

February, 1931

RADIO

REG. U.S. PAT. OFF.

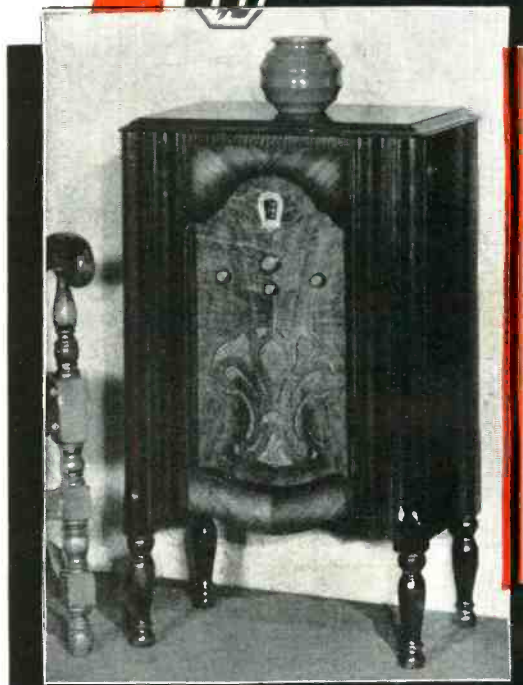
THE NATIONAL TRADE MAGAZINE

SUPERHETERODYNES

The two BEST radios in Silver-Marshall's history at the LOWEST prices—making the fastest sellers in the industry!

Each houses an eight-tube, midget-type superheterodyne chassis with tone control, local-distance switch, three screen-grid tubes, electro-dynamic speaker, 245 tubes in push-pull—every feature the public is demanding. Plus the exclusive extension speaker jack—making it possible to have the set in the living-room and as many as six extra speakers in distant parts of the house. Now that receivers are sold "with tubes"—there's your extra sale!

There are fifty-one strong Silver-Marshall distributors from coast to coast. Write for the name of yours—we will be responsible for what happens!



\$79⁹⁰
WITH TUBES

\$89⁹⁰
WITH TUBES



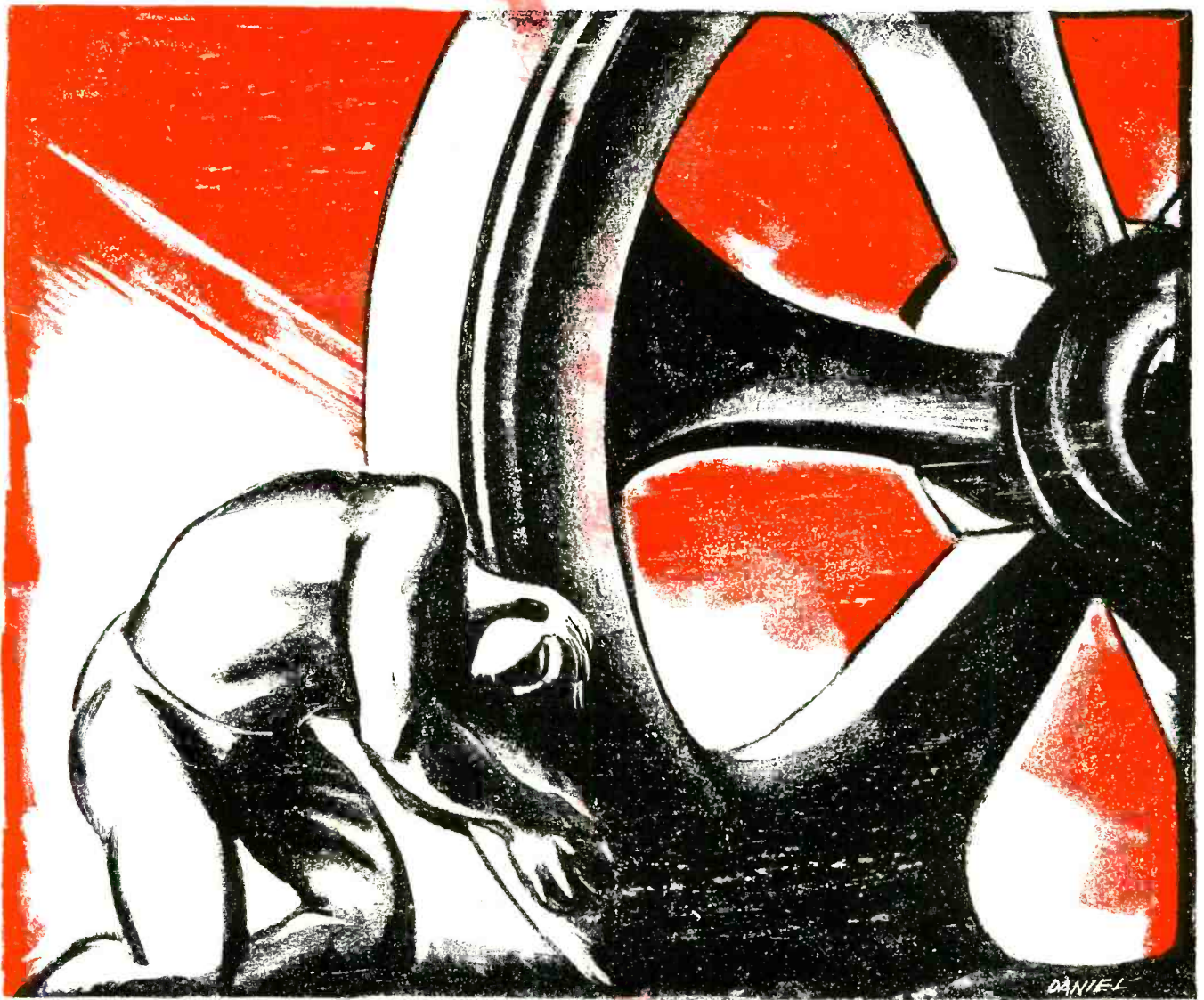
SILVER-MARSHALL

SUPERHETERODYNE

RADIO

6401 West
65th Street . . .

Chicago
U.S.A.



Put your shoulder to the wheel!

When the cart gets stuck, a real shoulder push will start things rolling. Now is the time when an extra shove is needed—once the cart begins moving it is easy enough to keep it going along. Harder sales work, outside selling, and new merchandising ideas

are worth at least twice as much today as they ever were before or will be. Added effort applied now will get 1931 started as a real profit year!

Brunswick Radio Corporation
 MANUFACTURERS OF RADIO, PANATROPE AND
 THE WORLD-FAMOUS BRUNSWICK RECORDS
 NEW YORK—CHICAGO—TORONTO
 SUBSIDIARY OF WARNER BROS. PICTURES, Inc.



BRUNSWICK MODEL 15
 Armored chassis. Uni-Selector and
 Illuminated Horizontal Tuning
 Scale. Tone Control. Cabinet of
 seasoned and selected butt-walnut
 with carved front **\$13950**
 panels.
 Other models \$170 up (less tubes)

BRUNSWICK RADIO

THE FLASH



WITH THE MARCH ISSUE the name of RADIO will be changed to RADIO AND REFRIGERATION, and a new department added to the magazine for the benefit of dealers who are interested in maintaining year round profits. The scope of the publication will cover the field of selling and servicing radio equipment . . . radio interference elimination . . . an enlarged section of the magazine containing a new form of dealer's service charts, showing how to look for and repair trouble in the current types of radio sets . . . more and better information on how to sell tubes . . . and the new department devoted to the merchandising of electric refrigeration and allied products.

* * * *

THOMPSON & HOLMES CO., Majestic distributors for Northern California, have petitioned for a new trial in the damage suit recently won by Magnavox over infringement of patent rights. Newly discovered evidence is claimed. Reports state that \$4,000,000 is involved.

* * * *

FADA has just announced the \$84.50 Hi-Gain Super Neutrodyne in compact cabinet form, 18" high and 15 $\frac{3}{4}$ " wide. It is known as Model 43. Three screen grid tubes with push pull '45 amplifier tubes.

* * * *

CAPTAIN WILLIAM SPARKS, president of Sparks-Withington, says that the radio "racketeer" is gradually passing out of the picture as the industry comes more and more under the control of the older, larger and saner organizations. The panic of the irresponsible manufacturers took a number of conscientious manufacturers with it. Caught in a landslide they could not stay, thousands of fine sets, bearing fine old names, went at ridiculous prices. According to Captain Sparks, the radio "racketeers" are folding their tents and invading other industries.

* * * *

AN ANNOUNCEMENT from *Time* says, in part, that a survey made among 30,000 of its subscribers shows that they will spend \$1,730,000 for new radio sets in 1931. Prices of makes they mention range from \$60 to \$500. The average is \$165.

* * * *

THE FEDERAL District Court for the Eastern District of South Carolina decides that it is unconstitutional for states to tax radio receiving sets because of interference with interstate commerce.

RETAILERS won a victory in Milwaukee on January 22, when they successfully restrained the North Central Distributors, Victor representatives, from selling sets direct to the public at wholesale prices. Nine dealers brought suit and secured an injunction to prevent the wholesaler from continuing the sale. Circuit Judge Walter Schintz approved an agreement whereby wholesalers must sell all merchandise on hand to retailers at prices which will enable them to meet the prices quoted in the advertising. Half of the radio sets must be sold to 45 Milwaukee County dealers and the remainder to those outside of the county, the report states. For detailed account see page 47.

* * * *

OXFORD RADIO CORPORATION, one of the largest mid-west speaker manufacturers, is in the hands of receivers. Liabilities are said to be \$225,000; assets about \$30,000. Machinery, equipment, and supplies will be sold in lots at federal auction February 10.

* * * *

JUDGE FIELDS of the federal court of Wilmington, denied the application of R. C. A. for a dismissal of the entire bill of complaint filed against it by Gold Seal Electric Company of New York. Application of Gold Seal for a preliminary injunction enjoining R. C. A. from appearing recently against them in a patent litigation suit was also denied.

* * * *

VERNON A. COLLAMORE, recently appointed executive sales head of MAJESTIC, wires that Harry Alter Company of 340 North Dearborn Street, Chicago, has been appointed distributor for Majestic radios and refrigerators for Chicago and Northern Illinois.

* * * *

EFFORTS to have Thomas A. Edison photographed beside a radio company's sound truck were unsuccessful, newspaper reports state. "I'm sick of the whole radio business," he said.

* * * *

B. J. GRIGSBY, President of MAJESTIC, reports that the factory will step up production to 3,000 sets per day, beginning early in February, and that the number of employees will be increased to almost 5,000. The factory has resumed a 5-day-week schedule.

Established
1 9 1 7

RADIO

REGISTERED
U. S. Pat. Off.

THE NATIONAL TRADE MAGAZINE

VOLUME 13



NUMBER 2

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<i>This may be a novelty, but it appeals to the imagination of the American people. It will close many a sale that might otherwise go begging.</i>			

P. S. LUCAS, Editor, H. W. DICKOW, Business Manager

General Office—Pacific Building, San Francisco

BRANCH OFFICES

New York 415 Lexington Avenue
Chicago 307 North Michigan Avenue
Boston 86 St. Botolph Street
Los Angeles 508 Crane Boulevard

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Entered as second class matter at the Post Office at San Francisco, California, under the Act of March 3, 1879.

IT'S EASY TO IDENTIFY 1931 TUBES

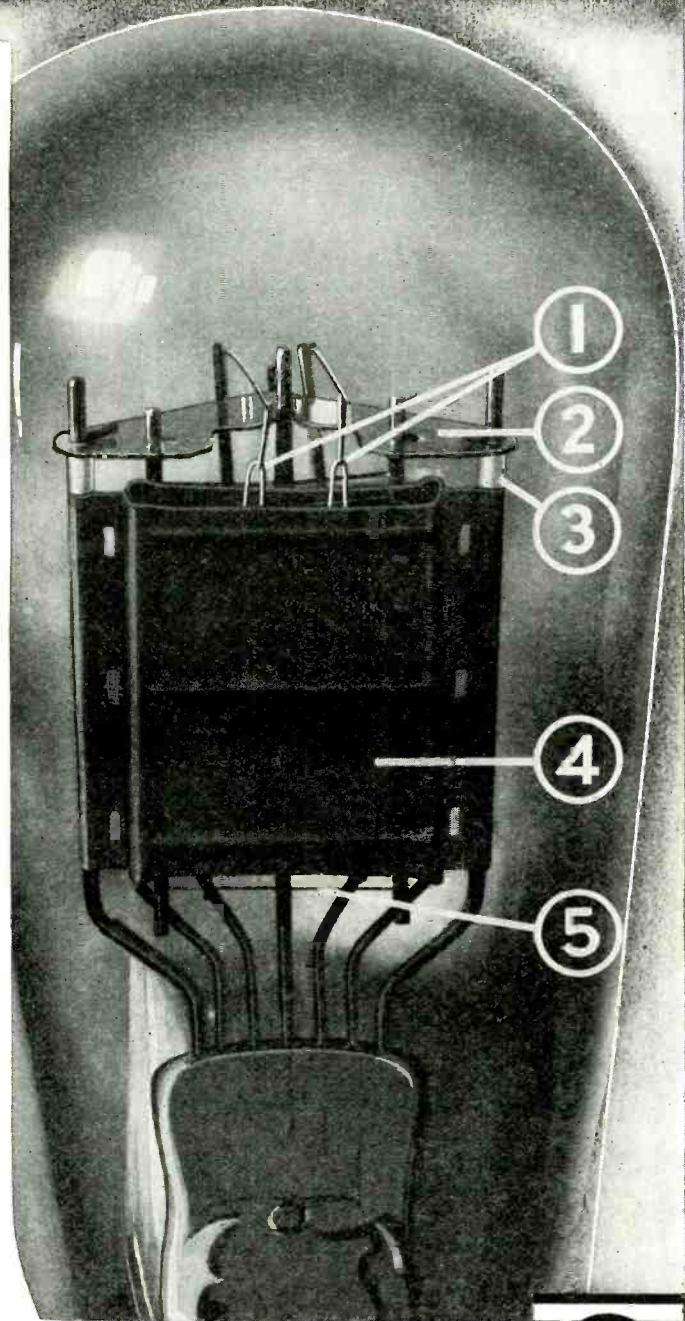
② Look for these Power Tube Refinements

The loud-speaker voice can be no better than its power tube lungs. That is why De Forest engineers have spared no efforts in refining power tube design. In the De Forest 445 Audion:

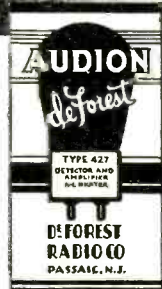
1. Special alloy filament insuring intimate contact between coating and base metal. Extreme ruggedness. Uniform resistance throughout life.
2. Mica spacer maintaining proper spacing of elements for positive characteristics.
3. Ceramic spacers keeping mica spacer clear of grid.
4. Ribbed or reinforced plate insuring uniform operation at all temperatures. Buckle-proof.
5. Molybdenum grid wire—20 times the cost of usual nickel—with extreme melting point permitting complete degasification.

These and many other advanced features found in every type of fresh De Forest Audion, insure the 1931 performance of the 1931 radio sets.

This is the second of a series of *debunking* messages dealing with 1931 radio tube features. The entire story, of vital interest to radio consumer and trade alike, is yours for the asking.



de Forest
AUDIONS
RADIO TUBES



DE FOREST RADIO CO., PASSAIC, N. J.

After all, there's no substitute for 25 years' experience



BIG in SALES

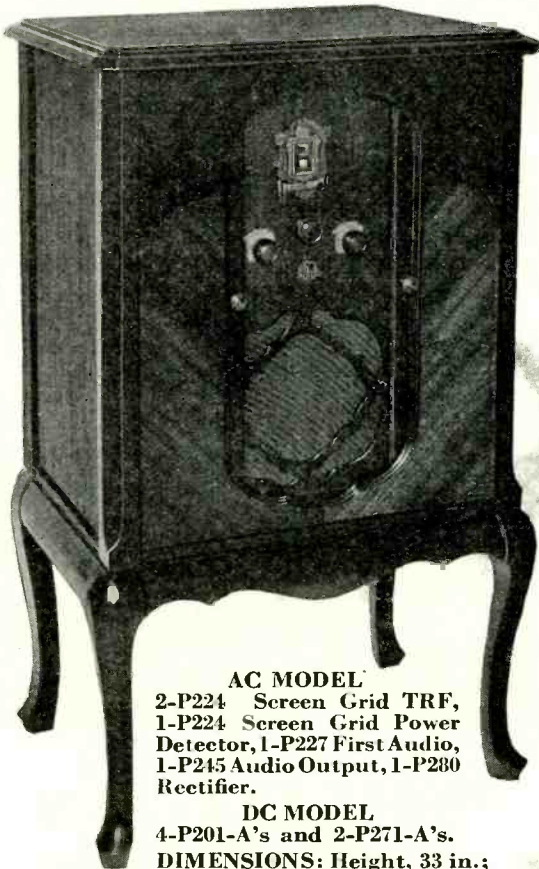
PROFITS and Performance

SMALL *only* in SIZE and PRICE . . .

and Pilot guarantees to maintain its present list prices until May 31st, 1931

Dealers made money on Pilot Products in 1930. They are going to make more money on present and future Pilot products in 1931. Because—Pilot hasn't stopped going ahead, hasn't a headache from 1930 conditions as so many in radio have. Pilot will have no distress merchandise on the market to slow up its dealers' progress, nothing but clean, new merchandise the public can continue to buy with confidence. Dealers who are careful about tying up with lines which won't pull their profits down should consider a Pilot franchise their first choice if they feel sure they can qualify!

SOME JOBBER TERRITORIES STILL OPEN



AC MODEL
2-P224 Screen Grid TRF,
1-P224 Screen Grid Power
Detector, 1-P227 First Audio,
1-P245 Audio Output, 1-P280
Rectifier.

DC MODEL
4-P201-A's and 2-P271-A's.
DIMENSIONS: Height, 33 in.;
width, 19½ in.; depth, 13 in.

A gem in cabinet design, this charming little two-tone walnut Queen Anne Model is coveted by every home loving woman the moment she sees it.

It has double sliding doors. Baffling area of cabinet is ample to bring out lowest tones of the special electro-dynamic speaker.

ILLUMINATED DIAL
KNOB CONTROL
TONE CONTROL
PHONOGRAPH CONNECTION

\$79⁵⁰

Less Tubes

PILOT *deluxe* Consolette



AC MODEL :
2-P224 Screen Grid
TRF, 1-P224 Screen
Grid Power De-
tector, 1-P227 1st
Audio, 1-P245
Audio Output,
1-P280 Rectifier.

DC MODEL :
4-P201-A's
2-P271-A's

\$59⁵⁰

Less Tubes

People can't believe they are *hearing* a Pilot Midget unless they *see* it! Its clarity, volume and range of tone makes the owners of most *big* consoles, wonder what they paid *big* money for. In its beautiful, NEW two-tone walnut cabinet, it delights all who see it as much as it delights all who hear it. Illuminated Dial, Knob Control, Tone Control and Phonograph Connection.

PILOT MIDGET

PILOT RADIO & TUBE CORPORATION

LAWRENCE, MASS.

Chicago Office:
234 S. Wells Street

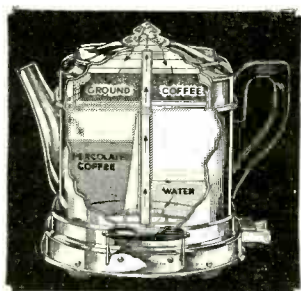
New York Office: 525 Broadway
OFFICES IN PRINCIPAL COUNTRIES OF THE WORLD

San Francisco Office:
1278 Mission Street

Profit-Wise Dealers Acclaim the New Armstrong Automatic Percolator



Radio Dealers
and Jobbers
Are Invited
to Write for
Territory » » »



Finish: Pot is copper, chromium plated on outside; silver plated on the inside. Black handles and nickel plated base.

Capacity: Three to six cups.

Heating Unit: 500 Watt Chromalox element in base, 110 or 220 volts.

Switch Plug: Armstrong patented non-arcing, non-sticking switch plug.

Packing: Each pot packed in individual test carton—six to each shipping carton.

Weight: Seven pounds net; standard package of six weighs 40 pounds.

The First and Only Fully Automatic Percolator

NO levers, clocks, or timing mechanism to set. Yet its action is positive, cutting off the current at the proper time, whether you make three, four, five or six cups. Makes French "Drip" coffee by method acknowledged to be the most healthful and scientific. Strong as you wish, yet healthful because it never boils.

Water passes through ground coffee only *once*. Coffee never boils. The full flavor and aroma of the coffee is retained with no bitter taste due to boiling.

Fast. Percolation starts in about a minute. No electric percolator is faster. Economical because of low wattage used (only 500 watts) and short time current is on.

Operating Principle: Percolator is divided into two compartments—one into which the water is poured, and the other from which the finished coffee is poured. Filling the water compartment causes the percolator to tip *down* on the handle side. This operates a switch in the base on which the percolator rests and turns the current ON. When the water in the water compartment has been transferred through the coffee and into the coffee compartment, the weight of the coffee infusion tilts the percolator on the spout side and the switch cuts off the current. There is no timing mechanism, no levers, no clock. The *Amount of Water* you use determines automatically the time current is ON.

ORDER A SAMPLE NOW

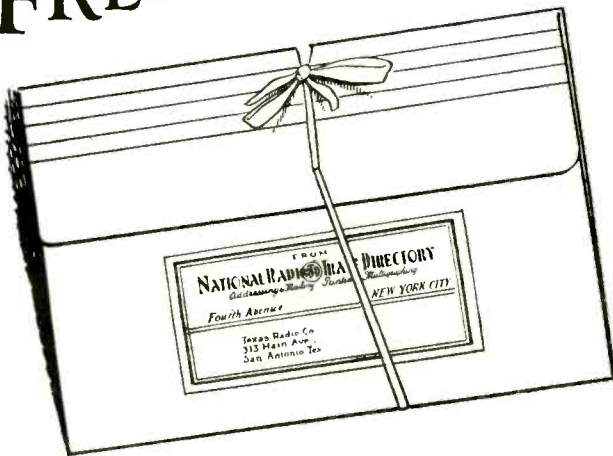
THE ARMSTRONG ELECTRIC AND MFG. CORP.
HUNTINGTON - - - - - WEST VIRGINIA

What's NEW in RADIO?

HOW would you like to be posted on the new things and new developments in radio, just as soon as they come out? How would you like to receive mail from the country's leading radio manufacturers, wholesale radio mail order houses and publishers in the radio industry? How would you like to have access to the most complete radio data files ever compiled, containing all the important facts in every phase of radio progress? How would you like to receive regularly, catalogs, folders, circulars, price lists, bulletins, samples galore, etc., keeping you in close touch with the happenings in the radio industry for an entire year? This is only part of our complete service to you.

Would you like to locate a manufacturer of a certain product? Would you like to know the name of a jobber near you handling some particular item you may be interested in? Let us solve these questions for you.

**This Handy Practical Portfolio
FREE!**



Every subscriber to our service receives one of these 10 by 12 inch accordion portfolios, made of a durable material, in which to save the valuable data we send you.

Just pin Dollar Bill to this form, fill in and mail at once!

No live radio dealer, fan, amateur, experimenter or professional can afford to be without our comprehensive service.

Our business is the nerve center of the radio industry, reaching out everywhere, collecting data from every available source, maintaining the most complete of its kind in the world.

**all \$1
for 1**

You will realize that the amount we spend for postage alone does not cover the charge for our service. The \$1 subscription fee barely pays the necessary expenses entailed in mailing.

A subscription to our service will actually save you many times the small cost of \$1.00.

If there is any additional information you may require before subscribing, write for further details.

National Radio Trade Directory

303 Fourth Avenue, Dept. K
New York

NATIONAL RADIO TRADE DIRECTORY,
303 Fourth Avenue, New York. Dept. K.

Gentlemen:

Enclosed please find \$1.00 for one year's subscription to your "Big Mail" and "Radio" Information Service. It is understood that you are to put my name on your stencil list to receive mailings, including catalogs, bulletins, price lists, samples, etc. I am also to receive free a 10 by 12-inch accordion portfolio.

ADDRESS

NAME

CITY

STATE

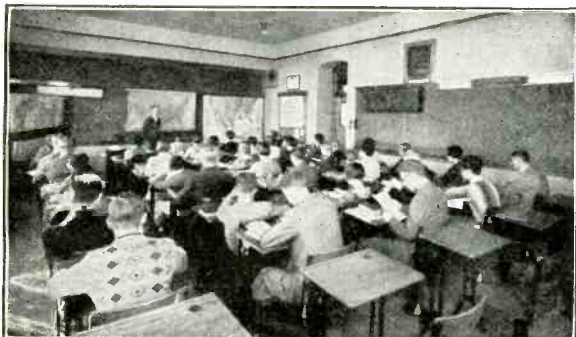
NOW...

60 Wright-DeCoster Reproducers Used in a Milwaukee High School

The decision to install Wright-DeCoster Reproducers was made only after a series of trials and tests in which the Wright-DeCoster made good over all competition.



Riverside High School, Milwaukee, Wis., equipped with amplification system operating 55 magnetic and 5 dynamic WRIGHT-DeCOSTER REPRODUCERS.



One of the class rooms of the Riverside High School, Milwaukee, Wis., equipped with WRIGHT-DeCOSTER HYFLEX REPRODUCER.

Board of School Directors RIVERSIDE HIGH SCHOOL

Milwaukee, Wis.

Wright-DeCoster, Inc.,
Saint Paul, Minnesota.
Gentlemen:

October 3, 1930.

The Acoustical Reproducing Co. have installed a speech amplification system operating 55 magnetic and 5 dynamic speakers at the Riverside High School.

We chose Wright-DeCoster speakers after a series of elimination tests in which we compared them with practically every make of speakers on the market. We find that the speakers can carry a very high volume level without distortion. This is a very desirable feature where it is necessary to carry a program into the auditorium during the noon hour. There is always considerable noise and yet those who wish to listen may do so and enjoy the program.

At all levels the Wright-DeCoster speakers have a very mellow and faithfully reproduced tone. We are very well pleased with them and wish you the best of success with your speakers.

Sincerely yours,

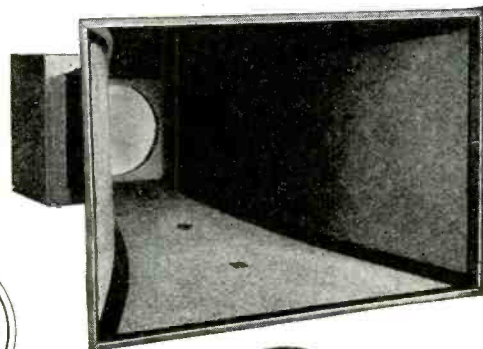
(Signed) J. W. SCHNECK,
Physics Department.

Is the Time to Sell SOUND

There were many sound installations made in 1930, but the outlook for the present year is positively unlimited. Cash in on the demand from schools, auditoriums, arenas, ball parks, football fields, amusement parks, aviation fields and fair grounds. Expert installations can be made by anyone who takes the initiative and gets complete instructions from a competent sound engineer.

WRIGHT-DE COSTER REPRODUCERS

Giving satisfaction wherever installed. Every successful installation is a booster for additional sales. The big selling season is just approaching. Get ready for it!



The field of sound projection offers one of the greatest opportunities of the day.

Write for Complete Information
and Address of Nearest
Sales Office



The Speaker of the Year

WRIGHT-DE COSTER INC.

2217 University Avenue

St. Paul, Minn.

Export Dept.: M. SIMONS & SON CO., 25 Warren St., New York City
Cable Address: SIMONTRICE, New York.

..... a quality product
engineered to the highest precision



B

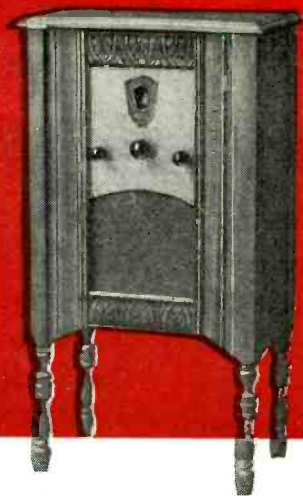
ENTON Microphones are manufactured with the utmost skill and care in a modern shop. It is the constant aim of the Benton factory to give you a superior product. Raw materials are rigidly tested and inspected before being made into the finished product. Benton Microphones have been in use in broadcasting studios and recording laboratories for the last eight years. . . . Constant research and investigation under the skilled guidance of electrical and mechanical engineers have made possible today the finest microphones you have ever used. . . . Benton Microphones. . . . You will find in the carbon microphones an advanced performance that is a revelation. The shortcomings found in other microphones of this type have been eliminated by superior design and construction. In the condenser microphone you have the highest type of voice transmitting equipment that advanced engineering skill can build. The frequency response and fidelity is the last word in precision. Rigidly inspected and fully guaranteed.

Benton condenser microphone pattern SR3, true to its reputation, "engineered to the highest precision." "Flat characteristic" over the entire workable frequency. Still flat at frequencies over 7000. Lower lows and higher highs than you will ever demand of it to reproduce. Designed for use with the highest quality speech amplifiers as this microphone reproduces exactly what it hears. Sensitivity carried to the highest possible limits without any loss of fidelity. Concealed ring in base for suspended studio recording, table or stand mountings. Head is adjustable for any position and is designed for lowest echo, machined from steel and bronze. Case shell brass, upper and lower ends cast aluminum. Perfect fidelity in any position. Two stages of straight line resistance coupled audio amplification enclosed in the case. Output transformer 200 ohms. Finished in black lacquer and chrome, packed in special shipping case with 20 feet microphone cable and coupling plug. Write for trade discounts to:

BENTON MFG. CO.

General Sales Office: 139 North Clark Street, CHICAGO, ILLINOIS

The
LITTLE BEAUTY
with the
BIG VOICE



\$79.50

Complete
with tubes

The TOM THUMB Console As New As Tomorrow Morning

IN response to the increasing demand for radio receivers smaller in size, but having all the power, selectivity and tone that the public requires in radio, the engineers of the Automatic Radio Mfg. Co., after months of experimenting, have produced the Tom Thumb Console. This receiver, only 30 inches high and 17 inches wide, has selectivity, sensitivity and tone quality heretofore associated only with higher priced large receivers.

Artistically, the beautiful Tom Thumb Console cabinet adapts itself to any surroundings. It is particularly fitting for the hotel room, or small apartment. For that son or daughter in college it will make an ideal Christmas gift.

The Tom Thumb Console is a six-tube receiver, employing four screen-grid tubes, a '45 in the output

stage, and an '80 rectifier. The speaker is the latest type, full dynamic, and the chassis is completely shielded.

Complete with tubes, the price is only \$79.50.

The TOM THUMB Midget

The little brother to the Console. It contains the same powerful, selective receiver as the larger model, yet it is only 16 inches high and 12½ inches wide. Price, complete with tubes, only \$69.50. See your distributor today. If he cannot supply you, write us direct.



Small in
size, but
a giant
for
reception

\$69.50
complete
with
tubes

Both Receivers also Avail-
able in D.C. 110-Volt
Models.

Complete with Tubes.
Priced \$10 Higher

Dealers and Jobbers

Cash in on the popularity of
the New TOM THUMB
Receivers. Write or wire us
today!

WOOD SUPERSONIC CONVERTER

3 tubes, 2-224, 1-227, tunes by single dial (illuminated). Easily
attached to any A.C. set.

Also in A.C. and D.C. completely wired short wave sets and combination short
wave and long wave sets.

Write Us Today for Full Particulars

AUTOMATIC RADIO MFG. CO. INC.
DEPT. D, 112-118 CANAL ST. BOSTON, MASS.

R A D I O T O R I A L

In Defense of the Better Business Bureau

SOMEBODY whose toes have been stepped on by the Better Business Bureau is gunning for the Bureau. This sniping takes various forms. One of these is the question which has been raised by the

●
Bronx Chamber of Commerce: "Do Better Business Bureaus better business?" In an advertisement soliciting funds to be used by an investigating committee which seeks to find an answer to this question, the Chamber states that the Bureau seems to rest upon assumed rights and self-asserted powers.

Without voicing the perhaps unjustified retort about the pot calling the kettle black, but confining the argument solely to the effect of the Bureau's work upon the radio industry, the answer is obvious. The radio business has been bettered by the Bureau's activity, as a brief analysis will show.

In the early days of radio, when an ill-informed public was unable to discriminate between the truth and falsity of performance claims for equipment to be used in conjunction with this modern marvel, the Bureau was oft-times an effective means for bringing public attention to the most flagrant falsities. In this work it had the support and coöperation of the legitimate, well-informed radio journals.

Consequently, a great host of misrepresentations of static eliminators (which also eliminated the signals), of patent underground aerials, and of aerial "booters" which booted the signals into the set, were unable to impose upon a credulous public to the extent that they had hoped. Radio merchandising was thus purged of many evils which were hurting the sales of less touted, worthy equipment.

This task was self-assumed by the Bureau, frequently when no one else had the courage to expose the fraudulent claims. But no self-asserted powers were exercised beyond inciting

the properly constituted authorities to needed action. And even if the Bureau has attempted to correct abuses in other industries, concerning which no data are here available, such praiseworthy action is not without precedent.

While we are not convinced that it is better for the Bureau to perform these services than it would be for the State to exercise the necessary regulation, we are of the opinion that the Bureau has done a good job in doing what others were unable or unwilling to do. The radio business, for one, is a better business because of the Bureau. Truth must prevail.



In This Case the Mechanic Is to Blame

● ONE of the disappointments of the past radio season has been the failure of the automobile radio set to register popular approval.

The idea appealed to the people who had the money to pay for it, but the desire was killed by the automobile mechanic. The radio exposed the faults of the automobile ignition system. Or at least the ignition faults spoiled radio reception in the moving car.

Everything is lovely for the first five hundred miles or so when the car is new. Then the wear and tear of operation causes the little sparks of a partly faulty ignition system, faults which do not interfere with the operation of the car, but do interfere with the operation of the radio. So the auto mechanic, in desperation and exasperation, merely remarks, "You don't want that radio anyway." And the customer doesn't.

Another factor which retarded sales of automobile radio sets during 1930, but which will probably be corrected during 1931, is their high price. When they are brought down to the sixty-dollar price classification, they will be a more popular accessory in the low-priced cars. Such a price cannot yet include installation or the very necessary shielding of the ignition system.

C O M M E N T

Tubes on Consignment ● **PROBABILITIES** are strong that the radio tube business will follow in the footsteps of the lamp business, as regards gradual reduction in price and method of distribution. Lamps are sold to the dealer on a consignment plan which obviates the necessity of his working capital being frozen in a stock of lamps. Inasmuch as many of the leaders in the vacuum tube industry had their early training in the lamp business, it does not take much of a prophet to foresee that it won't be long now before tubes are consigned. One advantage of this method is that it provides a legal means for the maintenance of resale price.



Super Power Stations Will Open New Markets ● **STRICTLY** from the standpoint of the man who sells radio sets, will high-power broadcasting help or harm the industry? The Federal Radio Commission has been loath to grant permits for the construction of high-power stations, but may soon fall for the idea of providing daytime reception of radio throughout the country. The immediate effect of such action will be to open new markets in rural communities which can not now enjoy radio music during a hot summer afternoon.

Such communities have constituted the best market for relatively expensive console models which give wonderful reception at night but noisy results during the day. With the greater field strength that comes from a high-power station there is no longer need for extreme sensitivity in the receiver.

So high-power broadcasting will probably decrease the demand for high priced receivers, while enhancing that for midgets.

In urban communities, near which the high-power stations will be located, the first demand

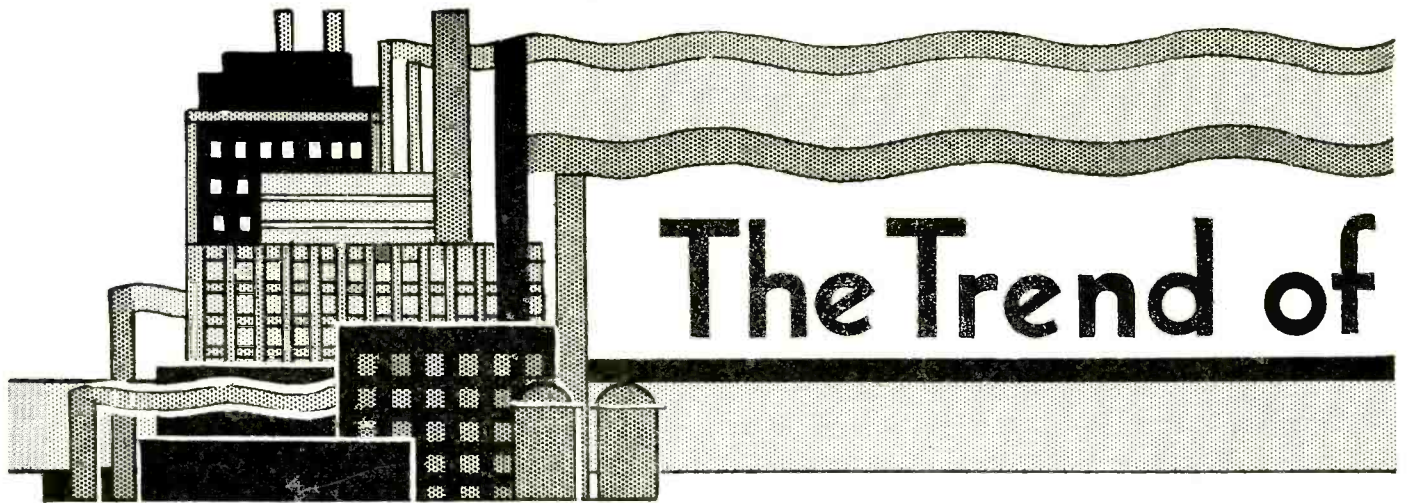
will be for more selective sets, thus junking the old crop of receivers that have not yet been replaced by modern sets.

Consequently, the answer to the question seems to be that high-power broadcasting will widen the market and cheapen the product which the dealer sells. Whether this will help or harm depends upon the point of view, as Einstein would say.



Keep It Under Your Hat ● **TWO** brands of information about television are being, and should be, disseminated. One is labeled for public consumption. It states that television is still in the laboratory stage and that there is no object in delaying the immediate purchase of a radio set because at some indefinite time in the future there will be worthwhile pictures on the air. When it does come a separate receiving set will be needed. The same arguments were profitably used by the phonograph dealers when radio speech and music made their initial bow.

The other brand of information is labeled for the confidential guidance of dealers only. Television is ready to graduate from the laboratory into the home as soon as it is commercially expedient to market the receiving equipment. Radio pictures are as comparatively good today as was radio music ten years ago. The narrow-band transmission system developed by Philo T. Farnsworth solves the problems of finding sufficient room in the broadcast spectrum. It is applicable to any kind of a scanning system and is capable of reproducing a 400-line picture from a transmission along a ten-kilocycle channel. This gives enough detail to satisfy the most critical audience. The purpose of this confidential information is to encourage the radio dealer to stay with his business through the lean present so as to be able to profit from the fat future.



The Trend of

Optimism Is Contagious

OPTIMISM is the key-note of merchandising success these days when it is so easy to give way to discouragement. In a talk by E. T. Cunningham, at a four-day annual convention of Cunningham district managers and salesmen last month, the well known tube pioneer gave it as his opinion that the depression was definitely "past history" and that the future held every promise of a steady, though slow, improvement.

"There has taken place throughout the industry, in all its phases," Mr. Cunningham pointed out, "a very thorough and necessary house-cleaning. Our troubles of the past year have not been caused so much by poor business, as by the fact that business has been conducted on a profitless basis. Uneconomic methods of distribution and poor merchandising have been two primary ills of the radio business in the past, which 1931 and the years to follow will not see repeated. In consequence of the lessons learned, there is every reason to believe that the end of the present year will see conditions in the radio line, as well as those of business generally, vastly improved over what they have been during the past twelve months. And what is even more important, perhaps, is that we shall see conditions based upon sounder economic principles than has been the case at any time since the turn of the century."



DeForest Objects

THE DeForest Radio Company, independent tube manufacturer, has instituted against the Hygrade Lamp Company of Salem, Mass., a suit for unfair competition. The Hygrade Lamp Company, a licensee of the General Electric Company, is accused of having distributed to jobbers and dealers in the radio trade a statement that would apparently lead the layman to infer that only those companies making radio tubes under license of General Electric could be relied upon in the future. According

to Wm. J. Barkley, the DeForest Radio Company and its predecessors in business have been making radio tubes since 1913, and probably did more than any other single company to create the present radio tube industry, since the original and basic patents on the modern radio tube were owned by Dr. Lee De Forest. The DeForest Radio Company takes the position that trade statements such as given out by the Hygrade Lamp Company are unwarranted and constitute an indirect attempt to destroy the good will of independent tube manufacturers generally.



Hot After Fictitious Trade-in Allowances

THE Boston Better Business Bureau is taking up the battle of the radio dealer who sticks to his prices by launching a campaign against false valuations on trade-ins of old radios, phonographs, et cetera. It says: "When any old radio, phonograph, or article of furniture, regardless of condition, may be traded for any amount up to \$50, depending upon the radio purchased, it is apparent that the valuation placed upon such article traded in is purely fictitious."

The Better Business Bureau believes that fictitious valuations on trade-ins should be discontinued, and requests the cooperation of local advertisers in doing so. At the same time, the Bureau is requesting the National Better Business Bureau to take the subject up directly with the radio manufacturers.

There are lots of dealers who will welcome the participation of their local Better Business Bureaus in the war.



Widen the Gap

MR. GEORGE LEWIS, Vice-President of the Arcturus Radio Tube Company, gave the nail a resounding whack on the head when he said that 1931 must show new technical advances in receiver design. To quote from a statement by Mr. Lewis: "Another point

in receiver design that demands attention is automatic volume control. . . . Automatic selection of stations with sharper selectivity will perhaps be another augmenting feature in the 1931 receiver."

In 1908 or 10, the Cadillac and other automobiles were fighting for supremacy when the Ford and similar cheaper cars began to appeal to the pocketbook. If Cadillac had declared war on Ford it would probably have been promptly licked and long since forgotten. But the Cad moved off into a field of its own; refused to compete in the low price class. Its builders put every luxury into it and attached a price to match. The farther away it got from what became known as the "low priced car class," the more popular it became.

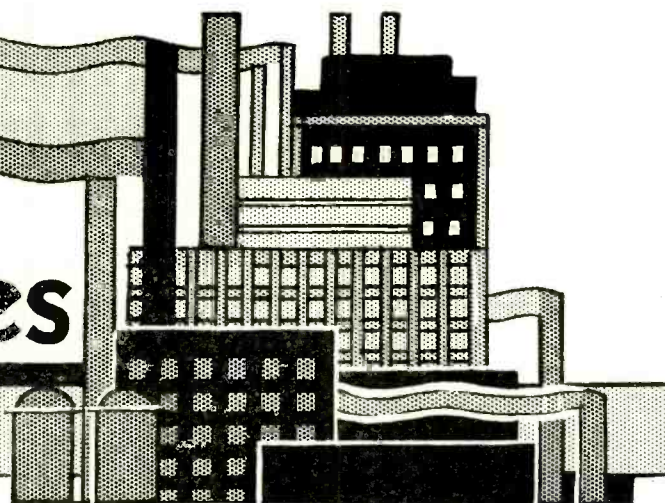
Perhaps the manufacturers of higher priced radio receivers will find the theory still true. Perhaps the addition of such luxuries as automatic volume control and remote tuning control, easy of design and manufacture, but costly, will so widen the gap between the midget and the console receiver that the Cadillac-Ford history will repeat itself.



Auto-Radio Season Soon to Open

WITH THE OPENING of the spring season a brisk demand for the low-priced automobile set should make itself evident if properly publicized. Philco Transitone announces the much-heralded \$65 automobile radio, this price including tubes, but not batteries. Installation charges are also extra, usually averaging about fifteen dollars. Without a doubt the future of the automobile radio depends upon the reduction in the prices at which these conveniences were offered last year, and with Philco taking this first step it is possible that the summer of 1931 will make up for the failure of 1930 to popularize radio "in transit." The absurd objections to a radio in the car that were heard last year, viz., "It would detract

The Radio Times



the attention of the driver," seem to have been disproved; completely laughed off; and it remains now only to make the public conscious of the tremendous advantages of equipping their cars with radio sets. Dealers must be convinced of the opportunities in such sales and instructed in the simplicity of installation. Perhaps the fact that installing a radio set in an automobile baffled the radio dealer had something to do with his lack of push.



Midget Superheterodynes Delayed

SEVERAL OF THE MIDGET manufacturers, feeling the breeze blowing toward the superheterodyne as the midget of the future, immediately announced superheterodyne models of their own. Upon designing the already announced models, they have discovered that there is still something in the radio engineering field that requires more than a couple slips of the slide rule and a few hit and miss coil and condenser combinations until the right one is found. As the first few supers begin to show their faces, it becomes evident to bystanders that those who are going to be the "kingfishes" in the manufacturing of these instruments are those who were more or less prominent during the years of "home-made" superheterodynes, or those who are equipped with engineering staffs able to cope with the situation. The super has always been a "cranky" receiver, and it will probably do a little more non-plussing before it has been completely chained.



T. R. F. Midget Not Doomed

MEANWHILE, speculation is rife upon the future of the little tuned radio frequency midget that has made such an important mark on the industry. It will always have the advantage of price, and for a while it will probably lead in good quality, being second to the super only in selectivity and sensitivity, which means—distance.

There are still, and always will be, plenty of buyers who understand themselves well enough to know *why* they buy a radio set. Most of these realize that a desire for distance, even if felt during an eloquent sales talk, will probably be just a passing fancy. They, therefore, buy tone and good looks. Others will want distance and will buy supers. Still others will think they want distance, buy supers and listen to locals exclusively. Nevertheless, the t.r.f. midget is probably here to stay and to please. There will continue to be good ones and cheap ones. If anything can help the situation it would be a wider breach between good merchandise and cheap merchandise; fair price and give-away price. Then odious comparisons could be more easily shrugged at.



Cracker and Milk Diet Not Fattening

RADIO DEALERS and salesmen who end up the day by totaling up the dollars and cents instead of the number of sales, say that the medium and higher priced receivers of reputable make will continue to be responsible for the large portion of the dealer's income if he will but *go after* the business. The midget receiver is a rival of the larger radio only in cases where the customer cannot afford to buy the medium priced set (whether she realizes it or not), or where the smaller cabinet is actually more suitable to the home that is to be graced by its presence. This is usually true only of hotel rooms and apartments, and not always of those. The midget is, of course, responsible for a certain amount of sales resistance that must be overcome, but the dealer who has been in the radio industry for any length of time is accustomed to sales resistance far more difficult to master. Furthermore, advertisements of midget receivers bring more prospects into stores than ever before, and lots of these can be sold their first set, and a large one, if easy terms are explained.

"Vanity, Vanity, All Is Vanity, Saith the Preacher"

TO WHICH Andy would have added "Check and Double Check." How many times a year does the owner of a Ford (yes, even a Model A), apologize to the owner of a Cadillac when he asks the latter to get in and ride? Is it not a possibility that owners of midget radio sets might get a little self-conscious when turning them on for friends who have expensive consoles?

There is a definite place for the higher priced receivers, but the latter must have something that the midget cannot afford; something that costs money to build into it so that it cannot be copied, automatic volume control, remote tuning control and other features yet to be conceived.



Short Wave Reception Popular

MANUFACTURERS of short-wave equipment, and dealers who have begun to push this merchandise, report that many customers are beginning to show an interest in short-wave reception. This is possibly due to the fact that the man in the house is trying to make a comeback. There's no longer much use trying to fish for distance with the one and only broadcast receiver controlled by the other members of the household, hence the second set, either for the present broadcast band or for short waves. One great advantage to the short waver is that it offers entirely new worlds to conquer; results that startle the old superheterodyne and infradyne fans, and is not nearly so complicated or expensive. Every customer interested in distance is a natural follow-up customer for either a short-wave converter or a complete short-wave receiver.

Better Installations

When it comes to the choice of sidelines, aerial installations and shielded lead-in wire ought to be the first considered.

Lead

HARRY ZEMANSKY and Sydney Fass, owners of the White House Radio Shop, turn obstacles into profits by refusing to dodge the issue. They insist upon good antenna installations and charge for them, while others are offering to install radio sets "free."

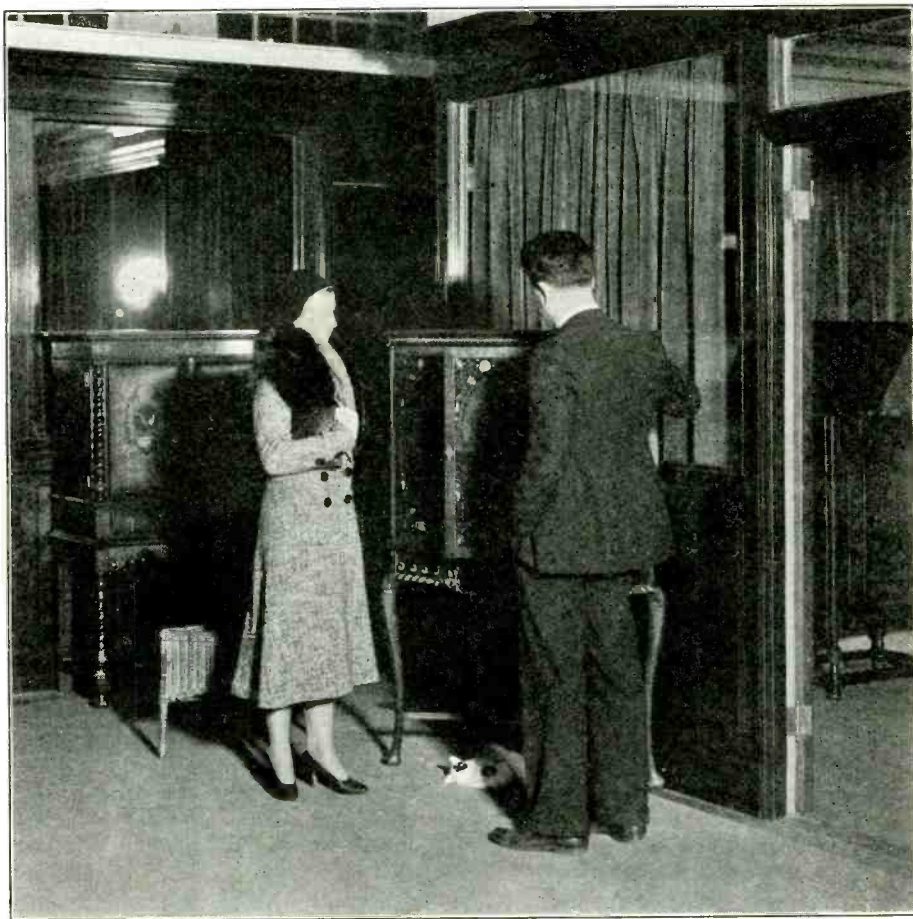
With radio stores all over the country advertising free installations there is not one customer in a thousand who expects to pay extra for this service when he walks into the store. But Zemansky and Fass start right in on their education and convince them that if they are to have the results they want the radio set must be installed with everything in its favor. Why, they ask, should we take the easier course when it means taking a chance on getting the set back and failing to gain the customer's undying good will? The customer walks into the store, is shown the various models, given the works, and signs on the dotted line. At this point most salesmen would draw a sigh of relief and consider it a job well done. Not so the boys at the White House Radio Shop. Instead of letting down when the sale is made they write it up and suggest that the customer assure himself of good reception with his good radio set by installing a good antenna.

"I thought it just plugged into the light socket!" one will exclaim, thinking that the much abused term, light socket, takes care of the whole works. Or another: "So and so, down the street, installs aerials free with the set. Why don't you?"

Right here it is a great temptation to let well enough alone; sell the set, throw a wire under the rug and call it quits, but Fass and Zemansky know that if they keep plugging until the customer realizes the advantages of a good installation they have not only added to the sale, but have assured themselves of a customer who is more than satisfied. It has been proven time and again that that customer will *keep* his newly bought radio, that in a few years he will come back for another radio, that perhaps he will tell his friends that the reason his reception is so much quieter and more satisfactory than theirs is because it was properly installed at the beginning.

While those results are difficult to measure in dollars and cents except to the man who keeps a card index on his customers (which the White House store does), Harry Zemansky says the profits alone are worth the efforts required to sell aerials. These men have been selling aerials—good aerials—since 1922, and have made many constant friends because of it.

These partners are glad to give a free home demonstration of a radio set. Always. But first there must be a good aerial in the house or apartment, else the demonstration will not prove the value of the set. Of course people squawk at paying good money for an aerial before they have bought the set, but if they are in earnest about buying it should not be difficult to persuade them that no matter whose set they buy their antenna needs will be the same. If they are floaters, or joyriders, they are immediately eliminated. If not, they get their



The Line of Least Resistance May Bring the

These two partners believe that good aerial installations are necessary if the dealer would play fair with the manufacturer, customer and himself.

to Greater Satisfaction

money's worth of aerial, the demonstration is more just, both to the White House and its competitors, and they are not likely to return the set and ask for a demonstration of another model. If the sale goes to somebody else the profit from the aerial has paid the costs of the demonstration.

There is another reason why a good aerial installation is of value both to buyer and seller. It minimizes service calls, many of which are requested because of interference; many merely because the customer feels that he is not getting the best results from his radio set, whether he is or not. If the set is installed properly in the first place the chances are greatly in its favor that the promised free service will not be needed.

It requires a lot of "push" to sell an antenna costing sometimes one-fifth of the cost of the radio set itself. While everything is in favor of doing the job right real salesmanship is needed to extract that extra ten or fifteen dollars. They always put the customer on the defensive; make him realize

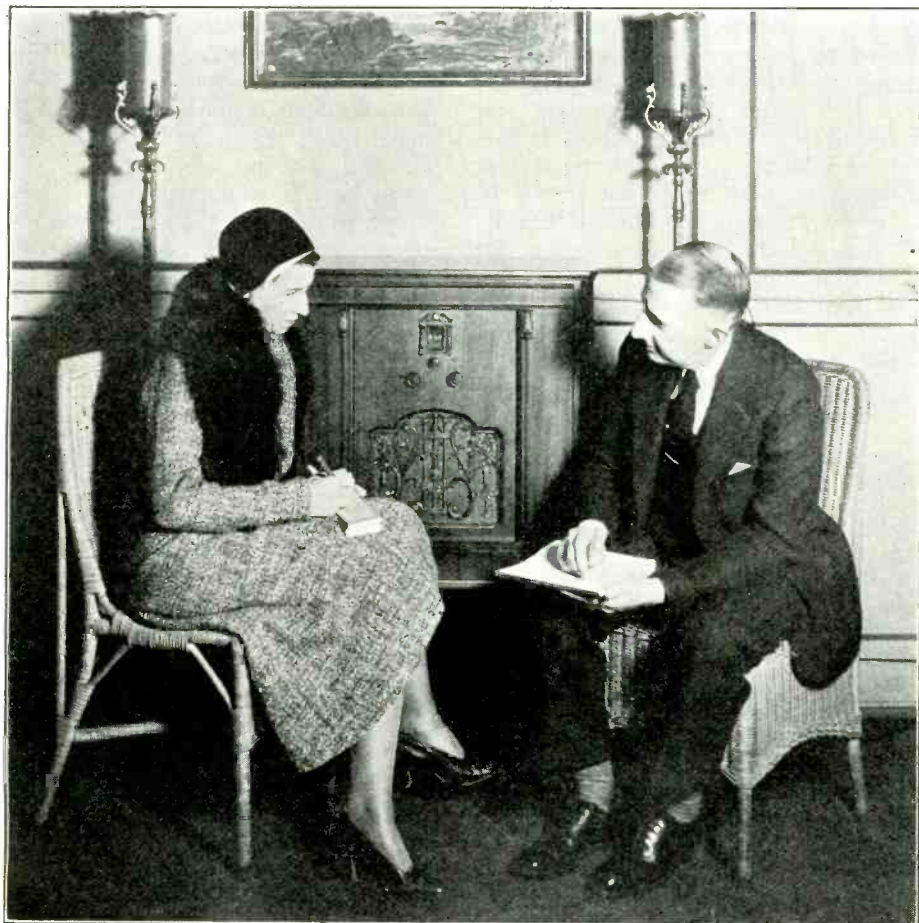
that while it would be a lot easier for them to toss a wire out the window than go to the trouble of climbing around the roof, it would not be fair to him. Perhaps they will ask him if he would buy a bathtub and supply it with water with the garden hose or a bucket.

"Everything is on the salesman's side if he will only use it," says Mr. Fass. "It's merely a matter of selling the radio set, then being willing to unsell it at the first mention of an expensive aerial, and turn around and sell it again, aerial and all. Sometimes we lose a sale, but the sales we make are practically as good as two sales in the long run and some of them are worth a good deal more. Our repeat business is big—and it is the easiest and cheapest to handle." Both Mr. Zemansky and Mr. Fass believe that it would make things a lot easier for the radio dealer and salesman if manufacturers would come out boldly and paste a large notice on each radio set telling that a good outside antenna would insure

most efficient reception. If all dealers would realize that more money could be made by selling good installations, than giving away poor ones, they believe there would be much less sales resistance to the idea. The use of such shielded lead-in wire as that manufactured by Cornish Wire Co., not only insures better reception but eliminates much of the interference otherwise picked up.

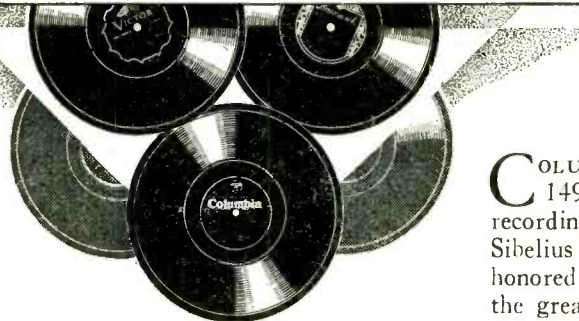
Filters for interference elimination constitute another avenue of profit for the White House Radio Store. They are sold in the same manner as the aerials, except for the fact that the need for them does not show up until after the set is installed. The salesmen, however, always take occasion to inform the customer that there may be some electrical appliance in the home that will cause interference, but that they can generally remedy it if informed of the trouble. Sometimes the service man makes the sale of one or more filters at the time he installs the set; sometimes it is made on a follow-up call.

While Zemansky and Fass handle a complete stock of phonograph records, cameras and other side lines, they find that the side lines actually allied with radio can be made the most profitable if pushed. It requires good outside antenna would insure dividends.



Customer Back—But Not for Another Radio Set

Selling Radio *by Recorded Music*



MAESTRO ALBERT WOLFF, conductor of the Orchestre de L'Association des Concerts Lamoureux, Paris, comes out this month with a splendid record, Brunswick 90121. On the first side is a French horn solo with symphony orchestra accompaniment, playing Romance in F Minor, by Saint Saëns. The French horn is seldom heard in solo work, but fills a definite place in the orchestra. It is a very difficult instrument to play, and is capable of rich and varied color, for both tender and majestic expression. The solo referred to is played by M. Devemy, of M. Wolff's orchestra, and is a fascinating work.

On the opposite side of this record are a pair of short numbers by the orchestra: Gopak, from The Fair at Soratchinsk, by Moussorgsky, and Flight of the Bumble Bee, a scherzo from Czar Saltan, by Rimsky-Korsokow. Both are piquant in character, as suggested by the titles, and are featured by the brilliant work of the violins, trumpets and piccolos accompanied by the deep rumblings of the basses, tubas and tympani.

TWO MAGNIFICENT baritone solos by Giuseppe De Luca, Victor record No. 3055, will have a strong appeal to those who love the human voice. De Luca is one of the outstanding baritones of the generation, and does great credit to the two selections recorded hereon. The first, Per Me Ora Fatala (This Passion that Inspires Me), from Act 2 of Verdi's beloved opera Trovatore, is very effective. De Luca is supported by the Metropolitan Opera Chorus and the Metropolitan Opera House Orchestra, conducted by Giulio Setti. The chorus is heard in the background, not particularly as an accompaniment to the solo voice, but as a whispered answer to the soloist's questions.

Gioielli Della Madonna (Jewels of the Madonna) is recorded on the opposite side of this record, with a splendid orchestral introduction and accompaniment. This is a serenade with very nice rhythm and is a catchy melody. De Luca is at his best in both selections.

A POPULAR NUMBER that has taken the fancy of music lovers of all types is that by Duke Ellington and his Cotton Club Orchestra on Victor record No. 22587. On the first side of this record is a selection called Mood Indigo, and the first strain convinces the hearer that it was well named. The Spanish title on the seal (evidently Mood Indigo wouldn't click with the Spanish speaking people, even if interpreted) is Estoy muy Triste—I Am Very Sad—and surely expresses the theme of the selection. It is a very plaintive melody, written by negroes; played by negroes; evidently typical of negro expression when in sad mood. It is full of minor chords that sound for a second like they are not going to harmonize with the next chord to come, so different are they from what we are accustomed to, but always do. The main strength of the accompaniment is the strumming of the banjos, entirely unsophisticated and characteristic of a negro gathering "down Mississippi way."

The other side of this record contains When a Black Man's Blue.

COLUMBIA MASTERWORKS Set No. 149 contains a splendid symphony recording of the works of Sibelius. Jean Sibelius is a Finn; not only the most honored musician in Finland, but one of the greatest of the living modern composers. Of his many compositions there are seven symphonies, the second of which is recorded in this album. His work is entirely uninfluenced by any so-called "school" of creative work, but is his own particular style of writing. There are two aspects of Sibelius which are made manifest in his music—his love of nature and his intense feeling for Finland. He paraphrases the Finnish folk-tune style freely for his thematic material, but his treatment remains strongly and insistently his own.

In the first movement of his Symphony No. 2 the opening phrases (strings alone) establish what becomes the rhythmic foundation stone of the movement. The wood-wind bears the first important theme in short and ejaculated tones, while the strings continue with the sweeping opening phrase. The horns have a prominent part in this phrase, followed by the appearance of the two bassoons and a drum roll. The second movement starts off with another drum roll, followed by 'cellos and basses, and passes into the main theme with the two bassoons. The pizzicato bass still keeps a steady and almost monotonous flow.

Long sustained notes on the brass add an air of bizarre grandeur. Oboe and clarinet introduce a concluding phrase after the principal theme. The second theme is folk song in character, more expressive than the first of a certain hope of happiness to come. It is carried by the brass, with string and wood-wind accompaniment. The third movement starts with a rushing scherzo followed by a quiet, simple legato theme played by the oboe with the accompaniment of wood-wind and horns. Then comes a long and exciting crescendo which enters, with majestic sweep, the finale. The finale is in three parts, triumphant in effect, coming to a climax of a major chord that brings to a conclusion one of the greatest of modern symphonies.

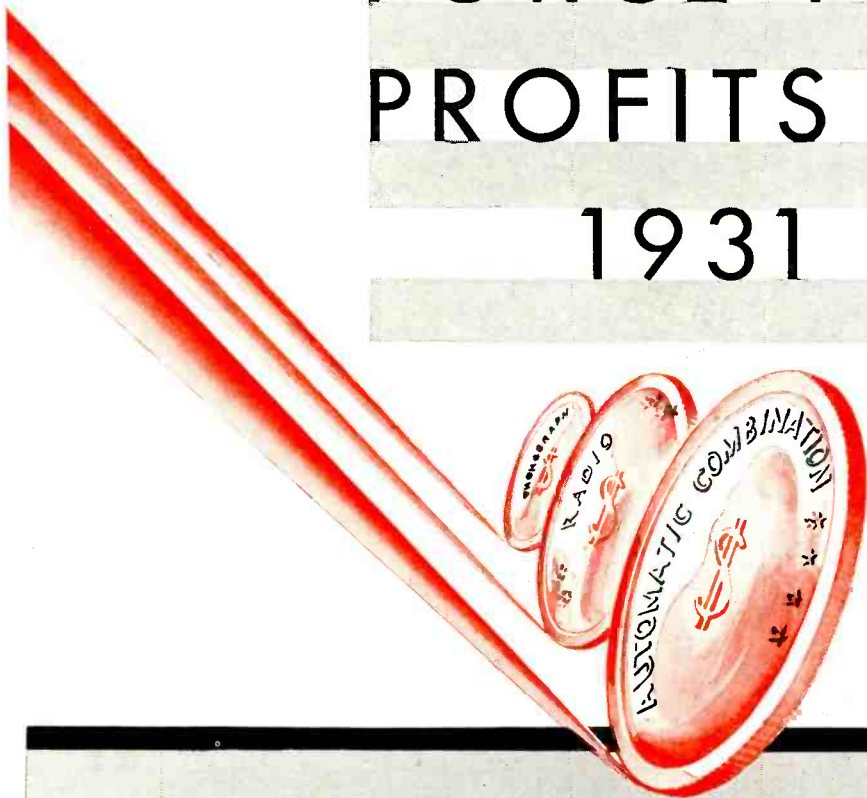


MAESTRO ALBERT WOLFF IN ACTION
RADIO FOR FEBRUARY, 1931

Capehart

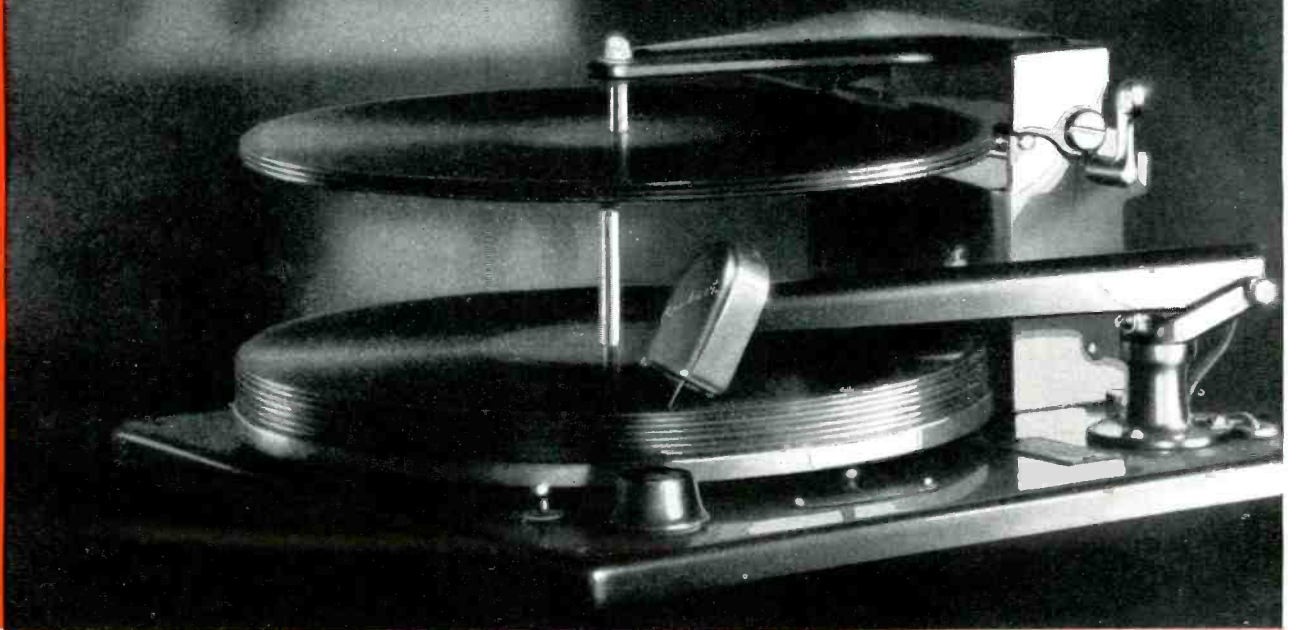
now brings to
the Entire Radio
Industry

A POWERFUL
FORCE FOR
PROFITS IN
1931



For Details See
the Following Pages

a **M**arvelous New



Capehart Model No. 10-12, for Home Instruments

World's Smallest Automatic Record Changer
Playing 10 inch or 12 inch Records—with Encore on Any Record
A Triumph of Engineering Skill

Developed for the Trade by the Pioneers and Leaders
in Automatic Record Changing Devices



Automatic Record Changer for the Home

A NEW achievement by Capehart—pioneer and leader in record changing mechanisms—designed especially for use in home instruments—to put the profit punch into 1931 sales!

This new mechanism handles both 10-inch and 12-inch records. Its compactness enables a fully automatic combination in a smaller cabinet than has ever before been possible.

Simple and dependable in operation, it embodies exclusive features of design and manufacture such as might be expected only of Capehart, with its background of leadership in the field of record changing devices.

In a word, the new Model 10-12 record changer adds that final factor of completeness to the radio-phonograph combination which alert dealers will recognize as the outstanding sales opportunity of the year.

Here is an automatic record changer that gives the entire radio industry a golden opportunity to capitalize the public's preference for effortless entertainment. It gives the user an instrument that is *entirely* automatic—and therein lies the tremendous force of its appeal.

The radio-phonograph combination is by all odds the in-

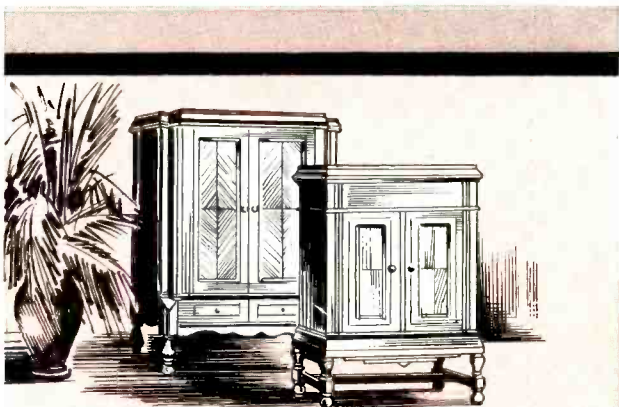
• • • • •
makes possible a
Vastly Improved
Super-Type Radio
Phonograph Com-
bination • • • • •
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Manufacturers will
offer to their trade

strument of the day. Radio's natural limitations have forced the combination onto the market. You have watched its amazing development. Now, with the perfection it attains through the Capehart record changer it is destined to become the giant of the trade.

In planning for 1931 it is up to you to face facts squarely. You know the trend in radio. You know the radio-phonograph combination is the logical development of this year. Remember then, the dealer who fails to feature the mechanism that makes the super combination possible, is passing up profits that can be his for the taking.

Ask your jobber about Capehart-equipped combinations. Get in touch with the manufacturers whose lines you handle. Or write direct to us for further information.

THE CAPEHART CORPORATION, Fort Wayne, Indiana

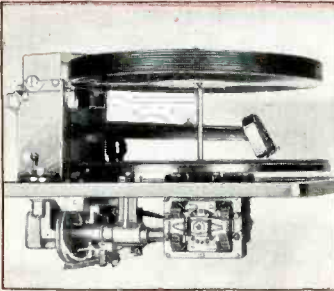


The compact size of the new Capehart record changer—14 $\frac{1}{4}$ " x 14 $\frac{1}{4}$ " x 7 $\frac{1}{8}$ "—makes possible a fully automatic instrument in a considerably smaller size than ever available before. This unit is equally adaptable to standard and full size instruments. The illustration above gives an idea of relative sizes.

Capehart



Model 10-12 in loading position. Note the lever on right side which throws the unit into position for 10-inch records when down or 12-inch records when up. With a special arrangement incorporating a double-throw master switch, one record can be placed on the turn-table, the adjustment set according to the size of the record and the magazine can be loaded while the pick-up automatically comes into position and the first record is being played.



Model 10-12—left elevation. Note the simple rugged construction. There are no adjustments to be made. All the timing revolves about one cam which insures positive operation.

Capehart Model 10-12 Condensed Specifications

Base Dimensions: 14 $\frac{1}{4}$ " x 14 $\frac{1}{4}$ " x 5 $\frac{3}{8}$ "

Overall Dimensions: 14 $\frac{1}{4}$ " x 14 $\frac{1}{4}$ " x 7 $\frac{1}{8}$ " above mounting board in playing position—to mount in a compartment as small as 15" x 15" x 7 $\frac{1}{4}$ " under the lid to top of mounting board

Capacity: 10 Records—either 10-inch or 12-inch size. This is the only unit of such compact dimensions that plays either 10-inch or 12-inch records. Thin paper records can be individually played as on any conventional phonograph.

Oilless Bushings: No oiling required except for turn-table motor.

Pick-up Connections: Pick up automatically cut off when it reaches stop groove, thus eliminating unnecessary scratching when instrument is not playing or records are being changed.

Tone Arm: Mounted on pivot and ball bearings to eliminate mechanical chatter. Highest type development to produce best quality of music over entire range of frequency.

Record Encore: Simply by lifting the magazine arm, the record then playing will repeat until magazine arm is lowered or current turned off. Last record in magazine will repeat until current is turned off.

Finish: Standard finish, DeWitt Brown lacquer. Parts subject to wear or handling are plated—presenting a highly attractive appearance.

Weight: 25 pounds.

Materials: Highest quality materials used throughout.

Two

Avenues to Profit with the New Capehart Model 10-12

NOTE particularly that Capehart's new Automatic Record Changer adds a great plus value to every radio-phonograph combination in which it is used. This plus value justifies a price which affords the dealer a splendid margin of profit. It guarantees, therefore, a substantial profit increase—even without the aid of the increased sales it is bound to produce.

And that is only the beginning. Each customer represents two profits instead of one. In addition to the original profit you gain a re-occurring profit on records.

Do not confuse these record profits with the kind you knew in the past. The Capehart Automatic Record Changer popularizes a *new* method of playing recorded music—the continuous method. Customers become interested in *whole* programs instead of single records. They buy accordingly.

Sell the combination! Sell the combination that is *entirely* automatic. Sell the combination that performs a *complete* function in the home. Sell the Capehart! Write direct to us for further information.

THE CAPEHART CORPORATION, Fort Wayne, Indiana.

Capehart

\$120,000 a Year from Service Alone

By JOHN F. IGNACE

PROMPTNESS and efficiency plus reasonable charges have enabled Albert O. Rabassa, trading as the Capitol Radio Service, Baltimore, Md., from a very modest and humble beginning to build up within six years the largest radio and aerial service company in the Monumental city.

For a number of years Mr. Rabassa had been employed in servicing radios for a local music store. His promptness and efficiency in rendering service won for him many friends. When he severed this connection former customers called him at his home for service. Because of this, he opened a business of his own.

At first Mr. Rabassa used the basement of his home for a workshop. No matter when his former friends and customers called upon him for service, he was right on the job. He rendered both night and day service. The promptness with which he attended to calls of distress from radio fans, and the efficient manner in which he rectified the radio's "illness" enhanced the good will he already enjoyed and prompted his customers to tell their friends. His reasonable charges were appreciated.

His business grew, and with its growth help was necessary. So he employed experienced and well-trained radio servicemen. The growth in business necessitated larger quarters which will shortly have to be abandoned for even larger space.

When Mr. Rabassa first entered business he did all the work himself and a passenger car was the only medium he had for transportation of himself and his equipment. Now, after six years, he has a staff of more than twenty servicemen in addition to about a dozen more who are employed on a part-time basis. He has two aerial trucks, four delivery trucks, seven cars. And he has just added a bantam, or midget car, for combined service and advertising purposes.

During his first year Mr. Rabassa made only about 500 service calls. This was not much, but it was encouraging. Each year the number of service calls has grown, until during 1930 more than 60,000 service calls were made. During the rush season more than 36,000 service calls were made in six months, or an average of 6000 service calls a month. This gives one an idea of the business that Mr. Rabassa has built up in the short span of half a dozen years, and it is the reason why the Capitol Radio Service is regarded as the largest radio and aerial service company in Baltimore.

Translated into dollars and cents more than 60,000 service calls a year mean a substantial amount of money. A complete radio test is given for \$1. Aerial installations are \$10 and \$12.50. Replacement of tubes and other servicing is charged at a proportionate rate. All charges, however, are considered reasonable by customers, in view of the fact that all work is guaranteed. If a test shows that replacement of tubes is necessary or some other work is required, no charge is made for the test, if the work is given the concern. This is a goodwill gesture which is fast winning friends. Conservatively, Mr. Rabassa said each service call averages \$2, though a better average is actually realized.

In addition to his own personal clientele, Mr. Rabassa does the service for twenty-four of the leading radio retailers of the city. In one large department store Mr. Rabassa has stationed four servicemen and a young lady who looks after the assignments and keeps a record of all work.

These servicemen erect aerials and service each new radio for the regular ninety-day service period. After the ninety-day service period is over the larger stores permit Mr. Rabassa to solicit the service business of the customers direct.

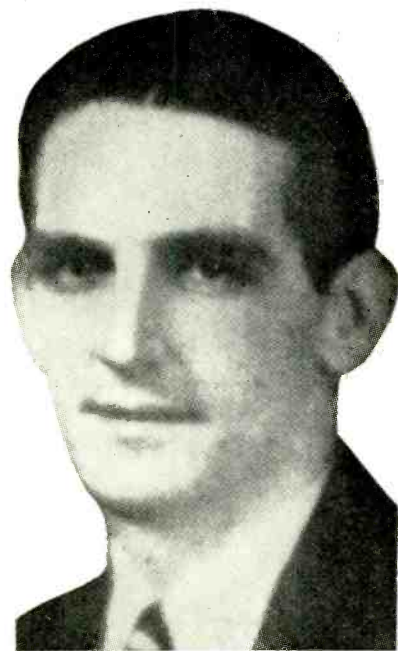
Mr. Rabassa said he secures about ten per cent of the customers in this way which helps materially in building up his business. For once they become his customers they remain his customers because of the promptness and efficiency plus reasonable charges with which he renders service. As many of the stores' customers continue to call upon the stores for servicing their radios even after the free period, Mr. Rabassa still gets the business. However, when he secures the service business direct his returns on the service are more profitable than when done through the stores.

Mr. Rabassa is equipped to render a complete service to the radio dealer no matter what the requirements may be. This has prompted many dealers to take advantage of his service. It lets them have complete service for their radio customers whenever they want it, eliminating the necessity for their employing their own service men. It lessens the overhead of the radio dealer and at the same time gives Mr. Rabassa additional business.

Mr. Rabassa employs a special night force, who are always ready to render service anywhere in the city. This night force works on a fifty-fifty basis with Mr. Rabassa. Mr. Rabassa gets the business, the servicemen do the work, and the payment is divided equally between Mr. Rabassa and the serviceman. The work of each individual is considered separately. For instance, if Mr. Smith gets an assignment from Mr. Rabassa for which a charge of \$10 is made, Mr. Smith retains \$5 and Mr. Rabassa gets the other \$5. This arrangement is very satisfactory. Without Mr. Rabassa these men could not, or perhaps would not get the work, and thus would earn nothing. With his cooperation they get the work and are thus able to make half of whatever the charge of the service call may be. It is argued that half a loaf is better than none, and so the service men are glad to get this business.

Mr. Rabassa has so arranged his business that he has all service men, whether full-time or part-time employees, at his finger tips and call. He is never short of men, no matter how many calls he may receive day or night. This helps materially in enabling him to render prompt service which builds up good will and enhances prestige. Mr. Rabassa never tells a customer that he will have some one call tomorrow. He realizes the radio fan wants the radio "illness" cured as soon as possible, otherwise he would not have called up. And Mr. Rabassa never fails. That is the beauty of having a large force at his call.

It is through these means that from a very modest beginning Mr. Rabassa has built up in half a dozen years the largest radio and aerial service company in Baltimore.

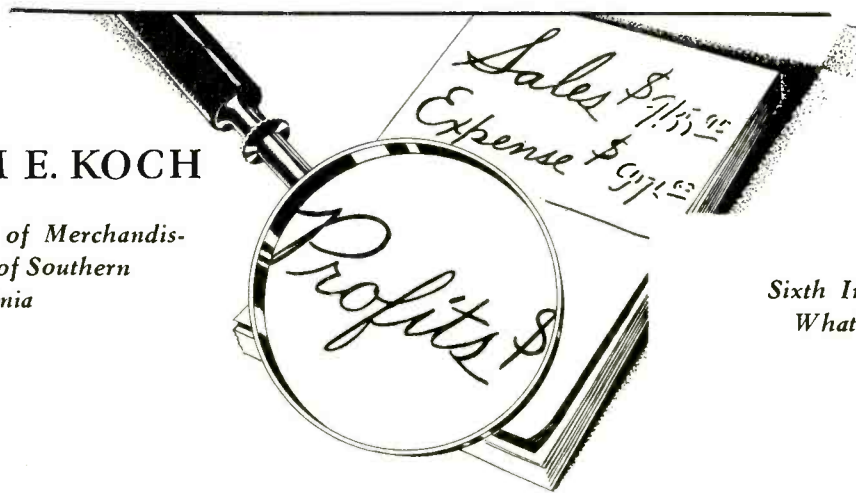


ALBERT O. RABASSA

Guarding the Profits

By WILLIAM E. KOCH

Associate Professor of Merchandising,
University of Southern California



Sixth Installment—A Study of
What's in the Selling Price

WHAT'S THE use of the radio retailer making a careful study of his selling price? Isn't it set for him by the manufacturer? Doesn't he operate on the basis of a discount, rather than the customary mark-up in most lines of retailing? Such questions may come up when we begin to think about "What's in your selling price?"

In the field of "silent" furniture, for example, the dealer usually is confronted with the necessity of setting his own retail price. Even his cost price may vary considerably according to his shopping and bargaining ability. He has, therefore, a fairly wide range of possibility for influencing the spread between his cost and selling prices. This results, of course, in strenuous price competition. Radio or "talkie" furniture, on the other hand, is merchandised more on the basis of a controlled specialty. The retail price usually is established by the manufacturer. The cost price is derived from the established retail price by means of a discount. Radio retailers undoubtedly are thankful for the existence of this more modern pricing system. They recognize its helpful influence on stability though they know that much more needs to be done along stabilizing lines.

And this brings us to the important point that a careful study of the selling price is quite as helpful in radio retailing as in the less standardized fields. In fact, the fundamentals remain absolutely the same. The selling price in one line of retailing is composed of exactly the same basic elements as the selling price in every other line, though different terms may be applied and the detail of procedure may vary.

Discount and Mark-Up

No essential difference is found between a discount and a mark-up, for example, except in the fortunately helpful influence of the discount method on stability through greater standardization and better price control. Similarity lies in the fact that both discount and mark-up represent the spread between the cost price and the aimed-at selling price.

Suppose a radio is listed at \$200, with a discount of 40 per cent. We simply arrive at the wholesale invoice price by the discount route—\$120. The "spread" is \$80 and is called a discount. In the case of a sideboard, however, the procedure usually is in the opposite direction. It may be bought for \$120 and priced to sell for \$200. The "spread" is exactly

The radio selling price contains exactly the same elements as do selling prices in other lines of retailing. No fundamental difference exists between discount and mark-up. An important difference does exist, however, between discount or mark-up and margin. Unplanned-for costs are the real mischief makers. A simple analysis helps us determine what's in the selling price and know whether it can reach the profit goal.

the same—\$80, though it is called a mark-up rather than a discount.

True, the mark-up route leads to a greater degree of mark-downs and price competition through lack of standardization. Yet we dare not assume that the more standardized discount method is free from such ills. We must remember that price reductions and price competition may be either direct or indirect. Any difference between the discount and mark-up methods lies in degree and detail of application rather than in principle.

Obviously, therefore, a thorough analysis of the selling price must take into consideration the significant fact that no fundamental difference exists between a merchandising method that is based on discounts and one that is based on mark-ups.

Discount and Margin

Another point that must be considered in analyzing the selling price pertains to the difference in meaning between either discount or mark-up and margin. This difference often stands as the "joker" in a profit-making program. It is based on the fact that we do not always succeed in getting all that the established retail price may indicate.

We must remember, in this connection, that the asked price and the obtained price are not necessarily the same. There may even be a difference between the contract price and the obtained price, between the paper price and the banked price—the cash that the transaction finally brings to the till.

The real selling price is what we obtain, not what we expected to obtain. With this meaning of the selling price we can say that the margin is the difference between the cost price and the selling price—the difference between what we pay out for the merchandise in buying and what we collect for it in selling. Price reduction is the difference between what we try to get and what we succeed in getting—the difference between what we aim at and what we hit.

We call it discount or mark-up before the goods are sold, and margin after they are sold. But be sure to remember that the final difference between discount and margin involves more than the recognized price reductions which fortunately are of relatively small consequence in radio retailing. It involves everything that in any way cuts down the income

resulting from sale, and not otherwise accounted for in our profit-making program.

The unexpected, unplanned-for and sometimes unsuspected costs are the real mischief makers. They invariably cut down the profit volume to the full extent of their existence. If we are to reach the aimed-at profit volume we must either eliminate the possible difference between discount and margin or account for it in planning.

Price Reductions

For lack of a better term, let us refer to the difference between discount and margin as "price reductions," and remember that there may be unexpected or unplanned-for price reductions. If you operate your business without any of these, you are, of course, making a perfect score. But bear in mind that unexpected or unplanned-for price reductions may occur even in the best regulated retail store.

A greater-than-expected allowance on a trade-in amounts, in the last analysis, to nothing less than a price reduction. An unexpected cost in the handling of a repossession is another example. Unplanned-for breakages and stock shortages and depreciations also show the same final influence on the bankable cash.

With this conception of unplanned-for price reductions in mind, we can establish the definite meaning of two of the most important words in the language of retailing—margin and profit—in this way:

1. Discount or mark-up less all price reductions (planned-for and unplanned-for) equals margin.
2. Margin less all cost of doing business (direct and indirect, visible and invisible, recognized and unrecognized) equals profit.

These two "lesses" represent problems in retailing that never are solved completely or permanently. They exist in "silent" furniture, in "talkie" furniture and in every other line of merchandising. Careful attention to them becomes more and more important as the influence of competition for the consumer's dollar, in its constantly increasing variety and intensity, becomes more effective. They contain much of the answer to the sometimes pertinent question: "Where have my profits gone?"

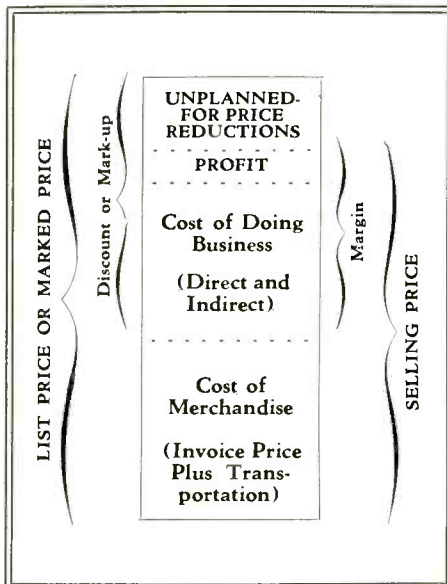
Of course, it is necessary to strive for more effective sales promotion. The big point to keep in mind is that business success is measured by profit volume, not by sales volume, and that both profit promotion and sales promotion are necessary. Thoughtful attention to the "lesses" is an important part of profit promotion.

What Do the Totals Say?

Do you ever think of your entire business for a given period as representing a single transaction? It certainly is helpful to do so.

Analyzing the selling price can be applied to one item, any group of items and to total sales. The greatest benefit comes from making the study from each of these angles.

In each case we start with the list price or marked price—the price we try to get. This amount is separated into its two main divisions—cost of merchandise and discount or mark-up. Since the cost of merchandise remains unchanged after the goods are bought, we turn our analysis more particularly to the division that represents discount or mark-up. The next step is to allow for unplanned-for price reductions which must include not only



A simple diagram, similar to the above, will give a clear picture of what's in your selling price and indicate whether it can reach the profit goal. Proportions must, of course, be made to fit your own business.

actual price cuts, but every element of cost and loss not definitely included in the planned cost of doing business. This always will be estimated, of course, but the estimate will become more accurate as our records become more informative.

When this element of unplanned-for price reductions is subtracted from the planned discount or mark-up, we get our expected margin which represents nothing more than our opportunity for profit. It also should be noted that the same element subtracted from the total list price or marked price will show the real selling price.

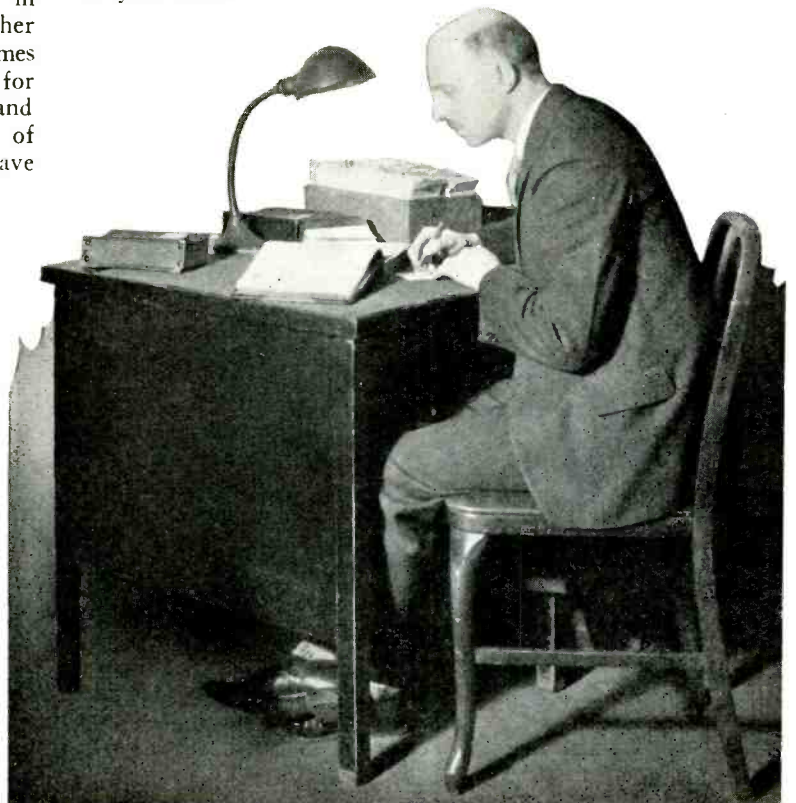
Then, when we subtract the planned cost of doing business from the expected margin we come to the bull's-eye of the business target—PROFIT.

This simple analysis can be made with figures alone, in percentages. It also can be pictured clearly by means of a diagram similar to the one shown in our illustration. The picture will tell you what's in your selling price and indicate whether it can reach the profit goal.

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EDITOR'S NOTE: Mr. Koch's next profit-promotion lesson in RADIO will be on "Turning Necessary Expense Into Profitable Investment."

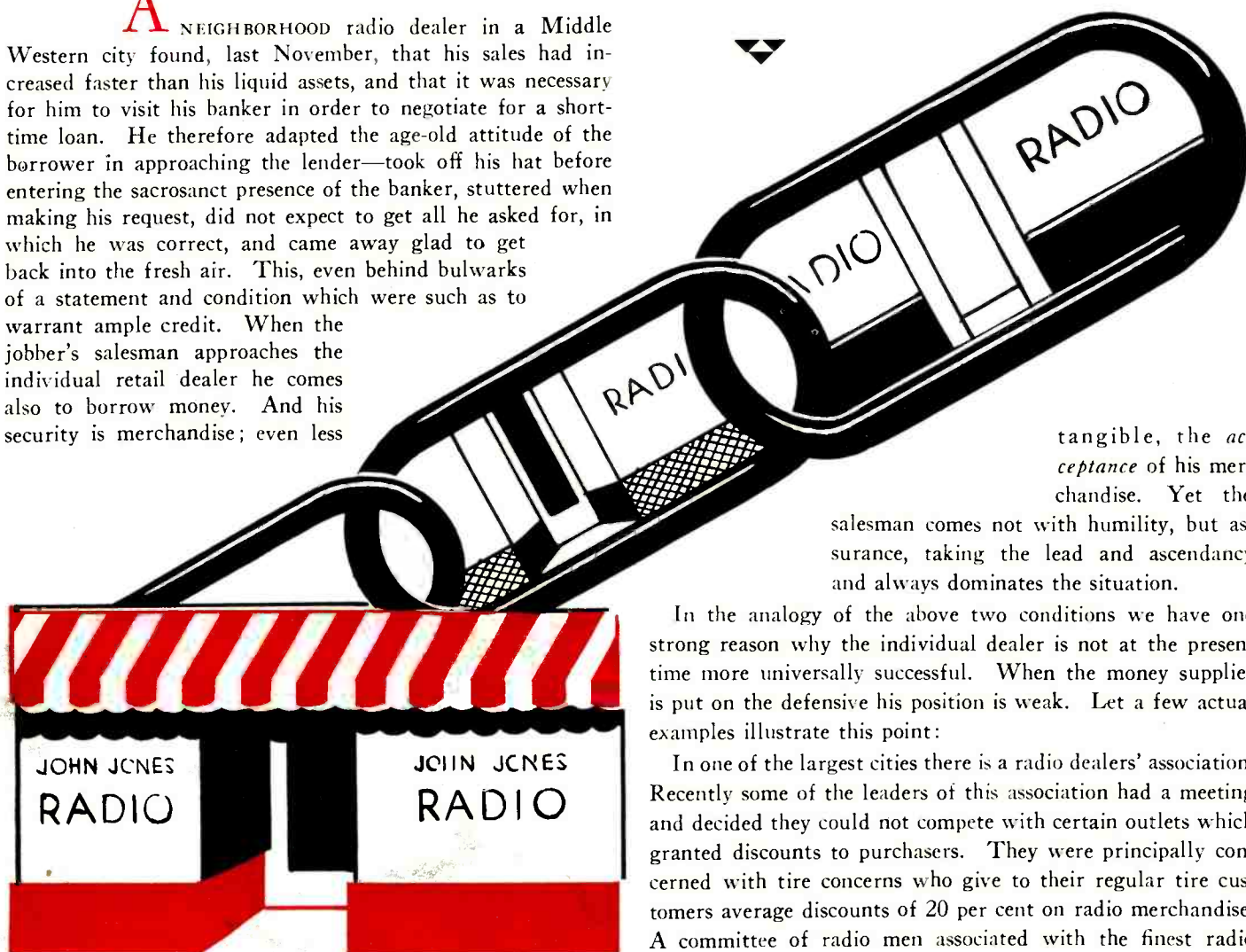
This series of articles has been prepared by one of the foremost authorities on the subject of retail management. In Mr. Koch's capacity as educational director of large retail firms he has had broad experience in the practical use of the methods described here. He is now Associate Professor of Merchandising in one of the largest universities in the country, and has published a most helpful and practical book on the subject; a book that has become extremely popular as an aid to retail merchants: "Methods of Retail Management." It will pay you to devote a little study each month to these articles. Try them out in your store, and tell the editors of RADIO how they suit your needs.



EVEN UP THE

“We must hang together,” said Ben Franklin, “or surely we shall hang separately.” If the individual dealers can band together to compete on equal grounds with the big chains, they can improve conditions for themselves, the distributor and the manufacturer. The only reason the manufacturer insists upon selling the so-called “illegitimate” outlets is that the “legitimate” dealers, as individual buyers and retail outlets, are *too weak* to do him an equal amount of good.

A NEIGHBORHOOD radio dealer in a Middle Western city found, last November, that his sales had increased faster than his liquid assets, and that it was necessary for him to visit his banker in order to negotiate for a short-time loan. He therefore adapted the age-old attitude of the borrower in approaching the lender—took off his hat before entering the sacrosanct presence of the banker, stuttered when making his request, did not expect to get all he asked for, in which he was correct, and came away glad to get back into the fresh air. This, even behind bulwarks of a statement and condition which were such as to warrant ample credit. When the jobber's salesman approaches the individual retail dealer he comes also to borrow money. And his security is merchandise; even less



tangible, the acceptance of his merchandise. Yet the salesman comes not with humility, but assurance, taking the lead and ascendancy and always dominates the situation.

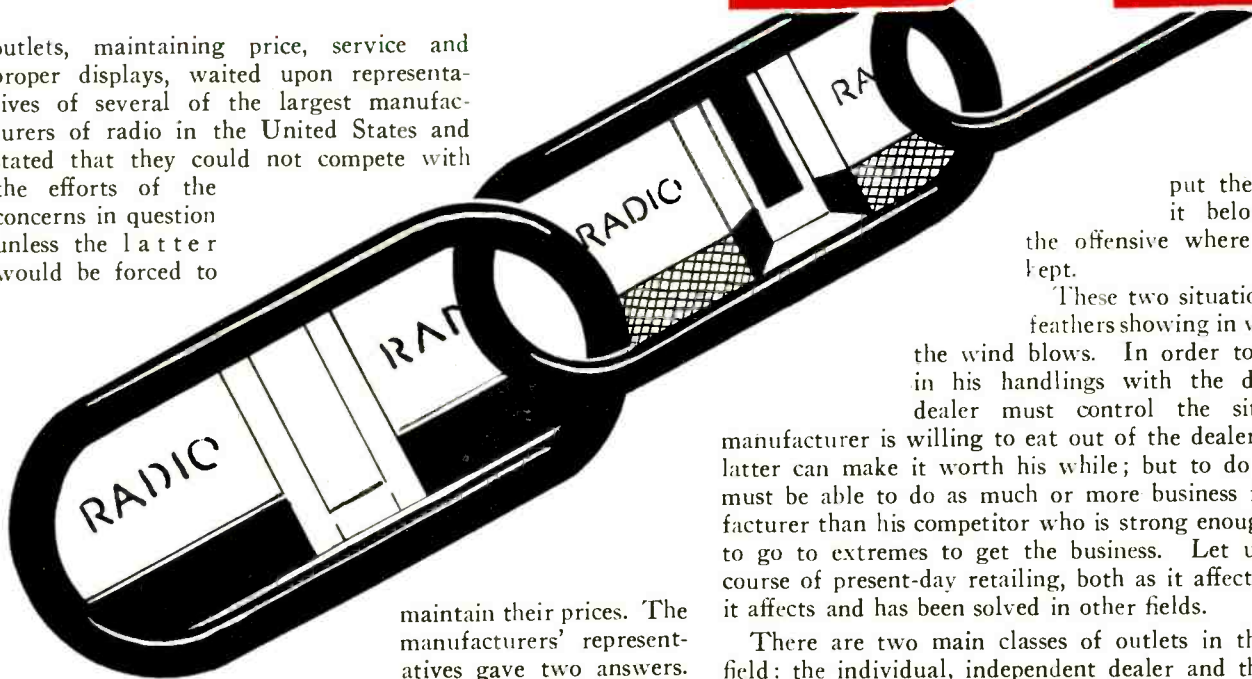
In the analogy of the above two conditions we have one strong reason why the individual dealer is not at the present time more universally successful. When the money supplier is put on the defensive his position is weak. Let a few actual examples illustrate this point:

In one of the largest cities there is a radio dealers' association. Recently some of the leaders of this association had a meeting and decided they could not compete with certain outlets which granted discounts to purchasers. They were principally concerned with tire concerns who give to their regular tire customers average discounts of 20 per cent on radio merchandise. A committee of radio men associated with the finest radio

ODDS



outlets, maintaining price, service and proper displays, waited upon representatives of several of the largest manufacturers of radio in the United States and stated that they could not compete with the efforts of the concerns in question unless the latter would be forced to



power, made it possible for that dealer to

put the blame where it belongs; to keep

the offensive where it should be kept.

These two situations are merely feathers showing in which direction the wind blows. In order to be successful in his handlings with the distributor the dealer must control the situation. The

manufacturer is willing to eat out of the dealer's hand if the latter can make it worth his while; but to do so the dealer must be able to do as much or more business for the manufacturer than his competitor who is strong enough and willing to go to extremes to get the business. Let us analyze the course of present-day retailing, both as it affects radio and as it affects and has been solved in other fields.

There are two main classes of outlets in the radio retail field: the individual, independent dealer and the chain store. The mark-up or difference between cost and selling price of merchandise is so preponderantly in favor of the chain outlet that it makes competition by the independent dealer impossible. In many cases the chain outlet can sell the independent dealer at a price including a profit at a lower cost to him than he can buy from the distributor. The advantages chain store buying has over individual buying are: 1. Possibility of larger discounts by reason of larger purchasing power. 2. Concentrated advertising. 3. Transfer of merchandise from one branch to another, thus keeping down inventory. 4. Ability to finance and carry own paper, thus allowing the financing profit to remain as an additional merchandising profit and being able to grant lower financing charges. 5. Servicing, delivery, unpacking and repairing can be done from one centralized location, thus cutting down overhead. 6. Collections can be better regulated and credit controlled, and 7. Larger lots of merchandise to be liquidated can be offered. There are other advantages which need not be gone into.

The chief advantage of the individual dealer is the maintenance of the personal element which goes far toward establishing good will, but which is hard to substitute for better value and publicity.

How has this lop-sided situation been overcome in the grocery, clothing and hardware business? Without losing their personal identity the individual dealers have formed associations which have all the advantages of the chain store outlets, as well as the independence of the individual. If we are to learn from the history of merchandising trends, the radio dealer must be guided to hold his position. And RADIO is planning to tell in detail how this has been accomplished in other lines and how the idea may be incorporated by the radio dealer.

maintain their prices. The manufacturers' representatives gave two answers. To the radio dealers they said: "We will see what can be done." To the tire concerns they said: "You pay your bills and we will certainly have to provide you with merchandise; but do not spread it around." . . . And what they did was *nothing*.

What the dealer organization should have done was request that the representatives of the manufacturers call upon *them*. Then, being definitely on the offensive, they should have asked for the cold facts about the discounting outlets. If the situation was unsatisfactory to the committee they should have informed the representatives that they and the dealers they were buying for were not sold on the distributors' methods and therefore were not interested in handling their goods. Goodbye!

From that time forth it would have been the manufacturers' representatives who would be walking into the sanctum of the association buying committee, hat in hand and sweat on brow.

A second example shows how a chain store keeps the manufacturer in the position of defending his own goal. The largest outlet for distressed merchandise in the United States requires that after the concern has made a purchase of radio merchandise to be liquidated the manufacturer is required to supply a letter stating that the sale was solicited by the manufacturer and made in good faith for liquidating purposes. The purpose of obtaining such a letter is to keep the manufacturer's representatives from going around among his smaller dealers and claiming that the larger and secretly desired outlet "cannot be kept in line," "has slogged over again," and with other opprobrious epithets putting the onus on the larger outlet to keep his own skirts clean. The *strength* of the chain, due to its *buying*

Putting the Automatic Record Changer into the Home

Description of the new Capehart Automatic Record Changer which is built to fit a radio-phonograph console of small size. It should open up a new field for radio dealers.

AN ENTIRELY new automatic phonograph record-changing device for use in instruments for the home, has just been announced by the Capehart Corporation of Fort Wayne, Ind. The new mechanism has been developed especially for manufacturers of radio-phonograph combinations, and will be available to the public in the instruments of a number of leading makers in their 1931 lines.

In announcing the new unit, Mr. Capehart said that although it had only recently been presented, following exhaustive tests of its operation in the Capehart laboratories, the mechanism has been enthusiastically received by radio manufacturers and distributors.

The base dimensions of this instrument are $14\frac{1}{4}$ inches by $14\frac{1}{4}$ inches. From the top of the mounting board to the top of the record magazine is only $7\frac{1}{8}$ inches, so that the base will mount in a compartment as small as 15 inches by 15 inches by $7\frac{1}{8}$ inches, under the lid to the top of the mounting board. From the bottom of the base flange to the bottom of the turntable motor is only $2\frac{5}{8}$ inches.

"We have here," says Mr. Capehart, "the smallest unit which will accommo-

date both 10-inch and 12-inch records. The magazine will accommodate 10 records of either size at one loading, and the shift from one size to the other is made simply by the movement of two small levers, accomplished instantaneously.

"Another important feature is that no oiling is required except for the turntable motor. All parts which might require oiling, have oilless bushings. This is typical of the manufacture of the unit throughout. Only the highest grade materials are used and the construction is sturdy and substantial. The base is pressed out of cold rolled steel and is beautifully finished in brown lacquer.

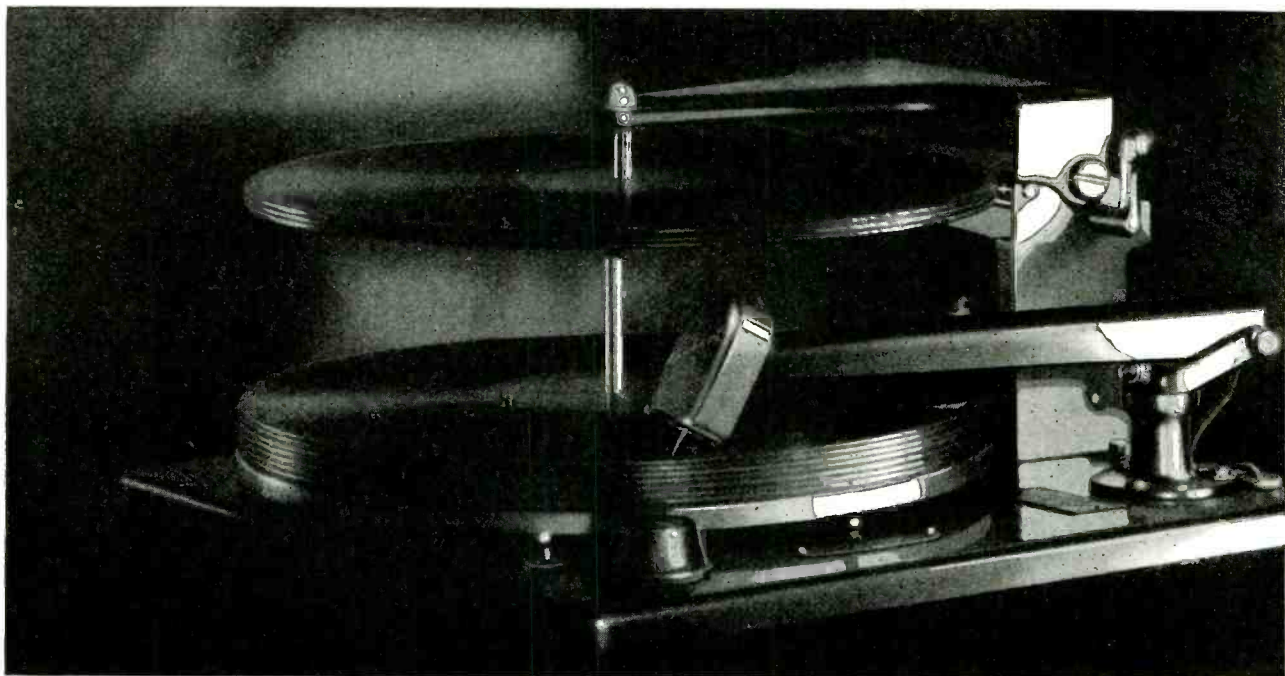
"The arrangement of the leads from the pick-up is such that no needle scratch is transmitted while the pick-up is in the change groove. The tone arm has a counter-weight spring to give the desired weight on the needle. This tone arm, which is mounted on pivot and ball bearings, doing away with any possibility of mechanical chatter, is of a type which has proven most effective in producing highest quality music over the entire frequency range.

"Any particular record may be repeated by simply raising the magazine

arm. The mechanism will then keep repeating the record which is on the turntable until the current is shut off or the magazine is placed in operating position again. When the last record in the magazine has been placed on the table and played it will continue repeating this record until the switch is turned off.

"There is no doubt that radio-phonograph combination instruments with the automatic feature provided by this new type, dependable record-changing mechanism, will be one of the most important profit factors in the radio business for 1931," continued Mr. Capehart. "The public has become accustomed to continuous and effortless music, through the radio. But the inevitable limitations of radio have renewed interest in the phonograph which supplies personally selected music without regard to uncontrollable outside conditions."

Mr. Capehart said that individual manufacturers would make their own announcements of the models which will include the new record-changing device. He pointed out that such models would undoubtedly be available in a range of cabinet sizes and styles.



HOME RECORDING

The New Infant in the Home Field of Entertainment

By J. EDWARD JONES

While home recording has been branded a toy by those interested in reproduction only, it is found that owners of this type of equipment are getting endless amusement from it. It appeals to the imagination—and has led many buyers away from the purchase of a midget receiver.

THE 1930-31 season will go down in the history of home entertainments as the introductory period of recording in the home. Its introduction has met with instant approval by the general public—instant approval, like all innovations, as a fad.

Home recording itself is but a forerunner of, and will prove to be but a part of what promises to be a very important factor in the field—talking movies in the home.

It requires but a small amount of knowledge, mixed with considerable imagination, to follow the sequence of coming entries in this vastly important field of home entertainments. We have the home movie camera and projector well established. Now we have home recording. The near future will see these two wedded and synchronized. Then will come television, first through films, probably silent, then through moving film with synchronized sound effects. After that at a considerable later date we will have television of moving objects and events simultaneously as they occur, with and without aural accompaniment.

The foregoing, while still in the offing, is not pure imagination as all this is being done in the laboratory today with more or less success. Several other devices using the radio set as a base are also awaiting proper arrangements for distribution to swell the list and scope of home entertainments. Meanwhile we will return to our subject matter already with us.

Like many great inventions and useful devices, home recording is simplicity itself. Given the average radio-phonograph combination with a good audio system, good turntable and electromag-

netic pick-up of suitable design, we have the essential electrical and mechanical arrangements which, with the development of a suitable record and needle comprise the entire system.

As simple as this may sound, many setbacks were experienced before the device could be put on the market. The development of the record alone was a gigantic task. A material must be found at once impressionable yet durable. It was out of the question to first produce a matrix of hard material then mold copies from it. A material had to be found that would take the vibrations and then immediately reproduce them 40 or 50 times.

Also, an electromagnetic pick-up had to be developed that would act as a producer as well as a reproducer, for it was not deemed practical to have a special cutting head. How well this was done is now common knowledge, so that with only an additional weight on the pick-up head and a special needle, we have home recording far superior in itself to either the first phonographs or the first radio receivers.

The home recording instrument consists of a radio-phonograph combination with good frequency response. Two essential features are a sensitive low impedance pick-up, and a powerful induction disc motor for the turntable, and these features are found in many combinations on the market. The low impedance pick-up is used, because, in addition to its usual advantages it more nearly matches the impedance of the voice coil circuit in which it operates while cutting. The induction disc motor, while proven the most adaptable for electric phonograph turntables, still requires considerable development to obtain more



power before 10 and 12-inch records can be produced in the home. It requires more energy to produce a 6-inch record suitable for home use than it does to reproduce a 12-inch factory product.

In the complete machine of today we do four things. We have the straight radio; recording of radio programs coming over the air; recording of voice, music, etc., originating in the home, and the reproduction of all records, all of which requires a four position switch of elaborate design.

The production of records requires some practice to obtain best results. The proper tuning of the radio set is very essential for recording of radio program. The set should be tuned correctly with switch in radio position. Considerable care should be exercised that signal is quite loud and tuned on the peak to eliminate side-band cutting. Then the switch should be thrown to radio recording. The speaker now merely acts as a monitor at considerably less volume for most of energy is being taken by the pick-up. The record should now be produced without changing the tuning or volume control.

In recording the voice or any recording where the microphone is used, experimentation will tell best how loud to talk and how close to the mouth the microphone should be held, but generally a loud clear voice close to the mouthpiece will make the best records.

The device has a multitude of uses. Greetings by voice far more intimate than the written word can be sent to distant relatives and friends. Children's voices and sayings can be preserved, singers and musicians can check their progress on this useful, practical, entertaining step in home entertainments.



*"Let's go back
to Heaven,
Gabriel."*

By N. EARL BORCH

IT WAS mid-afternoon and the alley was deserted, except for a couple of stray cats and myself, as I dumped my equipment at the base of a high-voltage pole and started tapping it with my sixteen-pound sledge hammer. After making it vibrate a bit I picked up the five-foot horn and held it to my ear, listening intently for the faint buzz that had brought me to that spot, when a heavy hand took a firm grasp on my shoulder and a gentle but persuading Irish voice behind me rumbled soothingly:

"Come on, Gabriel, me bye. Let's be going back to Heaven."

"I'm not Gabriel, officer," I said. "I'm just an interference investigator trying to locate the source of a buzz that is bothering radio listeners in this neighborhood." And I began to pull out some letters that gave me permission to pry about empty lots and back alleys.

"Yes, I know all about the buzzes, Gabriel," said the cop, dragging me along; "but the folks are probably worried about you."

As no amount of arguing would take effect, I finally yielded and went into the police station with him. Once there it was easy enough to convince the captain that I was still in my right mind, and after telling him what might be wrong with his radio set and what I thought of this and that and the other receiver I was allowed to go back to my work.

Trials and of an Interfer- tigator for a Asso

Another time I was out with a couple of men from one of the power companies. We socked the pole a couple of times with the hammer and were in the midst of tuning in on the portable receiver when the shriek of many sirens aroused us. Down the street came nine fire trucks, all ready for business. It seems that the jarring of the pole had tripped the fire alarm located there, and busted up the line where the men were waiting to be paid off. They were not in any too good humor when they found that there was no fire.

Some people get the wildest ideas about radio. There was one place where the whole family insisted that the stove pipe was picking up radio programs and playing them. They couldn't sleep at night so they called the Association. Of course when I arrived the music had stopped for the first time.

Some other people had become accustomed to the regular, even growling of their water pipes, realizing that it was merely a case of air in the pipes due to bad washers. But when the growling took on the character of radio music, with the lovely strains of a symphony orchestra, they decided it had gone too far. So they called for an investigation to determine why they should be bothered with radio programs when they didn't want them. Or perhaps they wanted to know how to tune in a mystery play on the faucet. At any rate, it was soon discovered that the growl of the pipes was changing pitch up and down the scale, depending upon the number of faucets that were turned on by the neighbors.

That one was almost as bad as the elderly lady whose blood pressure went up fifteen or twenty points when the people living on the top floor of the apartment house put an aerial on the roof.

"I keep going around with a terrific pressure in the top of my head," she complained. But an hour's convincing argument as to why the radio had nothing to do with it proved futile so I traveled on to the next victim of circumstances.

About the biggest thrill I have got on this job is the night I was working in a dark alley, rapping poles and trying to tune in a leak. A man came out on his back porch and wanted to know what I was about, prowling around in people's back yards like that. I informed him of my task as well as I could and thought I had satisfied him, for he went back into the house without another word. In a few minutes

Tribulations ence Inves- Radio Trade ciation

I heard the door creak and was startled by three shots from a high-powered rifle or shotgun. I didn't stop to inquire whether my challenger was trying to pick a good live target down in the dark alley or merely exercising the ejector of his gun by tossing some lead in the general direction of the Heavyside layer, but grabbed up my junk and hit it out for my car.

About the luckiest fellow I ever ran into was a man who clipped some wire from a fallen eleven-thousand-volt line between the time it threw the circuit breaker and the moment the dispatcher threw it in again. Some kids had been shooting at birds, and either by accident or otherwise threw a hunk of lead into one of the pole insulators, bringing down the line. When one of these lines comes down it shoots the circuit breaker, but the dispatcher, not knowing whether it was merely caused by an overload or not, throws it back three times, waiting sixty seconds between throws. In those sixty seconds this man clipped the wire off as high as he could reach and started to roll it up and take it home just as the juice came on again and the wire started to thrash around. One of the power company's engineers and myself arrived just in time to explain the situation and thank him for the wire.

An 11,000-volt line is no joke when it comes down and starts playing around. One landed about ten feet from where I was standing with my portable receiver once, and thrashed around like a chicken with its head off. It gouged holes in the concrete as large as a man's head, and sounded like a salvo of a hundred sixteen-inch guns all going off at once. The power men who have to handle that stuff have to know their onions.

Got a big laugh out of an "expert" radio service man not long ago. He had put in a complaint about some interference that was killing reception in his house. I found it to be cluttering up the air for two blocks, and finally located it in the service man's own house. It was a service switch with a bad connection, through which the current was feeding so poorly that the blade was red hot.

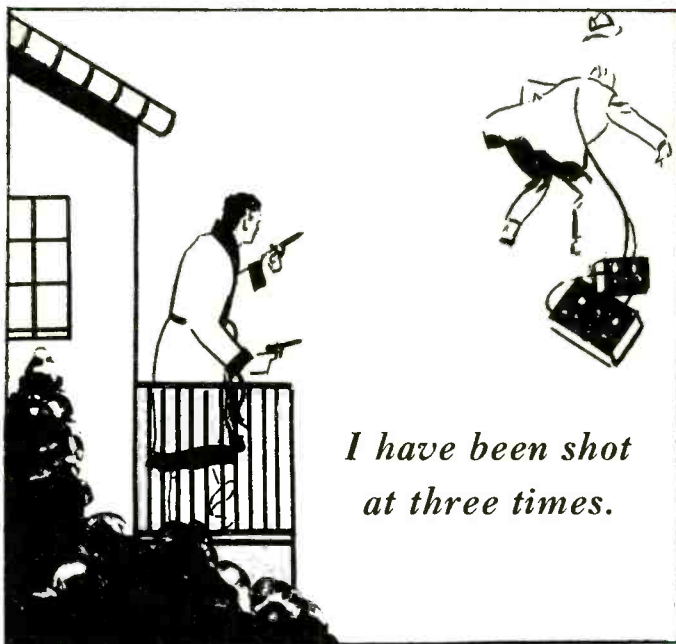
Three times have I been in a bootleg joint when it was raided. On line of duty, of course. I usually have a pretty hard time explaining the situation to the hard-boiled cops who aren't interested in excuses. The last time the barkeeper had a couple of men lined up along the bar drinking soda water, so

I guess he was pretty well informed of the inside activities of the police department.

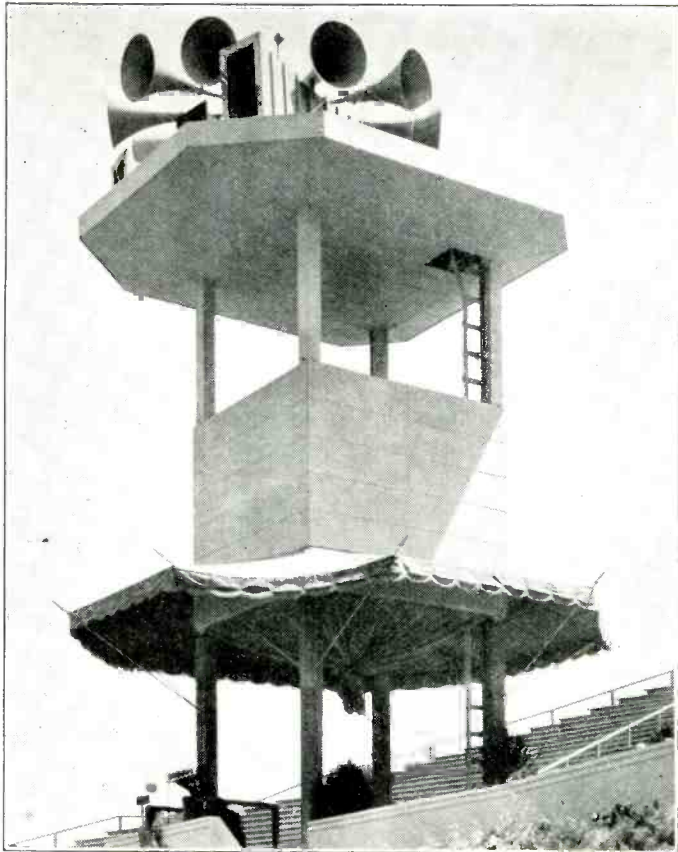
I was waiting for the auto ferry one night when a couple of young chaps who were looking for a free ride came over to speak to me. They had noticed my radio equipment, they said, and as they were radio men by profession they wanted to know all about it. I let them in and took them across, explaining the workings of my trouble shooters and other equipment and talking about the hard times in the radio game (the general line of conversation between radio men), and left them at a point where I was to do some investigating. I had a two-hour job ahead of me, following a high voltage transmission line a couple of miles across fields, so I took my equipment out of the car, hoisted it on my back and started on my hike. When I returned to the car, after finishing my search, I piled the stuff in the back seat, started the engine and began to drive off. I noticed that one of the plugs wasn't firing so stopped and climbed out to fix it. I raised the hood and saw that one of the wires was off, but just as I reached for it a voice in back of me told me to "Stick 'em up," and I did. By a strange coincidence (???) I recognized the same two fellows that I had transported across the bay earlier in the evening. One held the gun on me and the other started to ransack my car. The fellow who had me covered began to wobble a bit and I gave him a kick in the stomach, jumped in the car just as the second fellow turned the corner down the street a ways, empty handed, and made that bus go faster on five cylinders than it ever did before on six. I am still wondering whether the fellows were hard up and needed cash or desired the equipment to tinker with.

An elderly lady in a fine apartment house afforded me an amusing incident not long ago. She had not lived in the neighborhood long and had not made any friends, I guess. Anyway, she noticed an ad in the paper that said the radio interference man would come out and check up on her radio conditions free of charge, and she took advantage of the occasion. Upon my arrival I looked over the radio situation and found it to be perfectly satisfactory whereupon she admitted that she was very desirous of having me give an opinion of some seventy-five-cent lavender soap she had bought.

These experiences read like fiction. They are not, however, but are all true incidents that have happened to Mr. Borch; incidents that would have been very aggravating except for the fact that they contained a humorous slant.—Editor.



*I have been shot
at three times.*



Sound From

his office. One high school in Milwaukee was recently equipped with late type standard equipment, and contracts were recently awarded for four more high schools to be equipped at once. In the city of Providence, R. I., an award for complete systems for fourteen schools was recently given. These two instances are given merely as an indication of the fact that the school field, as well as many others, is open now, and is not a picture to be looked for in the future. Every manufacturing plant of any size needs a system for the purpose of being able to put an immediate call for any executive or employee in every portion of the plant, and letters from numerous manufacturers testify to the actual value they have derived from this feature as well as from improved morale and actual worker efficiency increase, by furnishing radio music to the employees.

Apartment houses and hotels furnishing programs to the guests are able to keep their places filled as against competition with others not so equipped, and have the desirable feature of being able to regulate the volume from the control panel, preventing the use of too high volume by inconsiderate guests to the annoyance of others.

Stadiums, race tracks, swimming pools, and every out-of-doors place where people congregate, form real prospects, in some cases for rental of systems, which can be made a very profitable angle of the business and which contact frequently leads to a sale of the equipment; and as these outdoor installations require a relatively large amount of power amplification and number of speakers, the amount of money involved eliminates from the group address business, the old seasonable objection to the merchandising of radio receivers. Skating rinks, dance halls, indoor pools, lodge halls, clubs, civic and privately owned auditoriums, miniature golf courses, bond houses, and others too numerous to mention, are all being equipped by the more progressive owners. So much for the field which, however, has only been touched upon.

In the sale of sound systems, at this stage of the game, some conditions have arisen that are somewhat unusual, and will bear discussion at this point. In more standardized lines of merchandise, bids received from different concerns will only vary over a reasonable percentage from one another. But due to ignorance, in many cases, of some of the bidders in the "sound" field, as to the amount of amplification necessary to insure satisfactory operation of the system, the type and quality of the apparatus they intend to furnish, and other causes, it is a very common occurrence for a prospect to receive bids for furnishing and installing a given number of speakers, necessary amplification, etc., which vary three hundred per cent from each other, and numerous instances have shown a greater variance than that. Such a situation naturally is most confusing to the prospect, and about the only method of procedure for the dealer who has intelligently bid one of the higher figures is to explain to the prospect the conditions surrounding the sale of this type of material, and to rely on his personal reputation, and that of the manufacturers of the material he will use, to convince the prospect that he is not attempting to obtain more than a legitimate price for the

THAT the field for the sale and installation of sound material is of immense proportions is a fact that is patent not only to the radio industry but to many thinking men entirely disassociated from that line. In view of this fact, the question naturally arises as to why there are, at this moment, an unbelievably small number of properly financed, responsible dealers engaging in this profitable and highly interesting line of merchandising.

In analyzing this situation, the apparent reasons for this condition are that the dealer realizes that without detailed information the selection of the proper type and amount of material to successfully handle the installation is impossible, and it will be the purpose of this and other articles in this magazine to put such information in his possession, in a fully comprehensive form.

The other major objection is, undoubtedly, the wide variance in the cost of a sound installation. There have been so many makeshift jobs, usually priced way below the high class installation, that the dealer is confused. Results, however, speak for themselves, for in this business, as in every other, the buyer gets just what he pays for.

Happily, there are now in operation throughout the country, quite a few well handled installations and, in consequence, those of us who are in direct, intimate touch with this field, know that the "sound game" is actually starting to burst open at this moment. Naturally, the first dealers in the various centers to get in some well handled installations are going to be in the position of leadership in this business, which will, from a dollars and cents standpoint, be far greater to the dealer than the sale of radio receivers.

As to the field, while it can be visualized by anyone, a few specific instances may be noted. It is being generally predicted that within two years' time, practically every school and college in the country will be equipped with a speaker in every room, as well as assembly halls, gymnasiums, cafeterias, and study halls; permitting any or all of these points to receive programs via radio, pick up programs from the stage of their own auditoriums, and announcements by the principal from

Profits

By W. P. BRUSH

Sound Installations

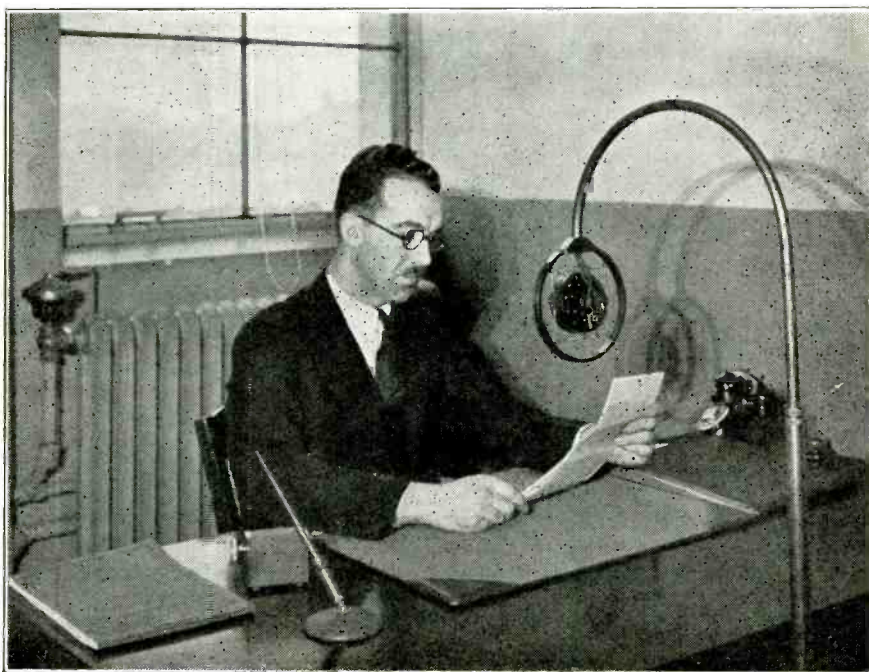
equipment, and that the low figure represents either inferior material or too little of it or both. This is usually very easy of accomplishment. In the case of schools where there is not sufficient money available to the Board for the purchase of a system, in not a few cases the Parent-Teacher Association and, in some instances, the student body or the graduating class will frequently purchase the equipment, if properly approached. In the case of one state college recently equipping their stadium, a canvass of the larger merchants of the city was successful, and several of the leading stores and one of the banks donated the necessary funds for the system.

While demonstrating this type of material involves some outlay, not only for the necessary equipment, but also in labor, due to the many ignorantly made installations, it is almost necessary; and as the amount of the sale is generally many times that of a radio receiver, the expense is warranted. As in the days of radio receiver selling, it is very common to receive a request for a demonstration of equipment to cover some event, but as the rental of equipment is seemingly a part of the picture, and with some of the men in the business a very profitable one, the proposition can be made to charge the regular rental charge, to be rebated if the purchase is made. Rental charges should be kept high enough to be really profitable, and also as a discouragement to the continuous renting versus the purchase of the equipment. Such charges are naturally dependent on the size of the community, the amount of equipment necessary to cover the gathering, etc., but a minimum of twenty-five dollars for the smallest amount of equipment, for use during one day or evening, even in a very small township, should be held to, for the reasons above. In the large cities, where any size gathering is to be handled, requiring the use of two speakers, amplification and associated equipment, a one hundred dollar minimum is pretty well adhered to.

In permanent installations, where the wiring for speakers, microphones and amplifiers runs into considerable work, and on any and all permanent jobs in localities where there is an electrical worker's union situation, the dealer can best handle that phase of the installation work by having an estimator for a local wiring concern look over the job with his own estimator, and upon receipt of a bid from the contractor for doing the job in accordance with the specifications furnished by the dealer, incorporate that bid as a portion of his own to the prospect, adding a small amount to cover his cost of supervision.

In this way, and by having the amplification completely assembled by the manufacturer, ready for operation, the merchandising of this material takes on almost the character of handling package goods such as radio receivers.

THE large number of inquiries being received by manufacturers of amplifiers, speakers and associated equipment; from radio dealers throughout the country, for information as to the necessary equipment for group address systems, indicates both that the dealer is aware of the very large, profitable field existing for this type of merchandise, and that, while closely allied to radio, specialized knowledge in both sales and installation is very essential to the successful merchandising of this type of material. Due to the fact that only recently has the general dealer interest turned to this picture, little or no authoritative data has been available. Starting with this article, RADIO will offer a series of articles dealing with the field, sales hints, and in later issues, understandable, non-technical descriptions of the various types of installations to be encountered, both indoors and out; which will enable the service man or salesman of normal ability to determine the amount and type of material best suited to each installation. All of the information contained in this series can be depended upon to be accurate and reliable, and is not of a theoretical nature, but has been obtained as the result of several years of practical experience in the field, and direct comparative testing of the various types of available material, under the actual operating conditions encountered. We honestly believe that, to those dealers who are contemplating engaging in the sound business, these articles by Mr. Brush will be of immeasurable value.



TOBE Filterette

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VOL. 2, NO. 2.

FEBRUARY, 1931

CANTON, MASS.

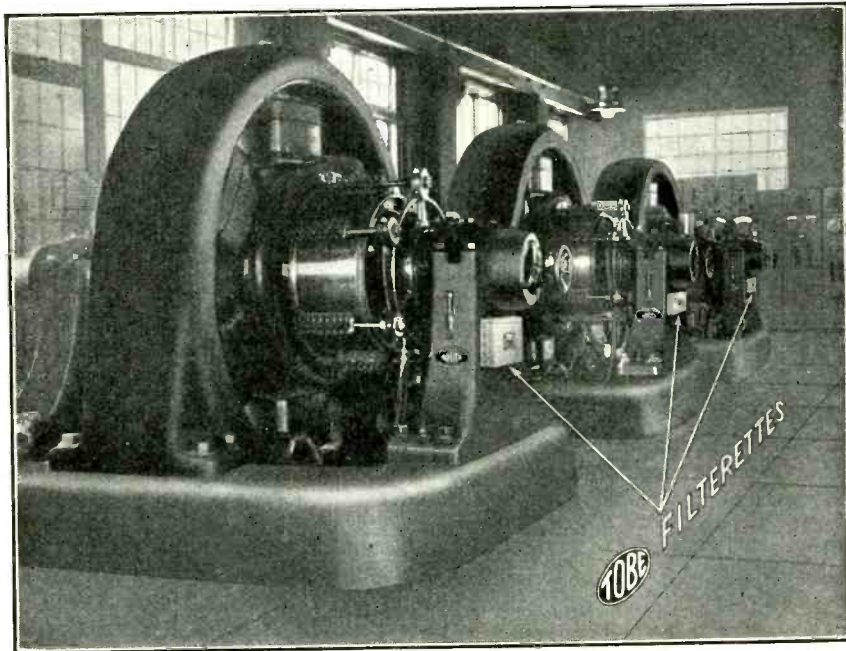
Interference Created by Power Plant Equipment Suppressed

Filterettes Applied to Exciters, Voltage Regulators and Converters

THE suppression of radio interference created by power plant or converter station equipment presents an interesting problem for the Filterette service station due to the number of possible interference sources in the plant, and the manner in which interference is distributed.

The first step toward filterizing a power station should be a survey of the plant to determine the possible interference sources. The power generating equipment will naturally receive the first attention. If direct current generators are being used they may create interference which will be carried out on the d-c lines from the plant. No interference should be created by the alternators. It will probably be found, however, that the exciter, or exciters, are responsible for some interference. This interference may be transferred to the outgoing a-c lines and thus carried for a considerable distance from the power plant. Interference due to the operation of exciters or d-c generators is indicated by a roaring sound. This interference may affect receivers as much as three miles from the plant.

Another possible interference source in an electric power plant is the apparatus used for maintaining the line voltage at a constant value. The automatic line voltage regulator contains contacts which make and break rapidly when the regulator is in operation. This opening and closing of contacts may create interference, audible in the receiver as a rapid succession of clicks, sometimes following each other so rapidly as to cause a buzzing sound. The interference due to the operation of voltage regulator contacts is usually noticeable only in



Tobe Filterettes Applied to 500 K.W. Rotary Converters

the immediate vicinity of the plant. Although the exciters and voltage regulators constitute the major sources of interference in an electric power plant, there may be others. Exhaust fans, air or water pump motors, portable electric tools and rectifiers in use in the plant are likely to create interference (Continued on Next Page)

Tobe 24-Hour Service on Condenser Replacements

Direct from Manufacturer to Service Man

AS A RESULT of an investigation of the radio service man's condenser replacement problem, the Tobe Deutschmann Corporation has instituted a new service for repair men. This service is intended to expedite power pack repairs by providing the service man with new sections installed in place of blown sections in condenser blocks. It is also intended to decrease the cost of power pack repairs by allowing the service man to replace only the defective condenser section rather than the entire block, as is too often the case when the block is returned to the manufacturer.

In order to provide the speedy service which is essential in radio repairs, a special condenser repair department has been established so that condenser blocks received for repair may be on the way back to the service man within twenty-four hours. Any condenser block from a radio receiver will be repaired at a net cost of \$3.75. This figure covers the replacement of all defective condensers with new Tobe Condensers, and also covers a complete re-finishing of the condenser container. If, as is sometimes the case, choke coils are

included in the block with the condensers, an additional charge will be made for the additional labor involved in the handling of these coils.

The condensers used in the Tobe Serviceman's Repair Division are new units. Condensers repaired by this division must not be compared to the so-called "surplus" condenser blocks, which may have been stored in a damp warehouse for so long a period of time that their characteristics have been permanently injured. When forwarding condensers for repair be sure that a packing slip with the owner's name and address is included with each block or condenser. Twenty-four hours after they are received they will be on their way back to you. Check or money order must accompany each shipment. Condensers should be shipped parcel post prepaid to Tobe Deutschmann Corporation, Serviceman's Repair Division, Canton, Mass.

Interference Created by Power Plant Equipment Suppressed

(Continued from Preceding Page)

which may be carried out on the power distribution system. This interference will not be as easy to identify as is that due to the apparatus which is in continuous operation, but it should be located during the survey of the plant. If the power station contains rotary converters, it may be found that they are responsible for some interference. The interference from this type of equipment is similar in character to that created by a d-c generator, and is usually carried out of the station on the d-c feeders. When all the possible interference sources in the power plant or converter station have been listed, a careful check should be made with an interference locator to determine what apparatus is causing the interference, and to record the intensity of interference from each source. The procedure necessary to overcome the interference may then be decided upon and steps taken to reach the desired end.

Contrary to the general belief of broadcast listeners and radio service men, the elimination of interference due

to power plant equipment does not, as a rule, involve the expenditure of excessive sums of money. The photograph on this page shows a street railway converter station which was completely filtered at a total cost of less than one hundred dollars.

In this station there were in use three rotary converters, each having a d-c output rating of 833 amperes at 600 volts. The interference originating at the d-c end of each machine was suppressed by

so large as to be difficult to install. The Filterette for use with a rotary converter is constructed of material designed and tested to operate safely under the severe stresses of street railway work. It is contained in a metal housing with hinged cover, and is fused so that if, for any reason, a condenser should break down, no serious damage would result. The inductances for use with this Filterette are constructed so that they are capable of carrying the maximum current output of the machines. One inductance is required in each d-c output lead from each rotary converter. As is the case with the capacitive type Filterette, it has been found that the inductive capacitive type must be installed close to the interference source. The greatest length of lead permissible between a rotary converter and an inductive capacitive type Filterette is twenty-four inches.

In addition to the procedure already

outlined, it has been found that some interference may be radiated from the leads connecting the various brush holders. It is therefore advisable to connect a capacitive Filterette section from each brush holder to the point on the converter frame nearest the brush holder. The Filterette sections should not all be connected to the same point on the converter frame.

Since the interference created by a rotary converter arises at the d-c side of the machine, the procedure followed in suppressing this interference also proves effective in overcoming the interference created by a direct current generator or exciter. In the case of an exciter, the use of a Filterette (Tobe No. 10 or No. 20) usually provides the desired reduction of interference.

The steps to be taken in overcoming the interference due to the operation of an automatic line voltage regulator differ somewhat from those which prove satisfactory in the case of a d-c generator or a rotary converter. Due to the type of circuit in which the current interruption occurs, a specially designed, inductive capacitive type Filterette is required.

Figure 1 shows the wiring of this Filterette in the main contact circuit of an automatic line voltage regulator.

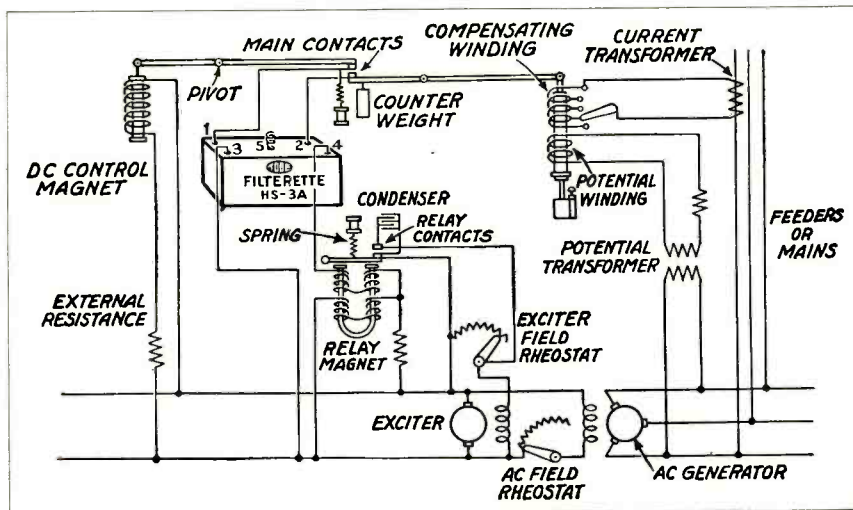


Fig. 1. Tobe Filterette HS-3A Applied to an Automatic Line Voltage Regulator

application of a Filterette (Tobe No. 60) across the d-c brush holders. It was found that although the three machines were operated in parallel, the use of a single Filterette across the bus bars at the switchboard did not provide satisfactory filtering. It was, therefore, necessary to apply one Filterette to each rotary.

To confine the interference to the point of its origin, a Filterette was mounted on the frame of each rotary in such a position that the leads between the brush holders and the Filterette were not more than eighteen inches in length. Single conductors, carried in flexible armor, were used for connecting the Filterette terminals to the brush holders of the rotaries. The Filterette case and return wire were bonded to the converter frame.

When modern equipment is in use a simple capacitive type Filterette will, in nearly every case, suppress the interference created by a rotary converter. Occasionally, however, it is necessary that an inductive capacitive type Filterette be used. When this is the case, the capacitive section is made separate from the inductive sections, since the construction of the Filterette as one unit would result in the production of a Filterette

TOBE DEUTSCHMANN CORPORATION

Filterette Division • CANTON, MASSACHUSETTS

The Acknowledged Authority on Radio Interference—Makers of FILTERETTES, the Accepted Remedy

40 MILES from NOWHERE



"LOU"

MOHAWK TIRES
AND TUBES
NEW AND USED CARS

MINING CLAIMS
BUSINESS AND RESIDENCE
PROPERTY

TRADING POST

"SEE LOU"

THE WIND BLEW
THE BULL FLEW
FOR INFORMATION SEE LOU

WE BUY AND SELL ANY DAMN THING . . . OLD OR NEW

THE ONLY TOWN CRIER IN THE U. S. A. KNOWN IN EVERY MINING CAMP

FOR RADIO PARTS OR COMPLETE RECEIVERS. WE DEAL THRU LARGEST
SUPPLY HOUSE. THEY HAVE IT. WE GET IT. FAST SERVICE.

OATMAN, ARIZONA

Lou "blew" into Oatman on the first zephyr of the strong financial breeze that bore increasing prosperity to the mining industry there. Lou is always among those first present in a booming mining camp—it's a habit with him. He was as well known in the Nevada desert camps of two decades ago as old "Six Cylinder Bill," who used to make the auto stage run from Tonopah to Manhattan in nothing flat.

"Megaphone Lou" got his name when he arrived in Oatman in 1915, by announcing the arrivals of all the desert men he had known in other camps. He immediately installed a trading post; handled tires, automobiles, mining claims, real estate, stock, Swiss watches, rock crushers, and burros. Now his pet line is radio—and how he sells 'em!

"My customers want good sets," Lou says, "and when they get 'em they're satisfied."

IF A LETTERHEAD should be designed to attract attention certainly this one from Lou's Trading Post of Oatman, Arizona, fills the bill. It attracts attention—and it introduces you to "Lou."

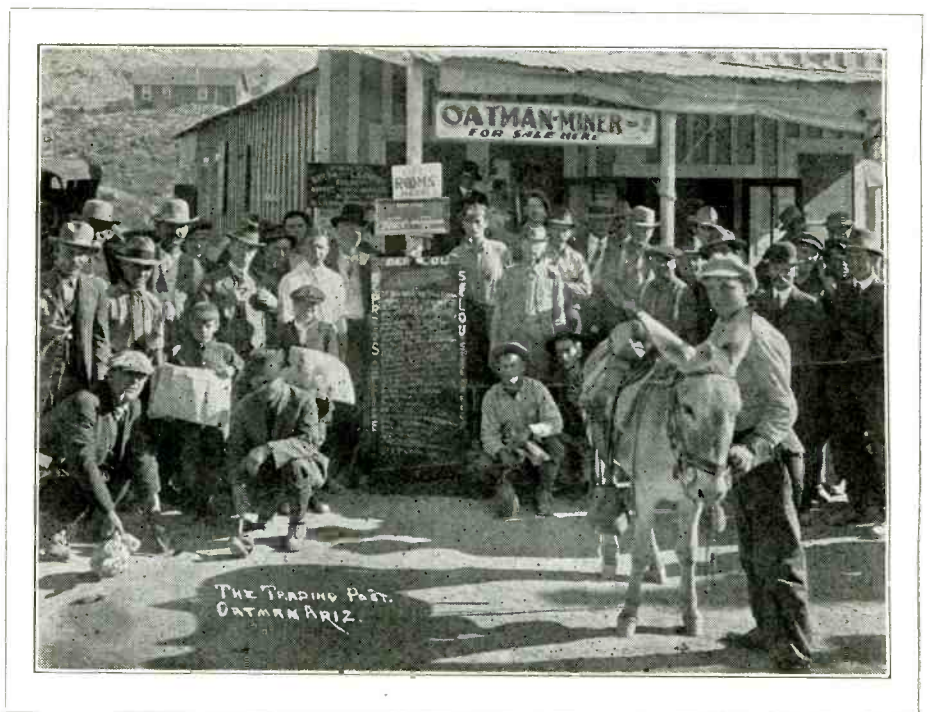
Lou Grossman, or "Megaphone Lou," as he is known to those who travel up and down the mining trails of the world, sells radio sets, among other things. He sells lots of radio sets. He has a style in selling radio sets that is all his own.

"The people have been bunked so much in the radio business that you must now work up a rep for being square and not handling any junk," Lou tells us. "You must back up any statement you make regardless of whether the manufacturers will or not." (They still go armed in that country.) "Never leave a set where you yourself are not satisfied, and give 'em to understand that their money is ready up to ten days."

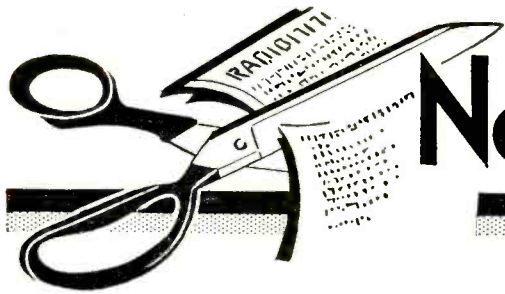
Lou knows his customers. He knows they have money and that they are not unreasonable when it comes to wanting what they want when they want it. He sells only for cash.

"Let 'em tune the set themselves," he says. "When stations come popping in watch the expressions on their faces—then you know whether you have made a sale or not. I always leave the room

and let 'em play with the set. In ten minutes I come back and write up the order. Give 'em to understand that fading and static can't be swept up in a basket; tell 'em what causes it; and then you won't have 'em coming back and wanting you to put a stop to a lightning storm."



THE TRADING POST
OATMAN ARIZ.



News of the Month

City Folks Like Midget Radios, But Large Models Lead in Rural Districts

According to a survey made by the Crosley Radio Corporation the people living in cities take most readily to the midget receiver idea. Powel Crosley, Jr., head of the firm which bears his name, believes this to be due to the fact that the great majority of people living in cities are confined to smaller houses or apartments, hence must conserve space as well as provide themselves with furniture that will harmonize with its surroundings. An overcrowded room is the first indication of lack of taste.

On the other hand, Mr. Crosley finds, the people who live in smaller towns and out in the country usually build larger houses, due especially to a less exorbitant evaluation on the land, and furnish them accordingly.

Export Trade Increasing Annually

The United States today is the world's largest exporter of radios, according to figures shown by Lawrence D. Batson in an analysis of radio markets of the world which the Department of Commerce has just released. During the last three years this country has made striking gains in this field. Foreign sales rose from something more than \$9,000,000 in 1927 to \$12,000,000 in 1928, while the export figure for 1929 was more than \$23,000,000. Figures for the first ten months of 1930 show total sales of radios and equipment in foreign markets had a value of \$17,800,000.

This booklet, "Radio Markets of the World," gives not only the statistics of radio consumption in foreign countries, but adds a very interesting account of each country's interest in radio, classes of people, receiving conditions, principal cities, attitude of the government, license fees, etc. For any manufacturer interested in opening up foreign markets it is an invaluable book. It may be had from the Superintendent of Documents, Washington, D. C., for twenty cents.

England Favors Jazz

E. C. de Villeverde, Brunswick Radio Corporation's export authority, having just returned from an extended trip through Great Britain, reports that the majority of the people in England desire more "jazz" music than the British Broadcasting Company will give them. While England blames the love of jazz on the United States (along with everything else of which they are not proud), the government attempts to prove its point by insisting that at least 75 per cent of the music broadcast be of the concert hall and operatic variety. It is excellent music, without a doubt, but Mr. de Villeverde says that the people don't like it, at least too much of it, at

the exclusion of what we in this country call the more popular music. The result is that people of high and low estate have developed the habit of turning on their radios at 10:30 at night, when dance music was permitted on the air. It has also increased the sales of dance records enormously.

Muter Forms New Company

The Muter Company has been organized by Leslie F. Muter to take over the Compo Manufacturing Company and is now established in its new factory at 1255 S. Michigan Avenue, Chicago. It will continue to manufacture Candohm resistance units, and add other popular items for radio manufacturers.



Ski Jumpers to Stage Show for Radio Men

Thrills and more thrills. This ski rider way up in the air above the famous Lake Tahoe ski hill in the California Sierras is sending a lot of shivery tingles down the spines of his spectators, standing several hundred feet below. A big crowd of Sparton and Jackson-Bell retail salesmen of Northern California, holding a mid-winter jamboree at Lake Tahoe on February 22, will have "front row" seats to a great ski show that day, the first tryouts by Pacific Coast ski men for the 1932 Olympic Games. The radio jamboree will wind up a sales contest of two months' duration among the Sparton and Jackson-Bell retail men in the northern and central part of the state.

Handy Reference Book Wins Favor

The RCA Radiotron Company, Inc., has just endowed its dealers, their salesmen and servicemen with a pocket diary in which is incorporated some of the most useful information men in the radio business ever need. Several pages are devoted to radio definitions, photo electric cells, television, hints for the service man, tools he should carry, receiver circuit analysis, calculation and the use of shunts and multipliers, grid bias resistor replacement. More specifically for the salesman are a page on radio set prices of November, 1930, rules for installment selling, margin, selling price and mark-up tables, tables showing how much a salesman should earn and an analysis of income, expenses and net profits of 109 typical radio stores.

Between halves of the diary are twelve pages of maps, including the world, the continents and sections of the United States. In the back is a glossary of broadcasting "lingo," a list of important broadcast stations, a wavelength-frequency chart, conversion tables, copper wire tables, tables of weights, melting points, etc., all the radio symbols and important formulæ, a description of each

of the important Radiotron tubes, and perhaps most useful of all, a complete average characteristics chart of all RCA Radiotrons, that chart that has always been "mis-laid at the moment."

The book is just right for the pocket and might be considered one of the most useful tokens of appreciation ever given by a radio manufacturer to his retail representatives. It may be purchased from Radiotron distributors by those who are not on the dealer list.

Extra Speaker Jacks Handy

One of the novel features of the Silver-Marshall Compact and Cadet superheterodynes is the addition of a pair of extension speaker jacks. Many radio owners have desired an extra loud-speaker, and while some dealers have been willing to tackle the job, most of them have avoided tearing into the innards of the set. Therefore all will welcome the knowledge that an extra speaker may be installed in the kitchen, bedroom or wherever desired, merely by plugging into the jacks so provided. This gives the dealer an opening to increase the amount of his sale as well as aiding him in giving the customer greater radio satisfaction.

Atwater Kent Dealer Meetings Successful

W. M. Dutton & Sons Company, Atwater Kent radio distributors of Hastings and Omaha, Nebraska, have recently concluded a very successful series of twelve Atwater Kent dealer meetings held in twelve key locations throughout their territory. The meetings were so arranged that no attending dealer was obliged to drive more than fifty miles.

At all the meetings the complete Atwater Kent Golden Voice line was on display, executives of the Dutton organization and Atwater Kent factory representatives were present and took up various sales and service problems, and after each business meeting a big get-together dinner was staged.

Albert Weiland Joins Majestic

William C. Grunow, president of Grigsby-Grunow Company and of Majestic Household Utilities Corporation, announces the appointment as production manager of both companies Mr. Albert Weiland, formerly vice-president in charge of production of the Radio-Victor Corporation, a subsidiary of Radio Corporation of America.

Mr. Weiland has had mass production experience not only with the Camden concern, but also with the Pierce-Arrow Motor Car Company, and in industrial engineering, with George W. Goethals & Company, both in this country and abroad.

Philco Balloon Travels 300 Miles

Philco dealers in the Philadelphia territory staged a "Philco Balloon Race" recently, releasing small balloons and offering prizes for the return of the one traveling farthest, with the result that one wandering balloon traveled over 300 miles before coming to earth.

Small eight-inch balloons released by H. Feinberg, Inc. of Chester, Pa., were picked up all over eastern Pennsylvania, New Jersey, Delaware and New York. The winning balloon came to earth in the chicken yard of Eric Lojeski, Terryville, Conn., farmer. He reported that it was in good condition, and a check-up of the serial tag disclosed it had been in the air two and a half days. The distance covered is believed to be a record for balloons of this size.

Each balloon released was marked with the Philco logo, and helped push the new Philco line now in dealers' hands. Considerable local interest was aroused over the races.



Judging the Fada Radio Contest

From left to right: H. E. Hulburd, vice-president; A. J. Gaehr, president; D. Aitken, manager of the electric and radio department, all of George Worthington Company, Cleveland, Ohio, and L. J. Stutz, Fada representative in Central Ohio. The pile of "debris" on the floor contains some of the 20,000 answers that were received in the contest. Prizes in the contest consisted of three Fada console receivers and five hundred prize certificates applicable on the purchase of any new Fada set. Presentation to the winners was made by the well-known orchestra leader, Mr. Paul Ash, from the stage of Loewe's State Theater in Cleveland. The hand-embroidered banner with the words, "Fada Radio Excels," in the hands of Mr. Stutz was received with one of the entries.



McMurdo Silver and Burton Browne, president and advertising manager, respectively, of Silver-Marshall, Inc. They are seen examining part of Mr. Silver's collection of revolvers—the second largest in the world.

SARGENT SHORT-WAVE EQUIPMENT

RECEIVER



CONVERTER



SARGENT SHORT-WAVE SUPER-RANGER

1. Receives Broadcast, Phone, or C. W.
2. Supplied in All-Electric or D.C. Models.
3. Universal Output. Full Efficiency on Dynamic or Magnetic Speaker or Head-phones.
4. Vernier Tuning on All Waves.
5. 100 Degree "Band-Spreader" for Amateur 20, 40 and 80 Meter Bands.
6. Wavelength Range, 12 to 115 Meters. (10 to 12 Meter and 100 to 200 Meter Coils on Special Order.)
7. Mechanically Rugged. Neat, Workmanlike Appearance.
8. Receiving Range, 3,000 to 10,000 Miles.
9. The Best All-Round Short-Wave Receiver that can be bought at any price.

DEALERS—WIRE FOR SAMPLE



SARGENT SHORT-WAVE CONVERTER

SHORT-Wave Reception from ANY A.C. or D.C. Receiver is now possible by means of the new SARGENT SHORT-WAVE CONVERTER.

Supplies its own power from a self-contained power plant.

Wave Length Range . . . 19 to 115 meters. Higher or lower ranges covered by special order.

Vernier Tuning and Input Regeneration, separately controlled.

Special Screen Grid Blocking Circuit prevents coupling between receiver and converter circuits. Receiving Range . . . 3,000 to 10,000 miles.

Handsome Polished Walnut Midget Size Cabinet. Permanently connected between antenna and receiver. Uses full amplification of your own receiver. Switching arrangement permits operation of receiver without converter.

Price, Less Tubes

\$69.50 List

RADIO CONSTRUCTORS CO.
357 12th Street, Oakland, Calif.

SEND me literature and dealer prices immediately on your

SHORT WAVE RECEIVER
SHORT WAVE CONVERTER

Name

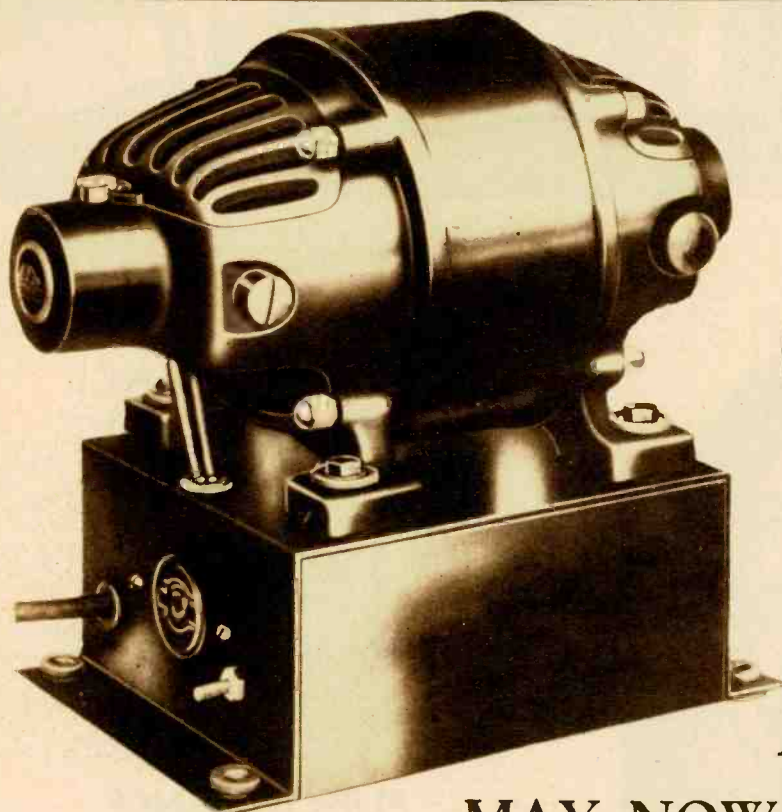
Street and Number

City

State

Cable Address
"RADIOSTRUX"

THE NEW JANETTE



Is Creating a
SENSATION

\$49⁵⁰
LIST

Millions in D.C. Districts

TYPE CA-20-F

*Rotary
Converter*

Only

\$49⁵⁰
LIST

MAY NOW OPERATE A. C. SETS!

The new JANETTE has opened up, at a single stroke, one of the greatest outlets in this country for A. C. Receiver Sets.

Over 500,000 American farmers are the owners of 32 and 110 volt D. C. lighting plants. Every one of them automatically becomes an A. C. radio prospect, not to mention the hundreds of thousand of prospects living in the D. C. districts of our large cities — a vast, untouched market. At the low price quoted the JANETTE CA-20-F Converter appeals to the buyers of popular priced receivers as well as the buyers of more expensive sets.

Lowest Priced Converter Ever Offered!

\$49.50 is a record low price for a converter — and this price includes filter, cord, plug and A. C. receptacle.

The JANETTE is powerful, well-built. It operates quietly. It has a double wound armature. Perfect filtering — not a trace of ripple or interference in the receiving set. Capacity 110 watts. And it is *guaranteed*.

MAIL THIS
COUPON TODAY

JANETTE MANUFACTURING CO.
557 W. Monroe St., Chicago, Ill.

Please send me full information and discount on
your new type CA-20-F Converter.

Name _____

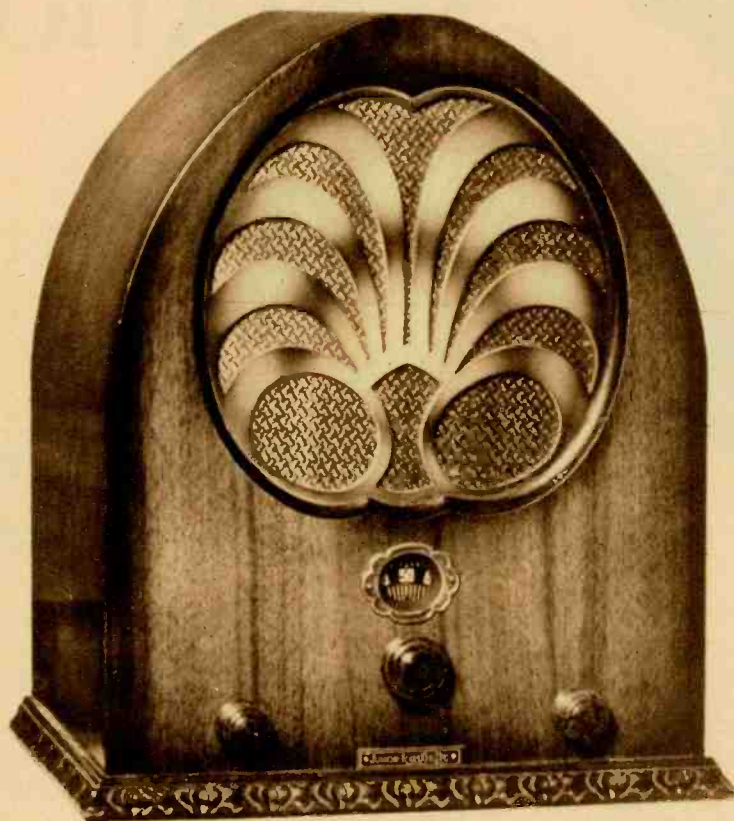
Street and No. _____

City and State _____

**JANETTE
MANUFACTURING CO.**
557 W. Monroe St., Chicago, Illinois

Singer Bldg., 149 Broadway, New York, N. Y.
Real Estate Trust Bldg., Philadelphia, Pa.
Harrison Sales Co., 314 Ninth Ave. N., Seattle, Wash.

And Now Junior Radiette



8 x 10 x 13 Inches

The parts and construction are of such high quality that necessity for servicing has been lowered to an irreducible minimum.

RADIETTE offers the most complete line of midget radio sets on the market. A midget for every purse and every purpose.

THE SMALLEST
COMPLETE ALL
ELECTRIC RADIO
SET EVER PRO-
DUCED WITH FULL
8-INCH ELECTRO-
DYNAMIC SPEAKER

ITS
PERFORMANCE
WILL THRILL YOU!

Because of its amazingly small size, remarkable beauty and convincing performance this sensational radio set will put new life and profits into any Radio Department.

BE THE FIRST
in your territory to offer
this great radio set!!!

FULLY LICENSED UNDER PATENTS OF

KELLER-FULLER

1573 W. JEFFERSON BLVD.

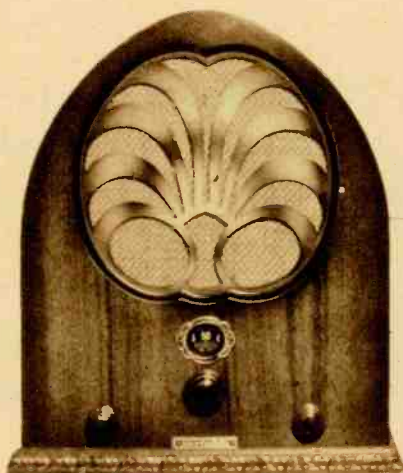
The Newest Radio Sensation

THE GREATEST
ARRAY OF HEAD-
LINE FEATURES
EVER COMBINED
IN SO SMALL A
RADIO SET AT
SUCH A LOW PRICE

\$49.50

with 5 tubes

The illustration below shows
the size of JUNIOR RADI-
ETTE compared to the size of
the regular RADIETTE.



Full 8-in. Electro-Dynamic Speaker
5 Tubes (2-224, 227, 245, 280)
Tone Control
Phonograph Connection
3 Tuned Circuits
2 Stages Resistance-Coupled
Audio Frequency
3 Gang Condenser
Band Pass Selector
Electrolytic Condensers
Fully Shielded
Cadmium Plated Steel Chassis
Laced Cable Wiring
UNIFORM GAIN ACROSS THE
ENTIRE DIAL WITHOUT OS-
CILLATION

The larger model shown above is the regular
model RADIETTE which has created an in-
vincible reputation for high quality of con-
struction and performance.

Many thousands have been sold in all parts
of the world. We continue this model be-
cause of its distance-getting ability.

Size 8 x 13 x 17 inches

6 Tubes (3-224, 227, 245, 280)

4 Tuned Circuits

Band Pass Selector

Full Electro-Dynamic Speaker

Beautiful Walnut Cabinet

List Price \$59.50, Complete with Tubes

TO LARGE BUYERS

We are prepared to furnish chassis in spe-
cial cabinets and with special names.

R. C. A. AND AFFILIATED COMPANIES

MFG. CO., LTD.
LOS ANGELES, CALIFORNIA

Introducing THE LOVELY "AERO

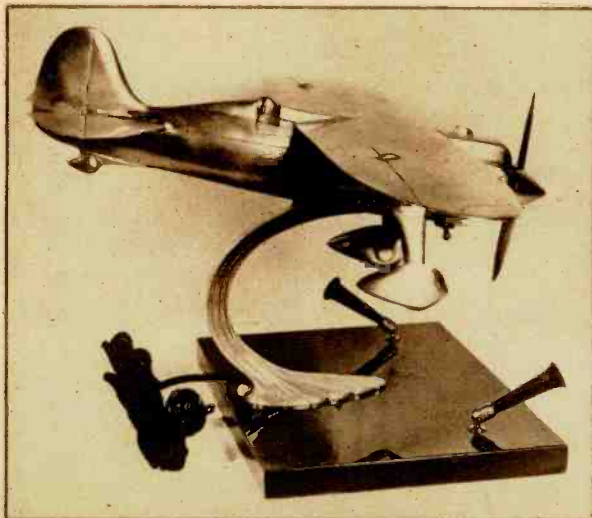
The most Beautiful and Distinctive
Desk and Table Lamp Ever Designed

New
Elegant
Different

▼ ▼ ▼ ▼
For Home, Office and
Display use

▼ ▼ ▼ ▼
A Sensational, Proven
Money-maker for Live Dealers

▼ ▼ ▼ ▼
A MASTER-PIECE
of Superb
CRAFTSMANSHIP



NOTHING like
"AERO-LAMP" has been previously conceived. Its
irresistible appeal is immediately obvious . . . its ready
sales value at once discernible to the up-to-the-minute
dealer's eye.

Here is, indeed, a rare combination . . . a brilliant
adaptation of masterly design with practical efficiency,
offering generations of utility and service.

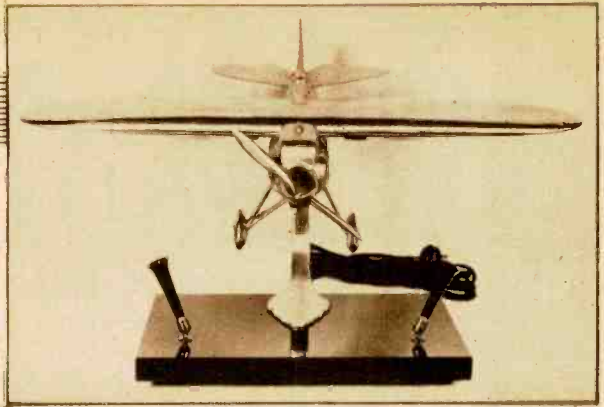
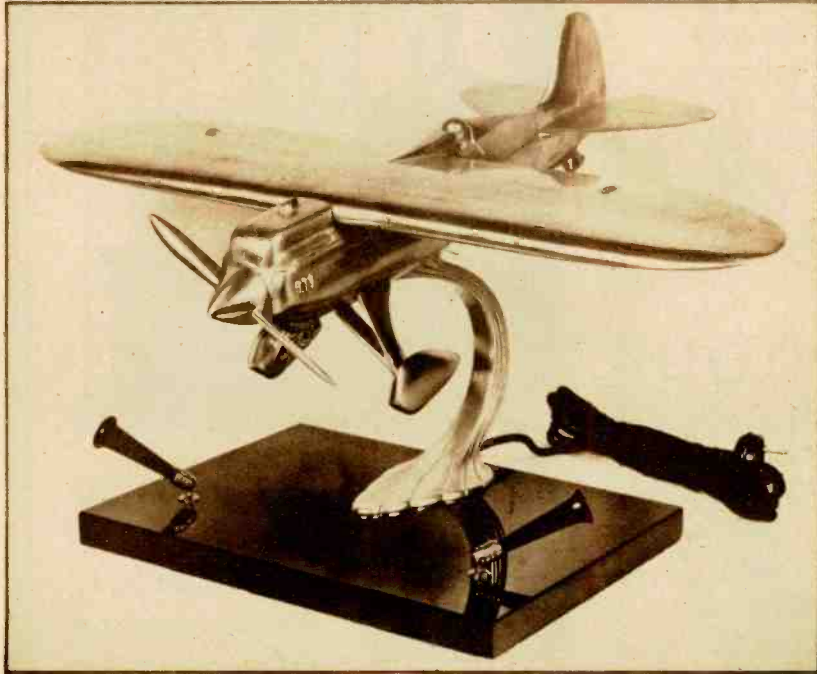
▼ ▼ ▼ ▼
You cannot fully realize the quick sales and profit
possibilities of the "AERO-LAMP" until you actually
see it. Its rich alluring finish . . . its graceful artistry
. . . its exquisite refinement.

Everyone instantly admires this beautiful ornament.
It has "IT" and plenty of it. It opens up new avenues
of unexplored revenue for you. It is a supreme achieve-
ment.

Never before has such a Splendid Feature
with Equal Individuality been
offered to the trade

▼ ▼ ▼ ▼
WATCH IT SELL!

LAMP"



Specifications AERO LAMP

Cast from Durable Hardware Bronze and Furnished in Six Superb Finishes and Base Combinations as follows:

Starlite Model—Satin Chromium Finish with Imported Black Belgian Marble Base \$45.00

Meteor Model—Statuary Bronze Finish with Imported Black and Gold Pencil Vein, Italian Marble Base \$45.00

Comet Model—Verde Antique Finish with Broad Vein Verde, Antique Marble Base \$45.00

Sunswift Model—Burnished Brass Finish with Black and Gold Broad Vein, Italian Marble Base \$45.00

Victory Model—Satin Silver Triple Plate with Genuine Imported ONYX Base, selected for rare color \$75.00

Triumph Model—18-karat Burnished Gold Triple Plate with Genuine Imported ONYX Base, selected for rare color \$125.00

Above prices do not include pens or holders. Bases are drilled to accommodate any standard holder.

40—10% DISCOUNT
FROM ABOVE LIST PRICES
F.O.B.—Los Angeles, Calif.

READ THIS MONEY-BACK DEALER OFFER

Proving Our Confidence in Your Ability
To Sell Aero-Lamps and Lots of them

You will be pleasantly surprised with "AERO-LAMP." What others have done you can do. It sells readily and quickly to those who can afford to pay for beauty and exclusiveness.

Here is our liberal INTRODUCTORY OFFER . . . send only one-half cash with your order. Take thirty days to pay the balance with the distinct understanding that any unsold merchandise may be returned within forty-five days from date of purchase and your money refunded, less transportation charges.

ORDER NOW!



Pay One-Half Cash
With Order
Balance in 30 Days
Subject to Return of
Unsold Merchandise

Follow this simple plan of getting acquainted today. Rush us your INTRODUCTORY ORDER by return mail. We take all the gamble because we know we have the most alluring, salable product on the market. Can anything be fairer?

We are proving our confidence in your ability to sell this beautiful and attractive new lamp idea. Believe us that words and pictures do not tell half the story. Let us hear from you.

BALDWIN-PACIFIC COMPANY, LTD.

138 WEST 17TH STREET, LOS ANGELES, CALIFORNIA

4,000,000 RADIO OWNERS ARE WAITING FOR THIS »

NEW CREATION OF DR. LEE DE FOREST!

THE world knows Dr. De Forest as the "Father of Radio." The technical field watches with interest his every new development . . . for De Forest leads with new discoveries, of interest to the radio news.

The man who invented the "radio tube" now brings you control of tone on your radio not thus factory equipped. You can bring your radio up to date with —



Every RADIO
OWNER Will
Want One » »

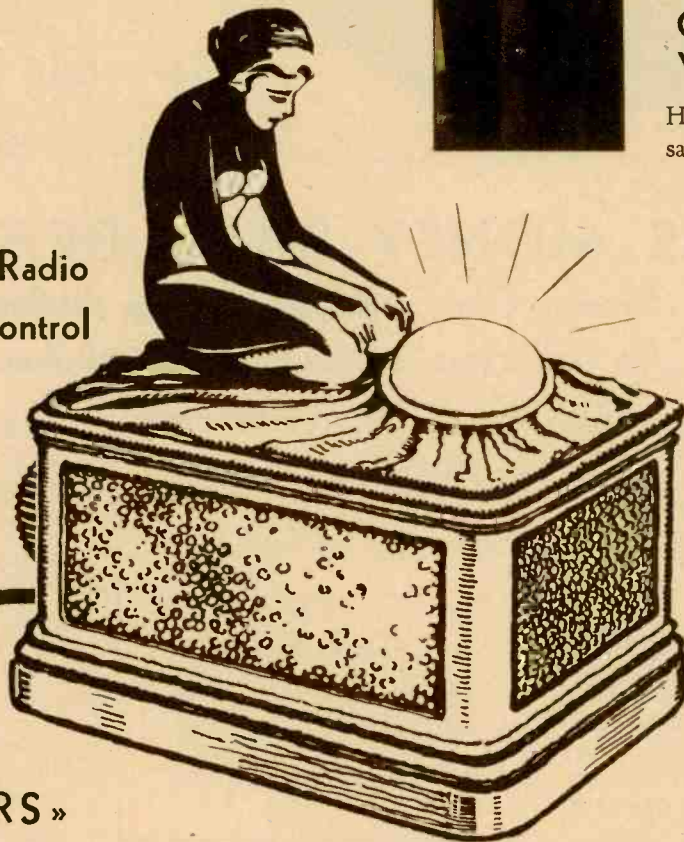
Here is eye appeal and sales appeal. This is a beautiful, artistic ornament as well as a practical up-to-the-minute necessity.

Royale Luminous TONE CONTROL

\$ 6.95

Modernizes the Old Radio
With Positive Tone Control

Just turn the knob
—the tone and color
both change!



RADIO
DEALERS »

EACH
TONE
IS SHOWN BY
DIFFERENT
COLORED
LIGHTS —
GREEN
PURPLE
RED
WHITE

Here Is a Quick and Ready Seller --- ORDER TO-DAY!

Manufactured by

Lee De Forest Mfg., Co., Ltd.

"Not connected with the original De Forest Radio Co."

1224 Wall Street, Los Angeles, Calif.

Exclusive Sales Representatives

BALDWIN-PACIFIC CO., LTD.

Westmore — 5987

138 West 17th Street, Los Angeles, Calif.

UNFAIR TRADE PRACTICES ENJOINED by COURT

By HARRY V. MEISSNER

Attorney for Wisconsin Radio Trade Association

A LAW SUIT of nation wide interest has just been successfully prosecuted by radio dealers in the city of Milwaukee, Wisconsin.

North Central Distributors, Inc., is the wholesale distributor for the states of Wisconsin, Minnesota, and Dakota, of Victor products. Under an unwritten franchise from the R. C. A. Victor Company, Inc., this company has exclusive wholesale distribution rights in this territory. This company recognized also under unwritten franchise, forty-five Victor dealers in the city of Milwaukee and many more throughout the state of Wisconsin. No Milwaukee dealers were exclusively Victor retailers and few, if any, of the state dealers handled Victor products exclusively.

It appears that the wholesaler had a large inventory of Victor radios in stock and was dissatisfied with the number of sales made by its retail outlets. The lack of consumer demand was brought about, not so much by inactivity of the dealers, but rather by the general business depression and unemployment.

Only as recently as December 20, the wholesaler had embarked upon a special discount plan to assist in moving its inventory. This plan had been outlined to the retailers in the form of a letter which stated that the special sales program and discounts would be in effect from December 20 to February 1. Practically all of the retailers had taken advantage of this special plan by purchasing sets prior to January 1, as required by the offer.

On January 12, 1931, the wholesaler sent word to the retailers that "something was about to happen." No definite explanation was made to the dealers as to what this "something" might be, and the dealer was left to speculate as to whether it might be a price cut, a new model, or some other change in the distribution plans which might vitally affect his investment. The Milwaukee dealers were given this notice by word of mouth, while the state dealers were notified by telegram or letter. The wholesaler informed the dealers that in order to protect the dealers the wholesaler requested the return of all Victor radio sets of every nature which the dealer might have on hand, and agreed to pay the retailer or credit him with the full price.

This vital news story arrived in RADIO's publication offices after everything else had gone to press. It's value was considered of such character that a page of more general news was deleted to make room for it. This is a tale of how a radio wholesaler, being dissatisfied with the efforts of its dealers, played a trick on them and sold the sets they should have been selling, to the customers that should have been theirs, and how the Wisconsin Radio Trade Association stepped to the front and secured a permanent injunction restraining the wholesaler from selling Victor radios to the public at wholesale prices. It is believed to be the first adjudication of the kind in the country, and it will have a very far-reaching effect. It inspires the radio dealer to get behind his association, recognizing in it an organization that can wield a stinging whiplash if the necessity should arise.—Editor.

The request for the return of merchandise stated that all radios would have to be delivered to the wholesaler before ten o'clock a. m. on January 14. All of the Milwaukee dealers and practically all of the state dealers, anticipating a loss because of this mysterious something, returned their merchandise to the wholesaler. Many were unloading their merchandise at the wholesale house at the time set as the dead line, ten a. m. January 14.

At ten o'clock a. m. on January 14, one of the leading newspapers of the city of Milwaukee released an issue carrying a full-page advertisement of the North Central Distributors, Inc., the introduction of which read as follows:

**You Can't Buy It from Your
Victor Dealer
HIS STORE IS EMPTY OF
VICTOR SETS
Now—We as Victor Wholesalers
for the entire Northwest, offer
Victor Radios direct to the public
at less than wholesale.**

The ad offered at retail Victor radios, Model R-15 complete with tubes for \$65; and then under a separate boxed portion of the ad offered "the entire Victor line at less than dealers' costs"; offering R-35 for \$102.28; R-39 for \$112.28; and RE-57 for \$172.28.

In truth, and in fact, the prices quoted on all of the sets excepting R-15 were not less than dealers' costs as outlined in the special discount plan of December 20.

It may well be realized that a situation of this kind aroused the interest and antagonism of every person engaged in the sale of radios in the city of Milwaukee, whether he was a wholesaler or a retailer, and it is of particular interest to note the advantages of a radio trades association in a locality and the manner in which this particular occurrence was handled by the Wisconsin Radio Trade Association.

Within half an hour after the ad had been released the secretary of the Wisconsin Radio Trade Association was in the offices of Harry V. Meissner, the attorney for the Wisconsin Radio Trade Association, inquiring as to whether this sales program could be legally enjoined. The president of the Radio Trade Association also called its attorney to instruct him to take any steps possible to stop this sales program.

The question of law involved was a new and interesting one. Precedents were lacking. The statutes of the State of Wisconsin, however, included a rather broad statement that "Unfair trade practices shall be prohibited." An examination of the law under the Sherman Anti-Trust Act and Clayton Acts was carefully made. The department of markets, which is counseled by the Attorney-General of the state, was consulted. The Better Business Bureau of the Association of Commerce was called into conference, and on the following day representatives of the wholesalers and dealers met to discuss the advisability and possibility of discontinuing the sales program. No agreement could be reached.

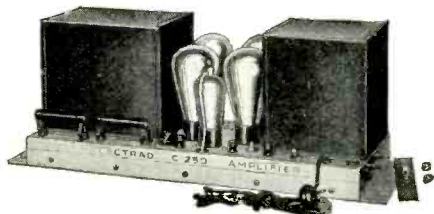
One important question which proved to be more or less of a stumbling block was the liability for damages on the part of anyone bringing such an injunctive action. In the event that the

(Continued on Page 51)

New Radio Products

Electrad Adds High Power Amplifier

Electrad, Inc., have announced the addition of two new power amplifiers utilizing the Loftin-White Direct Coupled System, which, with their Model A-245, completes a line of amplifiers suitable for all present day requirements of sound amplification. The new A-250, with one '24, one '50 and one '81 rectifier tube, requires an input of .28 volts and provides an output of 4.6 watts. The C-250 with a single '24, two '50's, and two '81's, requires but .3 volts input and gives an output of 10.35 watts.

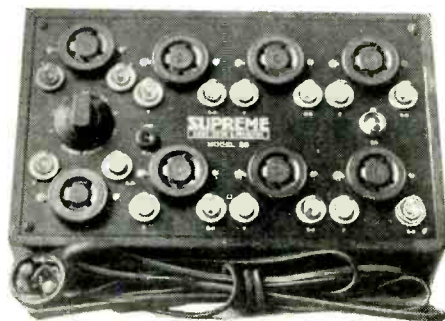


Radio Trouble Finder Introduced

"Trouble Finder-8" is a new instrument designed and marketed by Hallock-Watson & Yonge, 191 Park Street, Portland, Oregon. It is a complete eight-tube radio set, using the new 2-volt tubes. It also contains a volume indicator, permitting the intensity of a noise to be read directly on the meter while the sound is noted in the loudspeaker and the direction spotted with the loop.

NEW PHILCO SUPERHETERODYNE PLUS HIGHBOY

One of the 1931 additions to the Philco line of receivers is the eleven-tube Superheterodyne Plus just perfected by Philco engineers. It is equipped with automatic volume control, tone control, station recording dial, and is thoroughly shielded and non-oscillating. Speaker is electro-dynamic. The cabinet is made of pencil-stripped walnut and highly figured butt walnut. Elaborate carvings and shaded quality, maple overlays enrich the front of the cabinet. Retail at \$155, less tubes.



Supreme Develops Short Tester and Preheater

The latest instrument to emanate from the Supreme Instruments Corporation of Greenwood, Mississippi, is the Supreme Short Tester and Preheater. Its purpose is to detect open filaments and shorts between the various elements of the tubes and to heat up a set of tubes simultaneously in order to save time. One great advantage is that if a short or open circuit shows up it will light a lamp showing not only the dealer, but the customer, what is wrong. This is good psychology in tube merchandising.

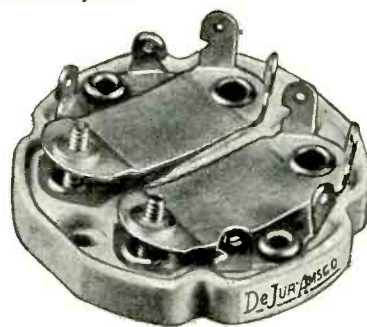


Ultra-Sensitive Relay by Leach

The Leach Relay Company of 860 South Los Angeles Street, Los Angeles, Calif., has developed a relay that operates on an exciting current of one milli-ampere. The contacts will safely carry one ampere. There are no armature springs in the instrument, magnetic attraction pulling the relay armatures both directions. It will serve a great many needs of service men and laboratory technicians.

New Condenser Line Designed for Superhets

A high-grade line of condenser units, particularly applicable to superheterodyne receiving circuits, is being marketed by the DeJur-Amsco Corporation, 95 Morton Street, New York. They are mounted on an insulating base of Isolantite. The types are Duplex-Variable, Duplex Semi-variable, Single Variable and Single Semi-variable. The Duplex Semi-variable units have standard capacities up to 140 mmf per condenser, with a minimum of approximately 70 mmf. These are considered especially adaptable for tuning intermediate frequency transformers in superheterodynes.



Experiments Prove Value of Shielded Lead-in Wire

Experiments made by the engineers of the Cornish Wire Company proved that one of the most effective ways of eliminating radio interference which emanates from power lines and electrical apparatus is the use of shielded wire for lead-ins and ground connections. The shields are usually grounded.

Corwico No. 16 shielded wire is available with both solid and stranded core. The copper wire is tinned and covered first with live rubber and then with a flexible metallic armor, made of very fine, closely woven copper wires.

POLYMET ENTERS SOUND EQUIPMENT FIELD

After many months of exhaustive research Polymet announces its entrance into the sound field, both with parts and with complete equipment. All elements entering into the construction of this equipment are being manufactured by the three factories of the Polymet Company, one of which is located at Winsted, Conn., one at Easton, Pa., and the third at New York.

Jewell Makes Portable Test Oscillator

Due to the return of the superheterodyne the Jewell Electrical Instrument Company has introduced a portable test oscillator for use with an output meter in aligning receivers and peaking the intermediate frequency amplifiers of superheterodynes. A single switch is used for selection of either the broadcast band or the i-f frequencies, the range for the latter band covering from 125 to 185 kc.



The Ellis Model 12N Two-Button Hand Microphone

This only two-button hand microphone employs the famous Ellis adjustable buttons used in the regular broadcast type units. This is in distinct contrast to the flimsy construction employed in the average single-button hand microphone.

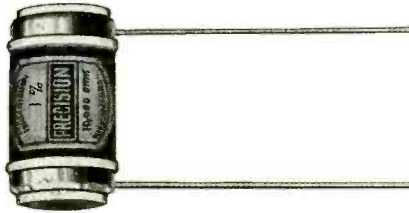
The Ellis two-button hand microphone is especially recommended for home recording devices, industrial and home talking-picture machines, portable public address outfits and, in general, wherever it is not convenient to use a regular spring-mounted microphone. Each unit is carefully made and individually tested. Size: 6½ inches long; head 2 7/16 inches in diameter; 1½ inches thick. List price, \$25. Three-conductor flexible cable \$1 list.

PACENT ADDS BOOSTER

The Pacent Electric Company has developed what they call an Electric Pick-up Booster for the purpose of increasing the audio amplification in radio sets employing a power detector and only one audio stage. The Booster is in reality a self-contained audio stage and is inserted so as to follow the detector and precede the power stage. It also contains a switch for changing over from radio to record. It is installed merely by placing an adapter between the detector tube and socket. After installation it remains a permanent part of the radio equipment.

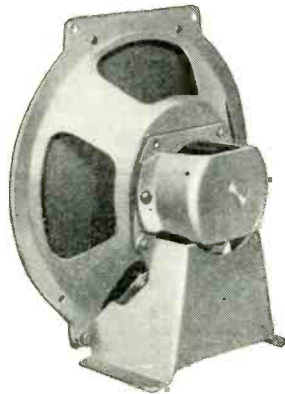
NEW RESISTOR BY INTERNATIONAL

A new wire wound resistor is announced by the International Resistance Company. This Precision Resistor has moulded end contacts which prevent open circuits due to corrosion, and pig-tails for ease of assembly. They are explained more thoroughly in the new catalog, which will be sent free upon request.

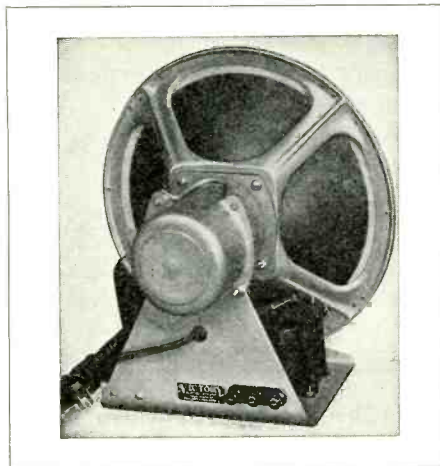


Two New Speaker Models Produced by Victory

The Victory Speaker Company of Oakland, Calif., is now marketing a new manufacturer's unit, and a larger auditorium unit, which, however, is

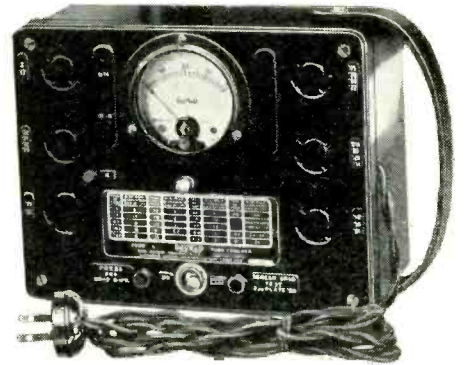


much smaller than the 16-inch unit used in theaters. The former, Model 50 d-c, has an outside diameter of 10 7/8 inches, and a field coil of 2500 ohms, in which No. 32 wire is used, giving it the ability of handling up to 80 milliamperes without overheating. The auditorium unit, Model 60 a-c, is 13 1/8 inches, outside diameter, and its field is excited by an '80 rectifier tube.



Self-Biasing Tube Checker Is Product of DayRad

This tube checker, DayRad Type L, is designed to indicate the "End of Life" of all types of amplifier, power and rectifier tubes. It will test both plates of the '80 rectifier, point out noisy tubes, and perform several other tests. It operates on alternating current.



Tone Controls for Table or Panel Application

The addition of the modern tone control feature to any existing radio set, whether battery or socket-power operated, is reduced to simplest terms by means of the selectone or tone-control device now introduced by the Insuline Corporation of America, 78 Cortlandt Street, New York. The installation of this device consists of slipping two adapters or connection disks about the prongs of the usual push-pull power tubes which are then replaced in their sockets. Or if the receiver has but a single power tube, one adapter is slipped over the tube prongs while the other is removed and its lead connected with the ground binding post of the receiver.

The selectone comprises a neat case containing the mechanism operated by a bakelite knob, a long flexible cord, and the two adapters. It is available in both table model and panel model.

HIGH VOLTAGE-LOW CURRENT FUSES NOW AVAILABLE

The Littelfuse Laboratories have recently expanded the original line of instrument Littelfuses to include a new line of high-voltage fuses with the same quickness characteristics as formerly, but designed to work on the voltages used in amateur and commercial broadcast equipment.

They make very good protectors for transmitting and rectifying tubes in radio and sound installations, operating mostly in the range below one ampere. The low voltage instrument fuses have been improved and a 1/100 ampere fuse has been added to the line.

ROUND TABLE TALK

22 Brattle St., Boston, Mass.
December 26, 1930.

Pacific Radio Publishing Co.,
San Francisco, Calif.

Gentlemen:

Have read your editorial in December RADIO.

In regards to free home demonstration evil, we have solved it, so far as we are concerned, on midget sets, as follows: We sell for cash only, let the customer take a set home on a trial basis as follows: We get the full cash price as a deposit. If he is not satisfied after a week's trial, we refund his money, upon safe return with tubes in good condition, charging him \$1 a day for "rental," which is deducted from the deposit.

While the rental is actually worth more than this, we figure that any bona fide prospect will gladly pay \$1 a day for the use of the set he is planning to buy, partly from the entertainment value, and partly for the privilege of proving to himself that the set is worth the price, and by paying a nominal fee he feels under no obligation to the dealer. Most of the sets put out on this

basis stay sold or customer returns it to try another for, say, \$10 more.

Should think some of your other readers could use this plan to advantage and that manufacturers could use such a plan in their advertising rather than antagonize their outlets by forcing unsound sales policies, such as free trials, on them.

We also agree that announcers talk too much, especially when the listener is only concerned about hearing name and location of the station broadcasting, in many cases. As regarding customers knowing more than the clerks, this is true to an astonishing degree here in Boston, and the only solution seems to be in paying the clerks more money and getting A-1 men. We have one salesman with ten years' experience selling radios, giving him a good salary and commission, worth three ordinary clerks.

Due to restricted capital, we are doing a strictly cash business and find plenty of customers. Most "salesmen" use the time payment argument as their *only* sales talk, thus cheating the boss out of many sales which would otherwise be for cash.

F. R. PRAY.

Gentlemen:

Having noticed announcements of other organizations in your magazine, RADIO, thought possibly you could use some of the following.

Colorado Radio Technicians Association, has been organized for the betterment of radio conditions as follows: All members are required to pass a rigid examination to show their fitness to service radio efficiently; an employment department is maintained for service men and their helpers, with the result that every man in the organization is working.

A course of study where a person may study radio is maintained and at each meeting we have a talk from some factory engineer on radio replacement parts.

We have the support of all the dealers in the city and a plan of advertising is being started, asking the public to insist on a certified radiotrician.

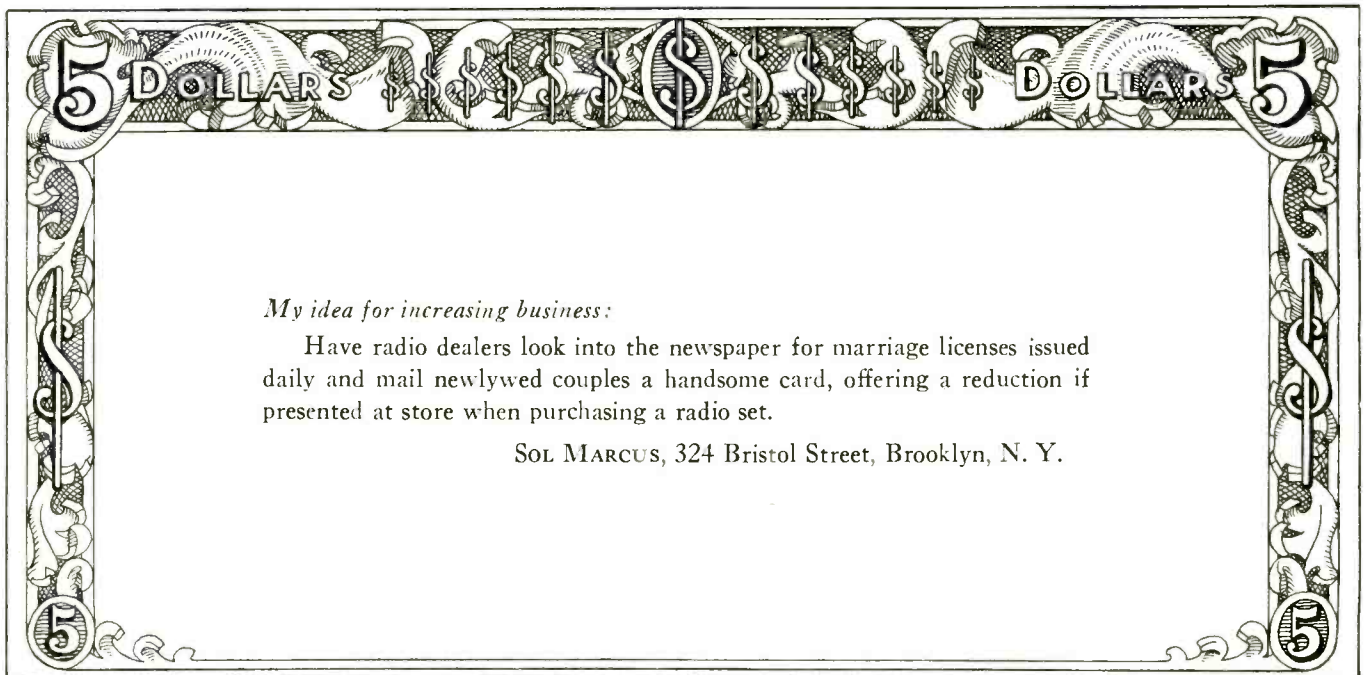
Yours truly,

COLORADO RADIO TECHNICIANS ASSN.

By Fred Haberl, Sec.-Treas.

P. S.—A library is maintained of all service manuals for the use of all service men in the city.

FIVE DOLLARS FOR AN IDEA



My idea for increasing business:

Have radio dealers look into the newspaper for marriage licenses issued daily and mail newlywed couples a handsome card, offering a reduction if presented at store when purchasing a radio set.

SOL MARCUS, 324 Bristol Street, Brooklyn, N. Y.

This month's prize goes to Sol Marcus, 324 Bristol Street, Brooklyn, N. Y. No wonder companionate marriage is getting a foothold in this country. Other interesting ideas were also received. For next month's contest get your letters to one of RADIO'S four offices on or before the 20th of the month.

Association



News

New RMA Directors

Two new directors, E. E. Shumaker, president of RCA Victor Company of Camden, N. J., and Meade Brunet, sales manager of RCA Radiotron Company of Harrison, N. J., were elected to the RMA Board to fill vacancies caused by the resignations, respectively, of J. L. Ray, formerly vice-president and general sales manager of RCA Victor Company, and G. K. Throckmorton, executive vice-president of E. T. Cunningham, Inc.

The RMA Board adopted resolutions of sincere regret in the loss of a former director, Harold S. Hyde, of the Radio Master Company of Bay City, Michigan, who died recently.

Developing Export Trade

In the development of export trade of RMA members, much information is being constantly secured and distributed through the Foreign Trade Committee of which Mr. Arthur Moss of New York City is chairman. Through the American Manufacturers Export Association, with which the RMA is affiliated, and from the U. S. Department of Commerce and other sources, Chairman Moss and his committee are securing information which is transmitted to the Association's members. There have been recent information bulletins on world markets, marine and credit insurance, patent situations, and other data.

Membership Campaign

Howard J. Shartle, chairman of the Membership Committee, reports that his campaign for members is meeting with splendid success and that very favorable comments have been secured from many of the trade's outstanding wholesalers. The executive offices wishes to announce the acceptance of the following new members:

Philadelphia Victor Distributors, Inc., 240 N. 11th St., Philadelphia, Pa.; H. A. Weymann & Son, Inc., 10th and Filbert Sts., Philadelphia, Pa.; Anthracite Radio Co., 401 N. Broad St., Philadelphia, Pa.; Schaffhauser-Kiley Corp., 401 N. Broad St., Philadelphia, Pa.

WISCONSIN TRADE ASSOCIATION COMES TO AID OF DEALERS

(Continued from Page 47)

injunction should not be made permanent, the plaintiff in the action would be answerable to the wholesaler for the damages sustained because of the temporary injunction. A special meeting of the directors of the Wisconsin Radio Trade Association was immediately called, and by the unanimous vote of the directors the association offered its entire funds, which exceeded \$10,000, to indemnify the plaintiffs in the action against any damages which might be sustained because of an injunction. The attorney for the association was authorized at the same time to proceed promptly to secure an injunction.

At 6:30 o'clock on the same day a Circuit Court judge signed a temporary injunction supported by bond of the plaintiff, based on a suit brought by Sheff's, Inc., in behalf of itself and a number of other associated authorized Victor dealers against the North Central Distributors, Inc. At 7:30 o'clock on the same evening the sheriff served the temporary injunction on the wholesaler and closed its doors. The wholesale establishment at the time was full of customers, lured by the ad, who were either securing demonstrations or making purchases. These customers were turned away.

The hearing on the temporary injunction was made returnable in the Circuit Court of Milwaukee County at 9:30 o'clock on Saturday morning, January 17. The North Central Distributors, Inc., appeared by attorney, complained about the loss which it was sustaining, and demanded immediate trial. The dealers were present with their attorneys and were ready for trial, and the case proceeded immediately to a trial on its merits.

The contentions of the dealers as set forth in the complaint were several. First, that the wholesaler had obtained a "monopoly by trick" in violation of the laws of the State of Wisconsin, which prohibited monopolies, and the interference with the distribution of merchandise through normal channels; second, that the advertisement of January 14 was untruthful in relation to the price

published as being less than dealers' cost, and therefore constituted "fraudulent advertising" in violation of the statutes of the State of Wisconsin; third, that the method used by the wholesaler in repossessing the merchandise and then offering it at what was alleged to be less than dealers' cost imputed that the dealers had been charging their customers an unfair and excessive price, and interfered with the carrying out of their contracts, deprived the dealers of the good will of their business, robbed the dealers of the benefits of their sales efforts and advertising, and, therefore, constituted "unfair trade practices" in violation of the statutes of the State of Wisconsin.

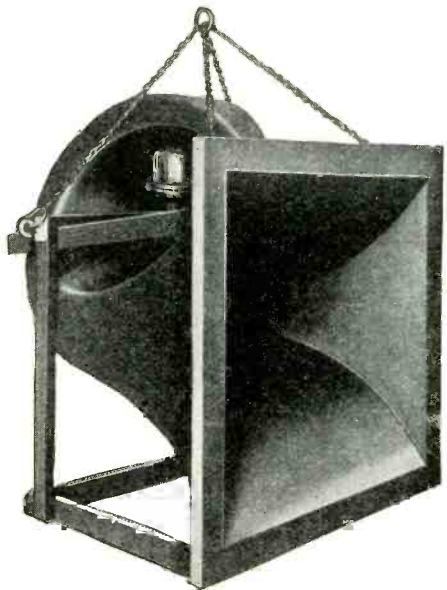
The circuit judge disregarded all other work as well as the usual weekend adjournment and continued the trial until six o'clock on Saturday, when the trial was continued to nine o'clock on Monday, upon the condition that the dealers could furnish the wholesaler with a substantially increased bond. The bond was furnished.

The trial continued at nine o'clock on Monday and at six o'clock on Monday the trial was successfully completed by the dealers, with the result that the court issued a permanent injunction restraining the North Central Distributors, Inc., from selling Victor radios at wholesale to the public in Milwaukee County for a period of six months, and also restraining the wholesaler from continuing his advertising campaign in the form of the specimen of January 14, 1931.

To the local dealers this litigation demonstrates two most important factors: First, that in order to establish the radio business on a real footing, fair trade practices must be followed, and that when the facts justify, the courts may be resorted to for the purpose of maintaining fair trade practices. Second, this incident clearly demonstrates the splendid cooperation between members of an association, whether wholesalers or dealers, and the great advantage to be gained from an association, well managed and well financed.

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Especially adapted for small capacity theatres, skating rinks, dance halls, small auditoriums, churches.

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Weight... 25 pounds Bell... 29x29 inches

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FRAZAR & CO., LTD.

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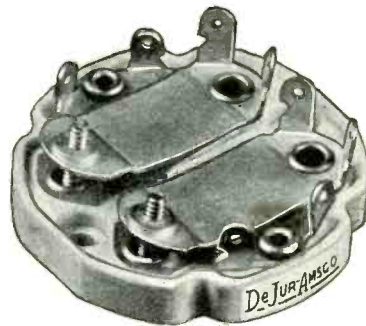
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These units are mounted on an insulating base of Isolantite. The Duplex types are mounted electrically and mechanically independent of each other with mica dielectric between the plates.

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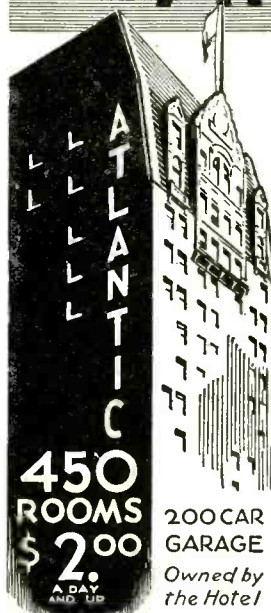
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The Complete Radio Test Set

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JUST as electrical engineers and laboratories have found that Weston quality and reliability in electrical testing equipment has never been equalled, every day more radio dealers and service men realize that it pays to buy "Weston's" first instead of last.

WESTON Model 565 is practically a complete portable radio laboratory. It makes the required tests on every model Radio Set and checks every type tube, A.C., D.C., Pentode and both plates of Rectifiers. As a tube checker, it operates directly from any 50 to 60 cycle, 90 to 135 volt A.C. line. Model 565 contains an R.F. Oscillator, Direct Reading Ohmmeter, A.C. Ammeter, D.C. Milliammeter, A.C. and D.C. Voltmeter — permitting an exceptionally wide range of measurements.

REMEMBER Weston test sets are endorsed by orders from thousands of radio dealers and service men. Before you buy a test set, inspect Weston Model 565.

In the meantime, for further information

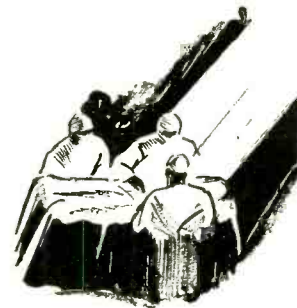
WRITE FOR CIRCULAR
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WESTON ELECTRICAL
INSTRUMENT CORPORATION
600 Frelinghuysen Ave. Newark, N. J.

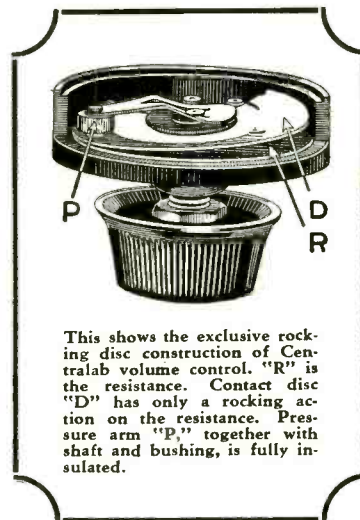
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Every phase of the building of a Centralab resistance unit must be under Control if it is to function smoothly and noiselessly. That twenty millions of Centralab controls have been sold the world over attests to the perfection of this technique.



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WHOLESALE RADIO SERVICE, Power Pack rebuilding, Shop equipment built and repaired, Coils matched, All kinds of Solenoid winding, B & B Radio Lab., 509 Terry Ave., North, Seattle, Wash.

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Dealer's Service Department of RADIO

SECTION II

FEBRUARY, 1931

SERVICE USE for V.T. VOLTMETER

As Described in RADIO for January, 1931

By B. E. ESTES

FOR CHECKING the sensitivity, selectivity, and hum level of a radio receiver, the set-up in Figure 1 should be used. The input of the vacuum tube voltmeter is connected



Vacuum Tube Voltmeter

across a 4000-ohm resistor which in turn is connected across the primary of the output transformer of the receiver. If a choke tube voltmeter is used, the vacuum tube voltmeter is connected to the output terminals of the receiver, and if no output transformer is used it is connected in place of the speaker. Condenser C_1 is used to prevent any of the d-c plate potential from affecting the grid potential of the tubes. This condenser should have a capacity of about one microfarad and should have a high leakage test.

The modulated oscillator used should be well shielded and a positive means of controlling the output voltage of the oscillator should be used so that the same output voltage can be duplicated at a later date. If it is desired to make selectivity tests,

there should either be separate verniers or a vernier dial capable of varying the frequency in steps of at least two k-c. There are several such oscillators, or as they are more commonly called, "standard signal generators," on the market, but for those who wish to build their own there will be a standard signal generator which can be built for a low price, described in a future issue of RADIO.

As the service man is most interested in seeing that the receiver which he is working with is up to the factory standard for that particular type of receiver, a comparison test against a receiver which is known to be working properly will be the most valuable to him. To do this, a receiver in good working condition is connected as in Figure 1 and with the volume control full on, the output of the oscillator is adjusted until the vacuum tube voltmeter shows that there is 14.1 volts across the 4000-ohm resistor. This is

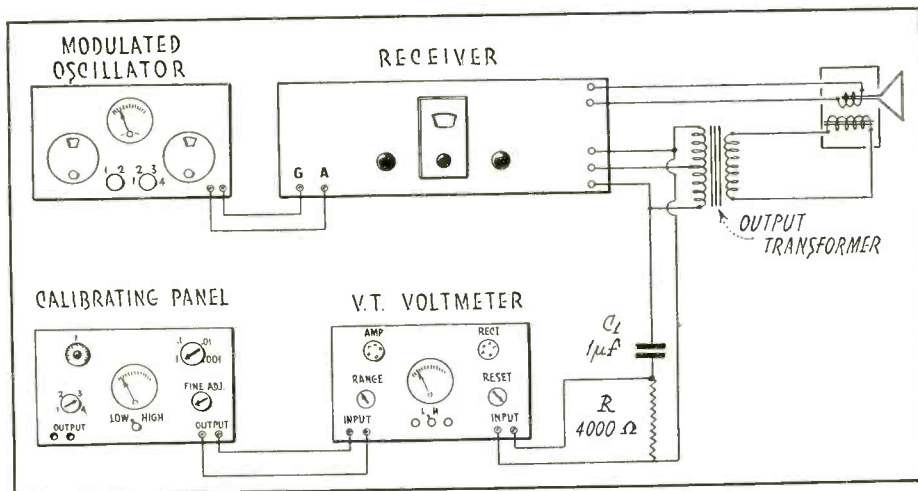
an output of 50 milliwatts, which can be used as a standard output. The setting of the output voltage control is noted so that at any later date if another receiver of this type is to be



Calibrated Panel

checked, the output voltage control of the oscillator can be set for the same input voltage to the receiver and the output voltage of the two receivers compared to see if the receiver being tested is up to standard.

The same set-up is used to align or neutralize a receiver. In aligning each trimming condenser, the set is adjusted until the needle of the milliammeter in the vacuum tube voltmeter rises to a peak and drops off again. The trimming condenser is then backed off until the needle is again on the peak. If the output voltage control of the oscillator is left set during this operation, an actual check upon the improvement effected in the receiver will be shown. This means of checking output voltage is also convenient when changing



Arrangement for checking sensitivity, selectivity and hum level

tubes or making other changes in the receiver, as any improvement in sensitivity may be readily noted.

In neutralizing, the dummy tube method is used and the neutralizing condenser adjusted until the minimum voltage is indicated across the output resistor. It is important, however, to compensate for each change in neutralizing capacity by a change in the trimming condenser, otherwise the results obtained will be misleading.

Selectivity at the various frequencies may be checked by setting the volume control of the receiver at a point where good volume is obtained from a local station. The oscillator is then connected and the input voltage to the receiver adjusted until an output of 14.1 volts is obtained. The oscillator is now moved off the resonance point two kc at a time and the output voltage at each point noted. When about ten kc have been covered, the dial is moved back to the resonance point and the same procedure repeated on the other side of the resonance point. When these readings are plotted in curve with voltage against frequency, a good idea of the selectivity

of the receiver at that particular frequency may be had. It is a good idea to make sensitivity and selectivity measurements at 1400, 1000, and 600 kilocycles.

When measuring the hum level of the receiver, the oscillator should be disconnected and the aerial and ground posts of the receiver connected together so as to eliminate any possible pick-up. The vacuum tube voltmeter is used on the *low* range and the voltage indicated will be the hum voltage of the receiver. It is a good idea to make a note of the hum level of the various receivers handled so that any receiver in question can be checked for hum and the voltage obtained compared with the voltage of a receiver in good operating condition. It is also handy to keep the meter on for hum measurement when working to eliminate hum in a receiver, as any improvement that may be made can be readily noticed. It is quite interesting to note the effect of varying the center tapped resistor in different types of receivers.

Next month Mr. Estes will explain other uses of this instrument.—Editor.

QUESTIONS and ANSWERS

That Will Help to Prepare the Service Man for Forthcoming Examinations

By J. EDWARD JONES

Q. (a) Why will a properly shielded antenna system eliminate many interfering noises?

(b) Describe briefly recognized shielded antenna system.

A. (a) Man-made static, or noises originating from electrical machinery and appliances, is maximum at approximately ground level, gradually decreasing towards the roof. This is because most machinery is installed on the lower floors. The radiation to building wiring is carried over entire building and will re-radiate into the set itself or any unshielded pick-up wires.

(b) Flat top of shielded antenna is placed as high as possible, longer than usual, in fact as long as total recommended by receiver manufacturers. The lead-in is brought down to the set in regular shielded wire. For ground, a 6 to 8-foot rod should be driven in moist ground with the ground wire to set also shielded. These shielding sheaths should be grounded to water-pipe system of building, preferably in two or three places. All metallic structures on roof of building should be connected together and grounded with top end of lead-in shield.

Q. In the old style Radiola superheterodynes, models 60 and 62, what was the cause of lack of control of volume, when volume control and its

associated bypass condenser were both o.k.? Why?

A. This lack of control was usually caused by a low emission '71-A power tube. In these sets the volume control varied the bias on the intermediate and radio frequency tubes between 9 and 21 volts. The plate current of the power tube, however, was caused to flow through the biasing resistor, therefore when the plate current of the power tube fell off the i-f and r-f tubes, bias was affected so that even though the volume control was retarded the true bias would approach 9 volts, or maximum. The quality of reception under these conditions was very poor.

Q. In speaking of a superheterodyne with a definite number of tuned circuits, can this number be greater than the number of variable condensers controlled by the tuning knob?

A. Yes. The oscillator circuit frequency is made to "mix" with the incoming signal frequency and produce a beat frequency which is always the same. This beat frequency is amplified by the intermediate transformers. The primary or secondary, or both of these transformers can be tuned and fixed, and each comprise a tuned circuit that is just as effective as if tuned by a variable condenser.

Q. Why is a vacuum tube voltmeter used for certain radio measurements?

A. A vacuum tube voltmeter takes no current from the circuit it is measuring. This is very important in certain circuits containing high resistors and impedances, because of the voltage drop caused by even the minutest current flowing through these resistances. Therefore a vacuum tube voltmeter gives accurate direct reading of such circuits, while with the usual type meter extensive calculations would have to be resorted to for every measurement.

Q. What is the advantage of mutual conductance test for tubes over the method used by most tube checkers on the market?

A. The measurement of mutual conductance is a direct measurement of the efficiency of the tube. It is taken with tube in correct operating condition, and the same tube will read the same on any mutual conductance tester, therefore intelligence can be transferred from one point to another regarding tube efficiency. The average tube checker uses arbitrary units, and the same tube may test differently on any number of checkers.

Q. What is the output rating in milliwatts of a '45 tube? What is the maximum rating of two '45's in parallel?

A. Sixteen hundred and fifty milliwatts. Approximately 3300 milliwatts.

Q. What type of volume control is used in the new RCA remote control receivers, and how is it operated?

A. The volume control itself is the same as in the straight models of these receivers, *i. e.*, a 4000-ohm variable resistor varying the bias on the r-f and first i-f tube. It is operated by the same motor that operates the tuning condensers. Two push buttons on the panel or in the remote control boxes govern the operation, one towards maximum and the other towards minimum.

Q. What voltage is used on each plate of the '80 tube in the Victor Model R-15?

A. The over-all voltage of the plate supply secondary of the transformer in this set is 1050 volts, therefore each plate of the rectifier tube is supplied with 525 volts.

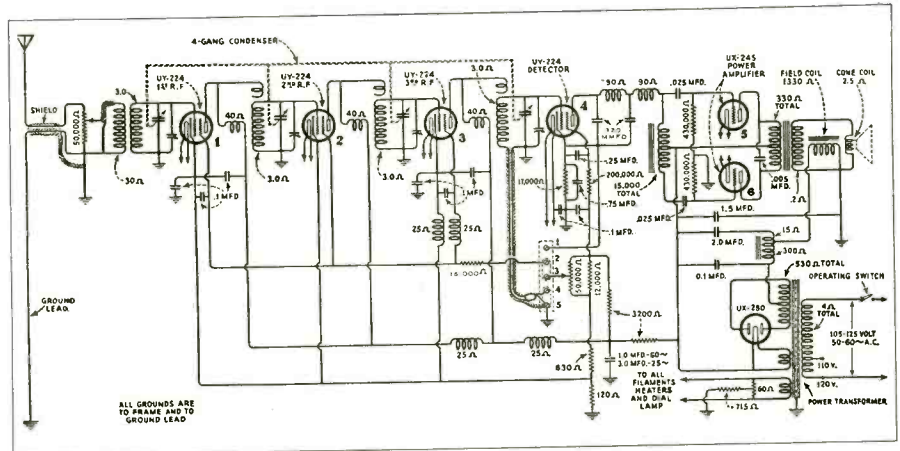
Q. Explain a simple method of measuring the gas content in a tube.

A. Granting that all voltages on the tube are normal, the gas content of a tube can be measured in terms of grid current in microamperes. This method is quite practical for ordinary purposes, as under correct conditions no grid current will flow unless a certain amount of gas is present. Three to four microamperes is about the limit allowable for general purpose tubes, but for a detector this can be higher without ill effects.

Dealers' Specification Sheet for the Service Department

RCA-Victor Company, Inc. Camden, New Jersey

General notes on the circuit of this receiver and some aids to shooting trouble that will be of great assistance to the service man in testing and repairing them.



Circuit Diagram of Radiola 48

GENERAL

IN THE Radiola 48 a variable 50,000-ohm resistor is connected across the aerial and ground, serving as one section of the dual volume control. Transformer coupling is used between the three r-f stages and detector, the primary in each case being loosely coupled. A single turn, dead-ended, is coupled to one end of the grid coil in order to provide capacitive coupling between circuits. The second section of the volume control varies the screen-grid voltage of the three r-f tubes.

The detector is of the plate rectification type, operating with high plate voltage and a biased grid. The bias is furnished from the drop in plate voltage as it passes through the 17,000-ohm resistor which separates the cathode from ground. The output of the detector is carefully filtered through the two r-f chokes and a bypass condenser for each, and is coupled to the two push-pull audio tubes by means of a high impedance choke which matches the plate impedance of the screen-grid detector tube, a pair of condensers and grid resistors. The grids of the power tubes are grounded, receiving their bias from the drop through the 715-ohm resistor connecting the filament center-tap to ground. This resistor is located in the power supply unit. A center-tapped primary step down output transformer couples the a-f output of the two UX 245 tubes to the voice coil of the speaker. The power transformer has just three secondary windings; one for all filaments and heaters, one for the rectifier filament and one for high voltage. There are two audio frequency chokes, including the speaker field winding, both being in the negative lead between the high voltage center-tap and ground. The positive lead goes direct to the plates of the detector and power tubes. It passes through a 3200-ohm resistor to supply all screen-grids and r-f plates, being reduced further through other resistors before reaching the screen-grids, and going through two r-f chokes in the plate circuits. The object of these chokes is to stop the flow of radio frequency currents before they get into the power supply system and make them take the capacitive course from the single turn to the following grid coil, which is of lower reactance at these frequencies than that through the chokes.

TROUBLE SHOOTING

No Reception—Defective operating switch, open cone or field coil in speaker, defective parts in chassis (test by voltage readings and continuity tests).

Low volume—Poor antenna system, shorted field coil, r-f stages not aligned, defective parts.

Poor quality—Receiver not properly aligned, defective coupling reactor, defective coupling condenser, defective output transformer.

Audio howl—Defective cushion supports, oscillation, bypass condenser not properly mounted causing poor connection to frame, open bypass condenser, broadcasting station heterodyne (this is caused by transmitting stations and is no fault of the receiver).

Oscillation—Poor ground, shields not in place, shield clips broken or bent, open or shorted bypass condenser, defective tube, screen-grid resistor (make sure screen-grid resistor is 16,000 ohms).

Hum—Defective rectifier tube, shorted field coil, grounded heater lead, loose laminations in filter reactor (tighten filter reactor clamping screw), shorted bypass condenser from C_4 to ground.

Noisy volume control—Poor contact of arm (work back and forth; if trouble does not clear up replace).

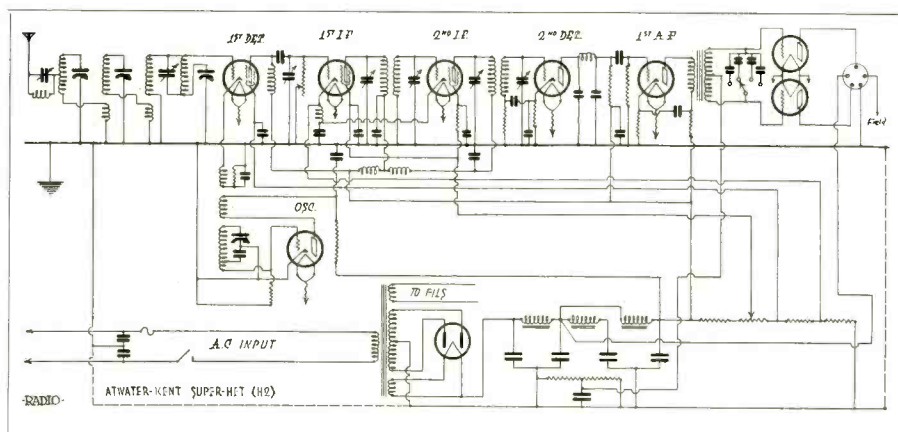
Dial scale reads incorrectly—Scale shifted (loosen clamping screws and adjust). Set not properly aligned.

To line up with oscillator and output meter—Remove chassis from cabinet, remove gang condenser shield clamp and shield, shift the black with yellow tracer wire connected to the arm of the antenna potentiometer to the black antenna lead connected to one side of this potentiometer. Couple the oscillator output to the antenna lead, adjust the selector knob until the first vanes of the gang condenser fully mesh with the stator plates and the next set is free. Adjust the oscillator for maximum resonance with output meter (about 1120 kc), then adjust the four vanes that are engaged with the stator, using the hexagonal wrench designed for the purpose. Then turn the condenser in so that the second sections of the end rotor plates are meshed with the stator plates and repeat for each set of vanes. The frequencies for the subsequent vanes are 840, 700, 600 and 550 kc.

Dealers' Specification Sheet for the Service Department

Atwater Kent Mfg. Co. 4700 Wissahicken Ave., Philadelphia, Pa.

Circuit analysis and details of the Atwater Kent H-2 Superheterodyne receiver, calling attention to the use of each part in the circuit for the purpose of guiding the serviceman.



Circuit Diagram of Atwater Kent Super

CIRCUIT ANALYSIS

THIS receiver has three tuned circuits ahead of the first detector, forming a pre-selector circuit, for the sake of greater selectivity. The first, second and fourth coil are tuned by condensers in the gang, while the third inductance forms a part of the grid circuit and is tuned by means of a semi-variable trimmer. The first two inductances are coupled inductively and conductively by means of small primaries in series with the preceding secondaries.

There are three windings in the oscillator coil; one in the grid circuit, tuned by one of the ganged tuning condensers, one in the plate circuit, coupled to the grid coil as a feedback or tickler inductance, and the third a pick-up coil transmitting the oscillations of the oscillator tube to the first detector or mixing tube. This coil is connected between the detector cathode and ground. The oscillator is tuned to a frequency differing from the frequency to which the first detector is tuned by 130 kc, which is the intermediate frequency of this receiver.

The intermediate frequency amplifiers are tuned to this frequency, both the primary and secondary of each transformer being tuned.

The screen-grid of the first detector is supplied from a terminal in the main voltage divider. The plate is fed from the main positive line, through an r-f choke. Grid bias is supplied with the drop in voltage through the resistor which separates the cathode and the oscillator pick-up coil from ground. The oscillator operates without grid bias, and the plate voltage is taken from the main positive line and dropped to the correct value through a series resistor.

The 130 kc output from the detector is coupled into the first i-f stage through a condenser between the detector plate and i-f grid. A trimming condenser across the grid and ground keeps this circuit tuned to the intermediate frequency. A variable resistor is connected across the first i-f grid and ground, serving as one section of the dual volume

control. When the resistance is increased the absorption of the i-f voltage is decreased, resulting in greater volume. At the same time the voltage of the i-f screen-grids is increased by the other section of the volume control, a potentiometer in the voltage divider.

The grid bias for the two i-f tubes is supplied by the last resistor in the divider, which puts a positive voltage on the two cathodes. Transformers with tuned primaries and tuned secondaries couple the first i-f stage to the second and the second to the second detector. The screen-grid voltage for these tubes is taken from the variable tap on the volume control section of the voltage divider.

The second detector grid circuit is tuned to the i-f frequency by the trimmer across the transformer secondary. A resistor that separates the latter from ground is used for the purpose of filtering, or providing a higher resistance path to the i-f current than that provided through the condenser between the coil and the cathode. The grid bias for the detector is supplied by the resistor between the cathode and ground. The output of the detector is at audio frequencies, and all remaining i-f frequency current is bypassed to ground through the small condenser between plate and ground. The r-f choke pushes it back to the condenser path. Resistance coupling is used between the detector and first a-f stage while the latter is coupled to the last a-f stage through a transformer. The tone control consists of a switch with four small fixed condensers connected across the two power tube grids.

The power supply system consists of a transformer with but three secondaries: one for high voltage, one for the rectifier filament and one for all the heaters and filaments. A fuse in the primary circuit will go out with a very slight overload, even that caused by a gassy rectifier tube—a good thing to remember when servicing this receiver. Three a-f chokes are used in the filter, although one of them is not connected in series with the high voltage line, but serves more as a tuned absorption circuit for 120-cycle current.

SIDELIGHTS on Midget Manufacture

By R. MACGREGOR*

THESE is no doubt about it—the industry is vitally interested in mantel radios. There is nothing essentially new in these sets, but we all admit they are different. They brought new problems to the radio dealer, distributor and manufacturer, and when something different is placed on the market, it is interesting to go over the pros and cons. The subject has been discussed extensively in print from a merchandising angle and a few words as to their manufacture should be appropriate.

The design problems with a mantel type radio are primarily those of building high quality apparatus at reasonably low price in which the utmost in quality is obtained, both as to the components which go to make up the set, and the performance of the finished product. We have always had inexpensive radio receivers, but the quality has generally been in accordance with the price. This year has seen a public demand for a receiver in the low price class, of high quality manufacture, of lesser range and power than the larger receivers, but equal quality as to those results which are obtained.

One example of the problems confronting the design engineer of the mantel type set, might be cited in tone quality baffle limits. It is generally understood that for true reproduction of low tones, a large baffle is required. This baffle is supplied in the larger sets by the physical dimensions of the cabinet. With a mantel type set, the size of the cabinet is necessarily limited, and, of course, so are the baffle dimensions which are, in reality, the front and sides of the cabinet. This problem has been met in a practical way by the design engineers, building more low tone amplification into the chassis and loudspeaker. This means that if the present mantel type set were assembled into a larger cabinet, low tones might predominate. However, with the present design, a nice balance is maintained.

The congestion of parts in a mantel type chassis, due to the requirements for compact assembly, bring about their own problems in shielding. Proximity of high and low voltage leads will cause regeneration of feed back in a mantel type chassis and special provisions must be

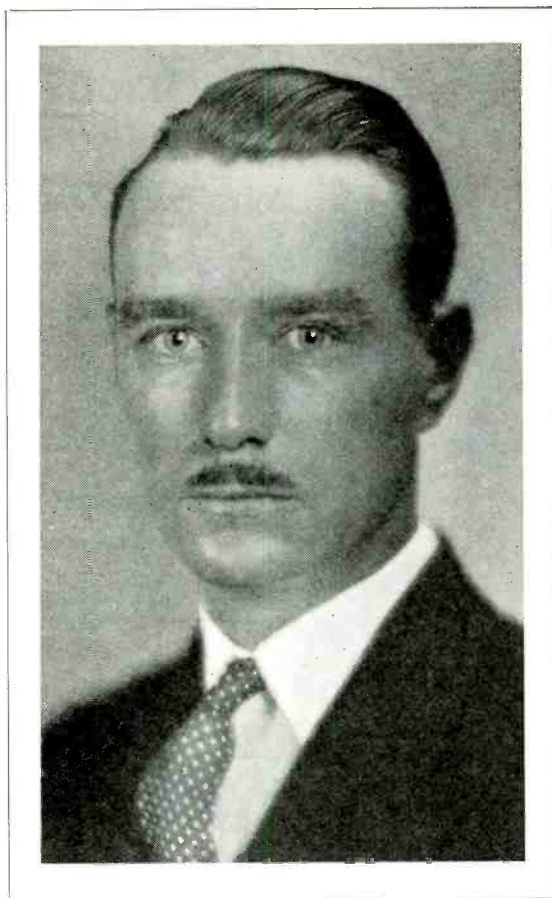
made to overcome, or neutralize, this effect, whereas in the larger sets, there need not be such proximity of leads of widely differing potentials, there being more space available in console types. One saving grace in the matter of feed back with the Junior is the fact that we have lower overall gain.

A third problem which is encountered in the design of a midget receiver arises with the requirements for higher gain per stage in the r-f circuits.

While the public might be pleased to pay half the price of a large set for a mantel type receiver, they would not be pleased to operate that set if it brought in only half the stations, which necessitates higher gain per stage of r-f amplification. A solution to this problem lies in setting rigid standards for each component part entering into the assembly of the chassis and maintaining strictly the tolerances thus set.

The selectivity of a mantel type radio might be expected to be less than that of the larger receiver, due primarily to the use of fewer tuned stages. It is obvious that the more tuned stages there are to a receiver, the more sharply that receiver will tune. Of course, there are practical limits to the number of tuned stages that we can use with any one receiver; cost itself would dictate a limit. A small amount of regeneration well placed helps selectivity and is permissible in a mantel type radio, provided that none of the ill effects of regeneration are permitted to affect other factors, such as the tone quality. A uniform sensitivity over the tunable range is desirable in any receiver, fortunately, is more easily attained in the mantel type radio than in its big brother. Amplification of stations operating on high or low wave lengths is assured in equal degree by means of compensation. In the r-f coils, compensation is simpler by virtue of fewer tuned stages, thereby having less to compensate for.

It would be safe to say that 75 per cent of design problems with mantel type radios are brought about by very compact assembly; for example, ventilation



holes in the chassis are desirable, whereas in a large set, with greater space for heat radiation, they would be unnecessary. The field coil of the dynamic speaker has openings diametrically opposite, to permit air circulation, and it is good practice to leave one side of the power transformer unshielded for the same purpose. It is necessary, of course, that the unshielded side of the transformer carry only low voltage leads.

Compactness of design confronts the production manager and slows down wiring, soldering and assembling at many points.

Even after careful production research for speedy methods, it is found that the figure of man-hours is larger per unit for this set than for larger models, meaning that more help is required. However, the fact that the chassis is assembled on one production line as a complete unit brings other advantages which offset largely other disadvantages. In the matter of actual assembling and soldering, the production department works independently of inspection, to make sure that no wire clippings or small beads of solder remain in the finished chassis, the job being considered complete only when a clean, correct chassis is turned over to inspection for tests and final adjustments.

Many and varied are the queer shapes of the tips on the soldering irons, for making direct contact into the odd corners where connections must be made on a small chassis. *Tips must be*

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replaced twice daily to maintain the speed and make clean, quick joints. Irons of the 3/8-in. size are preferable.

The same care and rigid inspection must be maintained with this small set as with the most powerful on the market. It is surprising how much psychology there is in the successful operation and control of an inspection department. Nowhere in a radio manufacturer's organization are the ideals of that organization more clearly made apparent than in the attitude of its inspection personnel towards the function they are performing. The human element enters into the quality of each inspector's work and they realize the value built into the chassis, and consequently, it is easy to enlist their best efforts continuously.

The small amount of regeneration which is permitted in the receiver brings freak results on a test bench, unless provisions are made to subtract that regeneration while tracking and testing. Special shields in the form of a fixture, remove this variable so that all the chassis are the same, minus regeneration.

The r-f coils, to maintain high sensitivity in the finished product, have very close tolerances; 22/100 of 1 per cent, plus or minus, is allowed in our coils.

Servicing is simplified from many angles with mantel type radio due to its portability, and in general, the lack of "gadgets" in these circuits. The chassis has fewer unit parts than larger sets, and having fewer circuits, there are fewer possibilities of faults, by the law of averages. In general, the service complaints arising with mantel type radios are confined to selectivity and sensitivity complaints due to the customers comparing these mantel type sets with higher powered receivers of correspondingly higher price.

One common complaint with mantel type radio is broad tuning due to a local broadcasting station of low power situated within city limits or township limits of the smaller cities and towns.

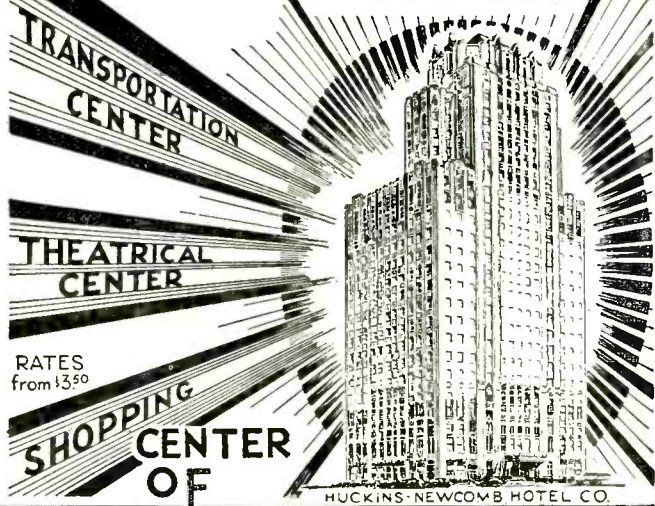
The larger receivers having more tuned stages, can generally cut out the interfering station within a few degrees on the dial. With a mantel type radio, this is not so, and a handy service kink, practiced by some of our more experienced service men, is to connect a small choke coil of about one millihenry inductance in series with the antenna when the interfering low power station operates on low waves between 1100 and 1500 kilocycles, as most of these low power stations do.

Many service men are of the opinion that long antennas are needed with these small sets, but this is not the case, as was demonstrated by a CLARION dealer in Itasca, Illinois, who advised the writer that he had at first installed the set with about 60 ft. of aerial and had then reduced the antenna length

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piece by piece untid 42 ft. of antenna, including the lead-in, remained.

The effect of a good ground of low resistance seems to be more apparent in improving selectivity with a mantel type radio than with the console model, but in the actual installation of many mantel type radios, very poor grounds are often made. This is possibly due to the fact that a larger percentage of mantel type sets are sold over the counter to the customer on a cash basis, and the customer does his own installing.

It seems wherever men of the industry meet, the question now asked is "How long will the midget fad last?" Some think it permanent, others consider it a transient, and some ignore it entirely, but the public nevertheless has been buying mantel type sets in ever-increasing quantities.

Naturally, no one would care to answer such a question definitely saying far in advance what this industry of ours will or will not do, but it is interesting to reflect that past radio seasons have seen the inception of a-c operated receivers, dynamic speakers, screen-grid tubes, etc., and they are still with us, differing only from the originals by natural improvements. Is it not then reasonable to suppose that the market for mantel type radios is a permanent one? The public, as usual, will dictate the answer.



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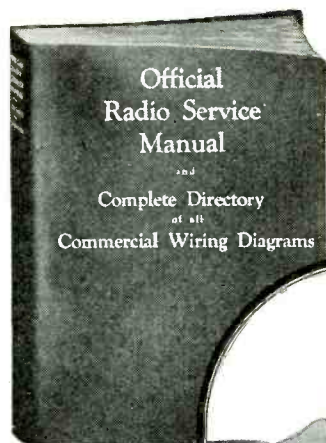
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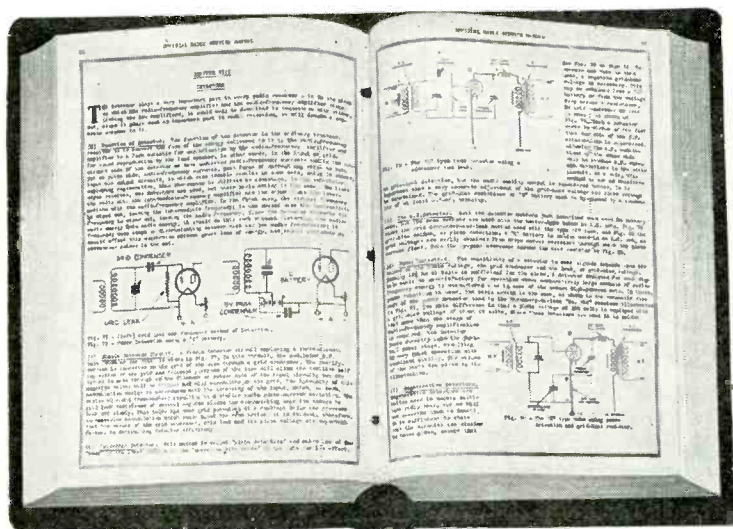
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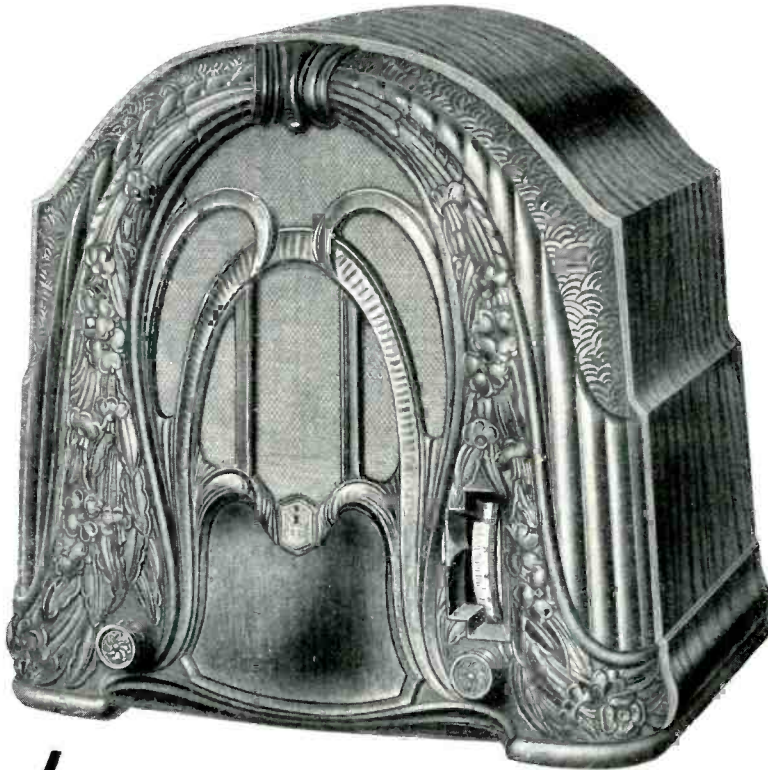
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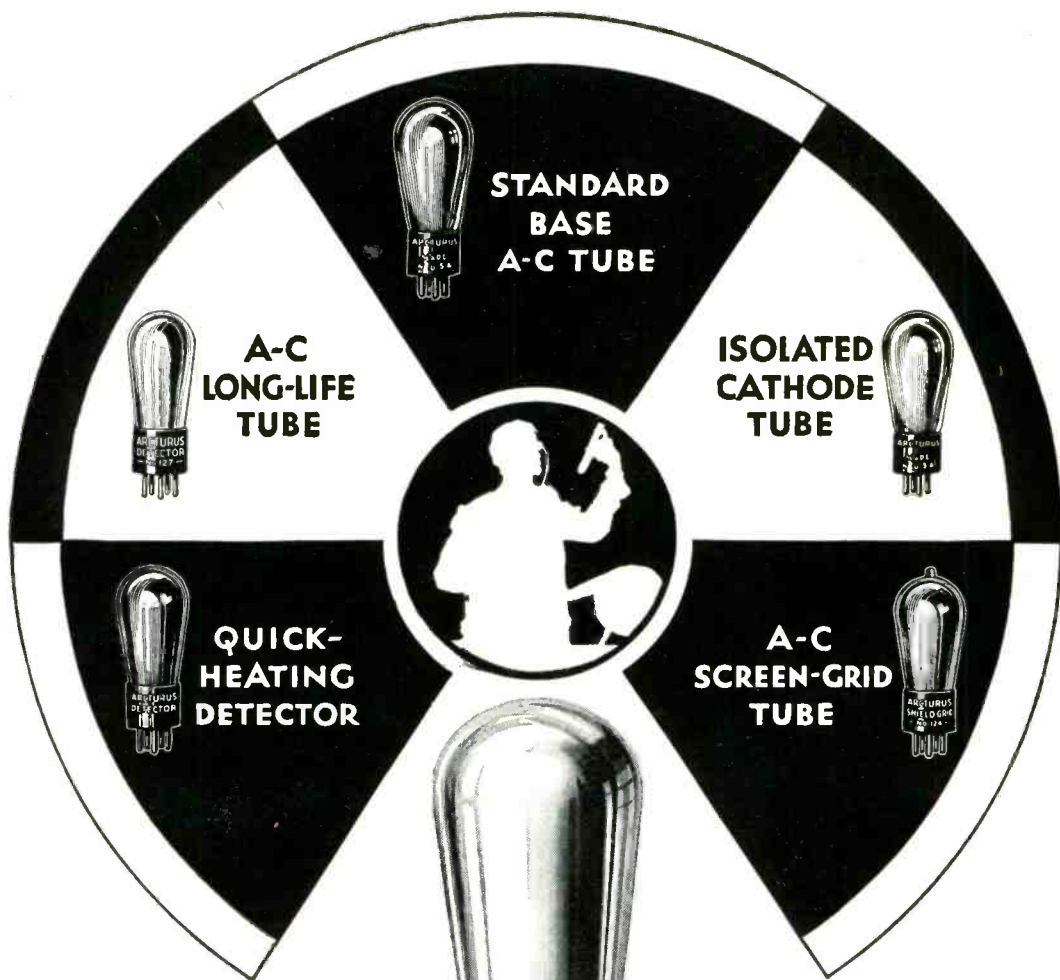
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