

RADIO TODAY

\$1 Yearly

Caldwell-Clements, Inc., 480 Lexington Ave.

New York City

General Outlook

- business spurts to highest peak since '29
- index ranges 21% above 1934
- automobile activity doubles
- employment up; 1,000,000 more get jobs
- individual earnings up 12%; more money to spend for radios
- Christmas Clubs' \$300,000,000 ready Dec. 2; how much will radio dealers get?

Broadcasts that Sell Sets

- \$82,000,000 total to Dec. 1
- 11-month totals 17% ahead of '34
- November; NBC over \$3,000,000; CBS \$1,704,000
- Ethiopian re-broadcasts featured
- Christmas novelties ahead
- ultra short-waves new coverage

Radio Trade

- warm Fall delayed retail buying
- sales volume still 20% ahead
- some factories up 50% over '34
- plan doubling production for '36
- metal-tubes catch up
- installment selling grows

Auto Radio

- auto shows reveal growing importance of car radio
- estimate 1935 sales at 1,000,000 auto sets
- metal roofs increase
- metal-tube sets for auto use soon



An Industry Opportunity!

If dealers and service managers, each time they get a call to repair a "radio set out-of-order", will have the repairman

TAKE ALONG A NEW RADIO
LEAVE IT WITH THE CUSTOMER to enjoy, until his regular set is working again.
Then

SELL THE CUSTOMER on keeping that new radio to use as a SECOND SET

- for "upstairs"
- for the kitchen
- for the young people
- for the old folks
- for the nursery
- for the game-room
- for the work-shop
- for the maid's room

Each such sale will mean

Extra Commissions for the Service Man

More convenience for the customer
Additional listeners for the BROADCAST STATIONS

Extra profits for the DEALER

More volume for DISTRIBUTOR and MANUFACTURER

In this way EVERYBODY PROFITS

★ ★ ★

If each of the country's 50,000 service men sold only one set a month in this way, that would mean an additional 600,000 sets, or 12% increase for the year.

UNITED STATES
CANADA
EUROPE

Showmanship

On the Air,

as everywhere—it takes

in Salesmanship!

Successful selling today—whether it's on the air, on the printed page, or in your own store—demands Drama, News, Conviction. In a word, *Showmanship!*

NBC Showmanship continues to attract and hold the largest radio audience in the world. Over NBC Networks go the nation's most popular sponsored and sustaining programs— notable examples of king-pin radio showmanship within both the great NBC organization and the most progressive advertising agencies. And NBC's technical facilities provide the final touch of superior *showmanship* which grips the greatest air audiences ever known.

These audiences are your best—your most immediate—prospects. These programs are one of your greatest sales assets. For the interest, the enthusiasm they generate provide the greatest incentive for improved receiving sets. To snap up your own sales curve, follow the lead of America's most successful advertisers: dramatize not only the fine instruments, the fine products you have for sale, but also the outstanding NBC programs!

Tune in the RCA Magic Key Program every Sunday 2 to 3 P. M., E. S. T., on WJZ and associated NBC stations.

NATIONAL BROADCASTING COMPANY, INC.

A Radio Corporation of America Subsidiary

NEW YORK • CHICAGO • WASHINGTON • SAN FRANCISCO

NOV 22 1935

EMERSON *Duo-Tone* MODELS

EMERSON "DUO-TONE" MODELS 106 AND 107
AVAILABLE IN THE FOLLOWING ACTUAL WOODS:

- Matched American Butt Walnut with Mahogany inlay and Ebon base.
- Deep Mahogany with contrasting Mahogany inlay and Ebon base.
- Curled Maple with Mahogany inlay and Ebon base.
- Bird's-eye Maple with Mahogany inlay and Ebon base.



Feature it as the Ideal Christmas Gift

Emerson



Radio

"RE-CREATES THE ARTIST

IN YOUR HOME"



A GAIN this year the "World's Biggest Selling Little Radio" will be the most widely bought and celebrated Christmas Gift. The reasons?

STYLE—new IDEAS in design—a new conception of how the wonders of radio should be *physically* groomed—a new appeal in the dealer's windows—new advertising and selling features—these are the dynamic forces working for Emerson distributors and dealers.

You see them eloquently expressed in the new "DUO-TONE" models. Here are beauty and harmony—identical grille design in front and rear of the cabinet—which are

not only startling, but also enormously appealing. Looked at from any angle, they are adaptable to any "placing" in the simplest as well as the most luxurious decorative appointments.

You find this high conception of STYLE in ALL Emerson models—in the matched, hand-rubbed woods—in the craftsmanlike construction—in the soft blending of highlights and shades of finish which give them the rich character of museum pieces.

Of course, Emerson "Harmonized Unit" Radio is **TECHNICALLY** right. Its sensitivity, selectivity, TONE and many other features are far ahead of ordinary radio standards. But it is STYLE which distinguishes Emerson most in the buyers' minds—and STYLE has proved to be one of the most potent factors in modern merchandising!

19 Great Models — \$17.95 to \$129.95 • Send Now for Proposition

EMERSON RADIO & PHONOGRAPH CORPORATION, 111 Eighth Avenue, New York, N. Y.
The EMERSON Line Also Comprises Models for Every Foreign Market • Cable Address: EMPHONOCO, N. Y.

RADIO TODAY, published monthly by Caldwell-Clements, Inc., 480 Lexington Avenue, New York City.
Subscriptions yearly, \$1 in U. S.; \$2 in Canada and foreign countries. Special charter subscription, U. S. only, good for a limited time—14 Months \$1. Copyright 1935 by Caldwell-Clements, Inc.

ATWATER KENT RADIO

with NEW METAL TUBES
and CONTROL-ROOM RECEPTION



A MONEY-MAKING LEADER!

It's the popular Model 328 Atwater Kent 8 metal-tube console.

And it's just one of the many new models that make the Atwater Kent 1936 line outstanding in its appeal to the public.

Feature Atwater Kent Radio. Cash in on Atwater Kent sales, advertising and promotion plans. Feature Model 328. Make it *your* money-making leader of a money-making line.

ATWATER KENT MFG. CO. A. Atwater Kent, Pres. PHILADELPHIA, PA.

THE ATWATER KENT RADIO HOUR SELLS SETS FOR YOU
on Thursday evenings at 8:30 E.S.T. Columbia Coast-to-Coast Network

Staff—

DARRELL BARTEE
FRANKLIN S. IRBY
RANDALL R. IRWIN
G. H. MAYORGA
M. H. NEWTON
J. E. OSMUN
JOHN F. RIDER
B. V. SPINETTA
VINTON K. ULRICH

LEE ROBINSON
Sales Manager

RADIO TODAY

ORESTES H. CALDWELL
Editor

M. CLEMENTS
Publisher

480 Lexington Ave.
New York City
Tel. PLaza 3-1340

Vol. I, No. 3

Business at new peak

★ Sharp pick-up in general business has landed the basic index at a hearty 91, highest figure since Summer, 1933. A year ago the figure was a feeble 75; the current upswing is noted in all six major industrial activities as against the doings last year at this time. Most notable gain was in electrical power output and the National Industrial Conference Board reports that this figure is the highest on record, including the boom days of December, 1929.

Employment, earnings, up

Most recent figure puts the number of unemployed at 9,466,000, compared with 10,393,000 at this time last year; the number out of work has been cut by almost a million.

Auto production now stands at more than twice what it was last year at this time, and stimulated by the national show, predictions are that production for the coming season will reach 4,000,000 cars. Steel-mill activity is well over twice what it was last year.

Means radio buying

Dope on retail trade, as reflected by latest total of department-store sales, has increased by slightly more than the usual seasonal proportion.

Average hourly earnings are up, all over the country, indicating new spending reserves for the purchases of Xmas radio sets. Weekly earnings have risen from \$19.55 a year ago, to \$22.59 at the present time. Considering slightly increased living costs, increase in purchasing power is still 12 per cent ahead of a year ago—significant news for the radio dealer!

Broadcast billings

★ Gentle decline was expected in gross time sales by the broadcasters this month, since the totals for the season openers were recorded earlier this Fall. NBC's figure for November, it is estimated, will continue to linger around the \$3,000,000 mark, 11 per cent above the total for November '34 which was \$2,683,494. CBS could scarcely be expected to equal its October figure, which was a new monthly high for the web, and its estimate for November is \$1,704,000 as against \$1,682,959 for the same month last year. Eleven-month totals run 19 per cent ahead of '34.

Cumulative estimate so far this year, for all gross time sales on national nets, regional webs, national non-networks and local has reached \$82,494,000, which is well above the same figure for 1934.

Which all helps sell radio sets!

Radio sets boom

★ In spite of unseasonable weather and spotty retail sales, spirited reports arrive from various directions that radio-set production and distribution is running 40 per cent or more ahead of last year.

Philco, adding 2,000 employes, has built up a factory payroll of 10,000, reporting daily outputs reaching 7,000 sets. Camden headquarters, RCA-Victor, for October, 1935, ran 146 per cent of October, 1934, and 187 per cent of September, 1935. From Chicago come such encouraging messages as "With the peak season half gone, our production figures already exceed totals of previous years." Another files the exceptional report "Our business is up 125 per cent over last year."

Conservative Dun & Bradstreet, Inc., becoming bullish on radio, comments that leading set-makers have made plans to expand production by 60 to 100 per cent next year.



5,000,000 sets in '35—Geddes

★ Bond Geddes, executive vice-president of the Radio Manufacturers Association, headquarters American Building, Washington, D. C., called at RADIO TODAY's offices with an encouraging picture of radio's present prosperity.

"From the way the market has been going and with the best sales months still ahead, at least 5,000,000 radios will have been sold by the end of the year. This includes automobile radios and battery sets. Last year 3,300,000 radios and 780,000 automobile receivers were sold for a total of about \$235,000,000. This year the market is at least double for automobile radios, and we expect the gross for all types of radios will run close to \$350,000,000."

Mr. Geddes attributes the boom to better purchasing power among labor and farm elements, particularly the latter, who are buying battery sets in greater volume than ever. Added to that, he said, is the desire among set owners to replace their old sets with the newer all-wave models. Federal money pouring into the farm regions is very largely responsible for the heightened market for farm radios.

Labor conditions are extremely satisfactory, workers are well paid, and no labor troubles are in sight, the manufacturers report.



Senator William Marconi with Mrs. Marconi, returns from a visit to South America, to aid the radio service of the Italian Army using his new micro-waves.

New amplification-principle

★ Engineers examined with interest the impact or secondary-emission amplifying tube demonstrated at New York, Oct. 23, by Dr. V. K. Zworykin of television-iconoscope fame. In a single glass envelope, amplifications of half a million or more can be obtained, all with a minimum of tube noise.

Starting with the impact of a single electron, the inventor arranges this to set free other electrons, which in turn carom against plates setting off increasing numbers of electrons, until prodigious amplifications result, all in the same tube.

While the device, developed in the Camden laboratories, has so far been applied chiefly to television, some outside engineers who have seen it declare it has wide and revolutionary possibilities for radio and general use, and predict commercial utilization within the next two or three years, replacing present thermionic-tube amplification.

Wire broadcasts to cafes

★ Vivid voice descriptions of major sports activities are now being presented to the New York public through a new wire service called Teleflash. The service distributed over telephone lines, is leased to taverns, hotels, smokeshops, and the like.



Dr. Zworykin and his new "electron-impact" amplifying tube.

In addition to sportcasts, news items of national interest will be included and musical interludes will be used as fillers. At present, broadcasts are furnished from 10:30 a.m. until 10:30 p.m., but with evening sports such as hockey in season, the latter hour is extended.

Telephone lines and equipment, including amplifiers, are used. In order to insure a reasonable degree of fidelity, specially balanced lines are employed with a loudspeaker and amplifier having an output of $1\frac{1}{2}$ watts, additional units being employed for greater output. Advertising flashes are accepted to help defray the cost of programs. Single store service is provided at \$15 a month per unit.

Mark Dec. 2 for your share of \$300,000,000

★ Thrifty persons throughout the United States will have saved by Dec. 2 an impressive \$300,000,000 and over through the Christmas clubs, for holiday spending. On that date the funds will be released by the depository banks in every city and town the country over, and the fun begins.

With 1936 radio models displayed as the most stunning gift possible, radio dealers should come in for a neat share of this \$300,000,000.

California sees sales double

★ Radio sales this season are expected by distributors and dealers in Southern California to double those of a year ago.

Public interest in all-wave is resulting in definite increase in sales. Expect this winter to reach the highest peak of years. Helpful influence is the new spending idea that is beginning to be felt in all lines of merchandise. F.H.A. loans, while not available for radio purchases, are definitely stimulating buying.

Another primary factor is improved tone quality of standard sets. It is pointed out that nearly every family in Southern California has from one to four radios. At least three-fourths of these are sadly out-of-date. Dissatisfaction with these old sets is being created by inferior performance and tone quality as well as growing need of service.

REPLACEMENT SETS BETTER QUALITY

Replacement sets, of necessity, must be superior to the deluge of cheap sets that flooded the Southern California market for several years. Dealers who sold little but cheap merchandise a year or two ago are today selling only sets priced above \$50.

Catering principally to the low-priced field, local manufacturers have supplied the majority of sets sold in this territory during the last few years. Bulk of local products, however, has been manufactured for export. Regardless of local trends, it is probable that the Southern California manufacturers will continue to enjoy a good export business.

Press wants air censorship

★ Extraordinary tangle into which publishers have worked themselves over the matter of the broadcasting of news becomes further involved now that the Inland Daily Press Association urges the FCC to keep radio advertisers from manhandling news flashes. Its convention resolution said that news should be broadcast only as an unsponsored editorial service.

President Noyes of the IDPA has the notion that news broadcasts are not now "plainly marked advertising." Spectacle of Publisher Noyes crusading in this direction is curious, considering what advertisers get away with in IDPA member sheets, by buying ad space. Also, he's getting very noble about the purification of



Commander Gene MacDonald of Zenith plows the "unsalted seas" on his yacht "Mizpah."

a medium which according to other groups of publishers is reaching nobody, anyway.

While the IDPA were brooding over this, their neighbor publishers

were addressing, in convention speeches elsewhere, the Newspaper Advertising Executives Association, saying: "The public appetite for news is whetted by the radio flashes and circulation rises as a result . . . radio opens the door for the newspaper salesman."

Europe's "long waves"

★ Travellers starting abroad frequently ask American radio men what kilocycle range in receiving sets is required to hear broadcasts on other continents.

All countries and continents use the "standard broadcast band" same as U. S. and North America—550 kc. to 1500 or 1600 kc.

In addition, European stations use the "long waves." One important European long-wave broadcast band runs from 155 kc. to 280 kc. Then there is a gap, and broadcast assignments begin again at 355 kc. and continue on into the standard broadcast band. Some of the most important European stations operate on these long-wave assignments. With the crowded condition of the European channels, these long-wave assignments seem a fixed part of the European broadcasting picture, according to NBC's C. W. Horn.

For use in isolated countries where local broadcasting is not dependable, short-wave listening should be provided for down to the "international broadcast" bands at 11 and 13 meters.



Facsimile marches on! Weather Bureau chiefs inspect new transmitter for sending weather-maps and tabloid newspapers to ships at sea.

St. Louis ordinance would exclude auto radios

★ No radio set may be operated in any automobile in the city of St. Louis, if an ordinance introduced before the St. Louis Board of Aldermen, Nov. 8, is enacted. The proposed ordinance has the support of Major Lambert of the Police Commission. Local radio and automotive interests are vigorously opposing the measure and have called for a public hearing, pointing out that tests have shown auto radio to be a positive safety factor in keeping drivers alert and awake. No city or state has yet passed any measure banning auto-radio.

Can they drive and listen?

★ Question of whether drivers may safely listen to broadcasted torch songs while they do 50 miles per on an improved highway, has for some time worried lawmakers, as well as dealers in auto radio sets. The National Safety Council, headed by the able W. H. Cameron, has had long discussions but has not made a survey. The question is very serious to operators of big strings of commercial motor vehicles, who would like to check up on whether radio voices will sing their drivers to sleep, or keep them awake. The argument has also added gray hairs to the heads of radio salesmen who daily approach ordinary car owners on the subject.

Research men of General Motors,



Virgil Graham, indefatigable leader of RMA standardization, has joined the Hygrade-Sylvania staff at Emporium, Pa.

operating out of Detroit, recently worked up the final answer to the question of whether radio programs are a genuine distraction, in a dangerous way, to car drivers. The data gathered from 2 million questionnaires definitely revealed the program-listeners as driving slowly and safely. The survey became a powerful argument for the use of radio sets in cars.

The GM investigators found young drivers mostly wanting radio sets in their cars, more so than adult drivers — and the young set reported that radio music positively did not inspire high speeds. Nothing in their replies indicated that they could not drive and listen at the same time, safely and successfully.

"Jail House Follies"

★ Broadcast each Monday by WJAY from the Cuyahoga County Jail in Cleveland, the "Jail House Follies" while becoming one of the station's most popular programs, is having its ups and downs. Talent on the show is furnished from the ranks of the prisoners and each week approximately 400 inmates gather in the jail chapel to watch the show.

Recently one of the judges sat in during a performance and one of the prisoners sang "Just One More Chance". The following week two of the regular entertainers were given a break when they appeared in court; another was not so lucky. He drew a three-year term. The unlucky man, by the way, is the one who drew tears to the eyes of General Pershing at the dedication of the unknown soldiers' graves at London and Paris when as representative of the U. S. Army he blew taps. This man, an exceptional musician, was formerly assistant director of the U. S. Military Academy band at West Point and trumpet soloist with Vincent Lopez.

9-meter broadcasts for N. Y.

★ An ultra-high-frequency transmitter to operate on 9½ meters and carry the regular WABC program, is being erected on the roof of the Columbia Broadcasting building, 485 Madison Avenue, New York City. This 50-watt unit will be used for experimental purposes, to investigate the geographic range of these very short waves for carrying high-fidelity programs. The region around 9½ meters is clear of noise and in-



Ben Abrams, president Emerson Radio, and chairman membership committee RMA, celebrates 20 years in radio this month.

terference, except for automobile ignition, and is viewed as a possible broadcasting development. Already similar ultra-high-frequency broadcasts are being carried on at Buffalo and Rochester, and recently newspapers unable to get broadcast stations in the regular broadcast band, have turned longing eyes on the 7-9-meter field.

E. K. Cohan, CBS technical director, expects his new roof-top station to cover well beyond the visible horizon, reaching a metropolitan concentration of population numbering many millions.

September and last month's RADIO TODAY listed six manufacturers producing sets reaching down to 31,600 kc. (9½ meters) and beyond: Espey 5181; Garod 512, 514, 520; General Electric A-25; Patterson PR16; RCA-Victor C13-2, C15-3, D22-1, and Zenith "Stratosphere."

122 broadcast stations owned by newspapers

★ Queer angle to press-radio "war" is large number of broadcasting stations (some among the most powerful) owned by newspaper interests. Broadcasting estimates that 122 radio stations in the United States are newspaper-controlled. That is about 20% of the total of 600; 27 other newspapers are seeking licenses.

Scripps-Howard buying radio stations

★ The Scripps-Howard newspaper chain, which operates papers in 24 cities, has obtained approval of the Federal Communications Commission for the purchase of WFBE, Cincinnati.

Karl A. Bickel, who heads the Continental Radio Company, the Scripps-Howard radio subsidiary, said:

"Scripps-Howard's purchase of the Cincinnati station most emphatically does not mean that we are planning any extensive investment in the broadcasting industry. It does not mean that Scripps-Howard is considering a station in each of the 24 Scripps-Howard cities. It does not mean that Scripps-Howard is planning a transcontinental radio chain system of its own.

"It does mean that we feel that there are possibilities in radio for the development of a closer and more intimate contact between the readers of Scripps-Howard newspapers and the men and women who produce the papers. We feel that we should give these possibilities careful study, and hope that we may find ways and means of increasing the effectiveness and value of both of these great instruments for social advancement."

Applications are filed to construct 100-watt stations at Columbus and Toledo and to change the call letters of the Cincinnati station to WCPO.

Radio creates new living standards

★ That broadcasting is creating new standards of living for the American public, which eventually will be expressed in new levels of industrial production, was emphasized by Col. Richard C. Patterson, Jr., executive vice-president of the National Broadcasting Company, addressing the Boston Conference on Distribution, Colonel Patterson said, in part:

"Two facts about radio cannot be denied. First, there is a continued and steady increase in the number of good things available in the average day's span of broadcasting. And second, the public demand for quality programs is likewise steadily on the increase.

"You find on the air the best music from the best artists; the best drama with the best actors; the most pressing problems with the most renowned authorities to discuss them. And the mail that high-class programs of this sort call forth is best proof of the fact that America's radio taste is improving, along with the quality of America's radio programs.

CULTURAL JOB

"That, I think, is a cultural achievement. But it is also a business achievement. We in radio have helped to broaden and cultivate the desires of the American people. It follows from that that we have helped to broaden and cultivate the demand



Dick Patterson, general manager NBC, with O. B. Hanson, chief engineer and wizard of the networks.

for those things which make the gratification of those desires a possibility.

"And it is a significant fact that so many of these contributions have been made under commercial sponsorship. Business, which has been identified with the production of goods, has now become identified with providing the good things of life. Business produces the equipment with which to enjoy life. And then business turns around and helps to provide the enjoyment. Quite apart from the economic implications, I doubt if there was ever a time when industry could so well afford to have a hand in making that kind of a non-material contribution to our national well-being."

Export sets without tubes, non-infringing

★ Radio sets for export in which the tubes are inserted into their sockets by recipients abroad, so that patented operating circuits are not completed while within the jurisdiction of the United States, are declared not infringements of U. S. patents and so not required to pay license fees, according to decision of the Circuit Court of Appeals in the case of F. A. D. Andrae, defendant in a suit brought by RCA and AT & T.

The decision is declared to affect a number of export manufacturers and reverses an injunction granted the plaintiffs by Federal Judge Inch in Brooklyn several months ago.



Television of full movie-screen size and brightness is now being shown on Kurfürstendamm, in Berlin. Ten thousand thin-filament lamps make up the picture which measures 6½ ft. square, with 100 lines of 100 lamps each.

RACKETS THAT ARE HURTING RADIO

Dummy tubes, gyp merchandise, and shady practises compete for purchases of unwary public

★ UNDER the cover of prosperity, rackets spring up. Radio is no exception.

While the radio trade as a whole has been busy meeting the recent 1935 sales rush, outsiders, muscling in, have looked upon unsophisticated radio buyers as fair prey. Taking advantage of trade situations and changes in the radio art, these resourceful gyps have developed new ingenuities to fleece the public.

Against radio's racketeers the public and the radio trade must be warned. More and more, legitimate radio dealers are being faced with this competition in one form or another. The innocent layman naturally wonders why he is asked to pay the legitimate scale of prices at his neighborhood store, when "six-tube superheterodynes" are being advertised on gyp row "complete at \$4.85."

Stamp out evils

So the editors of RADIO TODAY feel they are rendering a needed service to all of radio by outlining some of the rackets now prevalent in certain

quarters. Spreading an understanding of these gyp practices is the surest way to meet such competition and to stamp it out!

Rackets now current in radio cover a wide range of merchandising misdemeanors. They involve swindles in radio products and servicing. Receivers and tubes are subjects of grossly misleading claims; trade names are counterfeited. Sharp tricks are practiced on store customers. And all of these react on the whole radio industry.

For example, "seven-tube" radio sets are advertised at bargain prices. But on examination it is found that one or two of the tubes in these sets are not even connected, and have no part in the set's operation.

Counterfeit tubes

One receiver found on the cut-price market this year, employs as a selling feature, one metal tube (apparently added as an afterthought). This metal tube has eight prongs, but in the socket only two of these prongs are wired up. Inside the tube a concealed jumper wire connects

these two prongs together. Obviously the tube is a dummy, put there only to mislead the unwary.

The new metal tubes make it more difficult than ever to detect deceptions of this kind, since the operation of the tube filament cannot be seen, although after a few minutes its heating can be felt.

Recent practice in mounting resistors, ballasts, coils, and other components of receivers, on standard bases, so that they can be plugged in or out, like tubes, has led irresponsible merchandisers to cite these metal containers as "the new metal tubes," to unsuspecting purchasers. In this way, by adding up all the metal-jacketed cylinders in sight on the chassis, the unscrupulous merchandiser can make an impressive total for "the number of tubes" in the set he is selling.

Strong-arm stuff

Gyp stores have a strong-arm "sell-up" technique. Here is the way it works.

Window displays, for instance, offer what is apparently a very attractive set at \$8.95. But try and get it. If the customer nibbles at this price bait and walks into the store, he is immediately given a stiff sales talk about another set at \$15, then \$25 — and so is led up a rising price spiral.

If, however, the customer still insists that he wants the \$8.95 set he came in for, and the clerk finally sees no alternative, the set demanded is tested by playing it in the customer's presence and is then taken to be wrapped. During the wrapping process, the clerk reaching inside, by a deft jerk breaks one or two wires; then the wrapping is completed and the package handed to the buyer.

When he gets home, the set of course will not work. Traipsing back to the store, he is met with the bland front: "Well, as you know, Mister, it worked here all right. You heard us test it. You must have done something to burn it out. We'll send

LET THE PUBLIC KNOW THE RISK IT RUNS

when dealing with gyp sellers. Only in this way can present evils be stamped out.

Here are some of the 1935 rackets:

- Dummy tubes are added to sets, to swell number
- Resistors, condensers, etc., are counted as "the new metal tubes"
- Salesmen deliberately wreck sets before wrapping, to get customers back for sell-up game
- Leading trade-names are counterfeited
- Standard sets are combined with gyp components
- Static "eliminators" coin money for curb-side demonstrators
- Tubes are switched; inferior grades substituted
- "Short-wave" claims made for standard BC receivers

it to our repair man to be checked up."

In a few minutes the \$8.95 set comes back with a report that it will cost \$8 to make the necessary repairs. And obligingly the salesman suggests the alternative set at \$15, which he proposed in the first place, with credit for all or part of the amount already paid. Usually at this point the victim is ready to complete the \$15 purchase.

Fake trade names

Names of leading brands are simulated by hyphenating them with qualifying adjectives, to make the purchaser think he is getting a standard set.

Standard sets are also obtained from legitimate sources and broken up, and the cabinet, chassis and speaker are then separately combined with "loft-made" parts. In this way the unprincipled seller has three complete sets on each of which he can point out a genuine trade-marked component, intimating that each whole set is a genuine factory-assembled job.

Street-hawkers are gypping the public with "static eliminators" and interference removers. Most of these highly-colored containers are filled only with sand, and their attachments are useless. They are demonstrated, however, on curb-side autos with the aid of an ingenious tension switch, which automatically introduces fearful interference when the "eliminator" is out of circuit, but wipes the circuit clear of noise when the eliminator gadget is inserted in the antenna.



"How about 50 and FIVE 10's on tubes?"

Advertising trickery

Mis-illustration of models in advertising is another trick in use by unprincipled dealers. Ads showing a deluxe console will also carry a featured price which appears to be a sensational value, but hidden away in a corner of the ad will be the small-type statement that "the model illustrated is No. 243." Investigation reveals that Model No. 243 is priced a great deal higher than the figure featured in the ad.

Many small sets are being sold as "short-wave" and "all-wave" receivers and casual inspection by non-expert customers would indicate that the sets

are actually wired for short-wave reception. But when they are purchased and hooked up, they turn out to be only ordinary broadcast receivers. In such cases a genuine short-wave set is used for demonstration purposes.

Cut-throat shops have even gone so far as to obtain metal shields which they buy or can make themselves and which can be fitted around an ordinary glass tube of inferior design, so that the tubes can be represented as metal ones. All manner of wild excuses are used to explain to the customer when the tube is not marked with the name of a manufacturer.

Costs radio good-will

And so the list of radio rackets might be extended almost indefinitely. This gypping of the public by irresponsible radio men, works a double evil. It is costing the public its hard-earned dollars. And when the victims wake up to the realization that they have been imposed on, it costs the good-will of the public toward the radio industry. All along the line—broadcasters, manufacturers, dealers—everybody suffers. Except the radio racketeer who momentarily benefits from the profits of his swindle.

So—every radio man who has the well-being of radio at heart, needs to be on the look-out for such rackets. Only by making their existence and menace generally known to the public—by forewarning prospective radio purchasers—can the evil be stamped out and the racketeers curbed.



FROM NOW TILL CHRISTMAS

Some practical reminders for the radio dealer, from a big-league radio merchandiser

By H. L. M. CAPRON*

★ GIVEN appropriate and consistently aggressive merchandising, this year should make radio sales history. This month and the next two months of December and January will normally account for some 46 per cent of your year's business.

Manufacturers have their new lines in production.

Dealers have selected the lines they will sell.

Consumer advertising campaigns have started.

The time for planning and thinking is past.

The time for ACTION is here.

In most sections of the country the radio market saturation is so great that our primary selling efforts must be given to the replacement market, with compacts and small table models definitely relegated to the "personal" and second set category.

This may require a different selling technique than you have used in the past; do not let tradition bind you too long or too tight to the old market.

The passing of the "original set" market, and the growth of replacement sales, place a new importance on customer goodwill—place a new value on your Service Division, and the satisfaction it must GUARANTEE—give you the best possible answer to cut-price competition.

Sales from service

The first large source of new business may well come from the work and the records of the Service Division.

Go back over the sales and service records of the past several years. Get in touch with these people, by personal call, by phone, or by personal letter. Tell them about a new radio, and offer, for a very nominal sum, to give their present radio a thorough overhaul in your shop. Loan them a new set and see that it is installed with a good lead-in antenna. The appearance, the tone, the foreign reception of the new radio will cer-

*For the past 14 years manager of one of the largest retail radio businesses in the world.

tainly make the old one seem even poorer than it is, and this demonstration will be far more effective than any sales talk.

Up-to-date windows

A series of window displays calculated to drive home the fact that the old radio is obsolete can be built around the comparisons of well known obsolete and modern things.

In each of the following windows (which can be done in miniature or with photos) an early electric radio should be compared with a 1936 model, preferably of the same make.

1. A wood-burning locomotive and train, with a streamliner.
2. An old horse and buggy with a modern automobile.
3. The Pony Express with a modern motor truck.
4. A covered wagon with the modern air-liner.
5. A sailing ship with the *Nor-mandie*.
6. A tallow candle with a modern indirect floor lamp.
7. Women's dress and hat styles of a decade ago with the new fall styles.
8. A bathing beauty of 1900 with the 1935 girl.

"Hear the whole show"

Displays dealing directly with the technical superiority of the new sets are also excellent attention-getters, particularly so when motion, chang-

ing color, changing light, or an element of mystery are involved.

One example of this type of display follows:

A large photo of an orchestra, of such size as to fill the entire back of the window, and so arranged that a segment can be made invisible, through special painting and lighting or shadow-box lighting.

A radio of the vintage of 1928, and a 1936 model, preferably of the same manufacture.

Three simple signs.

Over the orchestra—" \$2,000,000 WEEKLY FOR RADIO BROADCASTS . . . HOW MUCH DOES YOUR RADIO LOSE"?

Before the old set, "THIS RADIO RECEIVES ONLY PART OF THE MUSIC."

Before the new set, "THIS RADIO RECEIVES THE WHOLE ORCHESTRA." Arrange the lighting so that the sign on the old set is visible only when a part of the orchestra is invisible.

Getting leads

Wise dealers don't depend on window displays alone to bring in prospects.

Offer your old customers a commission of 5 per cent, or a year's free service, for every sale that is completed with a prospect of their reference. Plenty of leads, already half sold, will result; also follow the wedding and birth announcements in your local paper, and to every one send an appropriate engraved card of congratulations. File these names by dates, and each year send an appropriate anniversary, or birthday greeting card, a few days before the actual date. You will be surprised at the friends you will make this way, and friends make customers.

And there lies the very backbone of any long range merchandising or business development.

When the novelty has become the staple, when the spectacular and predatory price cutting has given way to stability, when necessity has replaced the luxury item, when storekeepers have become merchants, then friends,

—1936 models offer more chances for Xmas selling

—best windows accent latest set features

—but wise dealers won't depend on them alone

—leads a-plenty in local news columns

—repetition in ads makes reputation

—the real friend-making devices pay dividends

good-will, customers become the greatest asset that any business can have. With these thoughts in mind, there will occur to you dozens of things that you can do to make friends. The things you would like to have others do to and for you are the things to do for others. Think of them, then do them. They all pay dividends.

Make friends

Sales promotion is making customers.

Making friends is sales promotion.

You cannot forget that there are other years coming, and next year you will have to beat 1935. Our industry is very definitely settling down, and the future will find it governed by the same principles as are all other businesses.

In preparing for future years I know of no better method than always satisfying the customer.

Do not try to measure the effectiveness of everything you do by the immediate sales response, for you are dealing now with a virtual necessity, and in a long-range replacement market. Your primary purpose now is to keep the business coming, and keep making friends. You may be sure that every owner of a radio will sooner or later buy a new one. Try then to keep your name very favorably before all the people, so that when they do decide to buy a new radio, they will subconsciously think of you first.

The importance of this policy is much greater than is first apparent. Long-range psychology has a powerful sales impact.

Look ahead

Remember that a customer soon forgets what she paid, but long remembers what she got. And so make every effort to sell the better radio. Insist upon the best installation you can make, and give the very best service you are capable of. The customer must be satisfied. Purchasers of new radio are going to talk about them, and if you give the customer something to be proud of and happy with you may be sure that others will know about it.

It is probable that your own previous sales represent but a small proportion of the local population, and you must therefore go after new customers as well as actively cultivate your old ones.

Newspaper advertising if consistent, is always good but is apt to be too expensive for the small dealer unless carefully planned. Co-ordinated advertising and window displays can



Photo by Ewing Galloway

be very effective and within the reach of every dealer.

Repetition does make reputation. You can and should use small space in every issue of your local paper. One column by 40 to 60 lines is sufficient.

Try also to arrange with your local movies for the use of their sound equipment for two or three minutes each show. Make an appropriate announcement and then put on a foreign program.

How much for trade-ins

Since you are now definitely in a replacement market, you cannot escape the trade-ins which customers will invariably want. It is important that you work out a policy that is sound economically, fair to you, and interesting to your customers. A concrete suggestion that has produced the desired results is this: From the original list price of the customer's set deduct 40 per cent each year, and make the difference between that and the original price your allowance; except that the allowance shall be not more than 25 per cent of the price of the radio purchased, and the allowance

on a set more than two years old about 10 per cent of the original price.

Sure-fire offer

And now, just one sure-fire sales producer.

Make a special trade-in offer from time to time on just one make of radio. Offer 25 per cent for all radios of the selected models, **FOR TEN DAYS ONLY**. Pick the very popular sets of a few years ago: Majestic, Atwater Kent, Crosley, Fada, etc., but take only one at a time, and make your offer at least 10 per cent better than your regular trade-in proposition. The owners of the selected sets will feel they have been singled out for an especial proposition.

If you have any particular condition or problem in merchandising or operation, send as much information as you can to **RADIO TODAY**, and your problems will be answered to the best of our ability from many years' practical and successful experience.

Tell us, too, how you have licked the conditions that have faced you, so that, as a clearing house, we may pass the practical information along to someone else who needs your help.

RECEIVERS TODAY

Automobile radio offers additional profits to dealer and serviceman

★ NEW YORK auto show, just closed, indicated that interest in the new car models is greater than at any time since 1929. And this soaring interest is in the more expensive cars, definitely showing that the public has more money to spend. Automotive radio this year therefore offers excellent profit possibilities for both the dealer and the serviceman.

Recognizing the demand for auto radios the automotive manufacturers have designed all cars for receiver installations. Every American manufacturer has made provision in some manner for the use of a radio in his auto.* The radio controls are mounted on the instrument panel and appear to be an integral part of the original layout. Built-in antennas are featured on closed cars not having turret top construction. Mounting holes are drilled so that the recommended receiver may be installed in the least possible time. Provision for employing header-type speakers is found on most cars.

Service opportunity

In an effort to make more profit for their dealers, the manufacturers are strongly advocating that all demonstration cars be equipped with

*Information on the radio equipment and antenna facilities of the 1936 autos is given on page 34.

radios, in this way the customer hears how the receiver will sound in his own car. Since many of the organizations leave the installation of the set up to either the jobber or the dealer, an excellent opportunity to make installations exists for the local servicemen. By contacting the local automotive representatives, the wide-awake serviceman should be able to contract for installation of the sets and thereby add to his income. The fact that all the auto radios employ a vibrator unit indicates that servicemen will find much revenue in replacing these devices as they wear out. One successful contact with an automotive concern will lead to many future service and installation calls.

Easy sales

The radio dealer can obtain receivers through his jobber since the sets are standard models with the exception of the controls and mounting plate. By cashing in on the radio promotional activities of the car manufacturers and publicizing the availability of custom-built receivers for every make car, the retailer can obtain the business lost by the automotive dealer because of his lack of radio knowledge and salesmanship.

While the manufacturers supplying receivers to the automotive industry do not make the sets available to radio dealers, there are other reliable manufacturers making "duplicate" sets as far as appearance is concerned and which mount on the instrument panel. Where low price is of importance, the radio dealer can sell one of the competitive models which has a steering-column or similar type of mounting.

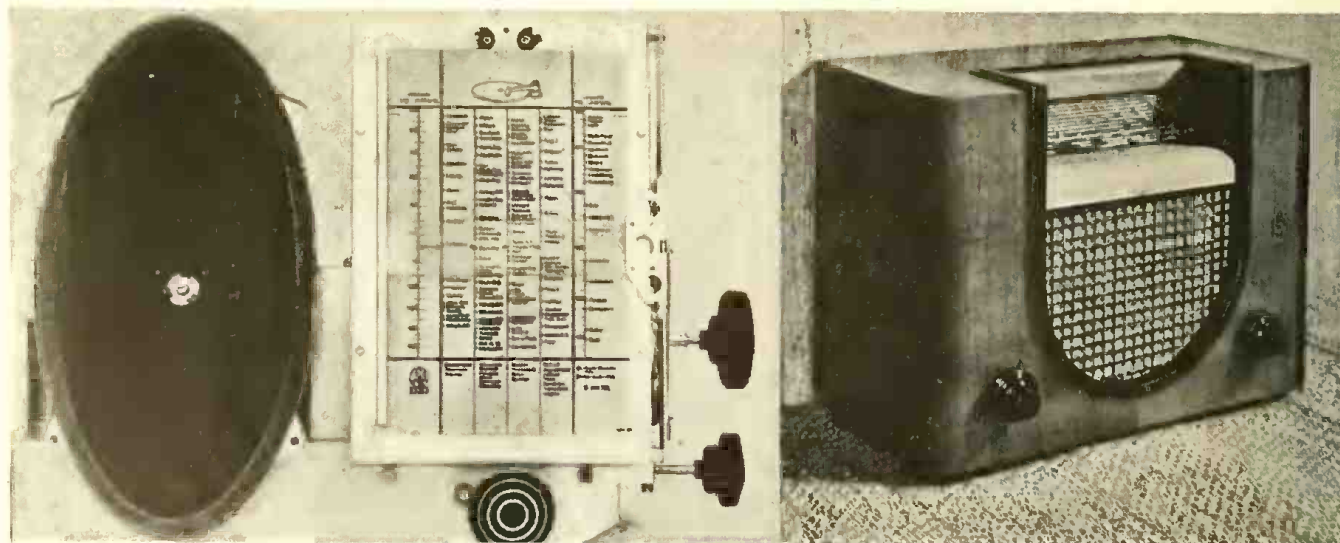
Open cars, no aerial

In considering the cost of installation the dealer should realize that none of the open-model cars and convertible coupes have a built-in antenna and that there is no way of satisfactorily utilizing the header-type reproducer. Another important fact to be remembered is that a receiver designed for use with a running board antenna should not be used with a roof aerial, for a great loss in selectivity will result.

All the General Motors cars employ the "turret top" steel roof which makes the use of a running board type antenna essential. A number of the manufacturers using a steel roof have so designed it that the top section can be utilized as an aerial, by insulating it from the rest of the car. Of the popular-priced cars, only Ford and Plymouth have open-roof construction; a chicken-wire antenna is built-in.

Metal-tube sets rumored

At the time of publication none of the radio manufacturers have announced metal tube sets for autos, but from current rumors it is likely



In current European sets, the listener tunes directly to the name of the station he desires. In the set at the left, the tuning marker moves up and down over the tabulated station names. In the right-hand receiver the marker is moved horizontally across the staggered rows of station designations. Note oval speaker for better tone quality.

that they will be introduced before long. Heralding a step in this direction is Raytheon's announcement of a metal (shielded) gaseous rectifier for automotive use; it is of the filamentless type, thereby reducing battery consumption. The tube operates as the result of the ionization of a permanent gas and with the low potential drop of 24 volts; in basic principle it is similar to the "B" eliminator tube used a few years ago. The use of this tube will probably decrease the cost of receivers slightly because a non-synchronous vibrator can be used with a high over-all efficiency.

German radio receivers

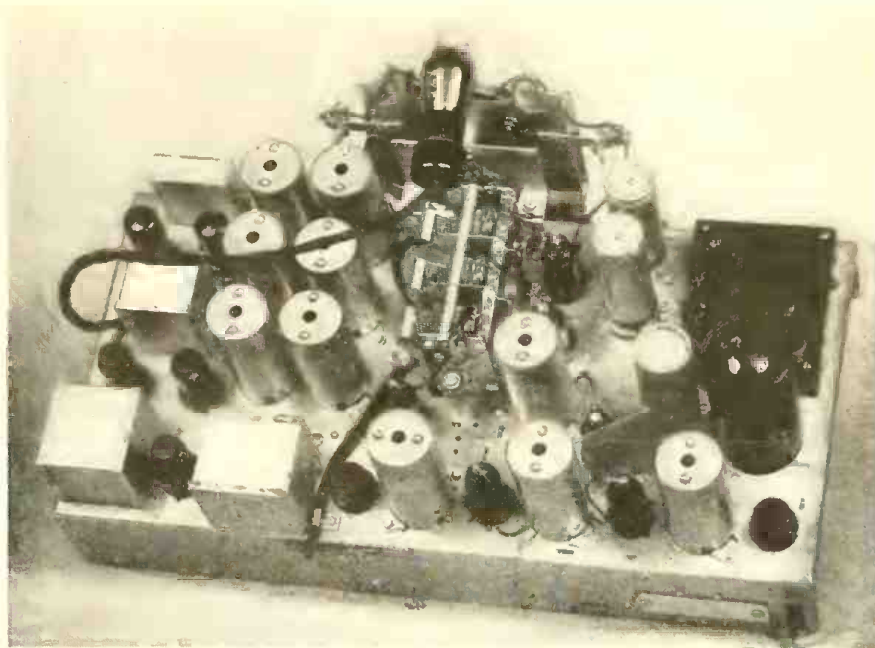
★ Circuit practice in German radio sets follows closely that on this side of the Atlantic. While the sets have different features, much attention has been paid to adding more or less important gadgets, refining the controls, and improving the appearance. In direct contrast to American receivers with their many tubes, the German sets usually employ only three or four tubes.

Loudspeakers have definitely been made better. Permanent-magnet dynamic speakers are proving to be popular; a more advanced design provides high efficiency and superb performance. It is reported that magnetic fields used in the air gaps are as high as 12,000 gauss. One set uses an elliptical shaped cone, for which a high fidelity of response is claimed.

Acoustical tests reveal that the mantel cabinets previously used for table models brought about a decrease in the quality of reproduction because of cavity resonance. This cabinet design has been partially replaced by a new one, a rather flat and horizontally elongated design. The loudspeaker is not mounted above the chassis but alongside it. The cabinets are extremely simple, unnecessary ornaments which catch dust and dirt being eliminated.

Cabinet features

German cabinet design is not a copy of furniture, but represents a style created by technical necessities. The beauty of the sets lies in the application of wood with varied and unusual grain effects. One manufacturer presented a receiver with a cabinet made of a black moulded material; all the fittings and tuning knobs were made of an ivory white material. The set received much attention from



A feature of several 1936 receivers is the cathode-ray tuning indicator. Among the sets using the device are Pilot, RCA-Victor, and Sparton.

visitors at the Berlin Radio Show, who gave it the nickname, "The man in evening dress."

The tuning dials are made with the names of the broadcast stations themselves, and size seems to be of no concern. The chassis illustrated is one of these dials; a hair-line indicator which moves vertically shows to what station the listener is tuned. Dual-speed vernier dials are employed, some with a reduction as great as

150 to 1. Another arrangement is the use of a mirror system which projects name of the station in large letters upon a ground-glass screen.

One designer has used the telephone dial mechanism as a tuning means; one has only to dial the station by a number and the station is automatically received. Perfect tuning results. A switching arrangement employing fixed condensers is the principle of operation.

TUBES TODAY

Metal production up

★ Metal-tube production is now keeping pace with demand. No longer working hand-to-mouth on shipments, some of the plants are now making deliveries to warehouse stocks, so that the replacement-tube business is again assuming normal aspects.

Total metal production is running at least 160,000 tubes a day, with rejects further under control. One factory which increased its output on metal tubes to 20,000 a day, actually had to cut production in half, to 10,000 tubes a day.

Big-gun salvo in the metal-tube assault was fired early this month in full-page newspaper ads in 67 cities throughout the country, listing the 47 radio set makers who now employ metal tubes in receivers which they manufacture.

Glass tube stand

★ Meanwhile the glass-tube advocates stand their ground, and report that glass-tube sets are selling well right through the Fall season. Wide publicity on the metal-tube issue, they say, has resulted in the public's coming into retail stores to get first-hand advice from dealers, with the result that the customer buys the set for which the retailer puts up best sales argument.

Announcement of replacement metal tubes under the Philco trademark caused considerable predictions by trade prophets, until the receipt of the letter to the trade sent out by Larry Gubb, general sales manager of Philco Radio & Television Corp., specifying that Philco radio sets for the spring season of 1936 will be equipped only with Philco high-efficiency glass tubes.

SALES IDEAS THAT WORKED

Adapt these practical experiences to your Christmas selling

Missouri bulletin

★ Jenkins Music Co., Kansas City, Mo., reports good results on a collection of educational records which the company got together and sent to the educational directors in the area. Such lists of directors are available from school officials to any dealer, and the lists of appropriate records are forthcoming from the manufacturers.

Baseball players sell radios

★ After the baseball season is over, engage some of the players to sell radios for you. That is the advice from James W. Morgan, proprietor of the West End Radio Company, Birmingham, Ala., who has successfully used this plan for the last four years.

Just as soon as the season is over for the Birmingham Barons, local team in the Southern League, Mr. Morgan offers all the players a job

selling radios during the off season. Usually two to four accept and, since they know lots of people and are well known themselves, they make good salesmen. In this way they are able to add to their baseball playing revenue and Mr. Morgan capitalizes on the popularity of baseball to boost his radio business.

Sound-proof booths for auto jobs

★ Sound-proof work booths are an essential part of the facilities which enable the Radio Electric Company, Montgomery, Ala., to cash in on a large share of the automotive radio business in its community.

"We employ five mechanics and as long as they all worked in one open shop they interfered with each other," said G. C. Dickey, manager. "The noise and squeaks from the radios being repaired was worse than the

din in a dog hospital just before feeding time.

"So we designed the booths, three in number, where a mechanic may go with a set and work on it, not disturbing any other workman and not being disturbed himself. The booths are ventilated, electrically lighted and practically soundproof. Each one is equipped with most of the tools needed for usual radio repair work. In each booth is a specially designed and built-in panel board where quick connections may be made with a tube tester, analyzer, oscillator and a volt-ohm meter.

Service follow-up

★ When Clark Radio Service, Granville, Ohio, finishes a servicing job, it has an additional gesture which appears to strike the proper good-will note, and is so downright engaging that the customer has a nice feeling about it all.

"We take this method to check up on the services rendered during the past few days. . . . Was everything satisfactory and are you pleased with the service?" runs the stamped reply card sent to the customer a few days after Clark's did the servicing. Simple, disarming, the card indicates a service attitude that customers like.

Ballyhoo truck brings results

★ A sound advertising truck has increased business for Bush Radio Company of Century, Fla., by 100 per cent since it was placed in service several months ago. W. E. Bush, proprietor, handles ballyhoo jobs for mercantile concerns as well as organizations of various kinds, charging \$20 a day for his services. During political campaigns his truck makes the whole state, going anywhere desired.

"Methods of advertising in a small town are necessarily limited, there being no daily newspapers or broadcasting stations," said Mr. Bush. "A sound truck can do the job more quickly and effectively than any other medium. We have handled all kinds of events with our truck and can draw a crowd of 100 people in 10 minutes, most any day."

Which of the Boys Will Play Saint Nick for You?



"Yard" Ryan

Clay Touchstone

Jimmy Morgan

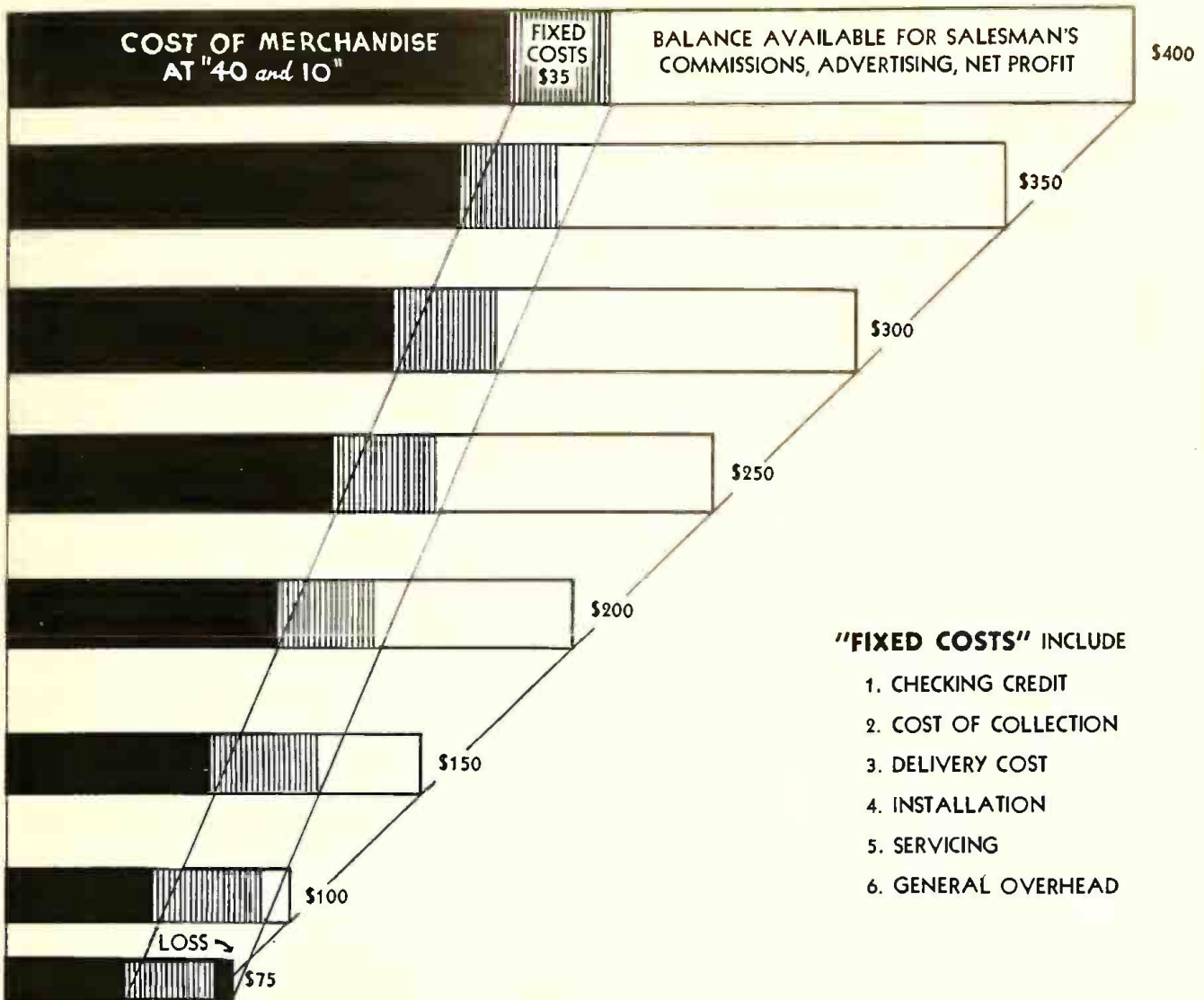
Bob Hasty

Here are four boys whose faces are as well known to Birmingham citizens as is old Saint Nick's. And Saint Nicholas could have no better helpers in making yours a golden Christmas!

Let One of Them Make Yours A Golden Christmas

The gents above are salesmen at the West End Radio Co., Birmingham, Ala., offering their faces for this smart holiday ad.

WHAT SALES ARE PROFITABLE?



"FIXED COSTS" INCLUDE

1. CHECKING CREDIT
2. COST OF COLLECTION
3. DELIVERY COST
4. INSTALLATION
5. SERVICING
6. GENERAL OVERHEAD

★ TO demonstrate to his dealer customers what size sale is profitable and what unit selling prices barely pay their way, Benjamin Gross, of Gross Sales, Inc., New York and Boston, sales agents for Stromberg-Carlson, has been making use of a chart like that shown above.

For various retail selling prices of radio receivers, running from \$75 to \$400, the chart shows the cost of merchandise, figured at "40 and 10" off list; the "fixed costs" of overhead and selling, and the remaining amount available for salesman's commission, advertising, and net profit for the dealer.

In this way there are graphically presented the amounts, from transactions of various size, which are available for the various elements entering into the dealer's costs and profit.

"Cost of merchandise," Mr. Gross points out, is the amount due the supplier of the goods, and so must be held to be passed on to the manufacturer or distributor.

"Fixed costs" are itemized above.

The cost of checking credit on a time-payment purchase does not vary with the amount involved; in fact, the man who is asking to purchase a high-priced set is often easier to "get a line on" than the man buying a low-priced console. Cost of collection is also pretty well fixed, and while depending on the number of months over which the installments are to be collected, is independent of the amount collected per month.

BEN GROSS

for the past 14 years has been an active leader in radio merchandising circles, and is well known for his effective sales demonstrations before dealers. He has won national recognition as one of the prime-movers of the Radio Wholesalers' Association, as chairman of the Code Authority for Radio Wholesalers and as chairman of the Five-Point Plan for radio industry promotion.

Delivery cost is little different for an expensive or a cheap console. It also costs about as much to install the one properly as the other. And to service either unit during the contract period costs about the same.

Experience in various stores, collected by Mr. Gross, indicates that these "fixed charges" usually total about \$35 per console and that this loading, as just explained, applies equally to all prices of sets, whether \$75 or \$400.

Out of what is left, as shown at the right in the chart, therefore, must come the amounts required for salesman's commissions, advertising and, finally, the dealer's own net profit.

Mr. Gross uses this chart to demonstrate that the profitable and desirable sales are those in the upper brackets as shown by the chart. On the other hand, he points out, sales in the lower brackets may be a matter of simply "swapping dollars," or may actually result in a loss on each transaction.

"MILLION-DOLLAR PROGRAMS"



Broadcasters pay thousands for direct hook-ups with Ethiopian battle-lines.

Burns and Allen get a staggering sum for weekly antics on the air.



"The O'Neills," popular units of Procter & Gamble's costly program series.

Sport fans are happy, though Baer-Louis bout cost sponsor \$27,500; World Series \$500,000.



★ SHOW these pages to your customers, Mr. Radio Dealer.

Or post them up in your show-window.

For they will "get across" to customers or passers-by just what it is that *you are really selling* — the means for hearing *the wonderful programs* that are on the air.

Radio sets are not just items of furniture — not mere assemblies of metal and wire. They are outlets for the greatest entertainment service ever offered in all the history of showmanship. Remember, there's a million dollars' worth of entertainment behind every radio dial!

That's why people buy radios.

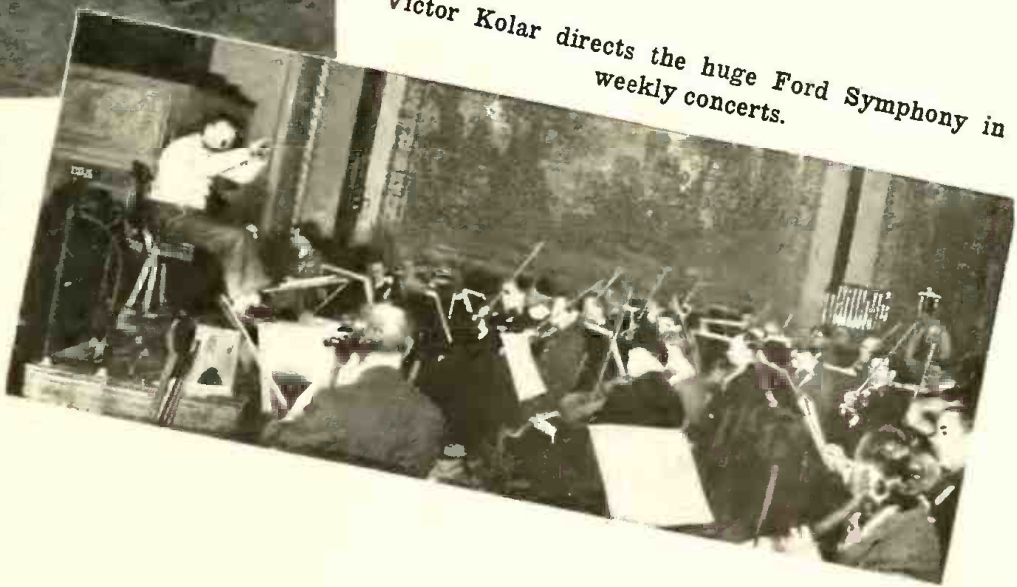
GO WITH EVERY SET WE SELL"



Air favorite Jack Benny, said to earn himself \$8,500 for weekly cut-ups.



Jeannine, of the Lilac Time series, for which sponsor Pinaud pays and pays.



Victor Kolar directs the huge Ford Symphony in weekly concerts.

To enlist the powerful selling force of million-dollar programs behind your own radio-set sales—put these pages where your prospects can see them—in your store, on your counter, in your show-window!

RADIO TODAY presents these pictures as samples of the great programs, costing in all many millions a year,

which are behind every sale of every radio set. Use them to remind your customers that no radio receiver can be too costly to reproduce faithfully the expensive programs the broadcasters spread across the night skies. And remind your customers also that—

"Million dollar programs go with every set WE sell."

HIGH FIDELITY ON 1550 KC

Successful experience of W2XR on 20-kc. channel.
Commercial programs in the New York area.

★ COMPLAINT has often been made that the 10-kilocycle broadcast channels set up by the original Federal Radio Commission seriously hobble high-fidelity musical reproduction by limiting the side-bands to 5,000 cycles, or about the range of the piano keyboard.

To provide experimental outlets for high-fidelity broadcasting, reproducing up to 10,000 cycles, the FCC a year or so ago established 20-kilocycle channels between 1,520 and 1,580 kc. One of the high-fidelity stations to be licensed on 1,550 kc. was W2XR, New York, which has now been operated a year under the direction of John V. L. Hogan, well known radio engineer.

Increased volume range

Experience with this station has revealed some interesting results. For example, tests of W2XR's transmissions have shown that they give definitely superior quality as compared with ordinary broadcasts, regardless of the type of receiver employed. An improvement over narrow-range broadcasting can be noticed on all

model radios, according to a listener survey conducted recently in the New York area. Obviously, to hear the program as it is in the studio, it is necessary to use a high-fidelity receiver.

True fidelity broadcasting, which means extending the range way down as well as up, allows for other improvements in art other than the flat frequency response. The dynamic range of sounds is greatly increased. It is possible to have a volume range of some 50 decibels. The average usable range in many instances is about 35 decibels, as compared to the maximum of 20 employed by most broadcasting stations. The range of volume actually usable in the home depends largely upon the noise-to-signal level and the output capabilities of the receiver.

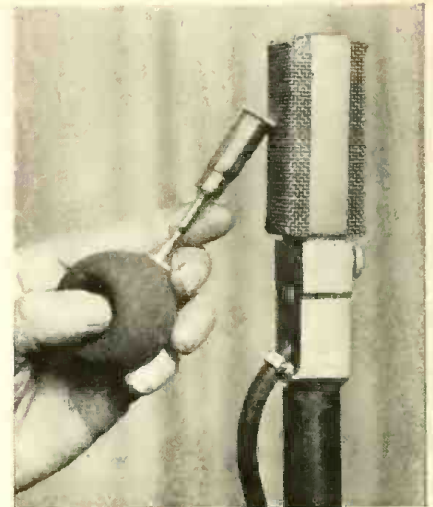
Low distortion

A requirement of high fidelity that is often overlooked is that of low harmonic content or distortion. This applies to both the receivers and the transmitter. At W2XR the transmitter has been designed so that less than 1 per cent harmonic distortion is present at modulation levels up to 100 per cent, and the audio-frequency range is from 20 to 16,000 cycles.

True fidelity broadcasting has been licensed by the Commission on frequencies of 1,530, 1,550 and 1,570. While the ground wave at these frequencies is attenuated rather rapidly, it is possible to have a higher radiation efficiency than at lower frequencies for same antenna heights, and the two effects practically cancel each other. The higher frequency more readily permits the use of a vertical quarter-wave radiator with its desirable features.

Service revenue

Fortunately, most of the receivers in use are able to receive these experimental broadcasts just above the broadcast band. A mail survey in the New York area disclosed that 80 per cent of the receivers could tune to 1,550. In Kansas City W9XBY declares that 98 per cent of the receivers can receive its program. W1XBS



Checking high-frequency response with a variable-pitch whistle.

in Waterbury, Conn., offered to adjust the receivers for a nominal fee so that they would tune to 1,600 kc., and now about 98 per cent of receivers within range can receive W1XBS. The migration of broadcasting to the 1,500-1,600's thus offers a new possibility for the serviceman. Adjustment of some of the older type sets to receive up to 1550 kc. is not too difficult and should produce a profitable income.*

The phenomena of skip-distance at the higher frequencies is known to all radio men. For this reason duplication of stations on any one channel is to be avoided unless a great separation exists. If high-quality programs are to be enjoyed, the background must be free of the "hash" and whistles now found at night on some of the channels above 1,000 kc.

Engineering difficult

From the broadcasting point of view the transmissions are more difficult to engineer. The speech equipment must be very carefully designed. The studios represent a new problem. Echoes not ordinarily apparent are likely to show up with high-fidelity broadcasting. Non-directional microphones are used, and this involves a

*John Rider discussed methods of increasing the frequency range of receivers in the October Issue of RADIO TODAY. See page 24.

Pioneering in Wireless
Pioneering in Broadcasting

Wanamaker's is Again on the Air

Over the latest
development in radio the
**TRUE FIDELITY
STATION W2XR**
1550 kilocycles

Monday to Friday

Each week from 7 to 8 p.m.
Beginning Monday Night, Sept. 16

Tune at 1550 kilocycles for
an hour of entertainment
unique on the air today.

John Wanamaker New York
Wanamaker Place Ninth Street at Broadway

Popular interest in hi-fidelity prompts sponsor to make W2XR a regular feature.

somewhat different technique in the control room.

The maintenance of the equipment is more exacting. Improper operation of equipment may not be noticeable with low fidelity, but it is readily apparent with high fidelity. The engineers must be more capable, and inspections and tests should be very frequent to insure optimum operating conditions. Cathode ray monitoring is employed.

More expensive

John V. L. Hogan, owner and directing engineer of W2XR has estimated that the initial cost of a high-fidelity transmitter is from 30 to 50 per cent higher than the ordinary station. But when it is considered that high-quality music is made available to the public, the increased cost is rather insignificant.

At the present W2XR is operating on a daily schedule of only three hours, from 5 p.m. to 8 p.m., but in the near future W2XR's activity will be greatly increased. A typical program follows: Waltz favorites, semi-classical; Salon moods; Hungarian gypsy ensemble; All-Brahms selections; Press-Radio news, Brahms' famous "Academic Overture." Much use is made of high-fidelity transcriptions, including those of the World Broadcasting System.

Less advertising

Last month for the first time, the FCC has permitted commercial broadcasting by these experimental stations. In keeping with the good taste of the programs, mostly classical music, the advertising plugs have been made innocuous. Perhaps this heralds the approach of a new "commercial" practice in broadcasting. W2XR has already obtained the full endorsement of the Women's National Radio Committee.

John Wanamaker, one of New York's biggest department stores, sponsors a full hour's program five nights a week, while Packard Motor Company of New York has contracted for spot announcements. Coal Carburetor Company, a local concern specializing in heating equipment is another advertiser.

While true-fidelity broadcasting has not yet reached the heights, it is a very valuable proving ground for developments in radio—many features have been tested in practice; and the Federal Radio Commission deserves praise for its foresight in licensing this most recent development.

TELEVISION TODAY

Picture definition

★ Just where television "clarity of picture" stands today, with respect to other familiar picture services, was stated numerically by Dr. Alfred N. Goldsmith, consulting engineer, New York, before the committee on engineering developments of the National Advisory Council on Radio in Education.

A modern theatre motion-picture screen shows about 5,000,000 picture elements.

A home-movie film has from one-half million to one million picture elements available.

The best television definition today (cathode-ray type), involves from 100,000 to 200,000 picture elements.

BBC television ready March 1

★ The British Broadcasting Company has promised that television broadcast from London will begin on March 1, 1936, according to Louis Sterling, Director of Electrical Musical Instruments, Ltd. Both E.M.I. and Baird will cooperate



Television active in Berlin. Monitoring position used by Reichs Rundfunk Gesellschaft.

with the government in supplying the receivers.

The E.M.I. receiver will have an image of six by eight inches and the list price is approximately \$400 in American currency. It is of the cathode-ray type utilizing 405-line transmissions and operating at 50 frames per second.



Cathode-ray oscillograph monitoring is employed in W2XR's control room in place of the sluggish power-level meter. Two pairs of turntables allow for the reproduction of all types of recordings including high fidelity.

"ON THE AIR"—

Great programs help the dealer
sell more and finer radios

★ Spectacular evidence of what remarkable merchandise the radio dealer is really selling in the programs now on the air is again offered in recent program announcements from the broadcasters.

Amazing supply of features continues to drift miraculously from resourceful studios, giving the dealer talking points which positively have no equal in the world of selling.

Radio, flushed with 20th century supremacy, has made such an impressive and romantic bid for spectacular talent that the whole set of great artists has come over. "Art on the Air Waves" has arrived and it's all over the program lists for the benefit of those who wish for a more advanced type of entertainment than "torch singers and crooners." Symphonies, ace vocal and instrumental soloists, operatic sensations, and other musical gems from the upper levels are scattered generously through the broadcasts. A recent program list issued by the Radio Institute of Audible Arts contained broadcast announcements for five different symphonic organizations of recognized national importance, all playing on the air in regular schedule, several with soloists extraordinary.

Self-destroying critics of radio, or anyone else who is indifferent to the

new merit of the broadcasts, could scarcely NAME ONE GREAT LIVING ARTIST WHO HAS NOT BEEN ON THE AIR. What few of the big names are missing are now on the way.

Headliners

Billings from the studios this Fall include Paderewski, Lucrezia Bori, Jeritz, Martinelli, Jascha Heifetz, Grace Moore, Nino Martini, Lily Pons, Michael Bartlett, Rosa Ponselle, Lotte Lehman, Lawrence Tibbett, Mischa Levitzki, Cyrena Van Gordon, Deems Taylor, Sigmund Romberg, Helen Jepson, Gladys Swarthout, Nelson Eddy, Walter Damrosch, and others. And the voice of Pope Pius XI was recently heard in a special broadcast from Rome. Outside this group are broadcasts with star dance orchestras and all the stage and screen folk in whom public interest is tops.

Broadcasters have a perfect right to wax lyric and extravagant on such presentations, and the "poor-program" propaganda looks thin and feeble to the point of being downright fantastic.

Perhaps the most extraordinarily useful aspect of the matter as far as dealers are concerned is that any type of prospect can be appealed to with

the talk of brilliant broadcasts. There are always sport highlights, international hook-ups, news flashes, educational, religious and political features, and a brand new emphasis on children's programs of a specially supervised nature. Important also is a new trend toward radio appearances of stage and screen folk.

Why tune in?

Some dealers have already used these broadcast features in their ads, but as a rule the sales captions have read something like "get your set tuned up for the big league ball games" rather than "don't miss the Philharmonic even if you have to buy a new set." Point is that this program appeal has to be adapted to the tastes, musical or otherwise, of the local patronage and the fact that current broadcasts offer a sufficiently wide range for it, is indisputable. For what other reason do people buy sets than to tune in on the things they prefer?

Money spent on talent for broadcast programs sponsored by national advertisers mounts steadily as the leading manufacturers compete for stars. Dollars involved in talent traffic in July, 1935, was 175 per cent over the amount for July, 1933, and 60 per cent over July, 1934. It will be noted, any time the American Association of Advertising Agencies releases a breakdown of recent expenditures of national advertisers, that talent costs are obviously increasing at the expense of other items.

Talent alone, 30 per cent

Late surveys have shown that 30 per cent of the total cost of an average radio program is spent for talent, a substantial increase over the percents for '33 and '34. On the basis of RADIO TODAY's estimate of 1935-6 business for CBS and NBC, approximately \$16,000,000 will be spent for network talent alone during the coming twelve months.

With talent appropriations on the consistent increase, listeners may expect to hear the biggest and most expensive artists on the air as regular radio entertainers.

Window poster

To help dealers make a sharp appeal to street and store traffic on the basis of these costly features which go with every set sale, RADIO TODAY offers on pages 16 and 17, a display which may be used as a window poster.



Give them time—all the screen stars get around to broadcast. Here are honeymooners Joan Crawford and Franchot Tone, shown with the latter's father, Frank J. Tone.

NBC flashes

★ First-string stars from opera, stage, and screen continue to be spotted as guests on big NBC bills, particularly on the RCA Magic Key program Sunday afternoons, WJZ, and the General Motors concerts Sunday nights, WEAF.

Otherwise: A new cast has taken over Lucky Strike's Hit Parade Saturday nights, WEAF. New line-up includes Al Goodman as musical director, Loretta Lee, Willie Morris, Stuart Allen, the Frim Sisters and the Rhythm Kings.

President Roosevelt will home-come to Georgia, his adopted state, on Nov. 29, and his address will be aired from Atlanta on both NBC nets and the CBS web, beginning at 12:30 p.m.

Pittsburgh Symphony Orchestra, directed by its brilliant young composer-conductor, Antonio Modarelli, will air a concert series Thursday nights on WJZ, starting Feb. 6.

Feature broadcast from Moscow, Russia, is slated for Nov. 20 on WEAF net, beginning at 9 a.m. Program will observe the 25th anniversary of the death of Count Tolstoy, the famous author. Vassily Katchalov, one of the foremost Russian actors, is on the program.

Radio Guild's Thursday afternoon program on the Shakespeare "King Cycle," having finished with "King John" and "Richard II," will start with "Henry IV" on Nov. 21, and follow with "Henry V," "Henry VI," "Richard III" and "Henry VIII," with an airing each week until Jan. 16, except Nov. 28. Presentation on WJZ is using noted Shakespearean actors, and co-operates with huge strings of schools.

Vittorio Giannini, distinguished young composer, with a fine rep here and abroad, will conduct an hour's program of his own works and present his cantata, "Primavera," for the first time in America over combined WEAF-WJZ nets, Nov. 29, at 11 a.m.

CBS specials

★ New Ford program at CBS is set for Dec. 1, airing from 2:30 to 3 p.m. Sundays. The feature plugs the new Lincoln Zephyr and the artist is Jose Manzanera, with a South American ensemble.

Manzanera's famed musicians recently completed an unusually successful engagement at the San Diego Exposition. Troupe is the only orchestra in the country authorized by Latin American officials.



Miss Jeanette MacDonald, soon to air some songs.

"Krueger Musical Toast," a new WABC-CBS series, which got under way Nov. 9, happens at 8:30 Saturday nights and features a grade A batch of talent. Ray Block's orchestra, Jerry Cooper and Sally Singer are the specials in it.

Juilliard School of Music and CBS have their "Understanding Opera" series under way Tuesday evenings. Each program will feature notable soloists and choruses with the Columbia Symphony Orchestra, directed by Howard Barlow.

Currently important dates on the Ford Sunday evening series are Cyrena Van Gordon, Nov. 17; Kirsten Flagstad, Nov. 24; Albert Spalding, Dec. 1; Lawrence Melchior, Dec. 8; Elisabeth Rethberg, Dec. 15; a Stueckgold-Meisle-Crooks-Pinza quartet, Dec. 22, and Charles Kullman, Dec. 29.

MBS extras

★ Beginning Nov. 18, a top-notch Italian Conductor, Cesare Sodero, will conduct Monday night programs on WOR titled "Cesare Sodero Directs." Concert begins at 10:15 and the soloists will be Willard Amison, tenor; Verna Osborne, soprano, and Garfield Swift, baritone. Large group of Choral Singers will also be featured.

Fans will be delighted at the announcement that Morton Bowe, tenor; Gabriel Heatter, news commentator, and John Gambling, vet announcer, have been renewed by the station for another year.

Rev. Charles E. Coughlin has renewed his Sunday broadcasts on WOR and a group of independent stations. Broadcasts arrive from Shrine of the Little Flower, Royal Oak, Michigan. Time is 4 p.m.

Sunday nights, beginning Nov. 17 at 10:45 p.m., MBS will air from Chicago a whole season of hockey games—those of the National Professional Hockey League. On Nov. 24 the Chicago Blackhawks meet the Montreal Maroons; thence through a heavy schedule to March 8.



Major Bowes (right) gets a ten-gallon greeting from a Texas official.

There's a place for you Don't be left behind... concentra

TREMENDOUS ADVERTISING BACKS METAL TUBES

48 Radio Manufacturers now use Metal Tubes

Look who they are:

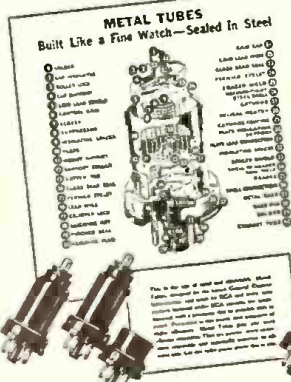
Answer Radio Co.
Aurora Products Co. Inc.
Automotive Radio Mfg. Co. Inc.
Baltimore Radio Corp.
Crescent Corp.
Crosby Radio Corp.
Curtis Radio Corp.
Continental Radio & Television Corp.
Columbia Radio & Television Corp.
Crosby Radio Corp.
Dunlop Radio Corp.
Edison Radio Corp.

Electrical Research Laboratories (Standard)
Emerson Radio & Phonograph Corp.
Fada Radio & Electric Co.
Fidelity Radio Home Appliances, Inc.
Frank Mfg. Co. Inc. (Frank Electronics)
General Radio Corp.
General Electric Co.
General Household Utilities Corp. (General)
Gibson, Inc.
Halsbach, Inc. (Radio 800 Radio)
Halsbach Radio Mfg. Corp.
Horn Radio Mfg. Co. (Horn Radio)

Howell Radio Co.
International Radio Corp.
Kingston Radio Co. Inc.
La Wai Mfg. Co. (Radio)
Mason Radio Corp.
Mason Radio Mfg. Co.
Mason-Spinks Industries (Mason)
Packard Bell Co.
F.M. Radio Corp.
Radio Products (Radio)
RCA Victor
Toshiba Co. Ltd.

Union Radio Co.
Sparks-Walsham Co. (Sparks)
Stromberg-Worlan Corp.
Stromberg-Carlson Telephone Mfg. Co.
Troy Radio Mfg. Co.
United American Radio Corp. (United)
United Scientific Laboratories (The West)
World Mfg. Co.
Wain-Gordon & Co.
Worcestershire
Wilson-Grey Corp.

And other manufacturers will shortly offer sets with Metal Tubes



Be modern—get a radio set with Metal Tubes

RCA Metal Tubes have proved a sensation without any direct advertising whatsoever. But we believe a good product deserves to be known and used by everybody. So one of the biggest advertising campaigns the industry has ever known is now telling the American public about the unquestionable superiority of Metal Tubes. A series of full-page, 1200-line and 1000-line ads are running in 103 newspapers in 83 cities. Behind these powerful ads are the weight and prestige not only of RCA, but of all 48 of the leading manufacturers who have adopted Metal Tubes in their sets. The industry is overwhelmingly behind Metal Tubes. The public is demanding sets with Metal Tubes. You can't afford to invest your money in anything else but Metal-Tube sets. Act now—before the pendulum has swung the full arc—before it's too late!

Full-page advertisement which ran in the N. Y. Times and other newspapers Nov. 1—opening gun of a smashing campaign on Metal Tubes in over 100 leading newspapers throughout the country.

Metal T
by 48 le
an over
industry
Metal T
are mee
lous pro
the ban
of the pa
Don't
the ben
take a
and pro
RCA M
The st
never int
from the
built as
time in
by G.E.
Presente
as an "c
a vetera
more pu

RCA MET

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

in the Victory Parade! e on sets with METAL TUBES!

are over! They are used
radio manufacturers...
oming majority of the
e public is asking for
nd those manufacturers
hat demand with fabu-
on schedules. Climb on
on and get your share
hat belong to the victor!
Christmas is just around
ou can't afford *now* to
e on diminishing sales
7in with the winner...
TUBES!

of RCA Metal Tubes was
ot. They were a natural
inning. A radio tube
uld be built for the first
y! Developed
ade by RCA.
he public not
ment" but as
cores of tests
g than a radio



tube ever encountered in regular ser-
vice... a new champion!

Hailed by the trade press, imme-
diately and enthusiastically indorsed
by a vast majority of set manufacturers,
*yet without a single word of direct ad-
vertising*, RCA Metal Tubes have taken
the set-buying public by storm! With
its instinctive recognition of a great
practical advance and its eagerness to
make use of its benefits, the public
cannot be fooled!

No, there was never a doubt.
Merely a question of time until pro-
duction could begin to catch up
with the staggering demand. Now,
production is up. We are able to
supply most of the needs of our
set customers. And Metal-
Tube radios of 48 leading
radio makers are pouring
off the lines in steady, end-
less streams. A great victory
has been won!



PIONEERING FOR PROFITS

Every industry you can think of has brought rich rewards to those who pioneered in producing its products. Pioneering made this country what it is today, the envy of the world, the land of opportunity. You can't stop America, because YOU CAN'T STOP PROGRESS! Metal Tubes designed by the famed G.E. laboratories and made by RCA represent pioneering and progress both. They are bringing the rewards of pioneering this very minute to all those who are alert enough to recognize them for what they are—the greatest single aid to set selling today!

AL TUBES

y of the RADIO CORPORATION OF AMERICA

INSTALLMENT SELLING

New angles for the dealer on the present time-payment set-up

★ RADIO dealers throughout the country are facing a new set of circumstances currently important in the matter of time-payments for receivers. With 70 per cent of radio sets being sold on the installment plan, radio men have discovered by this time what credit plan to use, and precisely how to adapt it to the type of patron most often appearing at the credit windows of their stores. But lately there have been developments, nationally speaking, which may give such dealers a clue as to what to expect if they apply for financing from national organizations in this field.

C.I.T. back in

Finance companies have recently shown an interest in radio again, and have taken steps which would have been unheard of three years ago. Commercial Investment Trust Co., One Park Ave., New York City, has been acting as the time-payment financing organization for eight of the leading radio manufacturers through contracts which have been signed in recent months. These are the makers of the following sets: RCA, Atwater Kent, Stromberg-Carlson, Stewart-Warner, Grunow, Crosley, Sparton, and Graybar. More recently, CIT announced that it had completed exclusive agreements with the Emerson Radio and Phonograph Corp. and Noblitt-Sparks Industries, Inc., whereby

the company will act as official financier for Emerson and Arvin radio dealers and distributors.

Under the CIT plan, a comprehensive financing system is offered to retailers through the company's 140 branch offices. The service does not apply to auto radios. CIT headquarters are in New York, Chicago, and San Francisco, but branch offices are functioning in the central cities of all states.

Catchy offers

Big radio retail outfits in the East are offering a variety of plans in their own credit departments, without a hook-up with the financing companies. Obviously, they are setting the pace for smaller dealers elsewhere, except in cases where the local set-seller must steadfastly adapt his plan to conditions peculiar to his area. What the big fellows are doing about the new groups which are asking for credit makes a profitable study for outlying dealers who will soon find themselves in a similar swim.

One retail company will give credit on even the lowest priced set in the store, which happens to be \$5.95, other aspects of the matter being satisfactory. Payments as a rule are spread over one year, although a special 18-month period can be arranged. Plan is advertised as costing the patron $\frac{1}{2}$ per cent per month, which amounts to

an interest charge of 6 per cent per year. Feature of the arrangement is a 90-day period without interest. At least 5 per cent must be paid down. Company reports that it does 90 per cent of its radio business on this basis.

A leading chain asks \$5 down, charges no interest whatever, and demands no second payment for 30 days. After that, the payments are as little as \$1 weekly. This service is not extended to a buyer of a set priced below \$29.

Others are asking no money down and \$1 weekly but in most cases such terms are not available on sets priced below \$20.

Seats at the show

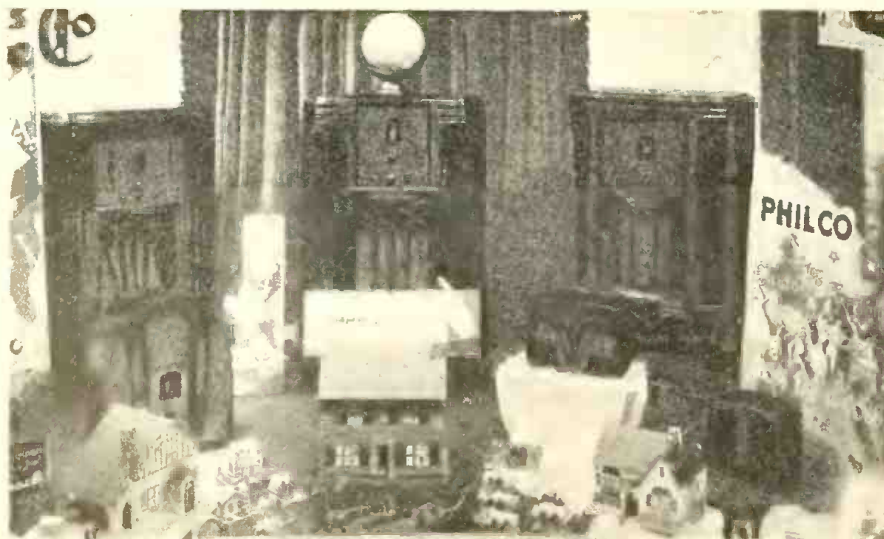
At this point most time-payment plans are being advertised in terms of the most attractive details, rather than publicizing such captions as "Easy Terms" and "Ask About Our Convenient Payment Plan." In some cases good results have been realized from ads which feature current broadcasts. Features are outlined for the week and the ad concludes: "It costs you only \$1 for this array of ring-side seats." On this score, dealers can always give special attention to local sport events.

Special method of plugging time-payment plans is being used by Stewart-Warner dealers and distributors. Company has arranged for distribution of electrically transcribed 15-minute programs for use of the local station. The discs are first-rate quality, and leave ample time for the dealer to explain his credit plan.

To hike volume

Whatever the method of plugging, dealers are conveniently keeping in mind that once a customer is credited, it is, under present circumstances, worth while to play up the higher-priced sets more than ever before. The 1936 models have such a list of imposing features that a small monthly payment seems easy to pay for the extraordinary brand of entertainment immediately forthcoming. It is for this reason that a merchant who sells radios exclusively has a certain advantage over the radio merchandiser of a department store. The former can play the air features, which are costing the broadcasters millions every season, directly against the small time payments which he will accept in return for the costliest entertainment in the world.

Special appeals can also be made along with credit plans to the householder who may buy a second or third set for the home.



Christmas time in a radio dealer's window — a time for spirited promotion of quality sets.

Kate Smith

CBS

Dick Powell

CBS

COLUMBIA programs, of course!

... close-ups of the country's favorites ★

Lily Pons & Kostelanetz

Eleanor Powell

CBS

CBS

Burns & Allen

Eddie Cantor

There's space for only 6 close-ups on this page. So we picked 6 at random from among Columbia's full schedule of radio favorites. We'll show you all the others, soon. The Columbia Broadcasting System, 485 Madison Avenue, New York.

THE IMPORTANCE OF RECTIFICATION

John Rider explains the function of many of radio's complicated circuits in terms of rectification

★ DID you ever analyze the number of different functions performed in a radio receiver—which are referred to or spoken of by a number of different names—but which are founded upon one and the same basic principle? . . . The power of interpretation cultivated by recognizing the function as related to a basic principle does much towards facilitating comprehension of radio theory. . . . This is quite an important consideration, because it reduces the number of supposedly distinctly different elements of a modern radio receiver and makes it easier to understand the workings of these new innovations. Take as an example the process of rectification.

Rectification, as we understand the term, involves one basic principle—namely, asymmetrical conduction. Expressed in a different manner, a rectifier as applied to radio and allied fields is a device whereby an alternating current is changed into unidirectional current, which naturally means that an alternating voltage is changed into a unidirectional voltage, varying between zero and maximum. . . . Or if the relation between the input and output circuits is such that input voltage and output current are involved, then the device as a result of its non-symmetrical conduction characteristic (asymmetrical conduction) will change alternating voltage into unidirectional current, varying between zero and maximum. . . . The variation of the output current, between zero and maximum, is in con-

formity with the variation from zero to maximum of the input alternating voltage. This is the basic principle of the rectifier and is applicable to all types of rectifiers, such as vacuum tube rectifiers, electrolytic rectifiers, gas rectifiers, oxide rectifiers, vibrating rectifiers, etc. . . . At the present time, however, we shall concern ourselves solely with vacuum tube rectifiers.

Power rectifiers

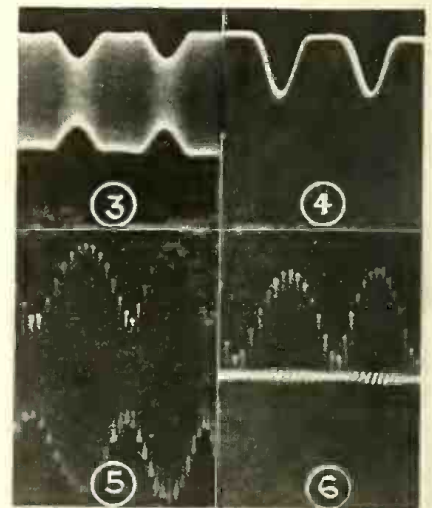
The basic circuit for power rectifiers is shown in Figs. 1 and 2. Fig. 1 is that of a half wave rectifier and Fig. 2 shows a full wave rectifier. The electron emitter may be the cathode in tubes which employ a cathode, or is the filament in tubes which use a filament as the electron emitter. R in both cases is the load upon the rectifier system, across which the output voltage is developed. C is a condenser connected across the output of the rectifier system.

Obviously, a power rectifier system which furnishes an output voltage, although unidirectional, but which varies between two wide limits, would not be satisfactory. Hence, since that condition exists in the rectifier tube and its output circuit, supplementary condensers and filter chokes are used, so that the output voltage supplied by the complete system has a steady value. It should, of course, be remembered that the process of arranging for a constant d-c. voltage output is something supplementary to the actual process of rectification and its

immediately related system, namely, the source of input a-c. and the rectifier.

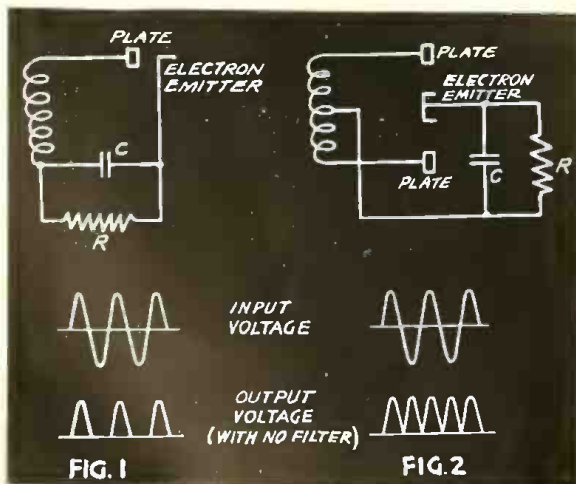
Detectors

The detector tube or the detector action also comes under the main heading of rectification, for the process of detection likewise depends upon asymmetrical conduction. The detector tube rectifies the carrier and permits a greater flow of output current for one half of the radio frequency



Detection as visualized by the cathode-ray oscillograph.

cycle than for the other half of the cycle. . . . As a matter of fact, we generally assume that in the conventional detector circuit there is no plate current flow during the lower or negative half of the modulated wave envelope. What really takes place during the usual process of detection is that the lower or negative half of the modulated wave envelope is eliminated and as a result of the elements in the load circuit (plate circuit) of the two or more element detector, the audio signal is extracted from the rectified output. This is shown in Figs. 3 and 4. Fig. 3 is an oscillogram of a modulated signal fed into a detector tube and Fig. 4 is the resultant audio output. Note that the wave shape of the audio output corresponds with the positive half of the wave envelope. The lower or negative half of the input modulated wave has been eliminated.



The half wave rectifier diagramed in Fig. 1, passes one-half of the cycle producing a fundamental ripple of 60 cycles. The full wave circuit of Fig. 2 rectifies both halves of the voltage and gives a fundamental ripple of 120 cycles to be filtered. The latter requires less smoothing.

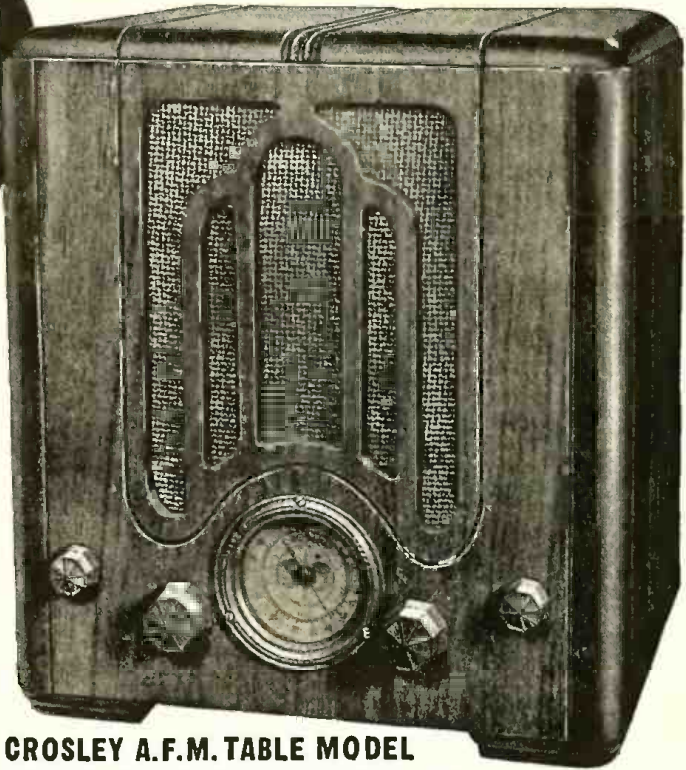
EVERY TRADITION OF RADIO VALUE UPSET BY THE NEW ~~CROSLEY~~

A.F.M.

AMERICAN - FOREIGN - METAL TUBES
(Two Bands—Five Metal Tubes) ▽



\$29⁹⁵

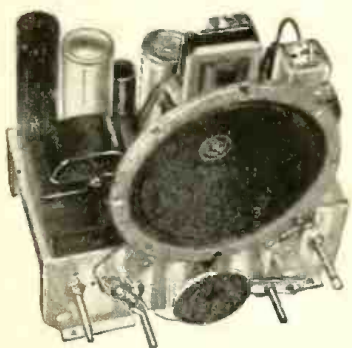


CROSLEY A.F.M. TABLE MODEL

Cabinet has figured walnut veneer on front panel.
Dimensions: 11½" high, 10½" wide, 7½" deep.

Prices in Florida, Rocky Mountain States and West slightly higher.

There is nothing in the history of radio by which the importance of this announcement may be measured . . . radio has not known such a value before. Right out of Crosley's laboratory it has come, this feature set with American reception, foreign reception, metal tubes; a set of remarkable performance at an unbelievably low price. Only in the other numbers of the Crosley 1936 radio line will you find comparable values. Think of the sensation which the Crosley A. F. M. radio will create when you show it in your window, on your floor, demonstrate it to your customers. Make the most of its sales-pulling powers by getting in touch—now—with your Crosley distributor.



CHASSIS—Superheterodyne. Five metal tubes. Two tuning bands—American (540-1710 kc.), foreign (2350-7500 kc.). Other features:

- 1 **TWO HIGH CAPACITY REGULATING WET ELECTROLYTIC CONDENSERS** maintain proper voltage thereby protecting other units of the receiver from voltage overload. Also serve as reservoirs supplying sudden increases in plate current tending to prevent overload or peak distortion of the receiver.
- 2 **POWER TRANSFORMER** is so designed and constructed as to insure long, uninterrupted operation.
- 3 **TONE CONTROL** has two positions so that the user may enjoy either treble or bass as he may desire.

- 4 **DIAL LIGHTS** completely illuminate the dial the instant the set is turned on.
- 5 **VOLUME CONTROL AND SWITCH** enables the user to select the volume output most desired for any position from a whisper to full strength. This volume control in conjunction with automatic volume control tends to counteract fading and maintain uniform volume.
- 6 **ILLUMINATED FULL VISION AIRPLANE TYPE DIAL** enhances the appearance of the set and places the entire range within full vision.
- 7 **VERNIER DRIVE STATION SELECTOR** with 6 to 1 ratio drive materially facilitates tuning in the desired station.
- 8 **BAND CHANGE SWITCH**. Simply turn to the left for reception of standard broadcasts and to the right for reception of short wave broadcasts.

- 9 **FULL FLOATING MOVING COIL ELECTRO-DYNAMIC SPEAKER** assures a life-like reproduction of tone whether the volume control is turned down low or up to its highest level.

- 10 **COMPLETELY SHIELDED FIRST I. F. TRANSFORMER**

- 11 **COMPLETELY SHIELDED SECOND I. F. TRANSFORMER**. The I. F. Amplifier, incorporating completely shielded I. F. Transformers, is of a high gain, high selectivity type, insuring good overall selectivity and sensitivity.

One type 6A8 Oscillator Modulator (double purpose) tube. One type 6K7 I. F. amplifier tube. One type 6J7 Detector and A. F. Amplifier (double purpose) tube. One type 6FG Output tube. One type 5Z4 Rectifier tube.

THE CROSLEY RADIO CORPORATION - Cincinnati

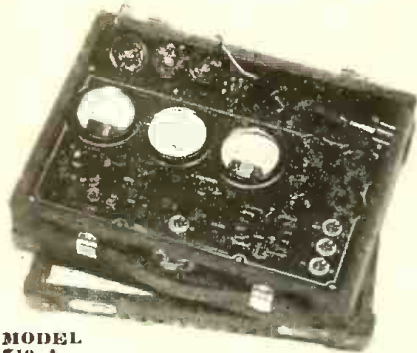
POWEL CROSLEY, Jr., President

Home of "the Nation's Station"—WLW—500,000 watts—most powerful in the world—70 on your dial

WHATEVER HAPPENS . . . YOU'RE THERE WITH A CROSLEY

~~CROSLEY~~ RADIO

NEW Readrite SET TESTERS



MODEL 710-A
COMPLETE SET TESTER
ONLY \$16.50
**RELIABILITY AT
LOW COST**

This popular three meter Set Tester checks all parts of radio tube circuits by plugging directly into the receiving set sockets.

D.C. Voltmeter Scale 20-60-300-600
D.C. Milliammeter Scale 15-150
A.C. Voltmeter Scale 10-140-700

Panel jacks are provided to make individual range connections.

MODEL 710-A
Complete in Black Leatherette Covered Case. Dealer Net Price..... \$16.50

MODEL 712-A
Same as 710-A but having Triplet moving coil Model 223 2" D.C. Voltmeter (1000 ohms per volt). Dealer Net Price..... \$22.20

Where reliability is desired at low cost, turn to Readrite—all Readrite merchandise is built rugged—it will stand up—it will give dependable performance over a long period of time.

OTHER PRODUCTS
Readrite manufactures all types of testers used for servicing Radio Sets, including Set Testers, Tube Testers, Resistance, Continuity and Capacity Testers, Point-to-Point Testers and inexpensive Indicating Meters.

SEE YOUR JOBBER



THIS COUPON BRINGS FACTS

READRITE METER WORKS
1911 College Drive, Bluffton, Ohio
Please send me full information on Model 710-A Readrite Complete Set Tester.....
Catalogue.....
Name,
Street Address,
City State

USES OF RECTIFICATION—JOHN RIDER

(From page 26)

Heterodyne detection

A much better representation of detector action is shown in Figs. 5 and 6. What is indicated here is identical to what is accomplished in beat oscillator arrangements for c.w. reception; this arrangement is a feature in several commercial receivers and is also used as a tuning indicator or "station spotter." Fig. 5 illustrates the wave envelope of two signals of different frequencies fed into the detector tube. These two voltages are alternately in phase and out of phase, thus giving rise to the variation in amplitude. The rate of amplitude variation occurs at the difference frequency. Fig. 6 shows the voltage across the load of the detector tube and you can see that the lower half of the input voltage pattern has been eliminated. In effect the input voltage has been rectified and with proper equipment in the load circuit of the detector, the signal which would be extracted from the rectified wave would be of the frequency representative of the rate of amplitude variation. In order that the picture of Fig. 6 be as clear as that shown in Fig. 4, it would be necessary to filter out all the frequencies represented by the lines running vertically. They appear in this pattern, because this test was made by using comparatively low frequencies, whereas the carrier used in Fig. 3 and not appearing in Fig. 4 was of a high frequency and was filtered out.

From what has been said, you can gather that the heterodyning process to produce a difference frequency is also founded upon rectification. As far as basis of operation is concerned, the heterodyne oscillator used for c.w. reception, the signal beacon for spotting stations as used in the receivers, and the operation of the first detector (also known as modulator, translator, mixer, etc.) used in super-

heterodyne receivers also depend upon rectification.

The process of rectification as applied to detector tube is applicable to the diode circuit, which is substantially identical to the half wave rectifier or the full wave rectifier, depending upon the use of a half wave or full wave diode detector. An example of the half wave and full wave diode circuit detector as used in commercial receivers is shown in Figs. 7 and 8. Ignore the a-f. circuit connections and you will find that this circuit is identical to the half wave and full wave rectifiers of Figs. 1 and 2. In Fig. 7, the 1.0 megohm resistor is the R of Fig. 1 and the two diodes

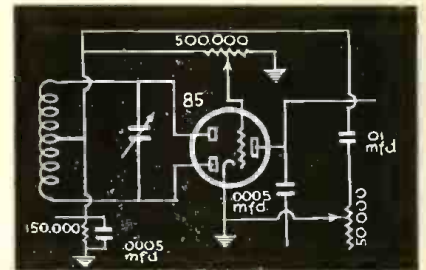


Fig. 8—Second harmonic distortion in detection is eliminated by using the full wave diode detector.

constitute the signal plate. In Fig. 8 the two diodes are used as the two plates of Fig. 2, and the 150,000 ohm resistor is the R of Fig. 2.

Demodulation

In grid bias detectors of the three or more element variety, rectification takes place in the plate circuit, because only the positive half of the modulated wave envelope is amplified—the negative half being eliminated.

In the grid-leak and condenser type detectors, rectification occurs in the grid circuit. When a modulated wave is applied to the grid of the tube, grid current flows through the grid leak. This rectified current varies in amplitude in accordance with the modulation of the carrier and a voltage is developed across the grid leak-condenser combination, which combination is in effect the load upon the rectifier system. This voltage is applied to the grid of the detector tube and is amplified in the plate circuit by ordinary amplifier action and is productive of the detector output. . . . Once more rectification is the basic principle.

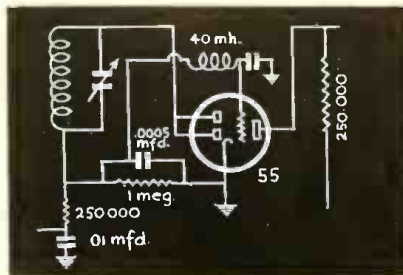


Fig. 7—The half wave diode detector is similar to the half wave power rectifier.

Automatic volume control

Automatic volume control depends upon rectification—that is, for the control voltage. One tube or one of the elements of a multi-purpose tube is used to rectify a portion of the signal and the rectified signal develops a voltage across the load resistor which is applied to the tubes to be controlled as a varying bias. As stated in connection with the basic rectifier circuit, the output voltage, while unidirectional, varies between zero and maximum in conformity with the input voltage; in the case of the AVC circuits, this is in conformity with the carrier amplitude. Hence the rectified voltage in the AVC circuit will increase when the carrier voltage increases and will decrease as the carrier voltage decreases, thereby supplying a variable bias, which, when properly distributed to the controlled tubes, maintains the amplification available with these tubes, at a predetermined level. What has been said is true with diode or multi-element tubes used as the rectifiers or detectors. By tapping off the negative end of the load resistor, at the proper point, the required control voltage is made available. By proper filtering of the carrier, possible audio variations are kept out of the controlled circuits. As far as we are concerned, these items are incidental to the fact that rectification is the basis of AVC operation.

Unusual AVC

A unique application, somewhat different from the conventional, is shown in Fig. 9. We show this instead of the conventional arrangement because it is representative of what we said, that comprehension of the basic operating principles will help clarify supposed mysteries. Fig. 9 illustrates a circuit used in several commercial receivers, such as the Sil-

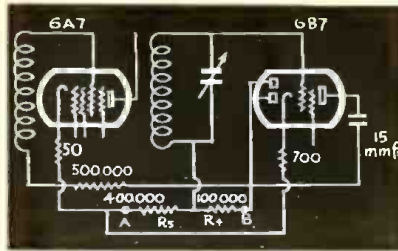


Fig. 9—The diode detector provides bias for an automatic volume control circuit.

vertone 1700 and 7-62, wherein a tube acts as an i-f. amplifier and AVC. The latter is of interest. A portion of the i-f. voltage in the plate circuit of the 6B7 tube (the i-f. transformer coupling this tube to the second detector is not shown), is fed back to the diode plate through the 15 mmfd. condenser. Rectification takes place between the diode plates (both being used as a common plate) and the cathode. The load resistor is comprised of the series combination of the 100,000 and 400,000 ohm units. This circuit is identical in structure to the conventional half wave rectifier of Fig. 1. (The 700 ohm resistor is also in the circuit, but the major units are the two resistors R-4 and R-5.)

By connecting the 6A7 cathode to point A and the control grid (through the i-f. transformer) to point B, the 6A7 tube is negatively biased by the voltage developed across R-4 and R-5, as a result of rectification. The control bias for the triode portion of the 6B7 used as an i-f. amplifier is secured by connecting its control grid to the junction of R-4 and R-5 and the voltage developed across R-5 (as a result of rectification) is applied to the 6B7.

The actual rectifier and AVC circuit shown here is typical of the diode tube AVC voltage sources as used in the majority of receivers. Where a triode is used as the source of the

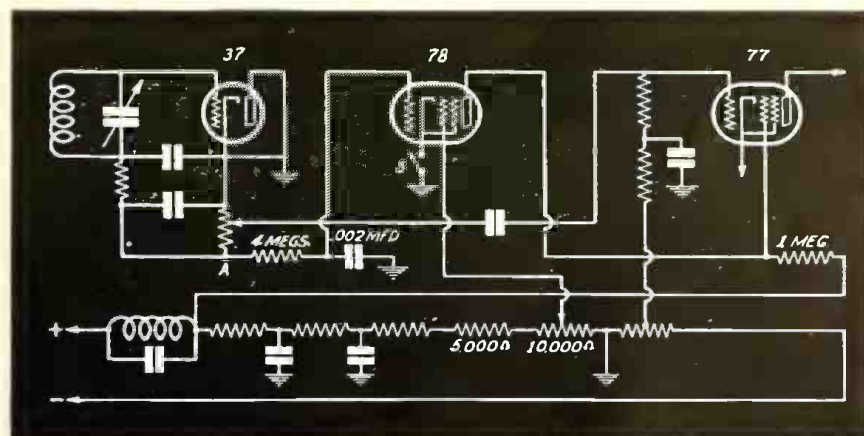


Fig. 10—Automatic noise suppression is obtained by making the audio amplifier inoperative when the station is out of tune.



A Money-Saving VOLUME CONTROL Kit

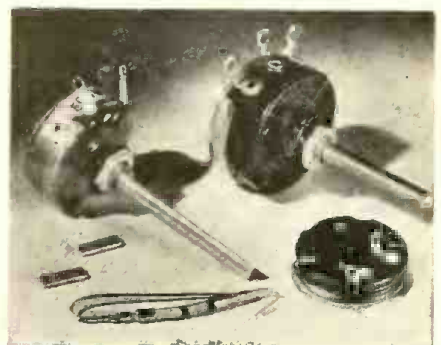
Here's how you save three ways:

- (1) Time-saving—you're always ready to service the most popular radio sets.
- (2) Cash-saving—you enjoy the quantity price on volume controls and switches—and FREE flexible resistors.
- (3) Labor-saving—these components are standard Clarostat quality: they "stay put"—no kicks and return calls to make good.

- ★ Kits available in two kinds: One, with composition type controls; the other with wire-wound controls. Stock both kinds!
- ★ Five different and most popular resistance values, plus five FREE ½-watt flexible resistors applied externally for desired bias resistance.
- ★ Three power switches that snap on any Clarostat volume control.

FREE Manual New Clarostat Volume Control Replacement Manual now ready. Send one top of Clarostat Volume Control carton to identify yourself as a service man, entitled to a copy. Meanwhile, order your volume control kits from local jobber.

CLAROSTAT
MANUFACTURING CO.
Incorporated
285 North Sixth St.
Brooklyn, N. Y.



Contents of Kit

- 5 Volume Controls (either 3 Add-a-Switches Composition or Wire-Wound)
- 5 Flexible Resistors

TUBE TESTER

Deluxe

FOR 1936



MODEL 1310
Only \$30.00

THE TRIPLETT MODEL 1310—TESTS ALL TYPES—NET DEALER PRICE ONLY \$30.00

HERE is a simplified tube tester that is easy to operate—yet it tests all types, metal and glass, including new 6P7 and 12A5. Conforms to all standards of good engineering practice.

The compound circuit used by Triplett to obtain this simplicity is amazingly accurate. It will definitely accept or reject tubes on the English Reading Good-Bad Scale—It also has short test and separate diode test.

The Model 1310 is furnished in a handsome modernistic portable wood case of two tone walnut—While very attractive, it is also impressive and professional. The removable cover and sloping panel make it particularly adaptable for counter or portable use. Dealer Net Price...\$30.00



MAIL COUPON FOR DETAILS

Triplett Electrical Instrument Co.
1911 Harmon Avenue,
Bluffton, Ohio, U.S.A.
Please send me (check)
.....More information 1310
Cataloginformation on.....
Name
Street
City State.....

SERVICING

(From page 29)

AVC voltage, rectification is still the basic principle, for the control voltage is the result of rectification of a portion of the i-f. signal.

Automatic noise suppression

Automatic noise suppression systems depend upon rectification as the means of securing the controlling signal, which will release the "locked" stage or stages, as the case may be. Opening the locked stage or stages may be accomplished by changing the voltage applied to the control, screen, or suppressor grids. Whichever system is used, or whatever the name applied to the system, you will find that the source which supplies the trigger voltage to release the locked stage is a rectifier system, which comes into play when the signal is tuned in. It is possible that amplification of this voltage takes place, so as to provide the required magnitude of releasing or trigger voltage. Be that as it may, rectification invariably is the basis of operation. Examine Fig. 10.

Tube 37 is the detector and AVC control. Tube 78 is the trigger tube and tube 77 is the first stage audio amplifier. Note that the screen grid of the amplifier tube (77) receives its voltage through a 1.0 megohm resistor, which is also joined to the plate of the control or "squelch" tube. Without any signal input, there is no bias applied to tube 78 and the plate current is high. This causes a high voltage drop across the 1.0 meg resistor and the voltage at the screen of the a-f. amplifier is so low that the tube is inoperative; hence the speaker is silent. When a signal is tuned in, a bias is applied to the grid of the control tube, via the 4.0 meg resistor. . . . The plate current decreases and the voltage drop across the 1.0 meg resistor decreases and the voltage at the screen grid of the a-f. tube (77) rises to the value required for normal operation of the tube. . . . The system is somewhat involved, but it rotates around rectification of the carrier by tube 37 and application of this rectified voltage to the trigger tube.

Tuning indicators

Rectification plays an important role in tuning indicators of most types. We refer in particular to the types which employ an i-f. transformer or which are tied in with a winding,



Hurry, Service Dealers, ask your jobber how to get all or any of N. U.—Rider Manuals Free on SPECIAL LIMITED OFFER!

... and remember, this is only one of the many pieces of equipment you can get free with National Union tube purchases. You'll have to act fast if you want to get Manuals on the special basis, but, whether you do or not, be sure to get full details of other free offers.

NEW VOLUME SIX INCLUDED OFFERS EXPIRE DEC. 15, 1935

Mail Coupon

NATIONAL UNION RADIO CORP. OF N. Y.
570 Lexington Avenue, New York, N. Y.

Tell me what shop equipment I can get, how I can get it and where! RT 1135

Name _____
Street _____
City _____ State _____

Keep OUT IN FRONT with Allied Radio

Service men! Dealers! The 1936 ALLIED Radio Catalog will keep you out in front. It's a real index to radio progress—complete, timely—brimming over with thousands of quality parts—sparkling with new Test Equipment developments, new P. A. Systems, new Metal Tube Radios—rich with full selections of the finest standard radio lines—everything to save you money and to help keep you out in front.

for Example OSCILLOGRAPHS

The 1936 ALLIED Catalog shows a complete variety of oscillographs and oscilloscopes—of every known make—the very latest types of test equipment for visual servicing, checking, measuring, etc. . . . You need the 1936 ALLIED Catalog. It is your guide to every class of equipment needed in Servicing, Public Address, Laboratory, Amateur and Experimental work. Everything for the entire trade—any part, any brand, any time you want it—at the lowest prices—all backed by a highly personalized service to meet your specialized needs. Keep an ALLIED Catalog by your side—it pays.



SEND FOR YOUR FREE COPY

ALLIED RADIO CORP.
833 W. Jackson Blvd. Dept. TR
Chicago, Illinois

Send me your FREE 1936 Radio Catalog.

Name
Address
City State.....

usually a tertiary winding upon an i-f. transformer. Either a meter or a glow tube, used in the plate circuit, is actuated when the receiver is tuned to a station and a signal voltage is applied to the input circuit of the tube used as a rectifier or combination rectifier and amplifier. Amplification is used in some circuits to secure the desired change in operating potentials so that the meter indication or glow intensity is of proper value or brilliancy. The tube which serves as a tuning indicator tube, regardless of what commercial trade name is applied, invariably is functioning as a rectifier.

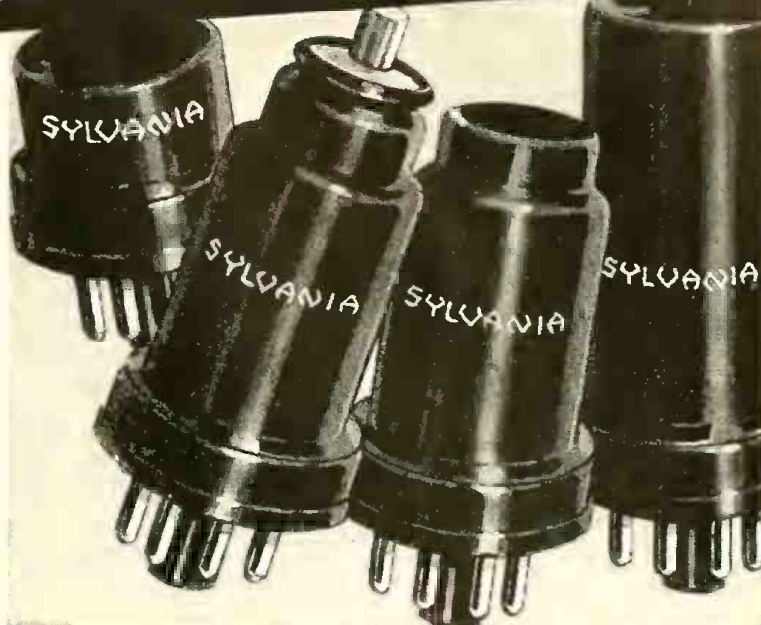
Expander circuit

The expander system used in the audio system of the RCA D22-1 receiver likewise depends upon rectification—this time of an a-f. signal. To show this circuit and to enter into a full discussion would take more space than is available at this time. However, the system functions as a means of compensating for the limitations imposed upon disc recording so that the stylus will not break from one groove into another when low sounds are recorded. The depth of the cut is regulated so that the cutting stylus will not break into the adjacent groove when recording high level sounds. Because of the consequent limitations between minimum and maximum intensities in the recording, reproduction of the recording cannot be the same as the original sound produced in the recording studio.

The volume expander serves to expand the sound in conformity with the limitations imposed, thereby causing the relation between high and low level sounds to be the same as originally produced in the studio. This increase and decrease is accomplished by rectifying a portion of the signal picked up from the record and applying this controlling signal to the expander tube system. The output of the rectifier stage varies in direct relation with the average value of intensity of the audio signal. Whereas the normal gain in an amplifier remains constant during operation, this rectified signal causes a continual rise and fall of the overall gain.

(Editor's Note: We are anxious to learn if you are interested in such material as is presented about rectification and applied to other basic functions in radio receivers. Correlation between basic functions and related applications should be of aid. . . . Do you think so? . . . What are your comments?)

SPECIFY SYLVANIAS!



Whether you're ordering metal tubes or the standard glass tubes . . . get the best! Specify Sylvania!

● For three years Sylvania has led all other tube manufacturers in supplying glass tubes for original equipment. This recognition by set manufacturers means one thing . . . QUALITY.

And in supplying the new metal tubes to the trade, Sylvania lives up to that reputation. That's why, whether you order metal tubes or glass tubes for replacement, *specify Sylvania!* They are known for their tone fidelity and long life, and you will be satisfied, because your customers will be satisfied.

Inquiries regarding tubes for original equipment or replacement will be promptly answered. Take no chances . . . carry Sylvania tubes and be ready to take care of your trade.

Communicate with Hygrade Sylvania Corporation, Emporium, Pennsylvania, for FREE technical supplement on the new metal tubes.

SYLVANIA

THE SET-TESTED RADIO TUBE

© 1935, Hygrade Sylvania Corp.

UTAH
VIBRATORS

Tear out this ad and pin to your letter-head for FREE copy of the NEW UTAH General Catalog of vitalized radio parts

UTAH RADIO PRODUCTS CO., Orleans St., Chicago

THESE SPLENDID BOOKS
FREE!



Think of it! 2 books full of invaluable information, to be had for just the mailing costs! One with 20 COMPLETE TRANSMITTER DESIGNS including 12 tested transmitter RF section designs and 8 modulator and speech amplifier designs. TEN COMPLETE DESIGNS FOR PUBLIC ADDRESS AMPLIFIERS in the other book. Circuits, complete parts, specifications, inductances, etc., all included. These books should be in every amateur's library. Invaluable for reference. Just 22 cents in stamps brings you both. Send for them today!



STANDARD TRANSFORMER CORPORATION
856 Blackhawk Street, Chicago, Ill.

MAIL THIS COUPON!

STANDARD TRANSFORMER CORPORATION
Dept. G — 856 Blackhawk St., Chicago, Ill.
I am enclosing 12c for Transmitter Manual
I am enclosing 10c for Amplifier Manual

Name Address
City State

"The Most Complete Radio Parts Catalog Ever Published!"



For 14 years I have supplied the Radio Service Men with his Radolek Parts—every year the Radolek catalog has been the most complete published—Now I am offering you the largest and finest Radio Parts Catalog of my entire career—Previous editions of the RADOLEK PROFIT GUIDE were the best of their kind—but this Big New Book far exceeds anything you've ever seen—it's colossal—gigantic—it's the "top"—Contains over 160 pages—10,000 individual Radio Repair Parts—hundreds of Special Items—Radio Receivers—Amplifiers—Everything in Radio—always in stock, ready for prompt delivery to you—of the right prices—You need this superb "Buying Guide"—I want you to have it—just send coupon—I'll mail it to you—Free.

W.C. Brown

RADOLEK

THE RADOLEK CO. MAIL THIS COUPON!
652 W. Randolph St. Radolek restricts distribution of this catalog to active and qualified Radio Men. Please enclose your business card or letterhead with this and you'll receive your copy of the RADOLEK PROFIT GUIDE, FREE.

FREE!

NAME
ADDRESS
Service Man? Dealer? Experimenter?

SERVICE NOTES—RIDER

Stewart-Warner ferrodyne models 1381 to 1391

★ There are 11 tubes in these receivers; eight of them metal and three glass. The output tubes are 2A3s and the rectifier is an 83-V. These are the three glass tubes. The metal tubes are a r-f. amplifier, a combination mixer and oscillator, two i-f. amplifiers, a demodulator or 2nd detector, an AVC control tube, a first stage a-f. amplifier and a 2nd a-f. stage. The output stage is the 3rd a-f. stage. Four bands are covered, from 18 mc. to 140 kc. The i-f. peak is 456 kc. and the chassis model is R-138. A meter located in the plate circuit of the r-f. tube enables tuning to correct resonance.

The first two i-f. transformers are two coil units, with a resistor across the primaries and another resistor across the secondary windings. By a combination of close coupling between the windings and the presence of the shunt resistors, the required band width is secured in the i-f. system. The third i-f. transformer is another two winding unit, feeding into a full-wave demodulator.

four nuts holding the tone compensator assembly can to the chassis. You will note four wires protruding from this can. Cut the green lead about an inch from the can and tap the bare end so as to avoid possible shorts to the can. Remove the remaining green lead from the grid of the 6C5. Connect a 0.1-mfd., 400-volt condenser, part No. 83440, to the same grid terminal. You can get this condenser into place best, if you point it to the front of the set and place it very close to the socket. Now connect a 6-inch lead to the plate terminal of the 6J7 tube socket. This socket is the corner one, and the plate terminal has a yellow wire connected to it, which runs to the tone compensator can. Now replace the tone compensator can.

You now have one end of the condenser and one end of the lead wire coming from the plate of the 6J7, still to be connected. These should both be soldered to the yellow and green wire coming from the tone compensator unit. The best way of making this connection is to strip away a small amount of the insulation at a convenient point along the yellow and green lead and solder the three wires together.

After this change has been made, crackling and station hiss will be eliminated. However, the treble control will not have the same effect as before.

Expense vs. income

★ Statistics indicate that servicemen operating recognized servicing establishments, that is, stores all over the United States, operate at an expense which amounts to from 31 to about 40 per cent of their total income. Recognizing the low prevailing servicing charges and the definitely limited prices which may be charged for replacement parts and the fixed cost for this merchandise, the expense figures are extremely high. Since these expense figures include the salary of the owner, which invariably is less than \$1,500 per year, the only possible means of improving the ratio between expense and income is to raise the income. Since a man can only work a definite number of hours each day, that is, if he is to live like a human being, the only means of rectifying the situation is to raise service charges.

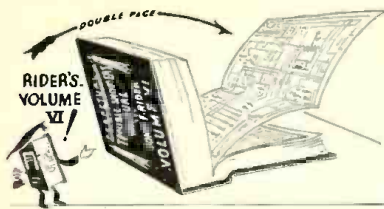
How about you? Considering the

Audio compensation

A bass and treble audio compensating system is employed, between the 1st and 2nd a-f. amplifier tubes. Variable bass and treble control is provided. The signal voltage for the AVC tube is secured through a .00026-mfd. condenser, from the plate circuit of the 2nd i-f. tube. Just to make you feel good, a total of 20 trimmers are used in the receiver. Shunt feed voltage supply is used for the oscillator system and two winding oscillation transformers are used on two of the bands, and single, tapped-winding oscillation transformers are used on the other two tuning bands. These single-winding oscillation transformers resemble the system normally understood to be a Hartley oscillator with shunt feed.

Station hiss

The rated a-f. response is up to 13,000 cycles. Because of this high audio response, station hiss may be pronounced. The following information concerning the elimination of such noises is furnished by the manufacturer of the receiver. Remove the



"YOU CAN'T GO WRONG WITH A RIDER MANUAL"

VOLUME VI HAS . . .

- **DOUBLE PAGE SIZE SCHEMATICS**
So that complicated diagrams can be easily read.
- **PRODUCTS OF OVER 115 MANUFACTURERS**
So you will have maximum coverage.
- **DATA ON NEW METAL, GLASS, AND GLASS-METAL TUBE SETS**
So you will know about the latest.
- **90-PAGE INDEX COVERING 6 VOLUMES**
So you can find anything FAST
- **1250 PAGES** • \$7.50
More than ever before. *The same.*
- **SEE IT AT YOUR JOBBERS' LATE IN NOVEMBER**

John F. Rider, Publisher 1440 Broadway
New York, N.Y.



Capacitors



WET
DRY
PAPER
MICA
TRIMMER

*Reliable . . .
in every climate
throughout
the world*



WHEN IN NEED OF GOOD CONDENSERS-SPECIFY THE BEST

Literature on request

SOLAR MFG. CORP.
599-601 Broadway
New York City

type of business involved, proper financial planning and operation calls for an expense not greater than about 25 per cent of the total income. Are you in line? . . . If not, find out why!

Receiver alignment

★ The first gun has been fired in the visual alignment of radio receivers. The service bulletin issued by RCA-Victor, covering the 1936 line of receivers, shows the response curves for the i-f. systems. Up to this time no receiver manufacturer has released response curves which could be used as the basis of comparison. Now that one manufacturer has released such curves, more will follow.

It is interesting to note that these curves are divided into three groups. We are referring in particular to the i-f. response curves for the model C-15-3 receiver. Three i-f. transformers are used. A separate curve is shown for the 3rd i-f. transformer, which indicates that this is the first unit aligned. The second curve is that for the combined operation of the 2nd and 3rd i-f. transformers and the third curve is that of the combined operation of the three i-f. transformers. Identification of these i-f. transformers is reading from the mixer stage to the demodulator stage. In other words, the transformer bearing the highest number is the one farthest from the mixer tube and closest to the demodulator tube. This should be the routine of alignment.

While the problem of alignment is not one of great moment in the smaller receivers, it is of importance in high fidelity receivers and in the very sensitive systems being offered to the public. The connection of the associated apparatus to the i-f. amplifier invariably increases the amount of regeneration in the system, with the result that, when critical alignment is made with meter type indicators, the proper frequency band pass is not secured. Since the tone quality of the receiver is markedly influenced by the band pass in the i-f. amplifier, it is important that band pass, as well the peak frequency adjustment, be correct. Considering the time involved, visual alignment is so far superior to meter type of alignment that a comparison is not fair.

Three men pass

★ The Service Manager of a well-known concern was recently in need of a number of service men. Ninety-six men applied for the job

Time
INSURANCE
with
EVERY



C-D CONDENSER

MONEY cannot buy back time that is lost. And time is opportunity. Therefore, why not insure your sponsors' time on the air? Today, one thinks in terms of time insurance—insurance against costly breakdowns and delays resulting from interrupted operations.

• To assure our many customers of the utmost in condenser value, we pledge our continued unremitting efforts to



maintain the high degree of excellence which is part of all **CORNELL-DUBILIER MICA-OIL-PAPER ELECTROLYTIC CONDENSERS**

Engineering Catalog No. 127 now available.

CORNELL-DUBILIER CORPORATION

4360 BRONX BOULEVARD
NEW YORK

- these bulletins



Hot off the griddle

SERVICE men know how foolish it is to risk losing a satisfied customer by installing inferior replacement parts. They know the dependability and profit of Ward Leonard resistors. This new bulletin 507A lists the Ward Leonard line and gives prices. Send today . . . it helps to keep old customers happy.

WARD LEONARD
Protective Magnetic Relays

WARD LEONARD ELECTRIC CO.
South Street, Mount Vernon, N. Y.
Please send Bulletin 507A.

Name
Street
City State
Jobber RT

SERVICING—RIDER

and were examined. Three men passed. Two of these with flying colors, and one just got under the wire.

Those who passed are not of much interest. — The reasons why the other 93 did not pass are of far greater importance. — Frankly, we do not know if it is tragic or funny. But, according to the Service Manager, the 93 men who "flunked" knew very little, if anything, about the ramifications of automatic-volume-control circuits and noise-silencing circuits. In view of the fact that the receivers sold by this organization are rampant with various types of peculiar AVC—"Q" and tuning meter systems, the S. M. felt that knowledge of this type was extremely vital to the man whom he would send out on service calls. Consequently, a great deal of weight was placed upon what knowledge was shown concerning such systems.

Perhaps AVC circuits are too complicated. That, however, does not excuse the fact that not more than about five men out of the 93 who failed were able to draw a circuit of a full-wave power pack using a type 80 rectifier. The question did not call

for designation of electrical values. . . . All that was wanted was an indication of the fact that the man knew the polarity of voltages in such a system and the manner in which the various parts were connected. — Several men showed a grid as one of the elements in a type 80 rectifier! Explain that if you please!

Harmonics

Harmonics have been a vexing problem in connection with superheterodyne servicing, so—a question was asked which covered the subject in a simple manner. The question was to state four harmonics of 2,000 kilocycles. About half of the men stated four multiples as being four harmonics, but even a number of these men identified the 4,000 kilocycle signal as being the first harmonic. — The balance, according to what we have been told, did not even know what a harmonic was!

The fourth question asked was if it was possible to align a receiver tuned to 9,000 kilocycles with an oscillator which had a range of from 150 kc. to 3,500 kc. Maybe you will be-

Radio equipment facilities of the 1936 automobiles.

Car	Built-in Antenna	Make of Radio (Opt. Eqpt.)
Auburn	Yes	Crosley
Buick	No	General Motors
Cadillac	No	General Motors
Chevrolet	No	General Motors
Chrysler	Yes	Philco
Cord	Yes	Crosley
DeSoto	Yes	Philco
Dodge	Yes	Philco
Ford	Yes	Philco
Graham	Yes	Crosley
Hudson	Yes	RCA-Victor
Custom 8	radio is standard equipment	
Hupmobile	Yes	Philco
LaFayette	Yes*	Philco
LaSalle	No	General Motors
Nash	Yes*	Philco
Packard 120	Yes	
	Radio is standard equipment with other models.	
Oldsmobile	No	General Motors
Pierce Arrow	Yes	
Plymouth	Yes	Philco
Pontiac	No	General Motors
Reo	Yes	Philco
Studebaker	Yes	

*Antenna with higher-price models.

All General Motors cars have steel roofs, necessitating use of running board antenna.

Open and convertible coupe models have no built-in antenna.

HOWARD WORLD SEVEN WITH ALL METAL TUBES



AN outstanding receiver of traditional Howard quality at an exceptional price. The World Seven is one of the finest chassis ever built at the Howard plant, where quality is always the first consideration.

Designed especially for the new All Metal Tubes. Complete All Wave Uniform sensitivity on all bands. Automatic Volume Control. Tone Control. Illuminated Airplane Dial. Three Gang Variable Condenser floated on rubber. The same bakelite cored coils used in the magnificent 19 tube Howard Grand. Heavy eight and ten inch Dynamic Speakers. These precision engineered chassis are mounted in Table and Console Cabinets of typical Howard beauty of design, with matched V panels and hand rubbed finish. Priced to retail at \$64.50 and \$79.50 respectively.

Also a superb 9-tube Howard Junior Grand in table and console style outstanding for performance and beauty. The Howard line includes seven other models from 4-tube AC-DC to 19-tube Howard Grand to suit every Docketbook.

Tear out this ad and send in with your letterhead for complete details.

it pays to sell HOWARD QUALITY

HOWARD

RADIO COMPANY
Belmont Avenue, Chicago, Illinois
"AMERICA'S OLDEST RADIO MANUFACTURER"

New! MUTER Interference Filters



THIS "Traffic Cop" of Radio absolutely eliminates the man-made interference that comes in over the power line by merely attaching the Filter directly to the set itself. Sell these filters with confidence and guarantee their operation, because they will do the job. There's a real need for them.

Ask your jobber or take advantage of our trial offer.

MAIL THIS COUPON

THE MUTER COMPANY Dept. T-11
1255 South Michigan Avenue
Chicago, Illinois

Please ship me one Muter Interference Filter at your trial offer of \$1.80 (\$3.00 list, less 40%). I am enclosing \$1.80 Ship it C. O. D. for \$1.80.

NAME _____
ADDRESS _____
CITY _____ STATE _____



lieve it and maybe you will not—but it's true nevertheless that of the fifty percent of the men who answered the harmonic question, some could not describe the alignment of this receiver with the oscillator mentioned.

Oscillator trimmer

The fifth question asked, referred to adjustment of an oscillator trimmer at 1,500 kc. Were there any peaks at this setting—how many, and which were used.

How many of these questions can you answer without referring to a text? Frankly, these questions as they stand are not really difficult when compared with the state of modern radio receiver development; and it is our belief that the relation between those who passed and those who "flunked" should have been reversed.

What is wrong with the picture?—Is it possible that service men do not really know the answers to these questions?—Is it possible that the service manager examined men who were practical workers and who had not studied the technical side of radio?—Such a thing is conceivable, but not very probable.—Is it possible that these men studied radio theory and forgot what they learned?

8-hole sockets to be standard

★ Quite a furor has been raised by the fact that some set manufacturers making metal tube sets have apparently disregarded the advantages gained by standardizing upon an 8-hole socket to accommodate the metal tubes. Instrument men with mathematical inclinations have computed that there are 261 different combinations of adaptor-socket arrangements required to accommodate all the possible pin arrangements. Naturally, service men have taken fright at the possibility of the expense required to secure these adaptors. As a matter of fact, there has been much talk concerning the adaptors which will be needed to accommodate the present testers to the metal tube chassis.

From what has been learned, the set manufacturers who are using sockets with just enough holes to accommodate the proper number of prongs, as found upon the tube base, realize the servicing problem, and it is rumored that when the present season's supply of sockets required for the production of sets is exhausted, the regulation 8-hole socket will be used. In the meantime, replacement sockets sold to the servicing field by these manufacturers will be 8-holders.

There is a solution

Really—the picture is not as black as it may have appeared at first glance. Of course, it would have been quite damaging if all of the manufacturers had deviated from the 8-hole socket; but since it is only a few, and since these receivers will not be coming in for service for quite some time, there is a solution. This solution is the use of a pair of testing leads and a meter for determining voltage and resistance or current—instead of the usual plug arrangement. Perhaps this is an inconvenience—but after

all, when these receivers come in for service they will be interspersed among a far greater number of those which enable the normal application of the plug arrangement.

As a matter of fact, an examination of service notes which will be released during the forthcoming year shows that a great number of manufacturers identify the voltage existing between the tube element at the socket, and ground, so that the few cases where the normal routine plug arrangement cannot be used will not involve extensive complications.

This ad pinned to your letterhead will bring you complete data on the great Baldwin line of Replacement Speakers.

CONSOLIDATED RADIO PRODUCTS CO., 361 W. SUPERIOR ST., CHICAGO
200 BROADWAY, NEW YORK, N. Y.

RAYTHEON PRODUCTION CORP., Dept. T11, 30 E. 42nd St., New York, N. Y.

Please send me items checked:

TUBE DATA CHART—8th EDITION—free _____

"33 DEALS" BROADSIDE (illustrated) free _____

METAL TUBE DISPLAY (illustrated above) free _____

TUBE TALKS (Tube Complements) 50c enclosed _____

Name _____ Address _____

Another **MUCH-NEEDED SERVICE**

rendered only by "Radio Today"

WHO'S WHO *and* **WHERE to BUY**

— a **DIRECTORY of the RADIO INDUSTRY**

Complete list of manufacturers of receivers, with names of companies, addresses and brand names.

Complete list of brand names, with names and addresses of manufacturers.

Complete list of tube manufacturers, with names, addresses and brand names.

Complete list of tube brand-names, with manufacturers' names and addresses.

List of parts manufacturers, with names, addresses and a key showing the various kinds of parts made by them.

Parts classifications, showing names and addresses of manufacturers producing parts of certain kinds.

List of manufacturers of loud speakers, equipment, accessories, etc.

Complete list of broadcasters, with names, addresses and station call-letters.

List of manufacturers of phonograph records.

How often YOU have needed, quickly, a name, an address or a list of one or more divisions of the industry!
And what a time you had finding exactly what you needed!

Radio has always needed a convenient and reliable directory—a handy reference work to answer the frequent questions that come up in the day's work of the busy radio man, whether he is a dealer, service man, jobber, manufacturer, purchasing agent, engineer or broadcaster.

In a spirit of service, RADIO TODAY now meets this need.

"Who's Who and Where to Buy" is not a separate publication—not sold at an added cost. It is to be published in the regular monthly issue of RADIO TODAY, in December, for the benefit of all readers of the magazine in all parts of the industry.

New subscriptions to RADIO TODAY can be entered so as to begin with the December issue, if sent in at once. ONE DOLLAR will bring you twelve (12) monthly issues, including the Directory, if you act promptly.

**RADIO
TODAY**

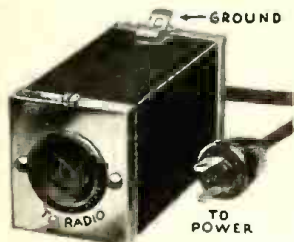
CALDWELL-CLEMENTS, Inc., 480 Lexington Ave., New York, N. Y. U.S.A.

NEW THINGS FROM THE MANUFACTURERS

HIGH-FIDELITY CONSOLE

★ Ten metal tube console—shadow tuning—dual-speed, rubber-drive vernier dial. Selectivity-fidelity control. All wave—540 to 18,000 kc. Full vision dial—one scale at a time. Mechanism controlled by band switch. Dual-section tuning condensers for easy tuning on low waves. Overspaced oscillator condenser. Modern type walnut cabinet. Model 810G—list \$149. Atwater Kent Mfg. Co., 4700 Wissahickon Ave., Philadelphia, Penna.—**RADIO TODAY**

LINE FILTER

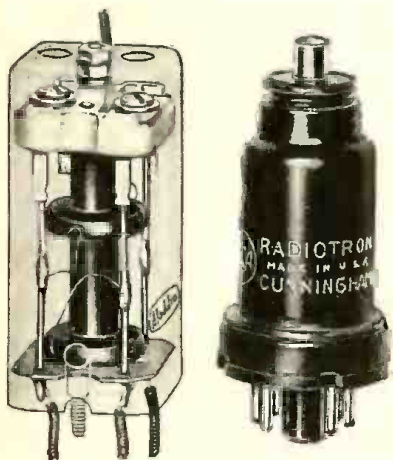


★ Line filter of inductive-capacitive type for receivers. Filters noise from power lines. Efficient on all waves. Duo-lateral chokes and oil-impregnated paper condensers. Compact metal case. Ground wire required. List price \$4. J. W. Miller Co., 5917 So. Main St., Los Angeles, Calif.—**RADIO TODAY**

AUTOMOBILE DI-POLE ANTENNA

★ Di-pole antenna for autos—mounts under either running board. U-shaped 8-foot steel tube. Adjustable brackets. Broadly resonant at 7 meters—balances out large part of ignition noise. Special crackle finish and wax impregnation for weather-proofing. List \$2.60. RCA Manufacturing Co., Camden, N. J.—**RADIO TODAY**

IRON-CORE I. F. TRANSFORMERS



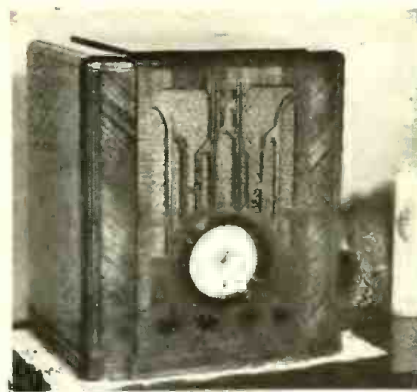
★ Intermediate frequency transformers using Polyiron core—compound of extremely small iron particles moulded with an insulating material. Coils extremely small—

half size of air core coil—high Q and low distributed capacity. Dual mica insulated trimmer—456 kc. Suitable for use with metal tubes and in auto receivers. Aladdin Radio Industries, 466 W. Superior St., Chicago, Ill.—**RADIO TODAY**

HEADPHONE AND ADAPTER KIT

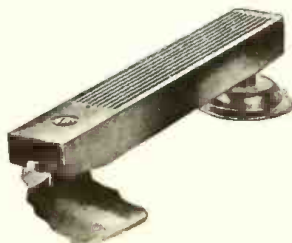
★ Adapter and headphones—permits use of set without loud-speaker. Designed for short-wave fans, dx listeners, invalids, hard-of-hearing. Adapter inserted in tube socket of any radio—speaker automatically disconnected while phones are in use. No wires disturbed. Lightweight phones. List \$7.50. Philco Radio and Television Corp., Philadelphia, Penna.—**RADIO TODAY**

THREE-BAND ALL-WAVE RECEIVER



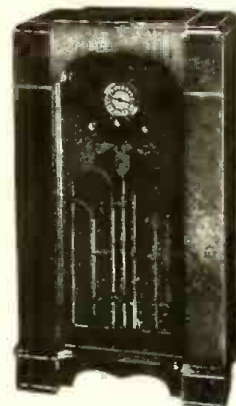
★ Seven-tube superheterodyne—metal and glass tubes. Average sensitivity of $1\frac{1}{2}$ microvolts over all three bands—535 to 18,000 kc. New mixer modulation for low noise level. Automatic volume control—mechanical band spread. Resistance coupled audio stage and wide-range speaker. Condensers and resistors RMA designated. Model 777—list \$74.50. Belmont Radio Corp., 1257 Fullerton Ave., Chicago, Ill.—**RADIO TODAY**

MAGNETO-INDUCTION PICK-UP



★ Compact pick-up for use in portable and midget combinations—exceptionally flat and lightweight. Magneto-induction type unaffected by temperature and humidity. Quality reproduction obtained. Audax Model 100—list \$9.50 Audax Co., 500 Fifth Ave., New York City—**RADIO TODAY**

BATTERY CONSOLE



★ All-wave battery console. range 15-550 meters. R.F. stage on all bands—automatic volume control. Eight-inch permanent magnet dynamic speaker—tone control. Dual ratio tuning control and airplane dial. Class B audio output for battery economy. Seven glass tubes. Heavy inlaid burl walnut cabinet. Model 74BC. Troy Radio Mfg. Co., 1142 So. Olive St., Los Angeles, Calif.—**RADIO TODAY**

TAP SWITCHES

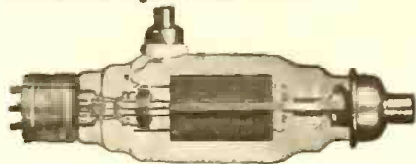
★ All-porcelain tap switches. Four to twelve taps in shorting or non-shorting types. High voltages and high frequencies handled without breakdown. Insulated shaft withstands several thousand volts. Special silver contact shoe—low resistance. Eight-point unit— $2\frac{1}{4}$ in. diameter—list price \$5.75. Ohmite Mfg. Co., 636 N. Albany Ave., Chicago, Ill.—**RADIO TODAY**

ROUND THE WORLD SUPER



★ Eleven-tube all-wave ferrodyne console. Non-adjustable high fidelity. Curvilinear dynamic speaker for additional octave of response. Separate bass and treble tone control. Shadow type tuning meter—multi-color illuminated airplane type dial with dual speed vernier. Dual line filter. Hand-rubbed acoustically designed cabinet. Model 1385—list \$144.50. Stewart-Warner Corp., 1836 Diversey Pkwy., Chicago, Ill.—**RADIO TODAY**

HIGH-FREQUENCY TUBE



★ Transmitting tube designed especially for use above 60 megacycles. Low interelectrode capacitances—high voltage insulation. High efficiency obtained—high μ and high transconductance. Graphite plate. Plate dissipation—HF-300, 200 watts; HF-200, 150 watts. List—HF-300, \$50; HF-200, \$24.50. Amperex Electronic Products, Inc., 79 Washington St., Brooklyn, N. Y.—RADIO TODAY.

ALL-WAVE ANTENNA

★ Factory assembled antenna for all-wave use—requires only a 60-foot span. Noises usually picked up by lead-in wire eliminated by twisted transmission line. Correct antenna length and coupling transformer design give maximum pick-up of signals on short wave and broadcast. Low-loss insulators, 75-foot transmission line, dual lightning arrester supplied. Model 3—list \$7. Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y.—RADIO TODAY.

NOISE ELIMINATORS



★ Filters to eliminate man-made static. Two types for use between receiver and line. Five models for use at source of interference. Line filters designed to carry 5 amperes—capacitive-inductive and capacitive types. Useful with small motors, vibrators, neon signs, oil burners, etc. List \$1.40 to \$1.50. Continental Carbon Co., Inc., 13900 Lorain Ave., Cleveland, Ohio—RADIO TODAY.

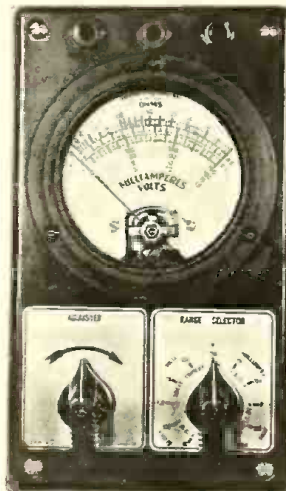
INTERFERENCE FILTER



★ Condenser-type line filter. Square metal case with plug prongs fitting electric outlet. Case

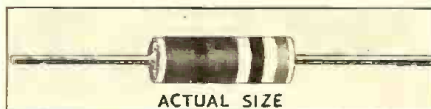
fastened and grounded to face plate by two screws. Integral receptacle takes attachment plug of receiver. May be used to isolate noise producing device from line. Aerovox Corp., Brooklyn, N. Y.—RADIO TODAY.

PORTABLE TEST UNITS



★ Compact, lightweight, portable volt-ohmmeters and test units employing rugged d'Arsonval movement with range-selector switches. Scale length of 2.4 in. Accuracy within 2% for DC volts and milliamperes, and within 5% for AC. Mounted in sturdy moldarta case 7 x 4 x 3 1/4 inches. Model PM-32 AC-DC unit illustrated. Westinghouse Electric & Mfg. Co., East Pittsburgh, Penna.—RADIO TODAY.

CERAMIC CASED RESISTOR



★ Solid molded carbon resistor enclosed in ceramic insulating case—positive over-all insulation. Tinned wire leads brought out from ends. Color coded according to RMA—color bands encircle shell. Will safely carry overload of 100 per cent. Available in 1/2 (illustrated) and 1/4 watt sizes—resistance values from a few ohms to several megohms. Erie Resistor Corp., Erie, Penna.—RADIO TODAY.

UNIT CONSTRUCTION, HI FI

★ Metal tube superheterodyne. Variable high fidelity—3500 to 7500 cycles. Shadowgraph tuning meter—dual-speed tuning—individually-lighted tuning arrow. Meter off in hi-fi position—assures correct tuning with normal fidelity. Range 550-18,500 and 150-350 kc. Centromatic unit construction. Model 595P—list \$139.50. United American Bosch Corp., Springfield, Mass.—RADIO TODAY.

LOW-COST HIGH-FIDELITY

★ Ultra-sensitive all-wave high-fidelity superhet—140 to 18,000 kc. Split-second, full-vision, dual-ratio tuning—variable tone control. Output of 15 watts—Class A '45's. R.F. stage on all bands—au-

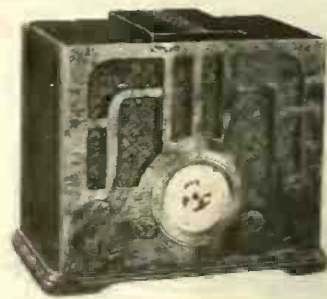
tomatic volume control. Adapted for all types antennas. Duo-tone semi-modern American walnut table cabinet. AC operation—8 glass tubes. DeWald model 805A—list \$75. Pierce Airo, Inc., 510 Sixth Ave., New York City—RADIO TODAY.

RESISTOR CHEST INSULATED RESISTOR



★ Fibre-board chest supplied free with purchase of kit of 56 IRC 1-watt insulated resistors—a metallized resistor with high-voltage insulation. Sealed against moisture—crack-proof and break-proof. Extremely small—tinned flexible leads moulded to ends. Vibration-proof and permanent. Color coded and marked—100 ohms to 10 megohms. List—1 watt \$3.25, 1/2 watt \$2.00. International Resistance Co., 2100 Arch St., Philadelphia, Penna.—RADIO TODAY.

FOREIGN SHORT-WAVE AND BROADCAST SUPERHETERODYNE



★ Dual-band table model, super—six tubes. Ranges—550 to 1,500, 5,500 to 15,700 kc. Full-vision dial printed in colors. Tone control, automatic overload control, and slow motion tuning. AC models—glass or metal tubes. AC-DC models—glass, or metal and glass. Hand polished walnut veneer cabinet. Freed-Eisemann model T-367-S. Freed Mfg. Co., 44 West 18th St., New York City—RADIO TODAY.

BROADCAST SWITCHING PANEL

★ Selective switching unit. Any four of six amplifier channel outputs may be connected to four outgoing circuits. Used with multi-channel and key station studio speech

equipment. Duplicate selector keys for pre-assignment of channels for following program. Single master change-over key operates control and indicator circuits. Model 271A—Western Electric Co., 195 Broadway, New York City—**RADIO TODAY**

OVERLOAD CIRCUIT BREAKER

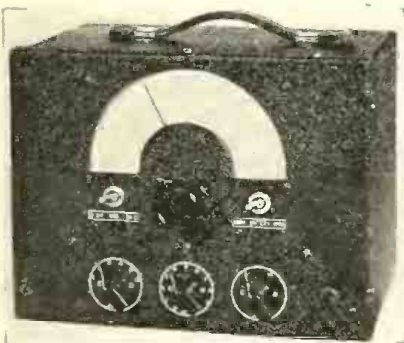
★ Circuit breaker for residential use. Outlet box mounting—125-volt AC or DC circuit. Eliminates inconvenience of blown fuses—gives positive protection to radio. Sealed-in, rust-proof mechanism. Can be used as switch control—impossible to close circuit while overloaded. Ideal for protecting transmitters. Listed by Underwriter's Laboratories. General Electric Co., Schenectady, N. Y.—**RADIO TODAY**

MODERNISTIC TABLE COMPACT



★ AC-DC superheterodyne in striking modern design—walnut veneers. Six tubes including ballast tube—range, 550-1,600 and 1,620-4,280 kc. Dual-gang ball bearing condenser with illuminated full-vision dial. Five-inch dynamic speaker and rust-proof chassis. Shielded i.f. transformers—impregnated coils—insolantite trimming condensers. Kadette 66—list \$19.95. International Radio Corp., Ann Arbor, Mich.—**RADIO TODAY**

LOW-COST TEST OSCILLATOR

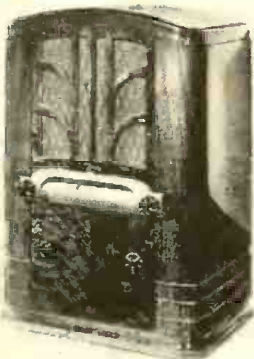


★ Signal generator with 90 to 20,000 kc. range—six bands calibrated on 8-inch open-faced dial. Ladder-type attenuator with interpolating control—accurate calibration of output ratios for sensitivity tests. Modulated or unmodulated r.f. output—400-cycle audio output for checking audio systems. Model 82—net \$19.90. Clough-Brengle Co., 1134 W. Austin Ave., Chicago, Ill.—**RADIO TODAY**

ADJUSTABLE RESISTANCE BOX

★ Low-cost adjustable resistance box of the decade type for laboratory or shop use. Accurate within 1/2 of one per cent and extremely rugged. Four types available, each of different resistance value. Combination of two will give resistances from 0.1 to 111,111 in 0.1 ohm steps. Muter Resistance Co., 1255 So. Michigan Ave., Chicago, Ill.—**RADIO TODAY**

SKIP-BAND SUPERHETERODYNE



★ Six metal-tube superhet. Dual wave—540 to 1800 and 5400 to 18,000 kc. Slide rule tuning with automatic vernier—one scale visible at a time. Stabilized 8-inch dynamic speaker with hum bucking coil. Automatic volume control—tone control. Undistorted output of 2 watts. Modified modern cabinet design of hand-rubbed walnut. Model A-64. General Electric Co., Bridgeport, Conn.—**RADIO TODAY**

24-TUBE SUPERHET

★ All-wave superheterodyne with variable band-width and cathode-ray tuning. Thirteen metal tubes and 11 glass provide output of 50 watts to dual speakers. Dual-speed tuning with open-faced dial. Automatic tone and volume control. Radio frequency pre-amplifier on all bands—range 140 to 30,000 kc. Lafayette model C-95—net \$115. Wholesale Radio Service Co., 100 Sixth Ave., New York City—**RADIO TODAY**

ACETATE RECORDING DISK

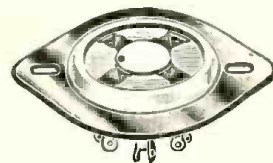
★ Chemically-coated acetate disc for instantaneous recording. Disc is soft enough to be cut, yet hard enough to be reproduced with steel needles. Texture and hardness such that up to 6,500 cycles has been recorded using lateral cutters—up to 9,000 cycles with vertical cutters. Surface noise below that of standard shellac records. Available in various sizes for processing or instantaneous recording. Presto Recording Corp., 139 West 19th St., New York City—**RADIO TODAY**

CATHODE RAY OSCILLOGRAPH

★ Portable cathode ray oscillograph—5-inch screen with calibrated scale. Amplifiers used singly or in cascade. Sensitivity—0.2 volt per inch deflection with cascaded amplifiers. Sweep circuit from 10 to

100,000 cycles. Improved linearity—current limiting and mercury vapor discharge tubes. All controls on front panel. Self-contained operation from 110 AC. Allen B. DuMont Labs., 524 Valley Rd., Upper Montclair, N. J.—**RADIO TODAY**

LOW-LOSS CERAMIC SOCKET



★ Steatite socket for low losses. High mechanical strength—metal adapter plate takes strain of mounting rivets. Ceramic portion held by spring without strain. Mounts in usual wafer-type socket hole. High dielectric strength, low power factor, and high electrical resistivity. Suitable for short-wave receivers and transmitters. Available in 4 to 8 contact types. American Phenolic Corp., 500 S. Throop St., Chicago, Ill.—**RADIO TODAY**

SIGNAL BEACON TUNING

★ All-wave receiver with variable fidelity—i.f. coupling changed. Dual audio channel—3 watts to 2 high frequency speakers, 12 watts to medium and low register speaker—12 metal tubes. Signal beacon tuning. Range—540 to 18,000 and 150 to 400 kc. Aladdin colorflash dial indicates band in use. Headphone jack—cuts out loudspeaker. Hand-rubbed streamline cabinet. Grunow—model 1241—list \$167.50. General Household Utilities Co., Chicago, Ill.—**RADIO TODAY**

METAL-TUBE RECEIVERS



★ A line of AC receivers employing metal tubes is being manufactured by Fairbanks-Morse Home Appliances, Inc., of 430 S. Green St., Chicago. Sets embody features incorporated in and supersede some of the glass-tube line announced earlier. Consequent with an increase in tube complement, the prices are somewhat higher. All-wave and skip-band models in console and table styles available. A line of 6-volt farm radios also has been added.—**RADIO TODAY**



"QUIET" . . . is the insistent demand of millions who today own all-wave receiving sets. Give them what they want, by installing

NOISE-MASTER ALL-WAVE ANTENNA

This remarkable unit, A.A.K. patented and engineered with traditional CORWICO thoroughness, is actually AUTOMATIC electrically—no adjustment is needed and no manual operation is required, once "NOISE-MASTER" is properly installed.

FOR EVERY SET AND LOCATION

"NOISE-MASTER" picks up and clarifies feeble overseas signals, straining out the "man-made" static that sometimes seems to make radio a curse instead of a blessing. Minimizing the noises caused by household appliances near the set, "NOISE-MASTER" improves broadcast as well as shortwave reception. It successfully operates more than one set from a single aerial. We guarantee that "NOISE-MASTER" will eliminate noise when properly installed, and urge you to recommend it at every opportunity.

CAT. No. 14 \$6.75
LIST PRICE



Send for latest complete literature describing this and other up-to-the-minute antenna units

CORNISH WIRE CO., Inc.
30 Church St. New York City

SALE STIMULATORS

HOW TO CHOOSE A RADIO

★ New booklet by Stromberg-Carlson begins: "When artists are pouring their talent into a studio microphone—when the air is alive with priceless entertainment, yours at a turn of the dial—surely it is worth while to give careful consideration to the choice of a radio for your home."

Conveniently sized, the 12-page booklet dramatically covers important aspects of good reception. It is being mailed to those replying to Stromberg's national ads, and is being distributed by the company's dealers throughout the country.

DISCS FOR DEALERS

★ The electrically transcribed 15-minute programs titled "All-Star Radio Round-Up" which Stewart-Warner has made available to dealers and distributors without cost, has already been spotted on nearly 100 stations. Program is varied and uses topflight radio stars throughout. Ample time has been provided for the dealer's local announcement, featuring his name, address, terms, demonstrations, trade-in allowances, special offers, etc. Company supplies a prospectus outlining the whole affair: how to select a station, time to broadcast, and allied matters.

FARMER'S SPECIAL

★ Turning to vigorous promotion of farm sets, RCA Mfg. Co. of Camden, N. J., is offering to dealers a 32-page booklet titled "Farm Radio Almanac and Log Book," along with mailing cards which prospects may

use to get the logs free. Offer includes an electric sign for the store or window plugging battery sets, and the 3 items may be had at a nominal cost (200 logs and 400 cards).

Almanac contains a complete monthly astronomical calendar, temperature and rainfall data for 68 cities of the United States, a section on the growth of radio art, a log of foreign and domestic stations, and miscellany of interest to farmers.

NEW SERVICE KITS



★ Problem of handling volume control replacements for most of the well-known receivers has been met by the Clarostat Mfg. Co., Inc., 285 N. 6th St., Brooklyn, New York. Company has just issued a neat and inexpensive kit for servicemen, in two types, both with 5 volume controls, 3 power switches and 5 flexible resistors. One type uses controls of composition, the other wire-wound; all are selected to serve the greatest variety of popular sets. The resistors come with the kits, free of charge.

MIRRORS AND A MOTOR

★ First-rate "mirrored window feature" now available from Emerson distributors or factory at 111 Eighth Ave., New York City. This exceptional exhibit is a combination of hard wood, chrome metal trim. Background is cream lacquered plyboard, on which two mirrors are arranged so that the rear grille of the "Duo-Tone" models are reflected. Contrasting colors and gold are used in the lettering, and the base is straight gold finish.

As a separate item Emerson is also offering a motor turntable display for the "Duo-Tone" models. This attractive device is ideal for showing the identical front and rear grille of the sets.



Quality
ENGINEERING

Ken-Rad
Radio Tubes
DEPENDABLE LONG LIFE

First-class engineering methods used. Write for complete information.

*Glass or Metal
Radio Tubes*



THE KEN-RAD CORPORATION
Incorporated
Division of
The Ken-Rad Tube and Lamp Corp.
OWENSBORO, KY.

Also Mfrs. of
Ken-Rad Incandescent Electric Lamps

MODERNIZATION STUNT

★ Interest is apparent among service men in Tobe Deutschmann Corporation's promotion of a set modernization plan. Theme song is "your present radio converted into an all-wave 1936 model." Promotional kit includes a poster, mats, stuffers, little stickers, and a descriptive book by Zeh Bouck, entire set priced at 25c. Deutschmann plant operates at Canton, Mass.; the company is the first to obtain a license from RCA to manufacture and sell the kits.

PHONE BOOK STICKER

★ Among dealer helps for fall is a new "phone book sticker" just issued by Hygrade Sylvania Corp. The sticker, which carries service copy on a 5 x 2 inch radio tube design, makes a timely appearance now that new phone books are about to appear. Hygrade suggests that it may be used also to stick inside a radio cabinet after servicing.

DEMONSTRATION NEWS

★ Technical Appliance Corp., 17 East 16th St., New York City, is issuing an illustrated bulletin, available on request, on how to demonstrate one or more all-wave sets in the radio store regardless of interference. Taco's system uses an all-wave noiseless antenna, hooked up so as to obtain the maximum signal-to-noise ratio, and has a multiple position double-pole switch so that signals may be routed to a number of sets on the sales floors. Antenna components used in the set-up are standard products.

TRICKY TUBE DISPLAY

★ Raytheon, 30 East 42nd St., New York City, has just built a new counter and window display featuring all-metal tubes, illustrated as they might appear in a real chassis. The affair is arranged so that the customer is inspired to stop, pick up and examine an actual tube. Display measures 12 x 6 x 18, and is being distributed free of charge to Raytheon dealers.



Every part in every single QUAM speaker is individually inspected like the parts in the finest custom built automobiles.

QUAM-NICHOLS CO.

1074 Broadway New York
1093 W. 74th Street, Chicago
30 9th Street SAN FRANCISCO
303 E. Pike Street Seattle
809 W. 17th Street Los Angeles
3037 Knox Avenue, S. Minneapolis
"AMERICA'S LARGEST SPEAKER MANUFACTURERS"

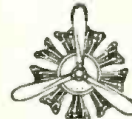


holds great rewards for trained men



The big opportunities in Radio will be enjoyed by trained men. The International Correspondence Schools Radio Course, prepared by leading authorities and constantly revised, will help make you a trained man! A fascinating book - FREE.

AVIATION ENGINEERS are leaders in modern progress



Aviation depends upon engines, and knowledge of aviation engines is a long step toward success in this rapidly growing industry. Many leading aviation engineers today took their first step by mailing a coupon to the I. C. S. at Scranton. Why don't you follow their example?

INTERNATIONAL CORRESPONDENCE SCHOOLS

Box 1413, Scranton, Penna.

Explain fully about your course in the subject marked X:

- | | |
|--|--|
| <input type="checkbox"/> RADIO | <input type="checkbox"/> AVIATION |
| <input type="checkbox"/> Mechanical Drawing | <input type="checkbox"/> Sound Technician |
| <input type="checkbox"/> Experimental Television | <input type="checkbox"/> Special Alternating Current |
| <input type="checkbox"/> Practical Radio Servicing | <input type="checkbox"/> Gas Electric Welding |
| <input type="checkbox"/> Radio Operating | <input type="checkbox"/> Diesel Engines |

Name.....Age.....

Address.....

WITH THE WHOLESALERS

★ The Commonwealth Utilities Company, Chicago distributor of Atwater Kent radio sets and refrigerators, recently moved into a new home at 1414 South Wabash Ave., where it has far more floor space and greatly increased facilities. This company is making rapid progress in the development of Atwater Kent business in the Chicago territory under the direction of S. E. Schulman, president, and Walter O'Halloran, sales manager.

★ Ros Howard, general manager of Zenith Distributing Co., 680 North Michigan Ave., Chicago, Ill., has announced the appointment of Harry D. Schoenwald as his assistant. "Harry," as he is known to the Chicago trade, has been identified with the music, radio and allied industries in the Windy City for over fifteen years. Mr. Howard has also announced the appointment of E. J. Collins, who will be in charge of developing Zenith sales in country territory.

★ Harry Dillon is a newcomer to the sales force of the Motor Power Equipment Co., St. Paul, Minn., according to the recent announcement of Frank M. Hutchinson, manager of the company's home appliance department. Dillon has been in the radio wholesale business for more than 10 years.

★ Martin Buehler, president of the Graybar Electric Co., Minneapolis, Minn., announces that his company has taken on the Northwestern distribution of the American-Bosch line. Earl Sharpe is sales manager of the Graybar Co.

★ The Monarch Home Appliance Co., 7421 Michigan Ave., Detroit, has been appointed dealer by the Aitken Radio Corporation, Detroit.

★ A. A. Schneiderhalm Co., Des Moines, Iowa, distributor of Zenith sets, RCA and Ken-Rad tubes, has announced the appointment of J. W. Wilkins as manager of retail sales.

★ J. M. James is the new traveling representative in northwestern Nebraska for the R. S. Proudfoot Co., jobbers of Lincoln, Neb.

★ Fischer Distributing Corp., wholesaler of radio parts and supplies, has moved from 152 Chambers St., N. Y. C., to bigger quarters at 19 Park Place. Milton Fischer heads the organization.

★ Arvin-New York Corp., metropolitan jobbers of Arvin home and auto radios and heaters, have added 5 salesmen to their staff: Bernard Cohen, Joe Winkler, Julian Goldman, William J. Gaynor and Arthur R. Wormser. Henry D. Felsen is sales manager of the company.

★ The Pittsburgh jobbers, Brown-Dorrance Electric Co., have recently named as dealers the firms of Willson's, Sharon, Pa., and Euwer & Co., Jeanette, Pa.

★ Annual radio show at Louisville, Ky., Oct. 30 to Nov. 2, enjoyed a spirited representation by distributors of the 1936 lines. Involved in the showings were these wholesalers: Philco Sales & Service, Bomar Manufacturing Co., Otis Hidden Co., Cooper-Louisville Co., Sutcliffe's, Smith Distributing Co., General Electric Supply Corp., Peaslee-Gaulbert Corp., Stratton & Terstegge Co. and Harbison & Gathright.

★ Ten big time radio jobbers of Texas were in the "Around the World Radio Exposition" at San Antonio, first week of this month: E. J. Hermann Sales Co. (Fairbanks-Morse), South Equipment Co. (RCA), General Electric Supply Corp. (GE), Peaslee-Gaulbert Corp. (Zenith), Graybar Electric Co. (Crosley), Straus-Frank Co. (Atwater Kent), Stromberg Carlson Telephone Manufacturing Co. (Stromberg-Carlson), Taylor Distributing Co. (Philco) and Westinghouse Co. (Stewart-Warner).

★ Ben Oppenheim, exec of the B & O Radio Co., jobbers of Newark, N. J., has announced the addition of two salesmen to the company staff. They are William Nelson and Thomas L. DeLime. B & O sells Zenith and Norge.

★ Florida Appliance Co., Miami jobbers of Stromberg-Carlson, held its formal opening late last month. Frank McCloskey heads the new company, which has a retail store in the same city.



He hooked a beauty—did Ray F. Sparrow, vice-pres. in charge of sales at the P. R. Mallory Co., Indianapolis.

★ Group of new dealers has been announced by Cooper-Louisville Co., jobbers of Louisville, Ky., handling Crosley sets and tubes: Central Furniture Co., Bomor Summers Co., Electrical Appliance Co. (3 stores), Bills Consolidated Co. (13 stores), and Jas. Laug Furniture Co.

★ Klaus Radio & Electric Co., jobbers of Peoria, Ill., have announced five new dealers in the territory for RCA sets and tubes: Sieg Co., of Davenport, Iowa, and Rock Island, Ill.; Mattoon Maytag Co., Mattoon, Ill.; Kirkpatrick Housefurnishings Co., Bloomington, Ill.; Lawson Radio Shop, Monmouth, Ill., and Waugh Bros., Burlington, Iowa.

Klaus company has recently opened a new branch at 320 E. Fourth St., Davenport, Iowa, with L. D. Claybaugh in charge.

★ O. H. Hansen has been added to the sales organization of Lewis & Carnell Co., American-Bosch jobbers of Philadelphia.

★ L. J. Chatten, Fada's general sales manager, has announced appointment of the R. F. and W. B. Fitch Co., Oskaloosa, Iowa, as exclusive Fada distributor in Southern Iowa area. Fitch Company uses special radio salesmen who handle nothing but home and auto receivers the year 'round.

★ J. J. Pocock, Inc., Philadelphia, has just been named as distributor of Stromberg-Carlson sets and accessories, to cover Eastern Pennsylvania, Southern New Jersey and State of Delaware.

★ F. B. Connelly Co., one of the key distributors of the West, is also one of the few radio jobbers who must be listed for wholesaling nearly 20 other products, ranging from automotive products to toys. Connelly has headquarters at Seattle, with branches at Portland, Spokane, and two Montana cities, Billings and Great Falls.

★ R. J. Newell has been appointed assistant manager and sales manager of H. E. Sorensen Co., jobber, of Des Moines, Iowa.

★ Five important dealers have recently been appointed by the Albany Distributing Corp., Albany, N. Y., to handle Atwater Kent sets and RCA tubes in the area. They are The Wallace Co., Schenectady, N. Y.; Right-Way Roofing Co., Gloversville, N. Y., and three Griffin Lumber stores in Glens Falls, Saratoga and Corinth, N. Y.

★ Lewis & Carnell Co., American-Bosch jobbers of Philadelphia, have issued a list of recently appointed dealers: Lit Brothers, Philadelphia; Stern & Co., Trenton, N. J.; Shaffer Furniture Co., Reading, Pa.; Miller Bros., Wilmington, Del.; Ogden Howard Co., Wilmington.

★ C. S. Tay, of the Crosley Distributing Corp., Chicago, has sent the news that the company has a total of 13 recently appointed dealers; the L. Fish Furniture Co. with a chain of 8 stores, and the Levinson Radio Stores, with a chain of 5 stores.

TRADE NEWS

★ Charles E. Wilson of Bridgeport, Conn., vice-president and head of the merchandise department of General Electric, has been named director of all appliance activities of the company, according to a recent announcement by President Gerard Swope. In this capacity, Mr. Wilson assumes the work of T. K. Quinn, vice-president in charge of specialty appliances at Cleveland, who has resigned and on Jan. 1 will head an ad company.

★ Recent order from Arabia brought the number of Hygrade Sylvania tube customers in different foreign countries up to 100, announces W. A. Coogan, Hygrade's foreign sales manager. Coogan has worked on his coverage job until he now gets a steady flow of orders from widely scattered parts of the world; he says that the export market at present appears to be on very solid ground, and believes that he may soon add more markets abroad.

★ Troy Radio Manufacturing Co., with W. L. Sexton general managing it, has moved into new and enlarged quarters at 1142-44 South Olive St., Los Angeles, Calif. New display rooms will feature cabinets in such finishes as maple, walnut, mahogany, and bone-white, several of which are reported as getting quite a rise out of coast dealers.

★ P. H. Tartak, president of the Oxford Tartak Radio Corporation, 350 West Hiron St., Chicago, Ill., manufacturer of loud speakers and other radio products, sent out an important announcement recently stating that the Tartak Manufacturing Company had taken over the Oxford Radio Corporation and would in the future be known as the Oxford Tartak Radio Corporation, thereby coordinating the equipment, personnel and good-will of these two manufacturing organizations. The company has leased additional floor space to take care of its increased business.

★ Louis Gerard Pacent, pioneer radio engineer and manufacturer, and president of the Pacent Engineering Corp., New York City, has been appointed a member of the New York World Fair Committee, 1939. Pacent is Fellow and former president of the Radio Club of America, Fellow of the American Institute of Electrical Engineers, and Fellow of the Society of Motion Picture Engineers.

★ Duane Wanamaker, advertising director of General Household Utilities Co., Chicago, since the formation of the company and one of the best known advertising executives in the radio industry, resigned from this position on Nov. 15 for the purpose of taking a long vacation. Mr. Wanamaker expects to sail on Nov. 20 for the South Sea Isles, returning to Chicago about March 1.

★ New Grebe Radio and Television Corp., with factories at Jamaica, Long Island, N. Y., and offices at 55 West 42nd St., New York City, is ready for delivery of its improved receivers, according to Maurice Raphael. Founder Alfred H. Grebe, widely known radio pioneer, recently died, but his technical staff of many years' standing remains active and Grebe developments are enthusiastically received by the industry. Grebe models presented at this time were perfected by Mr. Grebe before his death.

★ Technical Appliance Corp. has moved from Long Island City to 17 East 16th St., New York City. New quarters will triple the floor space, and new machinery will permit 300% boost in production. Company makes all-wave noiseless antenna kits, components, and allied products.

★ Dr. Henry A. Bellows, former Federal Radio Commissioner, and recently vice-president of the Columbia Broadcasting System, is the author of an article on the radio industry, in "Harper's Magazine" for November.

★ Two more orders for police radio installations have been received by the Westinghouse Electric & Manufacturing Co. at the Chicopee Falls, Mass., works, according to C. M. Hobart, sales manager of the company. One order comes from Bakersfield, Calif., and the other from Bloomfield, N. J.

★ Radio Today's BOOK SHOP ★

Outstanding Radio Books are available at the prices listed. No charge will be made for wrapping and mailing. Send remittance with order.

Address:

BOOK SHOP, RADIO TODAY
480 Lexington Avenue, New York, N. Y.

MODERN RADIO ESSENTIALS.....	\$2.00
By Kenneth A. Hathaway.	
THE OUTLOOK FOR TELEVISION.....	\$4.00
By Orrin E. Dunlap, Jr.	
THE ADVERTISING AGENCY LOOKS AT RADIO.....	\$3.00
Edited by Neville O'Neill.	
SOS TO THE RESCUE.....	\$2.50
By Karl Baarslag.	
LOUD SPEAKERS.....	\$13.50
By N. W. McLachlan.	
ELEMENTS OF LOUD SPEAKER PRACTICE.....	\$1.75
By N. W. McLachlan.	
EXPERIMENTAL RADIO.....	\$2.75
By Prof. R. R. Ramsey.	
THE FUNDAMENTALS OF RADIO.....	\$3.50
By Prof. R. R. Ramsey.	
YOUR INVENTION.....	\$1.50
By Elmore B. Lyford.	
APPLIED ACOUSTICS.....	\$4.50
By Harry F. Olson and Frank Massa.	
RADIO PHYSICS COURSE.....	\$4.00
By Alfred A. Ghirardi.	
AIRCRAFT RADIO.....	\$3.00
By Myron F. Eddy.	
PRINCIPLES OF RADIO COMMUNICATION.....	\$7.50
By John H. Morecroft.	
ELEMENTS OF RADIO COMMUNICATION.....	\$3.00
By John H. Morecroft.	
EXPERIMENTAL RADIO ENGINEERING.....	\$3.50
By John H. Morecroft.	
PRINCIPLES OF RADIO.....	\$3.50
By Keith Henney.	
RADIO ROUND THE WORLD.....	\$1.75
By A. W. Haslett.	
THE RISE OF RADIO.....	\$2.50
By Paul Schubert.	
THE STORY OF RADIO.....	\$2.75
By Orrin E. Dunlap, Jr.	

Priced to sell
-Built to
outperform



ARE YOU, TOO, CASHING-IN ON THIS PROFIT-MAKING FILTER?

Outstanding results :: the best materials including Miller exclusive duo-lateral wound coils :: a handsome unit :: and priced at \$4 list—this combination has turned the trick for dealers everywhere who have made it a point to sell the Miller Line Filter for positive noise elimination. The unsurpassed efficiency of this unit will definitely filter-out all high frequency and household appliance disturbances from power lines forever.

Don't pass up this easy, extra money in your territory. There is no installation expense. The Miller Filter just plugs in. Ask your distributor, or write

ASK ABOUT
THIS DISPLAY



Miller LINE FILTER

J. W. MILLER COMPANY
5917 South Main Street Los Angeles, California

SELLING RECORDS

Holiday slants on radio-phonograph combinations

★ **TIED** up in tinsel and promoted right and left are the holiday offerings in records, with the disc makers promptly cooperating with special Yuletide releases. But Christmas selling in music shops this season may be given a new slant, via radio-phonograph combinations. Now, of all times, is the moment to point out that the combination is an instrument of genuine distinction, notably adapted to holiday giving.

There is, of course, the problem of finding a radio-phonograph combination at a list price that will stimulate public interest in this type of instrument, carrying along with it an increased demand for records. There is missing a unanimity of opinion among retailers as to the most desirable list price for the ideal radio and phonograph combination; however, this should be expected in a measure, for it is obvious that the dealer who specializes on the sale of records of the better type of music

will lean toward the higher price radio-phonograph combination, principally because it affords better tone reproduction which is an essential factor in the sale of higher priced records.

On the other hand, the retailers who are finding a steadily increasing demand for dance music and popular vocal hits are emphatic in asking the manufacturers to give them a combination instrument selling under one hundred dollars.

New type album

★ Columbia Masterworks Records are the subject of a new and intensive sales campaign inaugurated by Brunswick Record Corp., New York. A new type of album featuring the Masterworks series has just been introduced, complete with many distinctive and attractive features.

"Stoky's" promotional trek

★ Robust promotion of symphonic music and radio-phonograph combinations will be RCA's springtime sponsorship of a trans-continental tour by Leopold Stokowski and his Philadelphia Symphony Orchestra. As the most important single activity undertaken by Mr. Stokowski in recent years, project is

Best sellers as we go to press

BRUNSWICK

Check to Check—Fox trot. No Strings—Fox trot. (Both from "Top Hat"). Vocal and tap dancing by Fred Astaire with Leo Reisman and his Orchestra—7486.

Isn't This a Lovely Day?—Fox trot. **Top Hat, White Tie and Tails**—Fox trot. (Both from "Top Hat"). Vocal and tap dancing by Fred Astaire with Johnny Green and his Orchestra—7487.

So Nice Seeing You Again—Fox trot. (From "We're In the Money"). Vocal by Maxine Grey with Hal Kemp and his Orchestra. **The Gentleman Obviously Doesn't Believe**—Fox trot. Vocal by Skinny Ennis with Hal Kemp and Orchestra—7503.

DECCA

Check to Check—Fox trot. **Top Hat, White Tie and Tails**—Fox Trot. (Both from "Top Hat") with Boswell Sisters vocal trio and Orchestra—574.

You Are My Lucky Star—Fox trot. (From "Broadway Melody of 1936"). **VC. La Cucaracha**—Fox trot. VC. Both by Louis Armstrong and his Orchestra—580.

Babs—Fox trot with vocal trio. **Thunder**—Fox trot, VC. Dan Grisson, both by Jimmie Lunceford and his Orchestra—579.

VICTOR

Truckin'—Fox trot. **The Girl I Left Behind Me**—Fox trot. "Fats" Waller and his Rhythm—25116.

Check to Check—Fox trot. **Isn't It A Lovely Day?**—Fox trot. (Both from RKO film "Top Hat") Eddy Duchin and his Orchestra—25093.

Top Hat—Fox trot. **Piccolino**—Fox trot. Ray Noble and his Orchestra—25094.

expected to have vast effect upon recorded music and allied matters. Dealer exploitations will be spotted along the 5-week route of the troupe which will include 100 players, traveling in a special air-conditioned train. Thirty-six concerts will be played in music centers of United States and Canada, and will begin when the current orchestra season ends.

AUDAX

TRADE MARK

"The standard

by which others are judged and valued"

MODELS to suit every demand from the humblest midget-combination to the **HIGH FIDELITY**—low needle-pressure requirements of fine transcriptions. **AUDAX** electric pick-ups are immune to climatic conditions. They are chosen on a **PERFORMANCE** basis, as equipment in most of the world's leading Radio Stations, Universities, Laboratories—in fact, wherever quality counts. List prices from \$9.50 to \$390.00 each. What is your pick-up problem?

Special Recording Heads to Order

AUDAX COMPANY
500 Fifth Ave., New York
"Creators of High Grade Electrical and Acoustical Apparatus Since 1915"

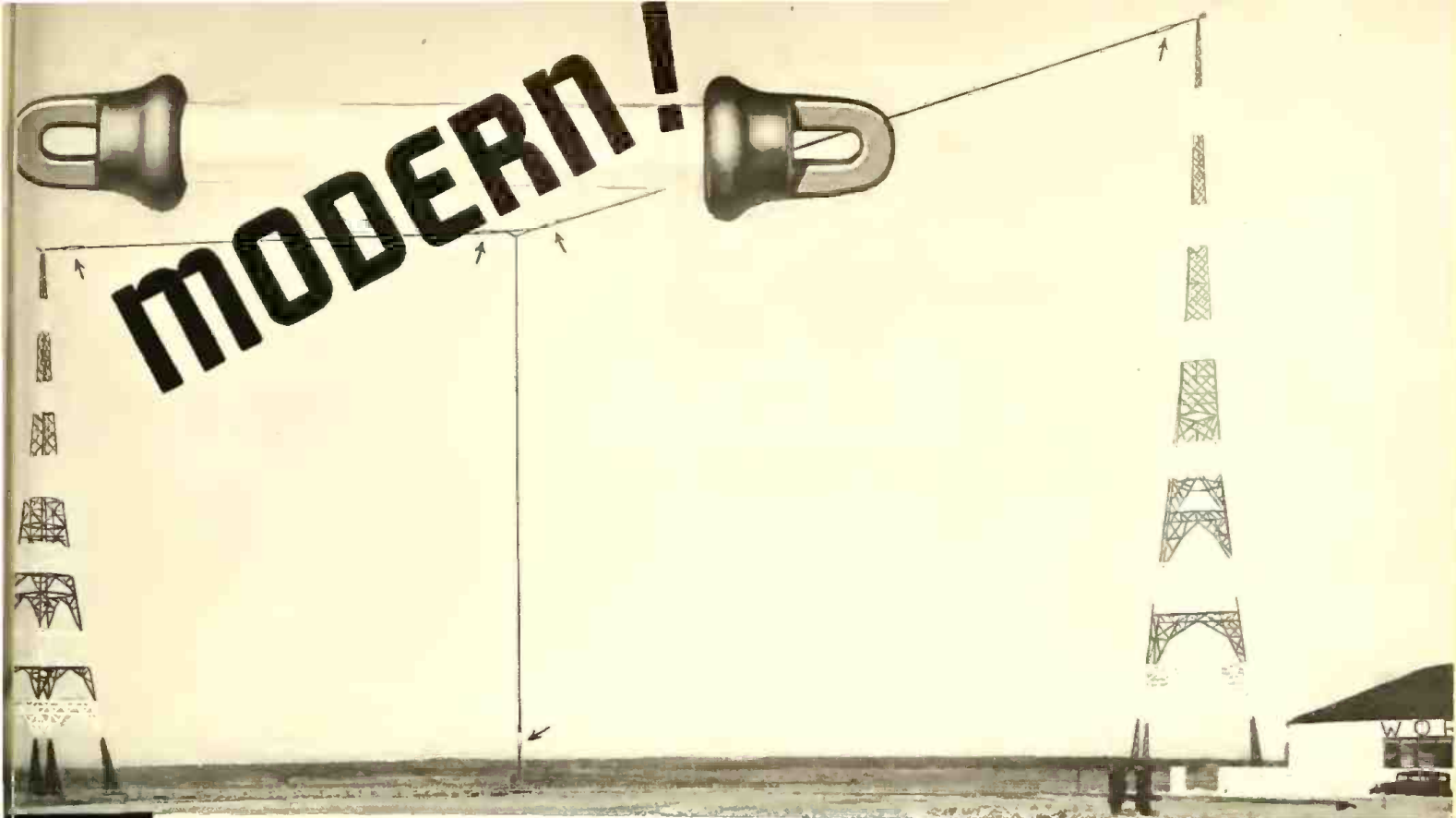


No. 33
(Needle Ballast)
Listed at \$24.50



Decca's Boswell Sisters, scoring a hit with "Top Hat" tunes.

MODERN!



Panorama of WOR 50 K W Broadcast Station

ISOLANTITE PLAYS AN IMPORTANT ROLE IN THE MODERN BROADCAST TRANSMITTER.

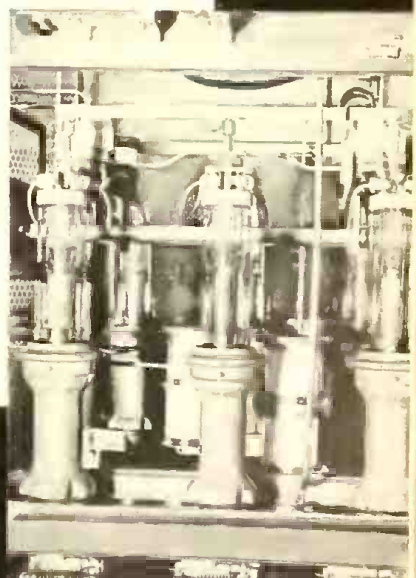
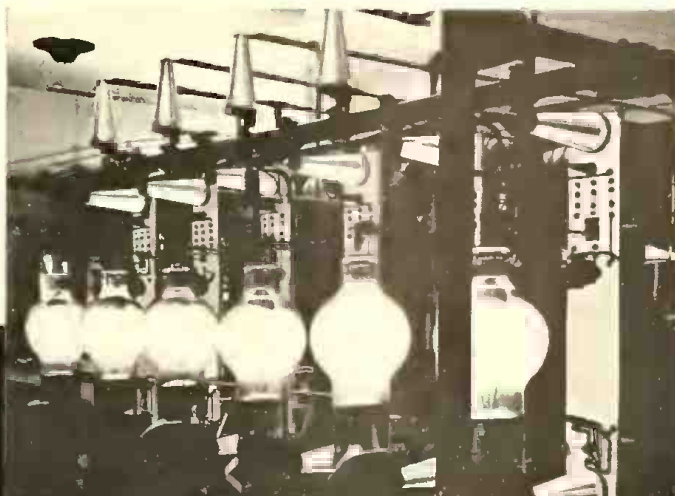
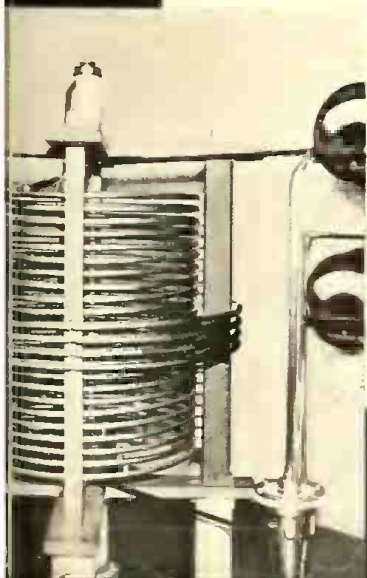
The 50 K.W. Transmitter recently built by Western Electric for Station WOR employs ISOLANTITE liberally.

In this up-to-date station are strain insulators, concentric transmission line spacers and end seals, stand-offs, switches, shafts, inductance supports, power and rectifier tube supports, condenser cases, pedestals and many other parts of ISOLANTITE.

To improve your equipment, specify ISOLANTITE insulation. *Isolantite Inc., 233 Broadway, New York, N. Y. Factory at Belleville, N. J.*

Represented by GRAYBAR ELECTRIC CO

Isolantite **CERAMIC INSULATORS**



THE WINNER!

ELECTRICAL MANUFACTURING Certificate of Award

IN
PRODUCT DESIGN CONTEST

This annual

in recent
electric
design

Presented
Nineteen



Here's the Tube Checker for which first prize has just been awarded in this nation-wide product design contest. Selected the winner . . . above all other products submitted . . . because it combines eye-appeal and dignity in outward appearance, with sound Weston engineering on the inside. In other words, it meets every need of the tube dealer and serviceman. It will do a real tube-selling job on the counter . . . it is sufficiently compact for portable use . . . and it will serve faithfully for years, as all Weston Instruments will. See Model 770 today, or, write for bulletin . . . Weston Electrical Instrument Corporation, 597 Frelinghuysen Ave., Newark, New Jersey.

WESTON Radio Instruments