWEDGING TOOL

The last word in Swedging Tools. Removes fittings from old cables and replaces them on new .150 and .130 cables and housings. High grade tool steel. Mounts on vise for immediate use. A really great seller to the service dealer. Only \$7.50 net.

SPECIAL BASE FOR PERMANENT MOUNTING
\$3.00 net



UNIVERSAL DELCO KIT

Special conversion kit for 1939-38-37-36-35 Delco Radios. 12-1 ratio TUNING CONTROL, combined volume control, and on-off switch, Tone Control, complete with all necessary fittings for above Delco Radios. To convert any of these Delco Models only this kit is needed with any Star Escutcheon Plate. Kit No. DE-39 complete with Tone Control \$7.05 List.

SPECIAL ANNOUNCEMENT NOTICE TO OUR CHICAGO, MIDWEST AND WESTERN TRADE

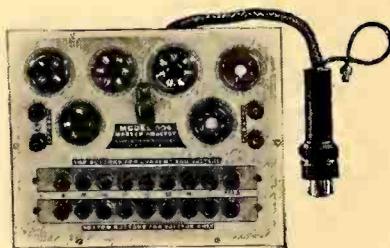
Beginning April 1, 1939, Consolidated Wire & Assoc. Corp., of Chicago, Ill., no longer represents us in the above mentioned territories. All inquiries, communications, and orders should be forwarded directly to our New York Factory for prompt attention.

Free catalog upon request. Write today to

Star Machine Mfg's, Inc.
1373 East Bay Avenue
Bronx, N. Y.
Cable STARCON—NEW YORK

More New Things

(Continued from page 32)



Push button analyst

★ Push buttons made to lock in master analyst no release button necessary. Permits both current and voltage measurements in same circuit at same time. Six sockets including loktal. 10 wire analyzer cable and spare lead. Model 504 without case \$13.75 net. Radio City Products, 88 Park Pl., New York, N. Y.—RADIO TODAY.



Multi-range meter

★ Push-button type AC-DC multi-range meter. DC volts at 1000 ohms-per-volt: 0/2½/10/50/250/500/2500. AC volts 0/15/150/1500. DC mils 0/1/10/100/1M/10M/25M. Resistance 0/2½M/25M/250M. Aluminum 2-tone panel. 3-inch square meter. Leatherette portable case. Model 1200E—net \$13.70. Approved Technical Apparatus Co., 57½ Dey St., New York, N. Y.—RADIO TODAY.

Turret bandswitch

★ Bandswitch to be used with pee-wee plug-in inductors for making rapid bandswitch without removing coils. Uses five-gang three position switch. Inductors wound on threaded Alsimag 196 forms—with end link, center link, and center tapped without link. 50 watts capacity. Coto-Coil Co., Inc., 71 Willard Ave., Providence, R. I.—RADIO TODAY.

Sylvania television tubes

★ 5-inch cathode-ray tubes for television and similar applications. Available with green, yellow, or white screens. Type 1802. Electrostatic deflection—2,000 volts maximum on second anode. Hygrade-Sylvania Corp., 500 Fifth Ave., New York, N. Y.—RADIO TODAY.

Table model radio-phono

★ 5-Tube superhet combination with built-in loop aerial. Receives standard broadcast and police calls. Phono plays 10 12-inch records, has self-starting motor. Walnut cabinet. Model 2741 for AC—\$29.95 list; AC-DC model, \$39.95. Detrola Corp., 1501 Beard Ave., Detroit, Mich.—RADIO TODAY.

Ham transmitter

Cabinet-type ham transmitter having 325-watt carrier on phone, 450 watts on c.w. Operation on all bands from 10 to 160 meters. Switching on any three bands. Hallicrafters, Inc., 2611 S. Indiana Ave., Chicago, Ill.—RADIO TODAY.

Universal dry electrolytics

★ A universal metal tab which may be rotated to any position, adjusted to height, or bent to any angle is feature on Sprague PTM 450 v. line of small cardboard dry electrolytic condensers. Sprague Prod. Co., North Adams, Mass.—RADIO TODAY.

Band-spread condensers

★ High-frequency type condenser with band-setting section and band-spread tuning section. Isolantite insulation. Bracket or panel mounting. Types EU-25-100-AF and EU-50-100-AF. Cardwell Mfg. Corp., 81 Prospect St., Brooklyn, N. Y.—RADIO TODAY.



Tube tester

★ "Dynamic conductance" tube tester will test all tubes including loktal and single ended. Case is solid oak with slip-hinge cover. Dynamic mutual conductance circuit, a hot cathode shorts and leakage test, English reading dial, and a neon glow bulb leakage indicator. Consolidated Wire & Assoc. Corps., 516 Peoria St., Chicago, Ill.—RADIO TODAY.

Low-power controls

★ Low-power wire-wound controls and rheostats in ranges up to 10,000 ohms. Power dissipation is 2 watts. Available with or without switch in complete assortment of shaft variations. 1 1/4 inches diameter x 9/16 inches depths of case. Catalog on request. International Resistance Co., 401 N. Broad St., Philadelphia, Pa.—RADIO TODAY.

Vibrator tester

★ Push button instrument tests all standard 6-v. vibrators—fused against shorted vibrators. Uses approved 5,000 ohms load. Roll chart shows correct button settings. Model 1671. \$41.67, dealer net. Other models available. Triplett Electrical Inst. Co., 194 Harmon Ave., Bluffton, Ohio.—RADIO TODAY.

Midget transformer

★ Replacement power transformer for small receivers is rated to deliver 480 v. CT at 40 M.A., 5 v. at 2 amps., 6.3 v. CT at 2 amps. May be used in half-shell, vertical upright or horizontal upright positions. No. T-13R19. Thordarson Electric Mfg. Co., 500 W. Huron, Chicago.—RADIO TODAY.

DeWald Phonoscope

★ Combined electric phonograph and wireless record player has provision for attaching microphone. Will play through set 50 feet away. Plays 10 and 12 inch records—self-starting motor. Crystal pick-up, P.M. dynamic speaker. Pierce Airo, Inc., 440 Lafayette St., New York, N. Y.—RADIO TODAY.

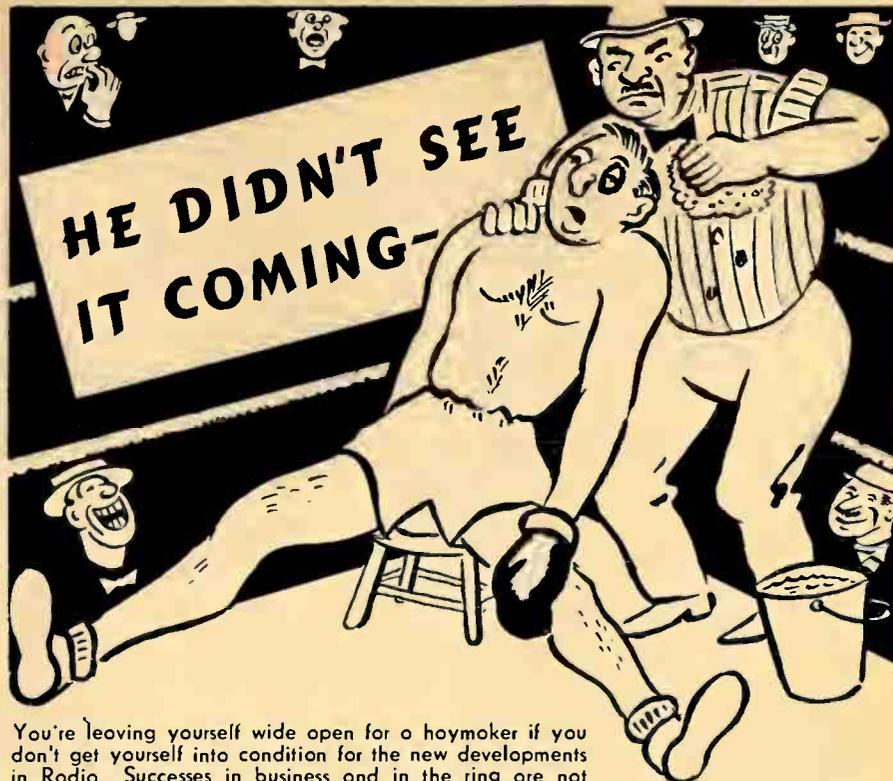


Noiseless auto aerials

★ Complete line of telescopic auto aerials designed so as to be free from all mechanical (and electrical) noise. Cowl and hinge-rod types for all cars. Also available are automatic and manually-operated disappearing type cowl antennas. Colored insulators for side cowl antennas. J. F. D. Mfg. Co., 4111 Ft. Hamilton Pky., Brooklyn, N. Y.—RADIO TODAY.

Inexpensive transmitting condensers

★ Light-weight compact transmitting condensers with brass plates and rods. Buffed plates. Alsmag 196 insulation. Bud Radio, Inc., 5205 Cedar Ave., Cleveland, Ohio.—RADIO TODAY.



You're leaving yourself wide open for a hoymaker if you don't get yourself into condition for the new developments in Radio. Successes in business and in the ring are not made the night of "the fight." It's the training that counts. Be sure YOU are "ready" for the radio maintenance business of the 1940's by conditioning yourself in the basics of television, radio facsimile, the cathode-ray tube, photo electric cells, etc. You'll have to know as much about these developments as you know about a superhet—OR find the profitable part of your radio maintenance business going to better trained men.

The radio business is not a "fixed" business—it is progressing. So if you want to "be in there fighting" you had better get into training NOW! Read carefully the contents of the books described here and order today!

NEW — Out in April "SERVICING BY SIGNAL TRACING" by John F. Rider

Use the system of servicing which is fastest—most modern—the system you can apply to all receivers regardless of age, type or make— independent of the kind of circuit or tubes used— independent of every limiting factor heretofore encountered. In this new book you learn what happens to the signal currents—the development of control voltages—and how all receivers are brought to a common servicing level. There is one thing which is common to every radio set—the signal. Read this book and you will be able to service the most complicated set with greater speed and less effort, for "Servicing by Signal Tracing" is based upon the most fundamental thing in any and all receivers, the signal.

300 pages..... \$2.00

Coming Soon! VOLUME II THE CATHODE-RAY TUBE AT WORK by John F. Rider

New applications of the cathode-ray tube during the past five years require that the 1939 serviceman know more about its operation, its characteristics and its performance.

The cathode-ray tube as the principal factor in television receiving sets is but one of the applications with which you will soon be faced. The use of the Oscillograph in industry is increasing every day in the testing of vibration, strength, engine pressure, etc. These industrial users need servicemen to maintain their oscillographs. You must be up-to-date on this vital subject. Watch for date of publication.

VOLUME I THE CATHODE-RAY TUBE AT WORK by John F. Rider

This book has established itself as a standard work. It is the most complete and practical book ever written on the subject. If you want to be ready for television you must have the facts contained in this book. This is the only book on the subject written especially for servicemen. Get it today! 336 pages— Over 450 illustrations..... \$2.50

THE OSCILLATOR AT WORK by John F. Rider

Eliminate guess work —KNOW! This new book tells all about oscillators that you use as a signal source —those in a receiver

or a wireless record player—in fact all oscillators. It not only explains the theory by means of simple illustrations, diagrams and curves, but gives you the practical facts—so you can combine theory and practice. Out in May—Place Your Order Now.

"An Hour a Day With Rider" Books—60c Each
On AUTOMATIC VOLUME CONTROL
On RESONANCE AND ALIGNMENT
On D-C VOLTAGE DISTRIBUTION IN RADIO RECEIVERS
On ALTERNATING CURRENTS IN RADIO RECEIVERS

AND DON'T FORGET
"You Need All Nine RIDER MANUALS"
Stop tussling with baffling service problems. You need and will eventually buy Volume IX. Why wait! Get it and start benefiting from this vast storehouse of essential circuit data today.

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

RIDER BOOKS
For Servicemen who want to be "Ready"

JOHN F. RIDER, Publisher, 404 FOURTH AVE., NEW YORK CITY

EXTRA PROTECTION!



POWER WIRE WOUND RESISTORS (Cement Coated)

That special cement coating on IRC Power Wire Wound Resistors is just as rough and tough as it looks. It is the most durable coating yet developed. It is practically impervious to moisture and heat. It doesn't peel, chip or crack. It offers **EXTRA PROTECTION** against the most common causes of resistor failure. It gives you true airplane — submarine resistance dependability — at not one cent of extra cost. Its amazing superiority can be demonstrated by any test you care to name. Ask your jobber. Insist on IRC Power Wire Wounds — the only resistors having this exclusive feature.

A 10-WATT SERVICE HINT

Hundreds of servicemen and amateurs save time and money by using these little 10-watt IRC Power Wire Wounds universally for all low wattage resistor requirements. The 10-watt adjustable (Type ABA) is especially handy. Any desired range up to the maximum of the resistor can be tapped off by moving the adjustable band. A few popular ranges equip you for literally hundreds of jobs.



INTERNATIONAL RESISTANCE CO.

401 N. Broad Street, Philadelphia, Pa.

Sales Helps

Dealers may now broadcast

Crosley Corp. has prepared a series of 13 dramatized, 15-minute, recorded programs for broadcasting that the dealer can put on his local radio station and tie in with his own advertising, name and address. The series is available for twenty-dollars, plus a small charge for each broadcast of copyrighted musical scores. Crosley Radio Corp., 1329 Arlington St., Cincinnati, Ohio.

Combination job ticket and receipt

A single printed card resembling a baggage tag is separated into three parts including; a job ticket for shop use, a receipt with a service guarantee and a job record card for filing as a reference. National Union Radio Corp., 570 Lexington Ave., N. Y.

Animals are used by National Union to illustrate need for new tubes. A dog illustrates a "howling" radio, a mule mimics a "balky" set and "squealing" is shown by an open-mouthed pig.

Display for table models

New floor stand to display Majestic table models is in three colors with ample space on the two steps to display six sets. The stand folds into a compact container, measures 57 inches wide, 52 inches high, and 28 inches deep. Available through distributor or Majestic Radio & Television Corp., 2600 W. 50th St., Chicago, Ill.

Contact microphone display for dealers



New Amperite display for Kontakt Mikes is in two colors and measures 11 x 17 inches. Available to all dealers on request.

Jobbers display answers service questions

Personalized counter displays which carry the name of the individual jobber are offered by Supreme Instruments Corp., Greenwood, Miss. Five sales messages make up the group, pushing the new 504 tube-and-radio tester. Question and answer information is printed on the back of the displays answering most servicemen inquiries.



Majestic floor stand uses generous spacing to show six table models to good advantage.

Modernistic clock-sign

An electric sign with illuminated clock is announced by Hygrade Sylvania Corp., 500 Fifth Ave., New York, N. Y. Done in four colors the sign measures 13½ inches high and 20 inches wide. Modernistic in appearance, with self-starting clock, it is being handled through Sylvania jobbers.

A green and black window strip streamer measuring 24 x 3¾ inches and recommending Sylvania tubes is also available to jobbers and dealers.

Better tone for car-radio display

An auto-radio exhibit constructed of wood and tubular steel for better tone while demonstrating is used to display the 933 Philco. Shipped collapsible by Philco Radio & Television Corp., Tioga & C. Sts., Philadelphia, Pa.

Speaker sales boost

Greater speaker sales is the aim of two six-color counter displays. One is directed to consumers with the caption, "Make your old radio sound like new." The other, for jobbers, displays "Oxford speakers for best results." Offered by Oxford Tartak Corp., 915 W. Van Buren St., Chicago, Ill.

Individually designed valance

RCA-Victor is offering transparent, six-color window valance incorporating the dealer's name and the RCA-Victor trade-mark. Made in an individual design for each dealer it is available through distributors at 40 cents per running foot; minimum price \$3.20 including installation and choice of strips advertising RCA products. RCA Mfg. Co., Camden, N. J.

Electric clock shows large sales

A display accommodating nine different sets and an electric clock with the slogan, "Every fifteen seconds, every day of the year, someone buys an Emerson" is available to dealers from Emerson Radio and Phonograph Corp., 111 Eighth Ave., New York, N. Y.

Handy condenser board

A board showing the various condensers in the Amcon line is being distributed to jobbing accounts by American Condenser Corp., 2508 S. Michigan Ave., Chicago, Ill.

Proving kit for car-aerials

A "Performance Prover" kit with necessary display and advertising supplies and a test devise to show prospects better reception with a new aerial, is being sent to dealers for 50 cents by Radiart Corp., Shaw Ave., Cleveland, Ohio.

NEW...

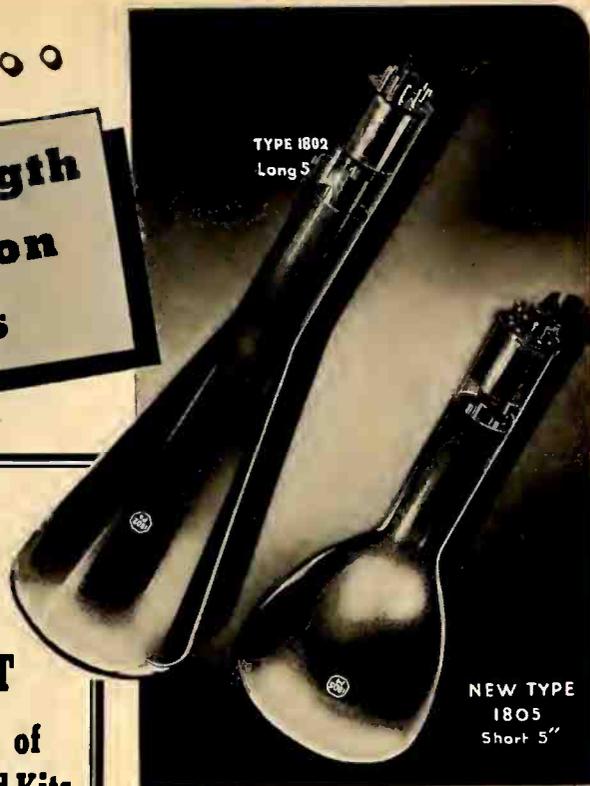
Short Length Television Tubes

A
NATIONAL UNION DEVELOPMENT
for all Builders of
Television Sets and Kits

Technical Data on Request to Engineers, Experimenters and Servicemen.

N.U. Quality in Television Tubes carries on the enviable tradition National Union has established for quality in radio receiving tubes . . . High brilliance . . . Clean sharp focus . . . 441 line definition . . . constant sensitivity. And, of course, the new short stem requires less space for mounting and materially reduces breakage hazard.

Just compare N.U. tubes for constancy in characteristics, performance and life.



TYPE 1802
Long 5"

NEW TYPE
1805
Short 5"

WHY SERVICEMEN INSIST ON N.U.

Radio service engineers have learned over the years that National Union will never let them down. In quality, protection, price and dependability, National Union has proved it is the serviceman's tube, dedicated to helping servicemen "make more money."

If it's Shop or Test Equipment you need **WRITE N. U.**

National Union Radio Corporation
57 State St., Newark, N. J.

Please send me

- Technical data on Television Tubes.
 Information on how I can get free (Test or Shop Equipment).

Name

Address

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

RT-439

THE TELEVISION TRAINING CORP.

480 Lexington Avenue • at 46th Street
New York City

Offers a complete course in

Radio and Television

Laboratory and Classroom Course —Not a Correspondence Course

Affiliated with the

NATIONAL TELEVISION CORP.

Your GUIDE to ECONOMICAL CONDENSER REPLACEMENTS!

SPRAGUE ATOMS

Save Time—Save Money—Save Space
on Dry Electrolytic Replacements.

Cat. No.	Cap. Mfd.	Working Voltage	Metal Tube Diam.	Length	Net Price
TA-10	10	25	5/8"	1-5/8"	\$0.24
TA-25	25	25	5/8"	1-5/8"	.30
TA-55	5	50	9/16"	1-5/8"	.27
TA-510	10	50	11/16"	1-5/8"	.30
TA-525	25	50	11/16"	1-5/8"	.33
UT-41	4	150	5/8"	1-5/8"	.24
UT-81	8	150	5/8"	1-5/8"	.27
UT-121	12	150	5/8"	1-5/8"	.30
UT-161	16	150	11/16"	1-5/8"	.33
UT-201	20	150	3/4"	1-5/8"	.36
UT-401	40	150	15/16"	1-5/8"	.39
UT-42	4	250	9/16"	1-5/8"	.27
UT-82	8	250	5/8"	1-5/8"	.30
UT-122	12	250	3/4"	1-5/8"	.39
UT-162	16	250	3/4"	1-5/8"	.45
UT-43	4	350	5/8"	1-5/8"	.30
UT-83	8	350	3/4"	1-5/8"	.33
UT-123	12	350	7/8"	1-5/8"	.42
UT-4	4	450	11/16"	1-5/8"	.33
UT-8	8	450	13/16"	1-5/8"	.36
UT-12	12	450	15/16"	1-5/8"	.45
UT-16	16	450	7/8"	2-1/8"	.54
UT-20	20	450	15/16"	2-1/8"	.60

Dual Combination Atoms

TA-100	10-10	50	5/8"	2-3/8"	\$0.39
TA-212	12-12	200	13/16"	2-3/8"	.57
TA-216	16-16	200	7/8"	2-3/8"	.63
TA-816	8-16	200	13/16"	2-3/8"	.57
AT-816	8-16	250	3/4"	2-7/8"	.66
UT-88	8-8	450	1"	2-3/8"	.60
AT-816	8-16	450	1"	2-5/8"	.81
D-6696	20-20	150	Emerson	4HC-348	.60

Where to Use Them...

Sprague ATOMS are "tops" for ANY dry electrolytic replacement where you want a first class job at rock-bottom cost. Don't worry about the larger size of old-style condenser to be replaced. ATOMS are the smallest drys on the market, BUT THEY'LL STAND THE GAFF! And how! They shake off high surges and come back for more. They have lower leakage and lower power factor. They absolutely will not "blow up." One or two handy Kits equip you for almost any replacement job. Don't let your competitors beat you to the punch. Get next to ATOMS today—the fastest selling midgets BECAUSE they're far and away the most reliable.

SPRAGUE PRODUCTS CO.
North Adams, Mass.

SPRAGUE ATOMS

"Mightiest Midgets of All"

Trade Flashes



S. N. Shure of Shure Brothers, Chicago, discusses sound sales with genial Bill Shuler (left) of Shuler Supply Co., New Orleans.

Parts Show special train

The transportation committee of the National Radio Parts Trade Show is already receiving names of members to be included on the 1939 Special to Chicago which leaves N. Y. Grand Central Station the afternoon of Sunday, June 11, picking up the New England delegation at Albany.

Fare is the only item travelers on the special will have to worry about since meals, entertainment, smokes and liquid refreshments are furnished free through the cooperation of some of the exhibitors.

All radio men interested in riding the Radio Special are urged by Pery Saftler, of the transportation committee, to notify him at 53 Park Place, New York, N. Y., so that suitable arrangements may be made.

New RMA members

The RMA membership committee under Chairman E. Aischuler is actively engaged in a membership campaign to increase RMA rolls, develop cooperative support and increase sales between RMA member companies. New membership applications have been received from Pierce Airo and Kolorama Labs. Farnsworth Television & Radio made the affiliation recently.

Pix contest for sound men

Crisp five dollar bills are being rustled under the noses of alert sound men by Transformer-Corp-of-America's Clarion Institute of Sound Engineers, in a "best installation" monthly picture and story contest starting in April.

All photos submitted must be at least 5 x 7 inches and will receive better consideration if both engineer and

agent are included. The story describing the Clarion installation should have a human interest angle. Five dollars will be paid for the best photograph and story, \$1.50 for every picture accepted; all others will be returned.

Keene Appliance Co. formed to sell radios

Announcement of the formation of the Keene Appliance Co., Ann Arbor, Mich., for the manufacture and distribution of radio sets and electrical appliances, is made by W. Keene Jackson, head of the company. Plans are under way for an early presentation of a new line of Keene radios to be marketed through distributors and strong territorial sales organizations.

W. Keene Jackson was for eight years Sales Manager of International Radio Corp., before which he was Sales Manager of one of the largest national radio sales organizations in the country. He plans to concentrate on style leading, quality merchandise at "right prices" and eliminate all fancy trimmings in merchandising, which add to the cost of a product.

"Talking Door" sales boom

New orders for the "Talking Door" intercommunicator are continually pouring in, according to Walter Spiegel of Regal Amplifier Co., manufacturers of the unit. Featuring the slogan "Here is that ounce of protection," Regal has gone out to educate the public to using the talking door as a safety measure. With thousands of visitors in the New York area for the World's Fair countless doorbells will be pushed and "Talking Door" should be an ideal instrument from both safety and convenience angles.

Sales Helps

Camera lines featured

Two new platform displays will soon be ready for dealers handling Mercury cameras. Each provides permanent mounting of demonstration cameras to prevent theft. Selling copy for the 1/1000th second candid camera is featured on one, while promotion for the movie camera line is contained on the other. Source is Universal Camera Corp., 28-30 W. 23rd St., New York, N. Y.

Silver offered with farm radio

Individualized advertising and promotion for distributors and dealers is part of the merchandising plan wherein an RCA table-model farm-radio and a chest of Rogers table silver all in one "package" are offered at slightly higher cost than the list price of the radio, including provision for trade-in. Instructions for directing the campaign, including newspaper announcements, window displays and store arrangements, come in a folder from RCA Mfg. Co., Camden, N. J.

3 auto-antennas shown

A two color display measuring 22 x 25 inches is used to carry three leading ICA antennas. Supplied by Insuline Corp. of America, 25 Park Pl., New York, N. Y.

Confidence through guarantee

A "Guaranteed Radio Service plan" is being promoted by Hygrade Sylvania. Three parts of the plan include: a guarantee certificate for display which gives the serviceman's job guarantee against defects or poor workmanship; a radio check-up form to suggest new parts; and a four page direct-mail piece to advertise the service and build up confidence and prestige.

Radio toys new market for dealers

Promise of a new field for radio dealers to look for revenue comes in the introduction of the RCA sound-effects and electronic kits planned to be shipped in May. Twenty-two different effects may be produced with the first kit, while the electronics set contains parts and instructions for building a p.a. system, a code practice set, a capacity relay and a small radio receiver.

That the market is ready to be tapped is proved by Nellie Griggs' letter to NBC. Nellie is a pupil at P. S. 30, Valley Stream, N. Y., and writes that children in the third grade are having real fun with make-believe broadcasts which they call "Our Guess Story Program".

Mechanical toys long ago proved their popularity with children and radio dealers will, no doubt, welcome this opportunity to expand their merchandising efforts with a low-investment, good-profit medium.



There's a brand new sector in the scale of instrument quality

SPEAKING of "English reading scales," there is a new sector at the top of testing instrument value today, and the name of this higher plane is SIMPSON!

You will realize this the moment you examine any of the testers illustrated here. Like their larger brothers, these little fellows in the Simpson line have the same beauty of design and unerring accuracy that could only be built into them by Ray Simpson and a group of associates who have made a life study of instrument design and production.

There is an instrument built for you in the broad Simpson line. You will find it built to a higher standard yet priced lower than instruments which cannot match its range, its beauty, or its stamina.

Ask for complete descriptions. See them at your jobber's.

SIMPSON ELECTRIC CO.
5202 Kinzie St., Chicago, Ill.



**MODEL 333
TUBE TESTER**

The "most" tube tester ever offered at the price. Tests all tubes including new Loctal and other late types. Has double-filament switching. Only 7½ x 10 x 5". Your price..... **\$26.50**



MODEL 215— The first small instrument with big 4½ inch meter. Five A.C. and D.C. voltage ranges—five decibel ranges—0 - 10 - 100 - 500 milliamps; 0-250 microamps; 0-4000 - 400,000 ohms; 0-4 megohms. Your price... **\$25.75**

**MODEL 240
"HAMMETER"**

A remarkable value in a pocket size (5¼ x 27⁄8 x 1¾") 3,000 volt, self-contained tester. Four A.C. and five D.C. voltage ranges at 1,000 ohms per volt; 0-15 - 150 - 750 - milliamps; 0-3000 - 300,000 ohms. Your price... **\$14.75**



MODEL 230—Smallest A.C. - D.C. instrument on the market, yet has ranges of 0 - 10 - 250 - 1000 A.C. volts; 0 - 10 - 50 - 250 - 1000 D.C. volts; 0 - 10 - 50 - 250 D.C. milliamps; 0-1000 - 100,000 ohms. Your price... **\$14.25**



MODEL 205 — Pocket size, but highest quality. Highest resistance ranges ever made in instrument of this size, 0-2000 - 200,000 ohms - 2 megohms. Volts, 0 - 10 - 50 - 250 - 1,000 D.C. only; milliamps, 0-10 - 500. Your price..... **\$13.25**

SIMPSON
INSTRUMENTS THAT STAY ACCURATE

A GOOD NAME GOES A LONG WAY



The Ken-Rad name has stood for many years for the finest and most technically advanced radio tubes. Ken-Rad Radio Tubes are dependable. **KEN-RAD TUBE & LAMP CORP.** OWENSBORO, KENTUCKY, U.S.A.
Address Export Dept.:
116 Broad St., New York, U.S.A.
Cable Address: Minthorne, N. Y.

★ **KEN-RAD** ★
DEPENDABLE RADIO TUBES

Trade Flashes

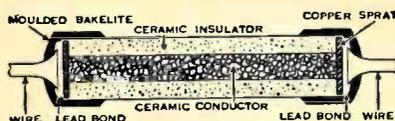


YOU WOULDN'T USE A FIRE HOSE TO WATER THE PLANT

Nor does it make sense to replace a small resistor with a LARGE one. In fact, most resistors in radio sets actually carry less than 1/4 watt load. It is changes resulting from high chassis temperature and humidity that actually cause breakdown . . . not overload. Replacements of the same material, but in larger sizes are no sure remedy.

TYPE 710, rating 1/2 watt, size 1/8 x 5/8 inch. List Price 60c for five.

TYPE 714, rating 1 watt, size 1/4 x 1 inch. List price \$1.00 for five.



Center ceramic core, and ceramic jacket fired together to form a single shockproof unit. Pure copper covers resistor end for wire lead contact.

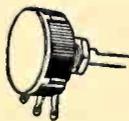


VISIT the 1939 National Radio Parts Trade Show, June 14 to 17 at Stevens Hotel, Chicago.

Old Man CENTRALAB

says:

You'll have one gosh awful time getting anything but perfect performance with Centralab Volume Controls, Fixed Resistors, and Wave Change Switches.



Centralab AXIAL LEAD RESISTORS

Division of Globe Union, Inc.
Milwaukee, Wis.



After losing all stock in the Ohio flood, Farver Supply Co., Portsmouth, Ohio, rebuilt their building and continued to serve a 75-mile radius with Tung-Sol tubes and about 40 other lines. A part of the large stock is shown here.

Radio dealers successful camera merchandisers

The aggressive radio dealer has the necessary push to put over a bang-up job of camera merchandising according to F. G. Klock, of Universal Camera Corp., who cites Vim Radio of New York as an excellent example.

Vim has recently ordered 2,000 Univex Mercury cameras after testing the interest of their customers by placing one of the cameras in the window. The interesting angle is that while some Vim radio stores are selling between 40 and 50 Mercury cameras weekly, camera stores in the immediate vicinity are retailing only two or three of the same unit.

Universal Microphone Co. is listed in Air Commerce Bulletin with two microphones approved for scheduled air carrier use.

National Television Corp. has been awarded exclusive rights to the use of a helical mirror drum for television, combined with a linear source of light, in a patent decision recently reached by Patent Office.

The Radio Technicians Guild of Rochester have already laid plans for a meeting on May 28 at Hotel Powers in Rochester. Radio men within a three hundred-mile radius and sections of New England are expected. The theme is educational so they've tagged it the "Info-Meet."

Norge reports March shipments at about 36,000 refrigerators. April production goes up 25 per cent.

Niles Trammel, exec. v. p. of NBC, is now a member of the board of directors.

J. C. Callahan may now be addressed as Ad. Mgr. of Majestic.

Television clause added to RCA recording pact

An amendment to the standard motion-picture producers agreements, enables RCA's recording licensees to use present movie sound recording for television at no extra charge. They may also make movie sound records especially for television broadcasting. Royalties will be the same as for present movie sound records.

N. B. Neely Radio Enterprises installed remote studios in KFOX, Cal., and appointed Bill Stencil and Richard Hix as sales engineers.

RCA going into sound in a big way, kept W. L. Rothenberger as Mgr., put in George Ewald as Sales Mgr.

Donald A. Wood became Mgr. of the ad service division of G. E.'s appliance and mdse. dept. at Bridgeport.

Universal Microphone likes the attention their professional recording machine is getting at the Golden Gate Exposition.

Edwin Schneeberg, script writer, has joined the radio dept. of N. W. Ayer & Son.

Hams at fair

Enthusiasts of the American Radio Relay League have constructed a novel display at the Westinghouse Building at the World's Fair. Action of every part of a radio transmitter will be illustrated by 6,400 flashing lights in various colors which wink on and off as different stages of the transmitter are activated. Ribbons running from the parts to enlarged diagrams will show just what happens when a "ham's" station goes on the air. Co-operating with the ARRL on the display are the American Institute and RCA Institutes.

CONSOLIDATED Volume and Tone CONTROLS



For Top Performance
at Low Cost

FIVE types of controls cover 90% of your replacement calls. Resistances range from 5,000 to 2,000,000 ohms. These units are built to the highest standards of quality based upon years of experience gained in engineering special units for special circuits. They are fully guaranteed.

The five types cover units without switches, with or without intermediate tap—with SP-ST switch, with or without intermediate tap—and with DP-ST switch without intermediate tap. Choose the units for which you have the greatest call and maintain a stock of these individually packaged controls. The investment is surprisingly small.

See them at your jobber's today!

CONSOLIDATED
WIRE AND
ASSOCIATED
CORPORATIONS

516 S. PEORIA ST. CHICAGO, ILL.

Par-Metal

RACKS CHASSIS PANELS ACCESSORIES

● Sound men everywhere are realizing that the appearance of merchandise is one of the greatest selling factors of PA Equipment. You may have the finest amplifier in the world, but put it in a wooden box and it's hard to sell. Today, sound apparatus must have "eye appeal" as well as "sound appeal." Par-Metal equipment lends that necessary factor with its rounded corners, chrome trim, Gray or Black ripple finish, combined with modern, streamlined appearance. Our catalog No. 39, completely describing the many combinations possible with Par-Metal equipment, is yours for the asking. Write Today.

PAR-METAL PRODUCTS CORP.
35-25 41ST STREET
LONG ISLAND CITY, N. Y.



Philo Farnsworth, v.p. in charge of research, Farnsworth Television and Radio Corp., soon starting production.

Vogel named V-P of Farnsworth

E. A. Nicholas, Pres. of the Farnsworth Television and Radio Corp., announces the appointment of Ernest H. Vogel as Vice-President of the corporation, effective immediately.

Mr. Vogel was connected with RCA from 1930 to 1936 in various advertising, sales and merchandising management capacities.

He joined the General Electric Co. in 1936 and advanced to the position of manager of the Radio Sales Division, which he resigned to assume new responsibilities with the Farnsworth Television and Radio Corp.

Mr. Vogel brings with him into his new capacity, a well-rounded administrative experience covering design, production, merchandising and sales, plus an excellent understanding of television, both technical and commercial, that should prove exceedingly valuable as television progresses.

He has recently returned from an extended visit to the leading European capitals, principally London, where he made a personal study of the technical, manufacturing and commercial phases of television.

Mr. Vogel will make his headquarters at the principal office of the corporation—3700 Pontiac Street (extended), Fort Wayne, Indiana.

That World's Fair Cover by Alan Foster

So much admiring attention was caused by RADIO TODAY'S March cover, showing the World's Fair trylon and perisphere, that we feel readers will be interested to know this was designed by the famous magazine cover artist, Alan Foster, of 3513 76th Street, Jackson Heights, N. Y. Mr. Foster has produced many striking cover designs for *Colliers*, *Saturday Evening Post*, *Red Book*, and *Good Housekeeping*.

Robert Robins, secretary of Wald Radio & Television Laboratories, accepted the invitation of the FCC to discuss the Wald method of using the present broadcast band for television transmission.

A FRANK TALK WITH RADIO MANUFACTURERS



on the IMMEDIATE
FUTURE of

ELECTRONIC MUSICAL INSTRUMENTS

—PIANOS, ORGANS and
FRETTED INSTRUMENTS

NO. 1 IN A SERIES

RIGHT under the nose of the radio manufacturer, a one hundred million dollar industry is in the making. The Miessner principles of electronic control have opened up a totally new market for music in the home.

Imagine a miniature piano capable of combining and surpassing the finest grand piano and largest organ, with far greater range of tone-power and timbre—with the added convenience of a fully-concealed radio and phonograph.

This almost unbelievable development makes use of engineering and acoustic principles well-known in radio. By every rule of right or reason, it should be a part of the radio industry, as naturally as the phonograph and television.

So, radio is today facing TWO inevitables—electronic music and television. But there is a tremendous difference in what each requires of a manufacturer in terms of finance, development and distribution. And it is this difference that determines their profitability now and for some time to come.

Television still has problems that will tax the resources of any manufacturer. It can progress no faster than telecasting. But Electronic Music is here, today, with no problems, no handicaps. Furthermore, it has the great advantage of a sensational revival of the piano business, paralleling that of the phonograph.

A manufacturer of electronic musical instruments does not have to cautiously feel his way—need not risk a penny. The development work has been done. A dozen factories are in production. Sales channels are already established and the public is buying.

Unit sales are higher. Trade-ins are not a problem. Inventories never become obsolete. Cut-price competition is totally absent.

We invite correspondence with radio manufacturers who are looking for Opportunity but keeping an eye on the balance sheet. We offer cooperation and protection under 40 patents already issued and others pending.

B. Miessner

MANUFACTURERS LICENSED UNDER MIESSNER PATENTS

Piano Manufacturers (listed alphabetically)

Anslay Radio Co., Bronx Blvd. & 238th St., N. Y. City
Gulbransen Company, 816 N. Kedzie Ave., Chicago
Hardman, Peck & Co., 33 W. 57th St., New York City
Kraukauer Bros., Cypress Ave. and 136th St., N. Y. City
Packard Bell Radio Co., Los Angeles, Cal.
Story & Clark Piano Co., 64 E. Jackson Blvd., Chicago
Winter & Co., 849 E. 141st St., New York City

Foreign

August Forster Piano Fabrik, Germany
Mason & Risch, Ltd., 642 King St., West Toronto 2,
Canada

Sherlock Manning Co., Clinton, Ontario
Organ Manufacturers
Everett Piano Co. (The Orgatron), South Haven, Mich.
Sebastian Gundling & Sons, Lancaster, Pa.

Fretted Instrument Manufacturers
Epiphone, Inc., 142 W. 14th St., New York

Manufacturers—For license data, write us direct
Dealers—

For sales franchise, write any of licensees above

MIESSNER
MIESSNER INVENTIONS, Inc.
MILLBURNI • NEW JERSEY

Trade Flashes

The *National Television Company*, 480 Lexington Ave., New York City, is bringing out a new television receiver for home use which is without oscillators in the sweep circuit. This results in accurate interlacing and a very steady picture which cannot get out of synchronism. Ease of adjustment is facilitated, servicing is simplified, and hazards are reduced for both the user and the serviceman. National has been experimenting with television since 1931 and holds nu-



RCA Victor has named W. Wallace Early manager of recording and record sales.

merous patents at the present time with others pending. They list the following products to show their preparedness in the new field; camera chains; synchronizing generator; special sweep circuits; test equipment for television; video volume controls; regulated power supplies; horizontal deflecting transformers; blank-out generators; square-wave generators; and television receivers.

The *National Small Business Men's Assoc.* meets June 27, 28, 29 in National Convention.

Contest Judging Div. of *Reuben H. Donnelly Corp.*, Chicago, retained to handle *Bendix Comparison Contest*.

Kester Solder Co., and its pres., *F. C. Engelhart*, observed 40th and 30th company anniversaries respectively.

Joseph B. Elliot now special ass't to *Fred D. Wilson*, RCA Mgr. of Field Activities.

E. W. Beyer becomes ass't in radio dept. of *Crosley Corp.*'s Export Div.

N. Y. Division of *Philco Distributors* have awarded the door prizes offered at their All Year 'Round Convention March 27. *Fred Greil*, McDowell Radio Service, won a Mystery Control model radio as first prize.

J. W. Walter of *Apex Rotarex* says the cruise to Havana May 27 will be grand. Dealer's cost is nil. *Wholesale Radio Equipment Co.* is cooperating.

Robert S. Sherman has been appointed direct factory rep for *Ward Products Corp.*, Cleveland, Ohio.

Majestic Radio & Television Corp. have announced a "no quota" policy for dealers in their products. *William Norins*, general sales mgr. states that undue hardship is often caused dealers by having to purchase a large volume in order to keep a franchise, often resulting in dumping and other harmful practises. Mr. Norins reports that production is up 200 per cent over January '38 and that present *Majestic* shipments are in line with November, a peak month of last year.

Jack Poppele, Chief Engineer of *WOR*, is doing a Mrs. Roosevelt showing his Finch facsimile receiver. He covers more territory than a jobber.

Ward Leonard Electric Co.'s address in Philadelphia is 1600 Arch St., Room 329. *Frank Beede* is there as District Mgr.

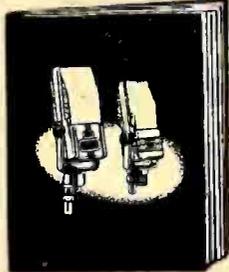
Radio Parts Manufacturers predict a sell-out at the *Radio Parts Industry Show* in Chicago. Only 25 booths were available April 1, and these only after eliminating space provided for the show's institutional displays. The '39 Show will no doubt set a record for size, diversification of exhibits and novelty of display.



Arthur Ansley, pres. of *Ansley Radio Corp.* which recently moved show rooms and factory to 4377 Bronx Blvd., New York.

FOR SOUND REASONS USE Electro-Voice MICROPHONES

Sound men who know sound values acclaim *Electro-Voice* microphones. Special engineering, advanced design, plus a complete line of types assures an *Electro-Voice* "Mike" for every sound need.



- ★ VELOCITY TYPES
 - V Series
 - L Series
- ★ DYNAMICS
 - Stand
 - Hand
- ★ STREAMLINE
 - Button Carbons
 - Hand
 - Stand
- ★ ACCESSORIES
 - Transformers
 - Stands
 - Hardware

Meets Every Sound Requirement

NOW GET BETTER QUALITY!

You get across better with *Electro-Voice* equipped sound systems. Investigate at once these better MICROPHONE VALUES.

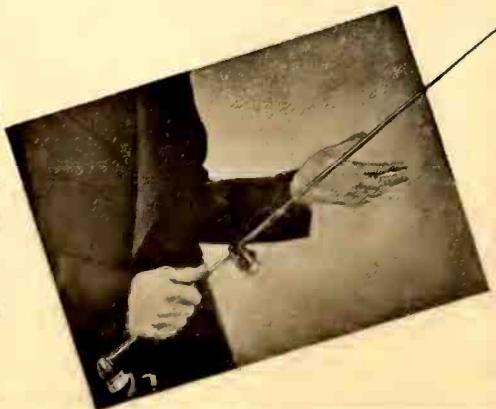
FREE BIG CATALOG NOW READY

Send now for your FREE copy of the big new *ELECTRO-VOICE CATALOG*. Lists entire line. Gives prices, characteristics, etc. Available at your parts distributor or write . . .

ELECTRO-VOICE MANUFACTURING CO.
1239-A South Bend Ave., South Bend, Indiana

New 1939 JFD NOISELESS ANTENNA

Mechanically and Electrically Noiseless



Silent as the Night
NO NOISE

TEST IT!

Attractive — durable — efficient — Beautiful chrome finish — Inexpensive, yet nothing finer at any price. Write today.

J. F. D. MANUFACTURING CO., 4111 FT. HAMILTON P'KWAY, B'KLYN, N. Y.



John S. Young, Radio Director for the N. Y. World's Fair is also radio consultant with J. S. Getchell Adv. Agency and v.p. of National Recording Co.

American Communications Corp., New York City, have moved from 1650 Broadway to larger and improved quarters at 123 Liberty St. The firm will now use new and specially designed equipment to continue the manufacture of the American Code Reader, oscillator, Miracle Mirror and burglar alarm. The company also makes the American centralized radio system, for hotels, clubs, restaurants, etc. E. M. Lurie is president.

George Prutting represents American Record from N.Y.C. to Baltimore. Fred Boudiette does the same around Hartford and Boston.



★ CLAROSTAT television controls are geared to critical requirements of video reception. Composition - element type for high resistance values (1000 ohms to 5 megohms); wire-wound type for lower values (1 to 100,000 ohms). Either type provided with insulating sleeve of 2000 or 5000 v. insulation to ground. Meet Underwriters' test at stated voltages. Typical of CLAROSTAT timeliness.

★ Write for CATALOG

Latest data on request. Submit your television or other resistance and control problems. And be sure to visit with us at forthcoming Radio Parts Manufacturers National Trade Show, Booth 620-22, Hertz Ave.

CLAROSTAT

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

An ultra-high frequency radio transmitter and equipment for the transmission and reception of facsimile has been ordered from RCA Mfg. Co., by Station WBNS, owned by Columbus Dispatch.

United Catalog Publishers, Inc. move May 1 to larger quarters at 230 Fifth Ave., New York City.

Westinghouse reports their radio-interference-proof pin-type insulators are beginning to outstrip conventional insulators in popularity so that now they are to be sold at the same price as ordinary porcelain.

Insuline Corp. of America removed to larger quarters at 30-30 Northern Blvd., L. I. City, N. Y. Machinery and facilities doubled.

Proof of the wide spread interest in portable radios was demonstrated at the Chicago Boat & Sports Show. Sentinel reports that their booth was constantly crowded and that visitors were impressed with the compactness, light weight, tone and volume of portables.

Troubadour sets made by Warwick

Through a typographical error in our March issue, "Troubadour" was incorrectly listed as a tradename used by Ultramar Mfg. Co., Chicago. Troubadour radios are made by Warwick Mfg. Co., 1700 West Washington Blvd., Chicago, Ill.

"Tricks With Mueller Clips" contest offers 25 dollars for best ideas Mueller Elect. Co., 1583 E. 31st St., Cleveland, Ohio, for entry blanks.

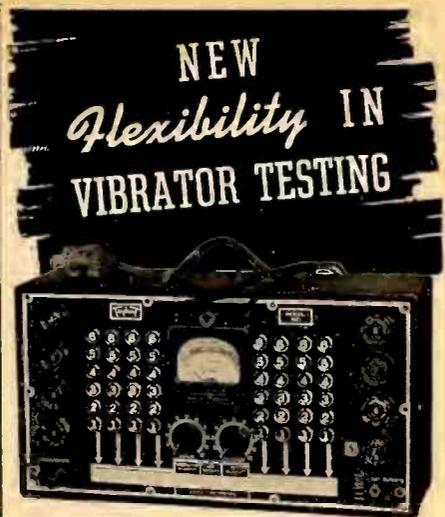
Nathan Schnoll has resigned from Solar Mfg. Corp. to organize Industrial Instruments, Inc., in Bayonne, N. J.

Enos Schaffer, American Steel Export's ad mgr., became vice-pres. of the N. Y. Advertising Club Jr. Assoc.—unanimously.

New York Electrical Appliance dealers feel pretty strongly about getting back that buck fifty in the Old Ice-Box Round-Up.



Whipple Jacobs, former v.p. in charge of sales, elected President of Belden Manufacturing Company. He succeeds the late Joseph C. Belden, founder of the company, who died February 17.



VIBRATOR TESTER Push-Button Type

Model 1671 **41.67** Dealer Net

- Tests All Standard 6-Volt Vibrators
- Easy to Operate . . . Roll Chart Shows Correct Button Settings
- Uses Approved 5000 Ohms Load
- Tester Fused Against Shorted Vibrators
- Flexible Push-Button Switching Permits Placing Proper Voltages on Each Reed, Guarding Against Possibility of Obsolescence.

Triplett Model 1671 will take the guess out of vibrator testing . . . help you locate trouble quicker . . . sell more vibrators.

This new tester has been developed with the cooperation of leading vibrator engineers, and uses the standardized 5000 ohms-8mfd. load. It will test all standard makes of six-volt vibrators as used in automotive and home battery receivers. The Model 327-A indicating instrument has three scales: 0-10 volts to show input voltage to vibrator for start or running tests. . . . A two-zone, two color merit scale used in conjunction with the load rheostat shows vibrator condition as GOOD or BAD. . . . A 0-100 scale permits inter-comparison of vibrator outputs under standardized input conditions. A roll-chart incorporated immediately below the push-buttons reduces test settings to utmost simplicity. Tester has tip jack facilities for oscilloscope connections. Like provisions have been made for connecting external buffer condensers if desired.

Model 1671 in Standard Triplett DeLuxe Metal Case, 14 1/2 x 7 3/4 x 4 1/2 in. Black Suede Finish . . . Silver and Black Etched Panel . . . Dealer Net . . . **\$41.67**

Model 1671 in Standard Triplett DeLuxe Leatherette Case with Removable Cover and Compartment for Accessories . . . Dealer Net . . . **\$45.67**

Also Available . . . Model 1670 with selector switch controls. In DeLuxe Metal Case . . . Dealer Net . . . **\$24.00**

See the New Triplett 1939-40 Line at the June National Radio Parts Trade Show — Booths 403-405.



THE TRIPLETT ELECTRICAL INSTRUMENT CO.
194 Harmon Ave., Bluffton, Ohio

Please send me more information on Model 1671; Model 1670.

Name
Address
City State

MAKE More on CHANGERS



By using
Popular
General Industries
Changer Units

Model "M"
plays seven
12" or eight
10" records
automatically.

SELL more General Industries record changer equipped radio-phonographs—made right for high-fidelity playing and dependable operation. Priced for building volume sales at popular prices.

Test Out a Model "M" Unit

Each Model "M" unit is complete, ready to install. Induction type motor, built for long service. Cool operation. Modern tangent tracking, high-fidelity pickup. Volume control. Simple, strong changer mechanism. All assembled on mounting plate, easy to install with low labor cost. Order a test sample. Give frequency of current you use and size of turntable wanted.



The GENERAL INDUSTRIES CO.,

3938 Taylor St., Elyria, Ohio

BRUNO
INTRODUCES

the new revolutionary low-priced

Phonoflex

RECORDING BLANK

PHONOFLEX RECORDING BLANKS

will not dehydrate . . . they never dry up

PHONOFLEX RECORDING BLANKS

are flexible . . . will not break or crack

PHONOFLEX RECORDING BLANK

shavings are non-inflammable

PHONOFLEX RECORDING BLANKS

are light in weight

PHONOFLEX RECORDING BLANKS

cut just like any other recording blanks

PHONOFLEX RECORDING BLANKS

are inexpensive

Now you can stock recording blanks—

that last forever and are priced for mass

consumption! The Bruno Laboratories,

Inc., has a profit-maker for you!

Write for Details Today.

LIST PRICES

Packed in cartons of 50

6" one face 20c list

6" two face 30c list

8" two face 45c list

10" two face 60c list

12" two face 75c list

Subject to Attractive Jobber Discounts

BRUNO

LABORATORIES, INC.
30 WEST 15th ST., N. Y. C.

Jobbers doings

J. H. Clippinger, v.p. of Continental Radio and Television Corp. of Chicago, announces three new California distributors for Admiral radios, in the Sacramento Electric Supply Co., Sacramento; the Pacific Wholesale Co., San Francisco; and Herbert H. Horn, Los Angeles. All five of the Marshall-Wells Co. branches now handle Admiral radios. The stores in Billings, Mont., Portland, Ore., Seattle and Spokane, Wash., joined the Duluth, Minn., branch in stocking Admiral.

Ross Electric Co., Brooklyn, N. Y., appointed distributor of RCA radio tubes.

Irving Ginn has hooked up again with Radio Service Lab. of N. H., works in Portland, Me., branch.

New distributors for Admiral are Morey Mercantile Co., Denver; Charles Ilfeld Co., Albuquerque, N. M.; H. H. Tammen Co., Denver; Teague Hardware Co., Montgomery, Ala.; Oklahoma City Hardware Co., Oklahoma City; Charles B. Scott Co., Scranton, Pa.; Gallup Mercantile Co., Gallup, N. M.; Bladel Electric Sales, Rock Island, Ill.; and Chester Barriage, Dixon, Ill. J. H. Clippinger, says Admiral setsales hit the 150,000 mark dating from mid-January.

A new firm, Stannage, Ltd., of Sydney, Australia, has been formed to distribute technical radio equipment in the British Empire. John Stannage of Wellington, N. Z., heads the company.

Radio Tube & Equip. Sales Co., Denver are new Arcturus tube jobbers, serving Denver and the Rocky Mountain area. Harry Moll, Inc., Denver, also rejoins Arcturus.



EUGENE V.
PARISH
SPRINGFIELD
ILL.

Hatry & Young are getting a new outlook at 1172 Chapel St. in New Haven, Conn.

The Smith Distributing Co., RCA distributor for Louisville, added Dillary Zillich to their road force as record salesman.

Edd M. Watkins, Admiral Distributor, says the big Admiral sign on his Electric Supply Co., Oakland, Cal., is seen by 52,000 motorists every twenty-four hours. That makes his corner second busiest (by cars) West of Chicago.

Ivan F. Brady, Elmira, N. Y., becomes distributor for Stewart-Warner.

Sherman Clay chain of radio retail stores are selling Stewart-Warner radios.

The Continental Radio & Television Corp., Chicago, has started publication of a monthly house organ to promote better relations between it and its distributors.



Radio Jobber O. W. Ray of Times Appliance Co., New York City, takes a trot with his famous wife, Marie Benton Ray (author of best sellers), on their electrified estate at Long Ridge, Stamford, Conn.

Representatives

Charlie Cushway and L. G. Winney, Thordarson, visited their New York reps, Charlie Cooper and John DiBlasi.

"The Representatives" welcome these new members: George E. Anderson, Hal F. Corry, and A. L. Berthold of Dallas, Tex.; Roland Moeller, Milwaukee, Wis.; Fred E. Garner, Chicago; Sidney H. Gatty, Philadelphia; and Waldo F. Kelleigh, Boston.

Arthur Freed and Al Saphin have been appointed salesmen for the Automatic Radio Mfg. Co., announced F. P. Altschul, sales v.p. Both men are well known in the trade and will have the metropolitan New York and northern New Jersey territories.

Forbes Music Co., Cheyenne, Wyo., named new appointees by Edw. L. Guthman & Co., Chicago.

Stromberg-Carlson's Larry Loveless, representative for Southern New York, won top honors, smashing his yearly quota and registering 250 per cent in sales. Next two top men were Donald E. Lee and James S. Gibson.

Wallace B. Swank has opened offices at 610 Blaine Ave., Detroit, and will represent makers of radio service and amateur parts in Michigan. He formerly was with General Household Utilities Co.

New RCA Sales Managers are George Malsed, Dallas, Tex.; Harold Winter, Kansas City, Mo.

George Connor, Hygrade Sylvania, lectured on "New Tubes & Circuit Applications" in Montgomery and Birmingham, Ala.; Nashville, Chattanooga, and Knoxville, Tenn., and Boston, Mass.

Diamond Braiding Mills, Chicago Heights, Ill., has set up a separate division for its radio and electrical wire business to be known as Diamond Wire & Cable Co.

RCA television gets F. H. Engel to plan and develop; Small Radio Div., acquires J. A. Milling as Mgr.

Borg-Warner Corp. says Norge units shipped in March were over 50,000, and their DVS Gas Ranges are 279.2 per cent of Jan.-Feb. '38 orders.

P. Crosley, Jr., feels science halted by FCC stripping WLW to 50 kw.

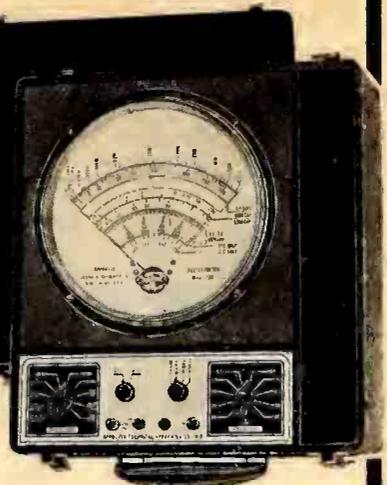
Bell & Howell has taken over Kodascope "Universal" film releases.

H. C. Briggs and C. B. Shapiro of Howard Radio hit N. Y. C. for console promotion, gloating about the 400 consoles sold in three days in Chicago.

Visitors to N. Y. World's Fair will be able to air their Major Bowes complexes before a television camera in the Westinghouse Bldg.

Sales Manager H. W. Johnson announces that the Turner Co. has discontinued manufacturing amplifier and inter-office equipment to concentrate on microphone equipment.

A.T.A. Leads with Outstanding Value . . .



Model 740 "Giant"

A.C. D.C. Select-O-Tester

Unbeatable for value, accuracy and simplicity. "Giant" 9" meter makes readings really a pleasure.

Notice the ranges offered . . .

0/15/150/750 Volts A.C.

0/15/150/750 Volts D.C.

0/1/15/150/750 D.C. Ma.

0/15/150/750 A.C. Ma.

.0005 to 200 mfd.

0/500 ohms and 500/5 Megs.

—10 to plus 19/38/53 db.

Output:—15/150/750.

Inductance 1/700 henries.

Watts: .006 to 600.

1000 ohm per volt meter assures good all around accuracy.

Net Price \$18.95

Cover extra 1.00

APPROVED TECHNICAL APPARATUS CO.

57 1/2 DEY STREET, N. Y. C., N. Y.

Send for New 1939 Catalog

ASTATIC
MODEL T-3

THE MIKE THEY LIKE

Entertaining artists and speakers alike marvel at the performance and flexibility of Astatic Model T-3 Crystal Microphone. Self locking, tilting head adjustable to directional or non-directional position. All chrome finish. Complete with interchangeable socket connector and 25-ft. cable. List Price \$25.00. See your Astatic Jobber or write for literature.

ASTATIC MICROPHONE LABORATORY, Inc.
YOUNGSTOWN, OHIO

Licensed Under Brush Development Co. Patents
Astatic Patents Pending

NEW Three-in-One Mounting

Available on the 20 Leading Power Transformer Numbers

BY means of 4 universally adaptable brackets, packed with each transformer, this mounting gives you a choice of any of the three types shown above.

Insist on Halldorson Vacuum Sealed Transformers for more lasting satisfaction. The vacuum sealing is positive in action and insures uniform impregnation of all windings. The result is an effective, skin-tight covering that does not crack, flake off or open up, even in tropical climates. Where servicemen know transformers, you find Halldorson.

Write for Details!

THE HALLDORSON COMPANY
4500 Ravenswood Ave. Chicago, Ill.

Halldorson

Vacuum Sealed Transformers

SEND US
50c
(IF YOU'RE GAME)

A Radiart jobber will send you a complete Radiart "Performance Prover" Kit, including display and advertising supplies and a test device that shows the improved reception of Radiart's longer, better aerials, right on the customer's own car, through his radio. This convincing test takes only a couple of minutes.

IT SELLS AERIALS
(Profitable Aerials)

THE RADIART CORP.
Shaw Avenue Cleveland, Ohio

SEND STAMPS OR COIN
If you don't think it's worth 50c you can have your money back



Rattle-Proof!

A New PATENTED Feature!

EXCLUSIVE ON ALL WARD AUTO AERIALS

at no extra cost to you!

PATENT NO. 2152316

The WARD PRODUCTS Corp.
WARD BUILDING CLEVELAND, OHIO



CAMERAS AND PHOTO SUPPLIES
will fill out those slack summer months

The IDEAL COMPANION LINE FOR RADIO

Inquiries from responsible radio dealers who are interested in adding cameras and accessories to their regular line are invited. When writing advise if you are now carrying photographic equipment—and mention the lines you carry.

We offer a complete line of cameras and photo supplies and the benefit of our long experience is available to interested dealers. Address Dept. RT-4 on your business stationery.

A complete line of cameras for the dealer

- KORELLE-REFLEX**
2 1/4 x 2 1/4 — 12 or 120
- WELTINI, Coupled**
35mm., 18 or 36 esp.
- WELTUR, Coupled**
1 3/4 x 2 1/4 - 2 1/4 x 3 1/4 in.
- WELTI**
35mm., 18 or 36 esp.
- WELTAX**
2 1/4 x 2 1/4 - 1 3/8 x 2 1/4 in.
- GARANT**
2 1/4 x 3 1/4 - 1 3/8 x 2 1/4 in.
- WATSON Candid**
35mm., 18 or 36 esp.

Burke & James, Inc. 225 W. Madison St. CHICAGO, ILL.

SLOW-MOVING STOCKS— SLOW-MOVING MEN!

Advice to jobbers and dealers on speeding up personnel

In talks to the RCA-Victor distributors at Atlantic City and French Lick, Bob Shannon, general manager of the RCA Manufacturing Co., drew some pointed parallels between men and merchandise in the businesses of wholesalers and retailers. Said Mr. Shannon:

"We take frequent inventories of raw materials and finished merchandise, and we classify them into three groups:

- ACTIVE
- SLOW-MOVING
- OBSOLETE

It is even more important that we take frequent inventories of our personnel. Here similar classifications apply . . . and they apply equally to engineering, manufacturing, sales and distributors'-dealers' organizations.

"In the *Active* classification, there are fewer problems, because here you find the men with characteristics that make for success, personality, enthusiasm, persistence and industry, with complete confidence in the future of the company and themselves. These men are the spark-plugs in any business and it is Management's obligation to see to it that they have full opportunity to exercise their ability and develop the team-work that is one of the basic factors in all successful organizations.

Ability minus vision

"It is the second classification—the *Slow-moving* group which becomes Management's real problem, because if something isn't done about it, they will eventually work into the third or *Obsolete* classification. In the slow-moving group there are many people with recognized ability, but they lack enthusiasm and the vision to see future possibilities. The answer to this problem is not one of personnel changes but of education.

"For many months, Management has been conducting an educational campaign in the distribution of well-prepared literature—group discussions, inviting suggestions and criticisms, and the general dissemination of correct information. This educational work must continue and the story repeated over and over, because more than ever before business

needs today the type of people filled with confidence in themselves—their work—each doing his job with the sense of assuredness and doing it with such credit to himself that opportunity cannot afford to pass him by.

Some look backward

"When we analyze the third or *Obsolete* classification, we find that obsolescence is not a question of age, but it fits a minority who are always looking backwards and are unwilling to adjust themselves to changing conditions and requirements. When the attitude of such a group cannot be corrected by education and fair treatment, there can only be one answer and that is to replace them!

"It would seem that with many thousands of distributors and dealers, a similar appraisal of employes would be worthwhile. It would be interesting to know what percentage of sales employes would fall into the three classifications—

- ACTIVE
- SLOW-MOVING
- OBSOLETE

While this might seem to be a cold-blooded way of appraising the human element, it is better to know the facts about your organization and then deal with it in a humane way.

"In summing up Management's attitude toward men and organization, it is stated briefly thus—putting responsibility where it is sure to be met—insisting on definite results rather than alibis—permitting no favoritism—giving praise where it is merited—putting a premium on fair play and making no promises that cannot be kept—and, finally, developing an organization that is prepared to take the leadership it is rightfully entitled to."



Energy, alertness, confidence are necessary to build profits.

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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.

New Booklets

New circulars listing genemotors, converters and heavy duty power units for police short-wave radio. Carter Motor Co., 1608 Milwaukee Ave., Chicago.

Bulletin describing Radiocrafter dials. New England Radiocrafters, 1156 Commonwealth Ave., Brookline, Mass.

Catalog of Atlas sound products including new 360° speaker and storm-proof Marine Midget speaker. Atlas Sound Corp., 1447-51 39th St., Brooklyn, N. Y.

14 page book describing Kenyon T line of transformers. Contains price revisions, circuit diagrams. Kenyon Transformer Co., 840 Barry St., New York, N. Y.

Instructive, newsy booklet titled, "A Community Credit Control Policy." One of Household Credit Library. Household Finance Corp., 919 N. Michigan Ave., Chicago.

Kohler Co., Kohler, Wis.—descriptive material on a new 800 watt, 110 volt AC electric plant. Also a bulletin on "Kohler Electric Plants for Every Need."

Technical description of Columbia High-Fidelity Recorder. Columbia Recorder Co., 745 7th Ave., New York, N. Y.

Precision Apparatus Co., 821 E. New York Ave., Brooklyn, N. Y.—owners of Precision electrometers models 500, 500A, 600 and 700 may obtain late tube charts, Form 7138, free, by writing this company.

Specs for ARC-6 automatic direction finder for aircraft. Lear Dev. Inc., Bldg. 31, Roosevelt Field, Mineola, L. I., N. Y.

Standard Transformer Corp., 1500 N. Halstead St., Chicago—eight pages of transmitting transformers, "the amateur transformer line built to broadcast specifications." Also a new booklet on the Stancor transmitter kit model 20P.

Free television lesson

National Radio Institute, 16th & U Sts. N.W., Washington, D. C., is offering a free sample television lesson, "Requirements of a Television Receiver" to RADIO TODAY's readers. Also available is a 64-page book telling about the N.R.I. radio & television courses.

New company in the recording field is *Rek-O-Kut Corp.*, 254 Canal St., New York, N. Y. *George Silber* is advertising and sales manager; *Walter Silber*, president; and *Victor Silber*, chief engineer.

The company is manufacturing a recording attachment for use with phonographs and combinations. One unit takes records up to 12 inches in diameter. Another model handles records up to 16 inches.

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- New Improved Low Loss Switch.

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NEW YORK ATLANTA CHICAGO

New Booklets

Clarostat Service Manual listing volume control replacements and circuits. Clarostat Mfg. Co., 285 N. 6th St., Brooklyn, N. Y.

Illustrated booklet and catalog showing new markets for cooling and ventilating equipment sales. Kisco Co., Inc., 4414-18 W. Papin St., St. Louis, Mo.

Description and specs of Weston Photo-electric cells model No. 594, types 1 and 2. Weston Elec. Inst. Corp., 614 Frelinghuysen Ave., Newark, N. J.

Supplement to Stromberg-Carlson Catalog No. 38-R covering all parts used on 235, 245, and 300 series receivers. Latest prices. Stromberg-Carlson Tel. Mfg. Co., 100 Carlson Rd., Rochester, N. Y.

Victor Record Catalog supplement with complete list of records released since issue of 1939 catalog. RCA Mfg. Co., Front & Cooper Sts., Camden, N. J.

Description and technical data on American D6T dynamic microphone. Bulletin No. 29-A. American Microphone Co., Inc., 1915 S. Western Ave., Los Angeles, Cal.

"The Public Address 'Blue Book,'" showing Bogen line of sound systems and equipment. Catalog P3-39A. David Bogen Co., Inc., 663 Broadway, New York, N. Y.

"The ABC of Radio," published for public distribution as part of NAB-RMA campaign to "sell American radio." Beautifully laid out, it contains convincing copy designed to benefit the entire trade. National Assoc. of Broadcasters, National Press Bldg., Washington, D. C.

Bulletin No. 70 on PM speaker and No. U-300 with revised prices and data on electro-dynamic unit. Fox Sound Equip. Corp., 3120 Monroe St., Toledo Ohio.

Replacement parts catalog with 32 pages of illustrations and descriptions of speakers, vibrators, transformers and Utah-Carter parts. Utah Radio Prod. Co., 816 Orleans St., Chicago.

Allied Spring-Summer 160 page catalog called "Everything in Radio." Allied Radio Corp., 833 Jackson Blvd., Chicago.

University loudspeaker line described and illustrated in new catalog No. S-39. University Labs., 195 Chrystie St., New York, N. Y.

19 page bulletin on RCA Radiotron tube advertisements. Chronological table of radio high-lights. RCA Mfg. Co., Front & Cooper Sts., Camden, N. J.

20 page catalog with technical details is second edition of 1939 Hammarlund parts catalog. Hammarlund Mfg. Co., Inc., 424 W. 33rd St., New York, N. Y.

12 page booklet on Aladdin Q Control Permeability Tuner. Aladdin Radio Industries, Inc., 466 W. Superior St., Chicago.

22 page catalog on DX coils, chokes, transformers, inductances, trimmer condensers. DX Radio Prod. Co., 1571-1579 Milwaukee Ave., Chicago.

Technical Bull. No. 400 on dynamic visual analysis of the power supply. Bull. No. 150—Practical Application of the Oscillograph to Modern Radio Servicing. Price 25 cents. Hickok Elec. Instrument Co., 10514 Dupont Ave., Cleveland, Ohio.

1939 Halldorson transformer catalog and replacement guide includes 3-in-1 mountings and television transformers. Halldorson Co., 4500 Ravenswood Ave., Chicago.

Spring sound catalog with complete array of sound systems and accessories. Clarion Institute of Sound Engineers, 69 Wooster St., New York, N. Y.

Catalog No. 76 with over 180 pages on products of Lafayette Radio Corp., and Wholesale Radio Service Co., Inc., 100 6th Ave., New York, N. Y.

History of television and description of RCA electronic system called "RCA Television." Also "Television in Advertising" giving uses of television as advertising medium. National Broadcasting Co., 30 Rockefeller Plaza, New York, N. Y.

Supplement to Thordarson Replacement Transformer Encyclopedia is No. 243-D. Complete info on correct transformer and choke replacements for 1938-9 receivers as listed in Rider Manual IX. Thordarson Elec. Mfg. Co., 500 W. Huron, Chicago.

Catalogs, with prices on Bendix automotive, electrical and radio test equipment now available. Bendix Radio Corp., Detroit, Mich.

Condensed catalog No. 10 with complete info on all Hickok radio test equipment. Hickok Elec. Inst. Co., 10514 Dupont Ave., Cleveland, Ohio.

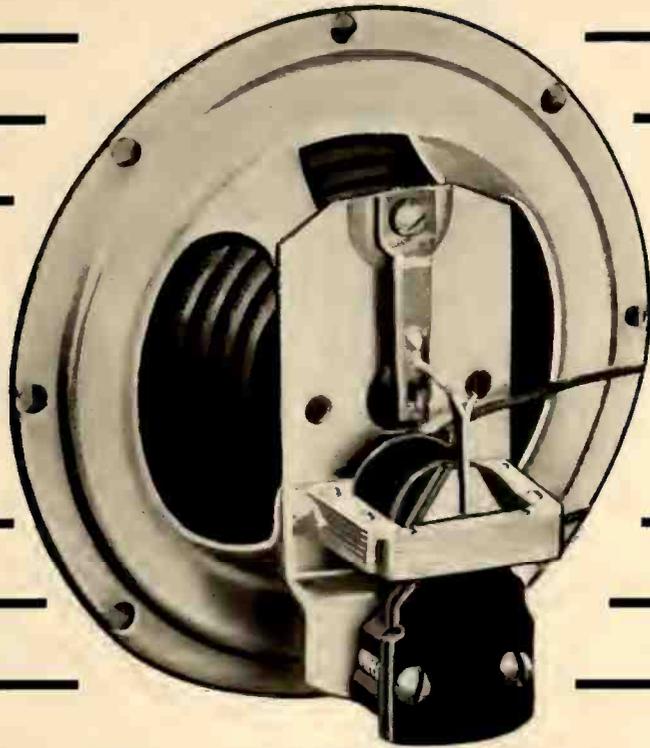
Bulletins 250-1-2-3-5 on REL sound and radio communication equipment and installations. Radio Engineering Labs., Inc., 100 William Ave., Long Island City, N. Y.

Review of ATA test apparatus illustrated and with complete data. Improved Technical Apparatus Co., 57 1/2 Dey St., New York, N. Y.

Description of JFD noiseless antenna and other auto-radio accessories. JFD Mfg. Co., 4111 Ft. Hamilton Pky., Brooklyn, N. Y.

Folder on Little Giant magnets for loudspeakers and electric instruments. Gives demagnetization and energy curves for various magnet materials. Crucible Steel Co. of America, 405 Lexington Ave., New York, N. Y.

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Radio manufacturers are welcoming the NEW PERMANIC with open arms. Here's a new speaker that offers performance and output equivalent to a small dynamic, with better sensitivity and bass response, all at less than 70% of the cost of a dynamic speaker!

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