

RADIO RETAILING

HOME ENTERTAINMENT MERCHANDISING



"Mighty Monarch of the Air"

Majestic Distributors are now demonstrating superheterodyne radio receivers, in six models, which for beauty, value and spectacular performance far surpass anything in Majestic history in fact, in the history of the Radio Industry.

Majestic
RADIO



Now...let's all pull together!

Now is the time when the whole industry needs as never before the sincere cooperation of dealer, jobber and manufacturer. We believe that our dealers and jobbers know that they can depend on Brunswick. We believe that we can depend on them... and we invite

inquiries from other dealers who are seeking a quality line, strongly merchandised, with a clean reputation of three generations of men behind it.

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



BRUNSWICK LOWBOY
 MODEL 15

Armored chassis with 4 screen-grid tubes and two 45's in parallel. Uni-Selector and Illuminated Horizontal Tuning Scale. Tone Control. Cabinet of seasoned and selected butternut with carved front panels. **\$13950**
 Other models \$170 up (less tubes)

BRUNSWICK RADIO

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RADIO RETAILING

HOME ENTERTAINMENT MERCHANDISING

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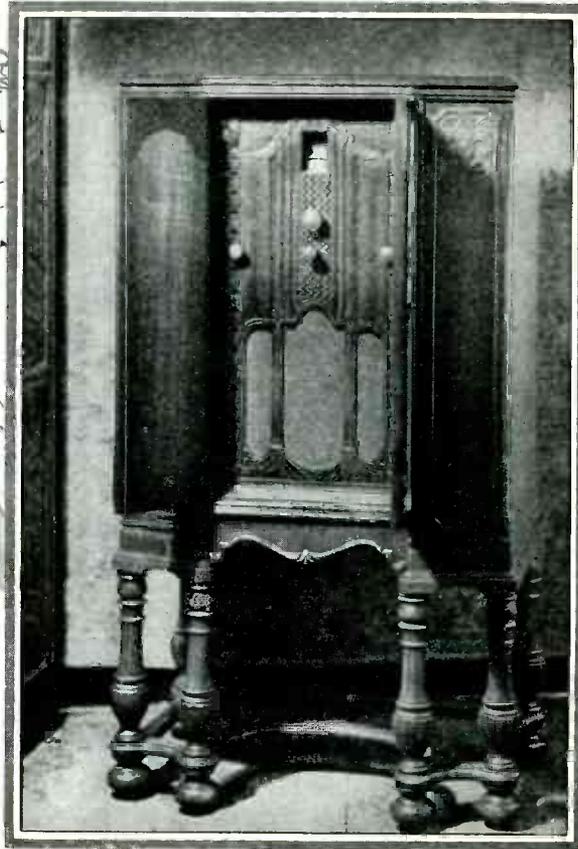
What a Stromberg-Carlson Franchise Offers Radio Dealers!

"There is nothing finer than a Stromberg-Carlson"

A NAME in Radio of permanent, not transient, reputation.

RADIO receivers, permanent in performance value and in investment value to owners.

POLICIES that are permanent in production and merchandising, upon which dealers can count for protection.



OVER a period of more than six years the consistency of Stromberg-Carlson products and policies stands out in the radio industry.

It is because thinking radio dealers know this, that they are judging new and untried plans by Stromberg-Carlson's tried and tested plans and policies, to a greater degree than ever

before. They are concentrating on the Stromberg-Carlson line of merchandise whenever they can qualify.

Stromberg-Carlson will always consider applications for franchises made by business men of sound finance and judgment who want intelligently to face a future in radio.

Stromberg-Carlson unsurpassed quality Receivers range in price from \$155 to \$369. The Multi-Record Radio (automatic radio-phonograph combination, electrical), \$645. (Prices, less tubes, East of Rockies.)

Listen to the Stromberg-Carlson Hour Monday Evenings in a Coast-to-Coast Broadcast of the Rochester Civic Orchestra, over the N. B. C. Blue Network and Associated Stations

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



1894

Stromberg-Carlson



1931

MAKERS OF VOICE TRANSMISSION AND VOICE RECEPTION APPARATUS FOR MORE THAN THIRTY-FIVE YEARS

It's Easy To Identify 1931 Tubes

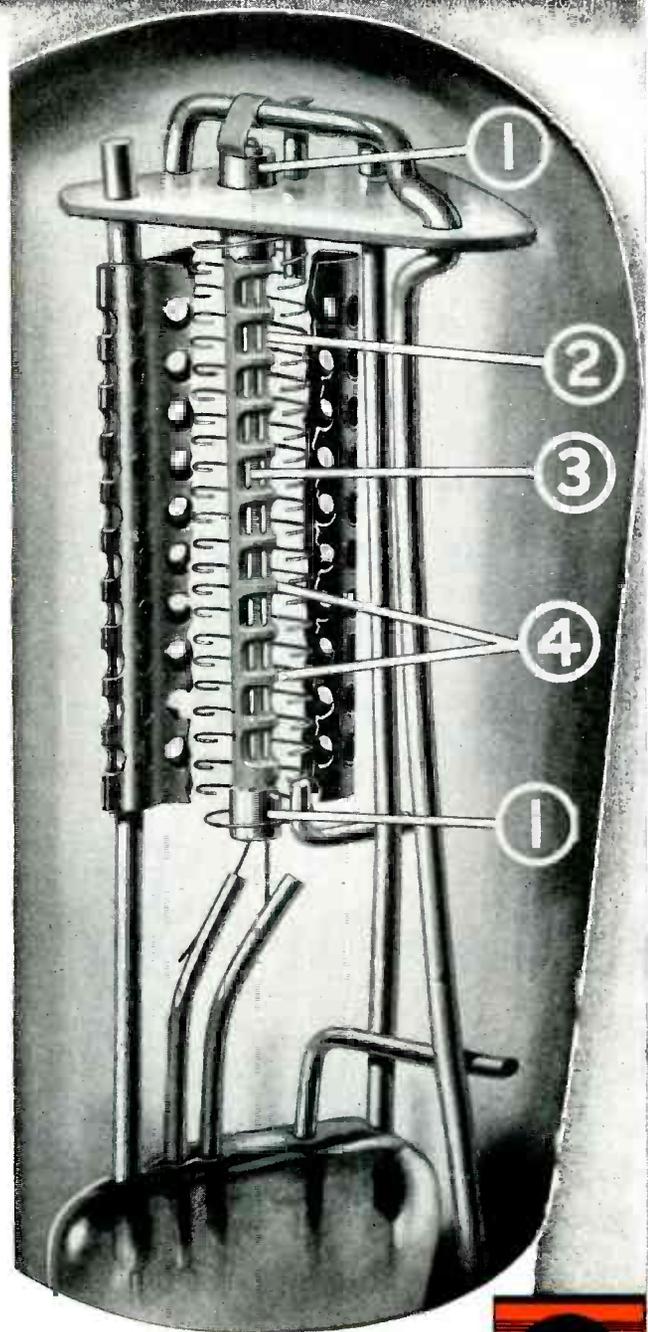
Look for Practical Quick Heaters

A radio set should start up in a few seconds. But are you willing to pay the usual price of short tube life and uncertain performance? De Forest engineers have eliminated the gamble by unique design:

1. Full-length cathode sleeve, minimizing hum and crackle. One-thirtieth usual hum level.
2. Notched insulator (patent applied for) reducing bulk yet retaining twin-hole insulator advantages.
3. Special hair-pin filament for neutralized A. C. field. Lower operating temperature than coiled type with freedom from brittleness.
4. Filament supported at twelve points. Cannot vibrate to cause microphonic noises. Cannot short circuit.

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 third of a series of debunking messages dealing with 1931 radio tube features. Would you like the entire story at this time?

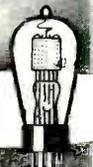


de Forest
AUDIONS
RADIO TUBES



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

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



“CeCo Tubes possess the distinctive feature of retaining true tonal quality under full volume.”

CHARLES SEGAL, Co-Partner, Publix Radio Co., Philadelphia, Pa.

“BELIEVE IT OR NOT!—Before entering the radio tube business, this Philadelphia dealer insisted on the CeCo franchise ...*i.e.*—no CeCo—no store. We joined forces. Their **CeCo sales** have gained month by month—today **90% of their total business** is CeCo...at full list. This series of advertisements tell its own story... ..facts not promises.”

Ernest Bauer
President.

CeCo Manufacturing Co., Inc.
Providence, R. I.

No. 6 of a series of unsolicited CeCo window displays



DO YOU KNOW?

1. CeCo types 866, 250, 281 are used throughout the world in theater and power equipment applications.
2. CeCo Radio Tubes were used exclusively in the transmitting and receiving equipment of the Chicago Radiophone Club to report the 1930 National Air Races.
3. For prompt delivery, CeCo maintains warehouses at New York, Chicago, Boston, Philadelphia, Cincinnati, Pittsburgh, Providence, Toledo, San Francisco, Los Angeles, Dallas and Springfield, Mass.

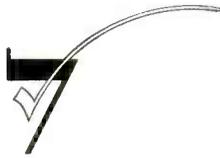
CeCo

RADIO TUBES

Licensed under Patents of Radio Corp. of America

They're Better or You Don't Pay!

Pioneers for 22 years



LONG before there was a radio broadcasting industry, Grebe was making fine precision instruments for the transmission and reception of sound thru the air. Twenty-two years of pioneering have given Grebe a background rich in tradition and achievement . . . twenty-two years of engineering leadership climaxed by the presentation of the SK4 and moderate-priced AH1.

To the technician, the name, Grebe, has always been synonymous with the most modern principles of radio science; to the layman it has signified the ultimate in enjoyment of broadcast entertainment.

For Grebe has never been content merely to rest upon past achievement, but has constantly maintained a firm hold upon the present and a sharp, far-seeing eye to the future.

Grebe radio

SUPER-SYNCHROPHASE 

A. H. GREBE & COMPANY, Inc., Richmond Hill, New York
Western Branch, 443 So. San Pedro Street, Los Angeles, California

THIS IS THE FIRST OF SEVERAL IMPORTANT ANNOUNCEMENTS TO THE RADIO TRADE DURING THE SEASON OF 1931

- It is perfectly natural for those in the radio trade who have watched the uniting of the Robert Bosch Magneto Company with the American Bosch Magneto Corporation to speculate on the effect of this merger upon the Corporation's radio program.
- The strength of the United American Bosch Corporation in automotive circles is greatly enhanced. As sole American selling agent for Robert Bosch products, in addition to the products of its own manufacture, and with Robert Bosch, A. G. of Stuttgart, Germany, selling American Bosch products, a world-wide alliance of two great organizations is created.
- Shortly, the new American Bosch Radio plans will be announced in detail. They will be thoroughly constructive and amazingly attractive, being grounded upon the same sound policies which have steadily and constantly built up a satisfied organization of dealers and a pleased clientele of owners.
- With no pressure policies or loss-incurring liquidation problems, the American Bosch Radio plans for the coming season become so interesting that no radio dealer can afford to lay plans for the coming season without considering all that is provided in the American Bosch Radio program.

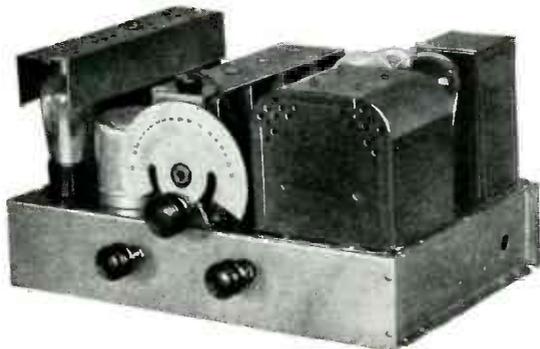
UNITED AMERICAN BOSCH CORPORATION

SPRINGFIELD · · · MASSACHUSETTS

Branches: NEW YORK · CHICAGO · DETROIT · SAN FRANCISCO

NEW PROFIT MAKERS FOR THE SPRING SEASON

A new chassis from the base plate up.



A new and improved circuit and simplified design.

The new Model 73—an engineering triumph—new in design and new in performance.

THE new Model 73 upholds all American Bosch Radio traditions. It is quality radio priced to place American Bosch Radio Dealers in a thoroughly competitive position. Notwithstanding the achievement of a lower-priced radio, there is an added performance value. The Model 73 has ability and performance in excess of its predecessors. American Bosch has anticipated the trend by providing quality radio at a never before approached low price.

It is lower-priced radio on a dealer profit basis. If you want to enter into a profitable radio program for the coming year, then you cannot help becoming interested in all American Bosch has to offer you. If you have learned the folly of trading dollars and are now ready for an enduring and profitable program, not only for 1931 but for years to come, ask us for further details. To delay is to lose profit. Write today.



MODEL 73-A
\$79.50

COMPLETE WITH TUBES
This is a big cabinet. Height 39 1/4", width 26", depth 12 1/8" with handsome walnut patterned veneers and attractive decorations. Contains the new 73 chassis.

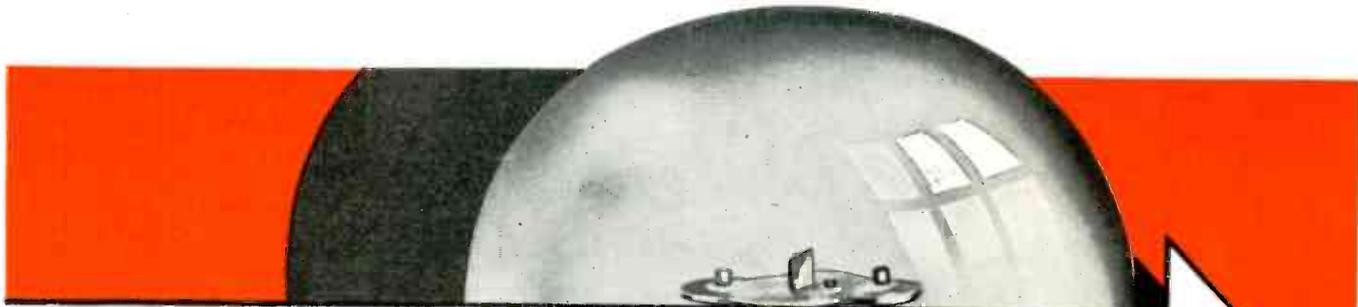


MODEL 73-B
\$95.00

COMPLETE WITH TUBES
This model has sliding doors. Height 44 1/4", width 26", depth 14 1/8". Beautifully patterned veneers with attractive ornamentation. Contains the new 73 chassis.

American Bosch Radio is licensed under patents and applications of R.C.A., R.F.L., and Lektophone. Prices slightly higher west of the Rockies.

STANDARD more sets than



In 11 Months!

From out of the mass of Independent Tubes, National Union has quickly leaped to leadership . . . "THE STANDARD TUBES FOR STANDARD SETS"



EQUIPMENT in **any** other tube

THE EXTRAORDINARY ELEVEN MONTHS ACHIEVEMENT OF NATIONAL UNION

No radio dealer can afford to ignore the amazing records that have been established by these precision-made National Union Tubes. Here is the printed story.



Dr. R. E. Myers, Vice-President
in charge of Engineering.

TO THE RADIO TRADE: Who judges radio tubes more harshly than the set manufacturer? On the tube that he selects for his set often rests the public opinion of his set . . . and hence the success of his entire business. *He simply cannot afford to gamble!*

You *know* this fact . . . and that is why the announcement that National Union Tubes are standard equipment in more sets than *any other tube*, must convey a world of meaning to you. 11 months ago National Union brought out

their first tube. Before then it was unknown. It was a tube that was designed to be the finest tube that money could buy. The finest group of engineers had been assigned to produce it. And produce it they did. Thanks to the genius of Dr. Myers and his staff, the fifteen experts who had been his assistants at Westinghouse.

And now at the end of only eleven short months National Union has reached an enviable position in the radio tube industry. Proof of this lies in the fact that set engineers have approved National Union Tubes as satisfactory equipment for their sets.

Such an acceptance is the result of a product of unusual excellence, fair policies and vigorous sales assistance. Does not the 11 month record of National Union assure a still greater year in 1931?

If you have not investigated the possibilities of this exceptional quality tube you should by all means do so at once. Write to us today.

NATIONAL UNION RADIO CORPORATION

400 MADISON AVENUE, NEW YORK CITY



Why **SET-TESTED**

Give you
Quicker sales
More profits
Greater satisfaction

THERE is one thing every set-owner wants to know about the tubes he buys: "Do they give perfect results in my particular set?"

There is one way to answer that question to his complete satisfaction; *Tell him that Sylvania Tubes have been tried out in a set exactly like the one he owns.*

That is what SET-TESTED means—to you and to your customers. That is why sales are quick, profits bigger, and complaints fewer. You know, and the people who buy

from you know, that Sylvania Tubes have been actually tested in every one of the fine radios listed at the right—that they have passed strict tests for tone, distance, volume and selectivity.

Write at once for the Sylvania Certified Test Chart. Dealers everywhere are using it side by side with their stock of Sylvania Tubes. Note for yourself how quickly tube sales increase—how much less time you need to spend with each one of your customers.

SYLVANIA PRODUCTS CO., EMPORIUM, PA.
 SYLVANIA RADIO TUBES SYLVANIA INCANDESCENT LAMPS

Sylv



•
 Licensed under RCA Patents
 •

TUBES

AUDIOLA	GENERAL ELECTRIC	SILVER MARSHALL
APEX	GENERAL MOTORS	SIMPLEX
ATWATER KENT	GRAYBAR	SONORA
BOSCH	GREBE	SPARTON
BRUNSWICK	GULBRANSEN	STEINITE
CLARION	HOWARD	STERLING
COLONIAL	KENNEDY	STEWART WARNER
CONTINENTAL	LYRIC	STROMBERG CARLSON
CROSLEY	MAJESTIC	VICTOR
EDISON	PHILCO	WESTINGHOUSE
FADA	RADIOLA	ZENITH



REGISTERED U. S. PAT. OFF.

This is the new Sylvania Certified Test Chart, giving complete instructions for selecting Sylvania Tubes, together with a signed statement by the Chief Engineer of the Company.



SYLVANIA PRODUCTS CO.
Emporium, Pa.

R. R.

Gentlemen: Please send, without obligation, your new Sylvania Set Tested Chart for easier tube sales.

Name.....
Address.....City.....
Jobbers.....

ATWATER KENT RADIO

with the GOLDEN VOICE

PLAYING FAIR with the dealer

ATWATER KENT looked far ahead at the very beginning of this season.

Did the Atwater Kent factory start with a great production splurge, and *load* retailers up to the guards?

No! It controlled production from the very start, holding it to the dealers' *needs*.

Did Atwater Kent "dump" a surplus and cut prices, letting the dealer "hold the bag"?

No! Atwater Kent's production control determined *in advance* that there wouldn't be any surplus.

As a consequence of this foresight, the Atwater Kent Radio on the dealer's floor today is the latest, up-to-the-minute model—offered at its *full* price, on which the dealer makes his *full* fair profit.

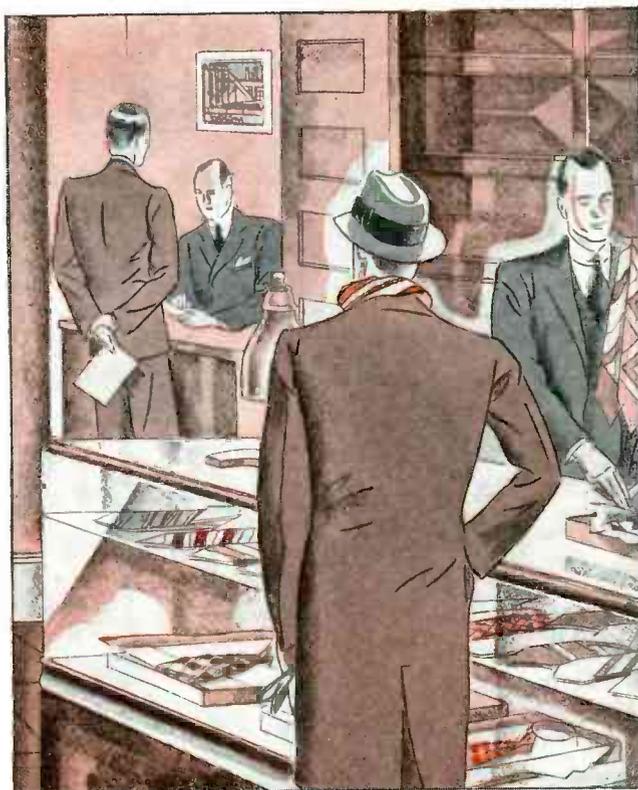
Dealers and consumers alike recognize the *new* Atwater Kent with the Golden Voice as radio's biggest value—the *first* choice of the *best* prospects in every territory.

Dealers and consumers alike recognize the *squareness* of Atwater Kent policies, as clean and dependable as the Atwater Kent Radio itself.

ATWATER KENT MANUFACTURING CO • A. Atwater Kent, President • 4700 Wissahickon Ave., Philadelphia, Pa.

"A WARNING... THAT TAUGHT ME A LESSON"

"I was waiting for change in a successful department store. The door of the department buyer's office was open. I heard the merchandise manager tell him that he must reduce his stock investment or find a new job."

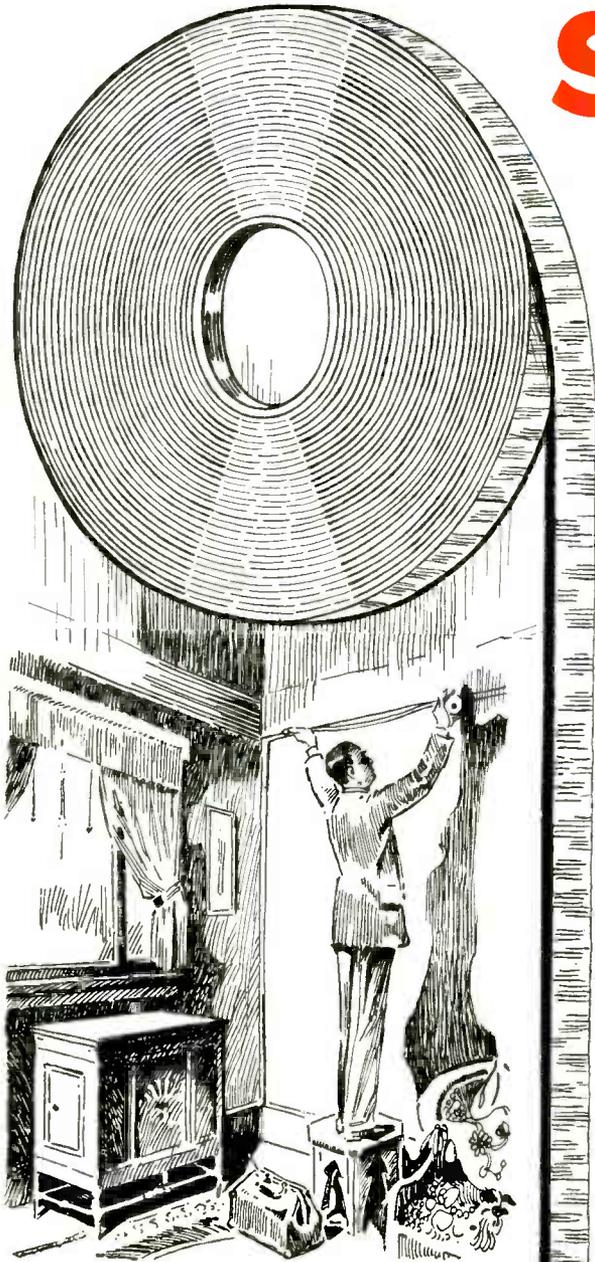


You can do your normal volume of business on a smaller stock inventory, by concentrating your purchases with the General Electric Supply Corporation.

The relationship between investment and profit is vital. By the elimination of duplicate lines, you reduce your inventory, speed your turnover, require fewer people to handle and less space to store, *and increase your net profit.*

You can reduce your inventory by using the prompt delivery facilities of the General Electric Supply Corporation. Your store is within a few hours . . . often within a few minutes . . . of adequate wholesale stocks that enable you to keep your investment at the minimum.

GENERAL  ELECTRIC
SUPPLY CORPORATION



SAMPSON STIKTAPE AERIAL

... A Marvelous ... Invention Ends Radio Installation Grievs

With STIKTAPE AERIAL dealers are cutting their installation time 75%! No tree-climbing, roof-creeping, window-ledge acrobatics for you or your customers with this modern, quickly applied aerial.



STIKTAPE AERIAL sticks any place and can be installed by anyone in ten minutes. Hide it, if you desire, behind baseboards or under rugs and it will not lose any of its efficiency. You can place the set anywhere in the room and the installation of STIKTAPE will be just as convenient.

The new low priced sets tune too broad when the aerial length is too long. STIKTAPE may be easily unrolled along wall and cut off when proper selectivity is secured.

Recent tests made by one of the most prominent* radio engineers in the industry proved once and for all that STIKTAPE is a scientifically designed, genuine aerial. It was demonstrated that STIKTAPE has a capacity over two times as great as the ordinary dangling wire and its natural wave length conformed rigidly to modern tuning design.

*—Name and interesting scientific data on request.

STIKTAPE is packed with twelve rolls to the dealer display carton in individual tins as pictured above. Dealers' discount is 40% off list—making one dozen cost you \$7.20. Send in coupon with check or money order for \$7.20 today and we will ship you display carton containing twelve complete aerals. All orders will be credited to your local jobber. Money will be refunded if not satisfactory.

\$1.00
COMPLETE

Mail this today

SAMPSON INDUSTRIES, INC.
4225 Olive Street, St. Louis, Missouri.

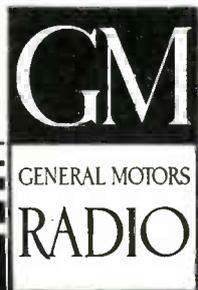
Enclosed find check or P. O. Money Order, amounting to \$..... Please send me STIKTAPE AERIALS.

Name

Address

Name and Address of Local Jobber

SAMPSON INDUSTRIES Inc ST. LOUIS MO.



General Motors RADIOS have outstanding value

The nine models now offered by General Motors Radio present values truly outstanding. Aided by the vast resources and unlimited research facilities of its parent organization, General Motors, this company has created new, higher standards of radio performance and beauty within a price range adaptable to any purse.

The Little General, at \$74.60 including Radiotrons, won immediate popularity when introduced last fall. Small in size—a giant in performance. Six tubes (4 screen grid); electro-dynamic speaker; Tone Selector. Three attractive finishes—natural butt walnut, ivory lacquer, green lacquer.

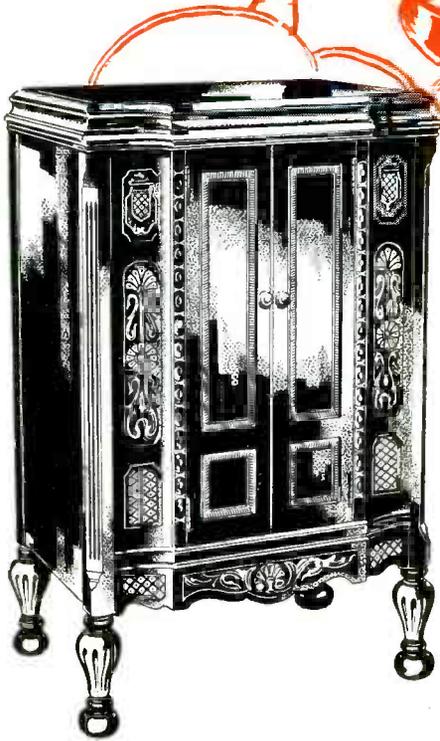
Console radio models include the Hepplewhite, \$136; the Sheraton, \$152; and the Late Italian, \$172. Radio-phonograph consoles—the Queen Anne, \$198, and the Georgian, \$270. Readily salable where outside current is not available is the Pioneer, whose self-contained power unit operates 1000 hours without power renewal. Price, \$136. All prices include Radiotrons.

Learn the unusual profit advantages of a General Motors Radio franchise. Write or wire for full information.

GENERAL MOTORS RADIO CORPORATION
DAYTON, OHIO

RADIO IS NOW GOING

INTO THE STRAIGHTAWAY



The New
SPARTON ENSEMBLE
Model 235

A 12-record, fully automatic,
combination radio-phonograph,
Sparton-built throughout, for

\$280 less
tubes

Western and Canadian
prices slightly higher

RREAL CLASS is telling as the radio industry reorganizes itself. Price still plays a big part, but price plus VALUE is becoming the outstanding sales factor as it eventually does in every industry. Dealers have learned that the margin of profit must be a true margin instead of a paper margin. The public has learned that it gets exactly what it pays for. Both, through hard experience, are realizing that a good name goes hand in hand with a good product. The good names of radio are automatically attracting the good dealers and the profitable customers. If you are the kind of merchant who has already seen this trend, we can get together and do it profitably.

THE SPARKS-WITHINGTON CO., JACKSON, MICH., U. S. A.

{Established 1900}

Pioneers of Electric Radio without batteries of any kind

Only SPARTON has the MUSICAL BEAUTY of

SPARTON RADIO

"Radio's Richest Voice"

(613)

RADIO RETAILING

HOME ENTERTAINMENT MERCHANDISING

O. H. CALDWELL,
Editor

A MCGRAW-HILL PUBLICATION. ESTABLISHED 1925.

Interpreting *the* FIGURES

THE total of unit sales radio receivers for 1930 exceeded expectations—3,828,000, including combinations, as against 4,438,000 for 1929. This favorable showing was due to the popularity of the midget and to drastic price reductions all along the line.

On the other hand, that more important factor, total retail set volume in dollars, slumped 44 per cent—\$332,198,000 for 1930 as against \$592,000,000 for 1929. This drop also can be charged to mantel model values and universal price cutting plus general business conditions and heightened sales resistance due to growing saturation.

Although the midget trend did not become a serious factor until September, such was the demand for a \$60 receiver that 1,130,000 units were sold prior to Jan. 1, 1931—or 30 per cent of our total unit sales. It is estimated that this ratio will exceed 50 per cent during 1931, based on present indications.

Overproduction, followed by dumping, while still rampant and indulged in by certain going concerns with national reputations, was less responsible for the destruction of price standards than was the availability of brand name products released by bankrupt companies, by those obliged to liquidate at any price to obtain ready cash or by the deliberate fabrication of trade marked radio merchandise for dumping purposes only.

Many recent developments, however, will exercise a decided influence of a corrective nature on all four of these negative factors above outlined. The entire industry is now thoroughly aroused. It recognizes the causes for its past troubles and is making every effort to remove them.

The sharp lowering of the average list price, from \$133 (less tubes) in 1929, to \$87, for 1930, indicates also the lessening of the "furniture" appeal and the prevalence of over-the-counter selling. To increase his gross volume and his net profit the independent dealer *must* broaden his lines and his sales promotional activities from now on.

The replacement business in tubes was not what it should have been. With 12,000,000 sets in homes, as of Jan. 1, 1930, we should have replaced at least 30,000,000 tubes. Actually but 24,000,000 were sold for this purpose, or two tubes per set.

With respect to sales possibilities: Certainly there should be as many radios in use as there are passenger automobiles. On this basis, and including our replacement and "two set" opportunities, there exists a future market for not less than 8,000,000 sets in private homes alone. The farm, or battery set, situation is most favorable. Less than 20 per cent of the nation's unwired homes today are equipped with suitable radio apparatus.

Viewed in its broader aspects the outlook is promising. The inevitable continuance of a demand for radio, the opportunities for adding allied lines, and the recent evidences that we will "put our house in order" offer ample causes for optimism.

The Government's Radio Census

State	No. of Families (to date)	Families Having Sets	Per Cent of Total
Vermont	85,804	39,913	44.6
New Hampshire	119,660	53,111	44.4
Delaware	59,295	27,183	45.8
Alabama	592,530	56,491	9.5
Arizona	106,630	19,295	18.1
For the Entire Country	29,300,000	14,850,000	50.6

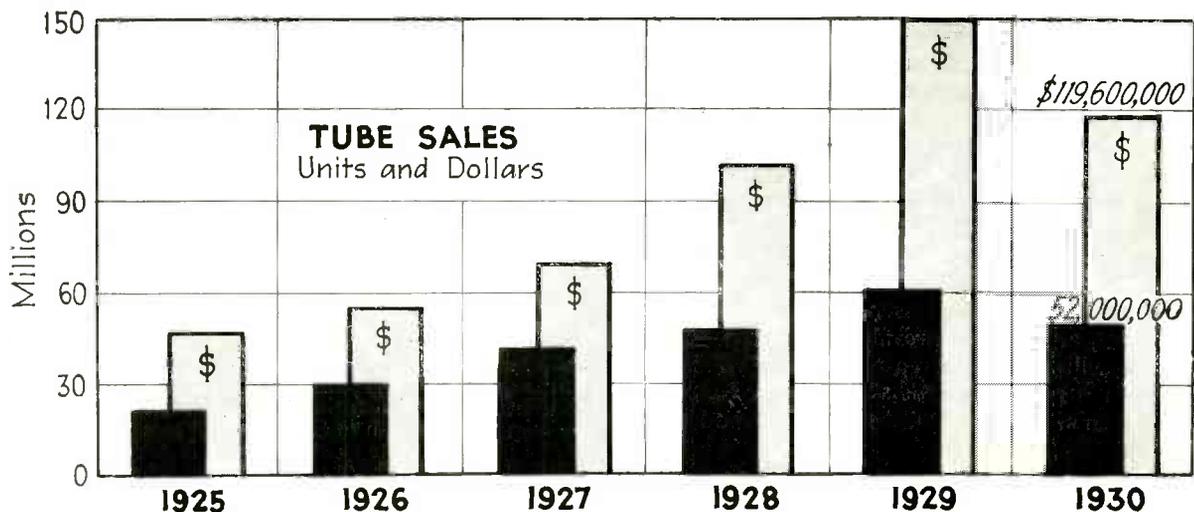
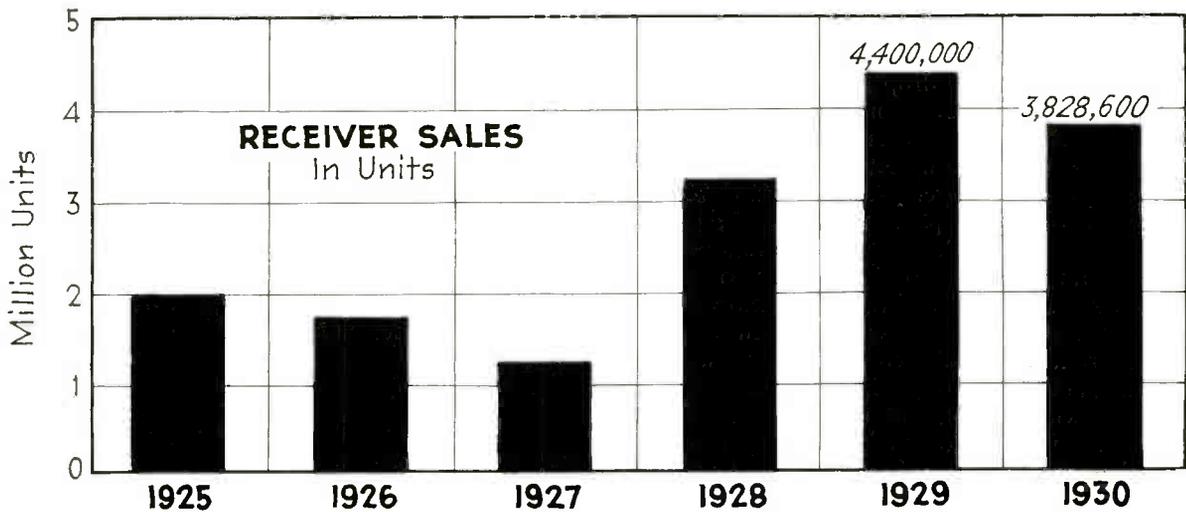
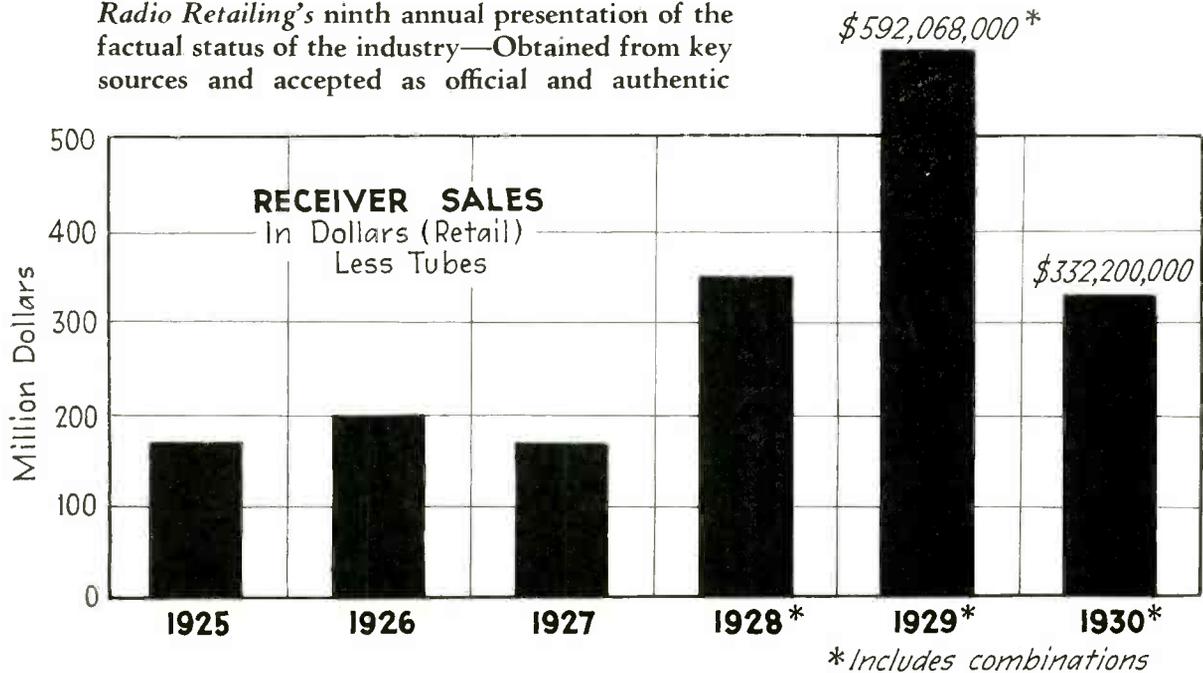
Because of the pressure on the Census Bureau for tabulations in other fields its reports on radio saturation, by states, have been delayed. Applying the above state figures, however, to the entire country, on a population ratio basis, and adding also the number of sets purchased since April 1—when the census was taken—the present total of the number of sets in American homes is 14,850,000.

Note: Proportionate allowance also has been made for special conditions in the South and in certain Western states as indicated by the returns from Alabama and Arizona.

It will be observed that the grand total, based on governmental data, agrees closely with *Radio Retailing's* own statistics, gathered from the manufacturers and other trade sources.

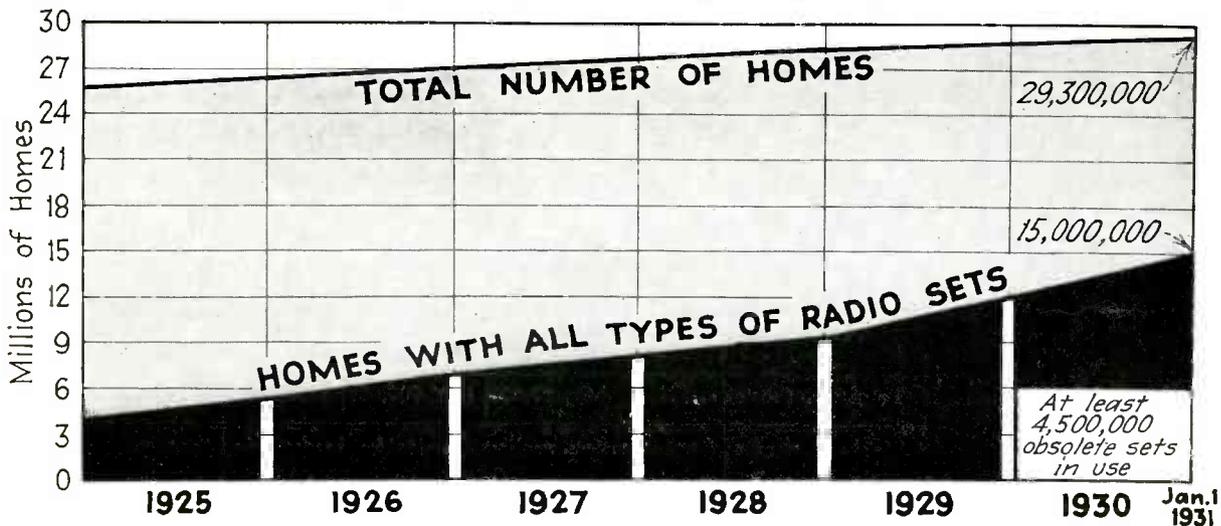
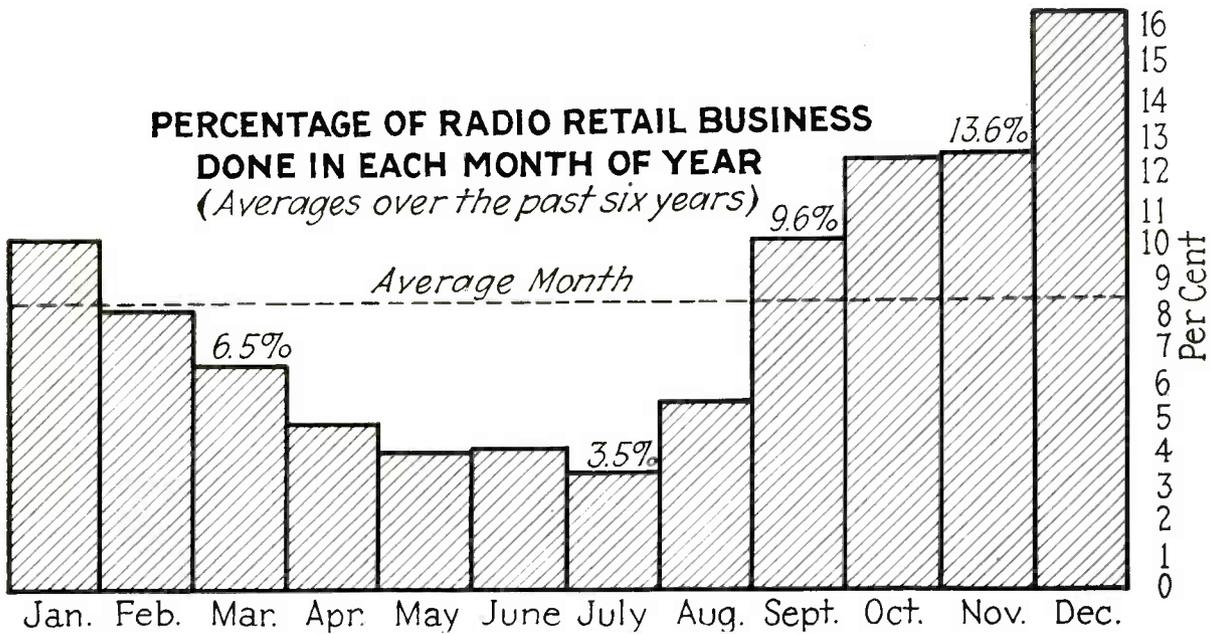
STATISTICAL SURVEY of the

Radio Retailing's ninth annual presentation of the factual status of the industry—Obtained from key sources and accepted as official and authentic



RADIO BUSINESS to 1931

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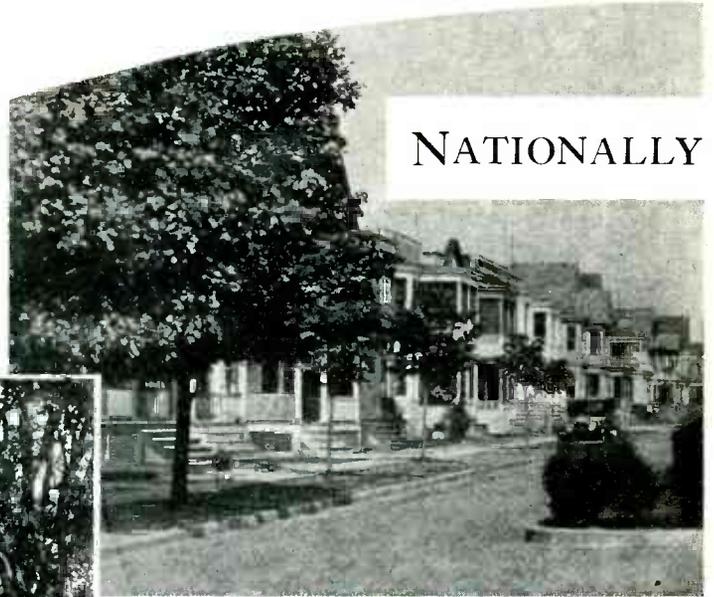
1 Telephone to every 2.4 families



20 Homes with Electricity out of every 29



1 Auto to every 1.7 Families



51.0% of our families own some sort of Radio Equipment

600,000 Farms with Electricity

20,438,000 Wired Residences

Total Sales of Radio

TUBES

by uses

1930

28,000,000
IN NEW SETS



24,000,000
REPLACEMENTS



	1922	1923	1924	1925	1926
Radio Sets, factory-built (including consoles and built-in reproducers).....	100,000 \$5,000,000	250,000 \$15,000,000	1,500,000 \$100,000,000	2,000,000 \$165,000,000	1,750,000 \$200,000,000
Radio-Phonograph Combinations.....					
Tubes.....	1,000,000 \$6,000,000	4,500,000 \$17,000,000	12,000,000 \$36,000,000	20,000,000 \$48,000,000	30,000,000 \$58,000,000
Reproducers (excluding those in consoles and combinations).....	25,000 \$750,000	500,000 \$12,000,000	1,500,000 \$30,000,000	2,000,000 \$32,000,000	2,000,000 \$30,000,000
A-B-C (Dry) Batteries.....	\$4,500,000	\$6,000,000	\$55,000,000	\$66,000,000	\$80,000,000
A-B Power Units, Storage Batteries and Chargers.....		\$7,000,000	\$25,400,000	\$30,000,000	\$55,000,000
Other accessories*.....	\$3,750,000	\$4,000,000	\$11,600,000	\$24,000,000	\$33,000,000
Parts (does not include sales to manufacturers).....	\$40,000,000	\$75,000,000	\$100,000,000	\$65,000,000	\$50,000,000
Totals					
Sets, plus Combinations....	\$5,000,000	\$15,000,000	\$100,000,000	\$165,000,000	\$200,000,000
Parts.....	\$40,000,000	\$75,000,000	\$100,000,000	\$65,000,000	\$50,000,000
Accessories.....	\$15,000,000	\$46,000,000	\$158,000,000	\$200,000,000	\$256,000,000
Total Sales for year.....	\$60,000,000	\$136,000,000	\$358,000,000	\$430,000,000	\$506,000,000

*Includes aerial equipment, meters, pick-ups, turntables, headsets, furniture, etc.

SPEAKING



\$23,894,000 Worth of Radio Equipment was exported in 1930

34,500 Automobile Radio outfits were sold during 1930



31.1% of our families own Washers



12.8% of our families own Refrigerators



44.4% of our families own Cleaners

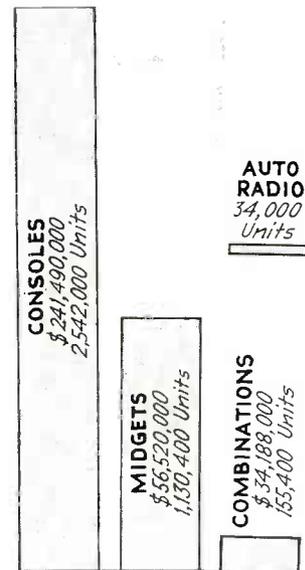


Products at Retail (1922-1930)

1927	1928	1929	1930	Product
1,350,000	3,200,000	4,200,000	3,672,400	Consoles and Midget Receivers,
\$168,750,000	\$350,000,000	\$525,000,000	\$298,010,000	
.....	81,000	238,000	155,400	Radio-Phonograph Combinations.
.....	\$38,000,000	\$67,068,000	\$34,188,000	
41,200,000	50,200,000	69,000,000	52,000,000	Tubes.
\$67,300,000	\$110,250,000	\$172,500,000	\$119,600,000	
1,400,000	2,460,000	800,000		Speakers (excluding those already in receivers).
\$28,000,000	\$66,400,000	\$16,000,000	\$3,500,000	
\$68,000,000	\$50,400,000	\$30,530,000	\$21,514,000	A-B-C (Dry) Batteries.
\$34,000,000	\$17,500,000	\$14,350,000	\$6,920,000	A-B Power Units, Storage Batteries and Chargers.
\$38,550,000	\$46,000,000	\$9,600,000	\$6,700,000	Other Accessories*.
\$21,000,000	\$12,000,000	\$7,500,000	\$6,000,000 (estimated)	Parts (not to manufacturers).
\$168,750,000	\$388,000,000	\$592,068,000	4,519,500	Automobile-Radio Sets and Combinations.
\$21,000,000	\$12,000,000	7,500,000	6,000,000	Parts.
\$235,850,000	\$290,550,000	242,980,000	158,234,000	Accessories (inc. tubes).
\$425,600,000	\$690,550,000	\$842,548,000	\$500,951,500	Total Sales for Year

Permission to quote statistics in this issue is granted if credit is given "Radio Retailing"

SETS by types 1930



Trouble Ahead

... IF



DURING the last three years the great broadcasting stations of the country have spent millions of dollars to install transmitting equipment which will send out the complete, rich range of the sound waves produced in the studios by vocal and instrumental artists. It is this widening of the sound-wave range which makes for fidelity of broadcasting—in other words “makes the broadcasting sound real!”

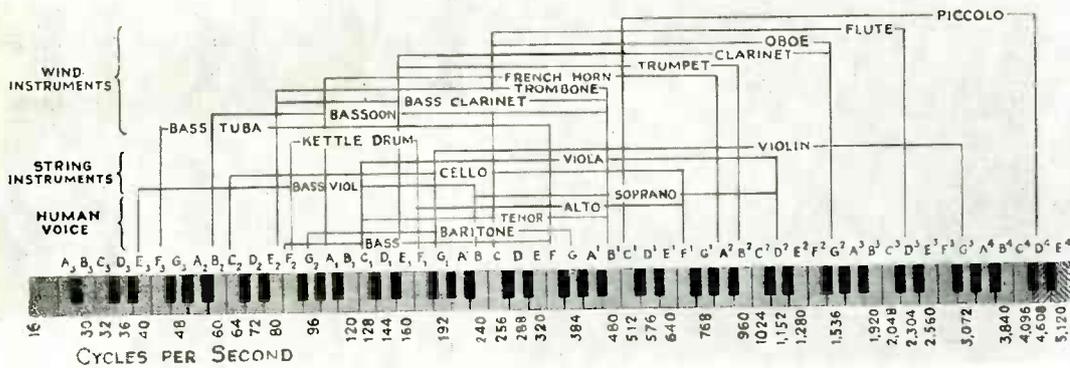
As the result of these huge outlays by the broadcast stations there are now in the air, nightly, radio impulses which are as nearly perfect, in quality and timbre, as the combined science and skill of the radio art can produce. From the lowest bass note of the viol or the drum, (about 16 vibrations per second) up to the high notes of the piccolo or organ, and overtones of other instruments (some 7,500 vibrations per second) all of the complex musical oscillations are now faithfully reproduced by the electro-magnetic vibrations in the ether.

Modern broadcasting heard through an inadequate radio receiver is like the art of a great musician expressed through an undersized piano

But how much of this wonderful tone quality that is now “in the air” can the average listener get?

The answer is: exactly as much as can be received by the radio set he is using—and no more! In other words, no matter how perfect the music may be in the form of radio vibrations, his set will allow him to listen only to those vibrations which can filter through its audio circuits and be reproduced by its loud-speaker.

Outside the listener's house, the crisp night air may be filled with wonderful music of utter perfection of tone. But the only part of this which the listener and his family can hear will be that which can come through his receiver



Complete realism requires that the radio set reproduce not less than the full range of the concert piano. Many of today's sets fall short of this requirement

Tone Values are Sacrificed

and speaker undistorted. All the latter-day miracles of tone fidelity in the broadcasting transmitters are therefore wasted, unless his receiver is capable of tone reproduction throughout the full range of the scale, from 40 cycles per second to at least 5,000 cycles per second.

A listener who has a radio set which furnishes less than full-tone acoustic reception is like a man viewing a beautiful sunny woodland scene through amber-colored glasses. He gets the outlines—but he misses most of the tone and color beauties of the picture, and envisions only a narrow band of distorted color effects.

To tune in an inferior radio set on the magnificent riches of radio-signal vibrations coming in over the air these nights, is like seating a great master musician before an undersized piano and expecting him to produce music other than the tinny tones of the toy instrument. It is not possible to get more than bob-tailed harmonies. Even the maestro can get no other tones than those from an undersized piano.

ON THE other hand, if his set is a modern, well-engineered receiver he will receive, in his own living room, the music exactly as it is being played in the distant broadcasting studio. But if his set is one in which "corners have been cut" and fidelity skimmed, he and his family will be living in a land of musical distortion.

Right now radio broadcasting is under test. It has been attacked because of too large an admixture of advertising, and the remark is not infrequent, "I don't listen to the radio any more, because it's all advertising." Especially does this criticism come from discriminating folk who ought to be among radio's staunchest supporters.

Unless a high standard of tone value in reception apparatus can be generally maintained, the same class of listeners will become further alienated because of lack of tone fidelity. To highly organized and temperamental people, tonal inaccuracy and tone inadequacy become a form of torture and sharp discomfort.

It is up to the radio trade, both distributors and dealers, to see that the public is supplied with receiving sets which are faithful and correct in their reproduction.

During the past year, owing to competitive efforts at price reduction, tone quality has in places been sacrificed, and, as the result, many sets are slipping back in tone quality to the point where the radio industry found itself in 1926 and 1927. This tendency is unsound, and marks a trend which if allowed to run on for a year or more, will do incalculable harm to radio.

On the one hand it will bring in a false standard of sound reproduction, which will disgust the public with radio as an artistic and emotional medium. And the broadcasters who have thus far invested millions in ripping out old equipment and installing new "full-range" transmitters, will shortly become discouraged and relax their efforts at first-quality tone transmission, if such transmission is to fall largely on acoustically deaf ears. Meanwhile popular interest will diminish, "listening time" will be reduced, and gradually advertising appropriation will be withdrawn from broadcasting, with the inevitable reduction in the number of feature events and artists.

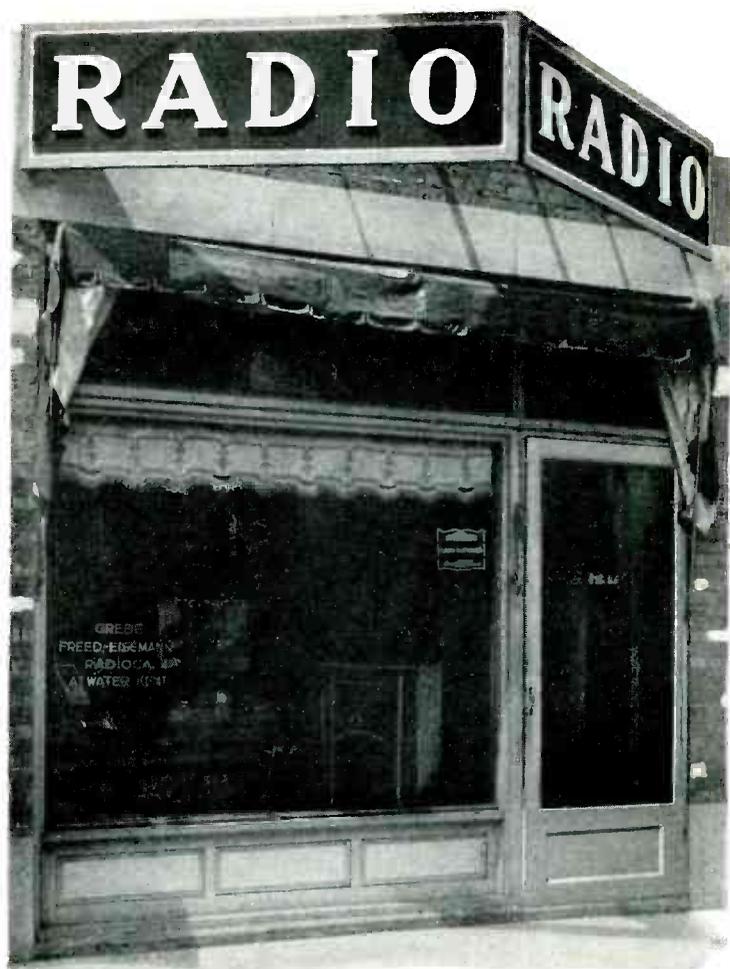
On the other hand increased naturalness of reproduction has always meant dollars in the pockets of the industry achieving it. Radio prospered proportionately as its fidelity improved during the years from 1927 to 1929. Again, the moving-picture industry doubled its box-office receipts by the introduction of the "talkies", which brought greater realism and naturalness to the screen. New realisms will always bring new floods of the public's money.

But to part deliberately from present high standards of realism is eventually to invite financial disaster to radio. The standards of tone must be kept rising.

The future of radio and the future of the radio business itself is thus largely in the hands of the radio distributors and radio dealers during the next twelve months. It rests with them as to whether they elect to distribute quality sets which will assure tone satisfaction and a permanent investment for the public. Or whether they will be satisfied to sell merely a few pounds of wire and metal pared down to a price, and so "get away with it" for the time being. For inexorably and inevitably the latter course will mean trouble ahead for everybody. It will result in the collapse of radio and radio broadcasting into a minor business of negligible prestige and volume instead of fulfilling its present destiny as a dominant art.

LOWERING OF TONAL STANDARDS WILL

- Alienate the discriminating public, reducing our audience.
- Relax broadcasters' present efforts at tone perfection.
- Cause withdrawal of radio-advertising appropriations.
- Reduce number of present feature programs and artists.
- Result in collapse of radio into a minor business . . . instead of fulfilling its destiny as a dominant entertainment art.



FOOL

the

*Twenty-five western radio
however, to sound diag-
ment by the San Francisco
all but two escaped*

By E. E.

*Chairman
San Francisco*

FOLLOWING that ancient adage, "a stitch in time," the San Francisco Association of Credit Men has devised a method to avert failures rather than to patch them up. Through the medium of its Business Service Department this group has assumed the duties of commercial physicians to ailing businesses faced with death due to bankruptcy. Since its inception this activity has treated about 490 cases, representing all lines of business distributed throughout northern California, of which 25 have been radio stores. Of this number 92 per cent have been nursed back to a healthy, happy and permanent existence. The other two radio concerns passed on because they neglected to follow the prescription given.

This body of credit managers, through group meetings and exchange of information, is able to watch very closely the condition of every business in the vicinity. It can detect immediately any tendency to increase indebtedness or to slow up payments. Where signs of weakness occur a business service report is secured and a competent accountant assigned to approach the merchant.

Without any charge to the dealer, an audit is made comprising an investigation of the inventory and operating accounts and a verification of assets and liabilities. Interested members are furnished with a copy of the report to which their credit managers reply, giving advice as to the necessary steps for improvement. The dealer is presented with a special report, and when feasible, a meeting of all creditors is arranged for him at which their further suggestions are given in a spirit of co-operation. In the majority of cases this service is

welcomed by the distressed one, and he is prompt and thorough in following the highly valuable advice. Many potential catastrophes have thus been avoided.

Although each of the 25 cases has had its own peculiarities, there was a marked similarity in the fundamental principles involved. Summarizing generally, the major sources of trouble lay equally in four elements of merchandising—purchasing, selling, financing and accounting.

Concerning the first, purchasing, the tendency was to allow inventory to absorb too great a proportion of capital, to stock a wide variety of lines in an effort to attract business with a consequent low rate of turnover. This practice had also developed a large number of small creditors, none of whom had sufficient interest in the merchant to help him along, any one of whom might have suddenly enforced payment and precipitated bankruptcy. One dealer had opened several branch stores all of which had to be kept stocked. Frequently a merchant had deviated from standard, reliable lines and bought heavily of the so-called "bargain" merchandise to find later the market price sliding off more and more.

Don't Oversell

In such instances recommendations were to clean out the inventory, disposing permanently of all slow movers, reduce the line to a limited number of reliable and popular makes and stock just as few of these as was consistent with sales.

Closely allied to the above conditions were erroneous ideas on the value of sales alone as a tonic. Numerous dealers felt that the remedy for all ills was to run up sales as far as possible at any cost, whereas this very practice itself was often found to be the source of trouble. Overselling is just as much of an affliction as overbuying, throwing a business out of harmony. In several cases dealers had tried to pull profits up by easing credit restrictions, lowering prices and running bargain sales. Uncollectible accounts were the result and, in one

Sheriff

businesses were sick. Due, nosis and prompt treat- Association of Credit Men, the bankruptcy court

Young

Radio Chapter Ass'n of Credit Men

case of this kind, reverts averaged 23 per cent during several months. Advertising also had usually been indulged in a bit too extensively with one store spending as high as 10 per cent of sales in this way.

The above troubles were overcome by directing sales efforts along more conservative lines; by striving for quality business rather than quantity; maintaining price and exercising credit prudence.

Records Must Be Accurate

The use of improperly devised accounting systems had been the cause of much trouble. In the majority of cases inadequate or poorly kept records had unintentionally caused misstatement of facts, hiding the true condition even from the proprietor himself. The profit and loss account of one dealer had shown a gross profit considerably in excess of the average gross margin on the goods sold. This dealer was unaware that stock was moving very slowly, piling up into more bulk each month and depreciating rapidly. On the other hand one store was burdened with a system far too elaborate for its size; unwieldy and inefficient to the extent that it also failed in its purpose with the same results.

But the most widespread ailment lay in the financial structure; the shortage of capital accompanied by inefficient manipulation. Although seldom considered seriously, all policies of merchandising are definitely restricted in scope by the amount of working capital. The



WATCH *These 4 Points*

PURCHASING:

*That inventory does not absorb too great a proportion of capital
That lines are not widely varied*

SALES:

That selling expense does not absorb profit margin. Overselling is as dangerous as overbuying

ACCOUNTING:

That a wrong bookkeeping system does not give a misleading picture

FINANCING:

That you do not disregard the law of funds to "front" and manipulate inefficiently insufficient cash assets

tendency is to try to make a limited investment do too much work, to spread funds too far, with a consequent weakening of the business backbone. One store solidly established with a narrow, well chosen line, will earn more than several branches handling wide varieties, each operating on the proverbial shoe string, as several dealers have discovered.

Specialty selling presents a financial problem quite unlike that of the ordinary retail store. Sales are in comparatively large units, a high percentage of which are on the deferred payment basis. A business of this type cannot be profitably operated on a scanty investment. To succeed, its financial structure must be continuously sound. It cannot go on indefinitely farming out all of its installment paper to finance companies, holding nothing as a reserve against slow payments and losses. As is true of any enterprise, all other factors are directly dependent upon financial condition, and policies should be created and maintained with a view to building it up, not tearing it down. The success of a business is measured not by the number of sales it makes or the profits enjoyed during good times but rather by its reserve strength, its ability to weather storms and adverse conditions.

By calling these sound business facts to the attention of retailers who were sailing too close to the wind the San Francisco Credit Ass'n. has helped fool the sheriff.



JAMES AITKEN

Who will direct the destiny of the National Federation of Radio Associations.

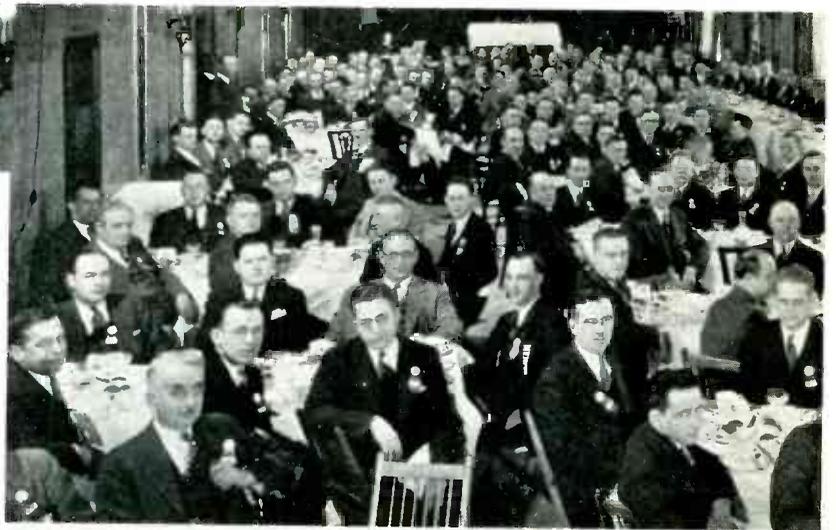
President Aitken, "Jimmie" to his countless friends, is a product of the north woods of Saskatchewan. Self-educated, his rapid rise to a position of high eminence in the radio fraternity, in this the country of his adoption since the age of 14, contains all the elements of business romance. Standing six feet seven this splendid specimen of a man demonstrated by his acceptance speech at Indianapolis his qualifications as a leader.

Mr. Aitken owns the Aitken Radio Company which operates radio wholesale houses in Toledo, Detroit, Cleveland and Dayton



LOUIS BUEHN

President of the Radio Wholesalers Association



Trade Cries To Destructive

By Ray V.

THE ethical radio dealers and jobbers of this country know what this industry needs, and are determined that it no longer shall be made the football of the unwise manufacturer or of the "give-away" retailer.

If I know my conventioning, that was the ringing note that sounded throughout three days of the hardest-working, most inspiring and constructive gathering of radio men I have yet to witness. They pounded the brass tacks from early morn 'till the wee small hours—these members of the National Federation of Radio Associations, in convention assembled at Indianapolis, Indiana, February 15-17.

The Cards are Laid Before the Set Manufacturers

For example: By means of urgent telegrams to the heads of all set manufacturing companies, there was assembled at the Hotel Lincoln, Tuesday afternoon, the presidents, sales-managers or responsible representatives of 25 producers—including all the "key" concerns. In friendly, but serious vein, the manufacturing executives met with the joint directorate of the National Federation of Radio Associations, and of the Radio Wholesalers Association to discuss prevalent trade abuses and their remedy—at their source—be it in the factory or in the field.

Three resolutions were presented to the former group by the tradesmen. These resolutions further reflect the type of thinking now going on in the minds of our best



Country's leading distributors and retailers, in convention at Indianapolis, are keenly aware of causes for radio's disrupted market — Make many constructive decisions — James Aitken, Toledo, new president, NFRA—Louis Buehn, Philadelphia, heads wholesalers

“HALT”

Practices

Sutcliffe

and foremost dealers and jobbers. Therefore, read them with more than usual care:

A RESOLUTION

Presented to the Manufacturers

To Prevent Overproduction

WHEREAS, in times past manufacturers of radio have been known to produce more units than their markets could possibly consume

WHEREAS—such overproduction resulted in many cases from no fault of their established distributors and dealers to whom, however, the resultant liquidation brought substantial losses.

THEREFORE—be it resolved that this association request, urge and demand that radio set manufacturers undertake to:

- (a) Exert every precaution in market analysis to most conservatively plan their production program.
- (b) Secure reports from their distributors weekly showing inventories on hand and sales of units to dealers.
- (c) Eliminate as much as possible the element of gamble or luck in calculating their potential sales.

A RESOLUTION

To Promote Radio by Raising a Co-operative Advertising Fund

WHEREAS, the radio industry has never, in our opinion, put into operation or sponsored, through co-operative effort, a definite and constructive program to broaden the market for radio receivers, and

WHEREAS, the history of American business is replete with examples of what has been accomplished through co-operative promotional and advertising effort by other industries, and

WHEREAS, we realize that such a plan properly conceived and properly executed would necessitate the creation of a promotional fund of considerable proportions,

BE IT THEREFORE RESOLVED, that the NFRA and RWA put themselves on record as being definitely in favor of the necessary steps to put the following plan into operation.

1. We recommend that every manufacturer of a radio receiver so adjust his list prices as to provide an extra net return per receiver for such a promotional fund.

2. That the NELA and the electric power companies be solicited for contributions toward this fund.

3. That the national chain broadcasting companies, whose services to advertisers as a whole will be greatly enhanced through the millions of listeners who will be attracted to their stations because of the aforementioned advertising and because of the outstanding character of these programs, be solicited for their contribution toward this fund, either in cash or in time on the air.

4. This promotional fund as received be turned over to a properly appointed body decided upon by a committee composed of members of the directorates of the RMA, NFRA and RWA.

5. That this promotional fund be used:

(a) To inaugurate a regular bi-weekly or monthly broadcast program, as revenue will permit, of such national interest as to give that great mass of the American public that does not now own modern radio receivers, or receiver of any kind, the urge to buy.

(b) To carry on a consistent advertising campaign in national magazines and newspapers to inform the public of all programs of national interest and of other reasons why every American household, office and factory should possess at least one modern radio receiver.

(c) To thereby furnish the radio retailer, by means of this activity, with a definite and concrete program which he can exploit and use to decided advantage in the profitable selling of radio receivers.

A RESOLUTION

For More Equitable contracts Between Manufacturer and Wholesaler Quotas, Price Reductions, Guarantees

Note: Dealers, as well as all jobbers, will find this resolution of intense interest. It treats of many vital and fundamental conditions.

WHEREAS: The contracts of some manufacturers are worded so as to protect the manufacturer 100 per cent and clauses are so written as to combat their own distributor customers instead of promoting the welfare of both parties, and

WHEREAS: Such contracts are unequitable, one sided and unsound in principle and defeat their true purposes,

BE IT THEREFORE RESOLVED, that set manufacturers in their written contracts, verbal agreements declared policies and price guarantees be duly mindful that there are two contracting parties with rights and desires that must be recognized so as to be fair to each other.

BE IT FURTHER RESOLVED, that the RWA wishes to go on record as being definitely opposed to the practice of some manufacturers demanding definite purchasing quotas from their distributors i.e. a period of six months to one year. It is our

(Please turn to page 49)

He's Had a Year

The Ira F. Powers Furniture Co., Portland, Ore., with 2,100 mantel model sales on the books, allows full credit when these are traded in for larger sets. Console sales now represent 72 per cent of the company's radio business where midgets formerly accounted for 60 per cent

ONE year ago this January, A. T. Erickson, manager of the radio department of the Ira F. Powers Furniture Company, Portland, Ore., viewed his first "baby" radio set. This interesting phenomenon had come to life in Los Angeles but a few days before. Should this newcomer be admitted into the conservative atmosphere of the Powers' radio department? His first inclination was to turn it down. On the other hand something was needed to offset the epidemic of price-cutting on so-called standard sets, and the idea of a receiver which would sell at a legitimately low price was alluring. When Erickson again considered the actual size of the set and realized that it was readily transportable and easily serviced, he decided to hazard the experiment.

The first ten sets to arrive were bought by employees in other departments before they could be placed on display.

The story is an old one now. It is known to every dealer who experimented with the midget at this period. At first they sold like wildfire. It seemed as though these miniature models would put every other type of radio off the market. The point was—did people who might ordinarily buy expensive sets purchase these instead and so injure rather than help the business. Undoubtedly some did, but Mr. Erickson felt their number was not great and that the benefits received more than offset the disadvantages.

In the first place, price cutting competition ceased. Why cut prices on console sets, when the customer who was looking for a price bargain would buy a midget?

Secondly, a really large percentage of the sales were "doubles"—that is, the midget set was bought as an auxiliary to supplement the more expensive one already in the home. Sometimes a console and a midget were bought simultaneously, the two being delivered together. Thirdly, Mr. Erickson believed it possible to nurse along some of the purchasers of the smaller models, selling them a larger set later on. In order to encourage this, he offered to take back the mantel type at its full value if turned in on a larger set within two months.

MIDGETS have now been in the store a full year. What has been the experience of these twelve months?

The foremost result, and one which sums up in effect all the others, is that Mr. Erickson firmly believes in

midgets, and carries them prominently among his merchandise.

He has found, first of all, that they require no special type of merchandising. The policy of the store is the same on this small radio as on other merchandise, except that the period of free service is limited to two months, and the customer is required to bring the set to the store. If an outside call is necessary, the regular service charge is made.

The customer is allowed surprisingly generous terms but, rather remarkably, the percentage of cash sales on this merchandise has proved unusually high.

It is against the practice of the store to give home demonstrations, but as the midget is so easily handled, exceptions have been made in many cases. Whenever the regular furniture salesman can make the demonstration in the course of his ordinary field work, the request is granted. He carries the set in his own car, makes the demonstration and *takes the set away with him again*. This is done whether or not a sale is made. "This is just my sample," he is instructed to explain. "An identical model from stock will be delivered to you within a few hours." Eighty per cent of such demonstrations have resulted in sales.

ERICKSON'S experience this past year has shown that the possibility of selling the midget as an auxiliary set is more than a mere dream. Eighteen per cent of all midgets sold during the year have been "second" sales, with the larger set purchased at the same time, or already in the home.

The policy of allowing full trade-in allowance for "juniors" on larger sets also has worked well. Nine per cent have brought them back within the allotted period and bought consoles to replace them. This was not done without some follow-up on the part of the store, of course, but a series of direct-by-mail bulletins brought results which were most gratifying.

The business has not been markedly seasonal, except that it has held up extremely well in summer, perhaps due to the vacation possibilities a baby receiver offers.

Has it injured the other business of the store? No, in Mr. Erickson's opinion. The Powers Company has always held a remarkable record in the sale of combinations, phonographs and radio sets. This it has maintained throughout the past trying 12 months.

Up to the first of November, 2,100 of these small sets

with MIDGETS

By
C. Grunsky



were sold. During the first few months of the year, it seemed that nothing but midgets were going out of the department. At this period, they constituted sixty per cent of the sales.

This condition was but temporary, however. Due to the natural tendency to press the sale of more expensive merchandise, and to special efforts to make small sales grow into larger ones, it cured itself. At the present time, the midget constitutes a fairly steady twenty eight per cent of sales, a position which Mr. Erickson feels probably represents a normal level.

Ten per cent of the department's customers may properly be pigeon-holed as belonging only in the midget class.

In other words, the mantel set can be made to constitute a large and, in itself, desirable source of revenue for the radio business. If properly handled it will stimulate, rather than interfere, with the even more profitable development of the sale of larger equipment.

Demonstrations are granted only when the furniture salesman can make the call in the course of his regular field work; frequently at the same time furniture is delivered. 80% of such demonstrations have resulted in sales

Illustration by
RALPH SULLIVAN

Somebody

*Multiple speaker installations
public acceptance. Here is a
that the radio dealer read*



PRISON

Pennsylvania's penitents no longer pine in pickle. The soothing sentiment of "If I had the wings of an angel" is wafted to the cauliflowered ears in the Holmesburg jug via multiple speakers (Atwater Kent system)



APARTMENT

Be they high-brow, low-brow or Amos 'n Andy fans, residents of Manhattan Towers, one of Gotham's skyscraper cottages, may have their favorite program by centralized radio, thanks to a three-channel system (Radio Receptor "Powerizer")



SHIP

A centralized radio installation aboard the Swedish American Motorliner "Kungsholm" does yeoman service (Western Electric Piano Co. unit)



Radio Retailing, March, 1931

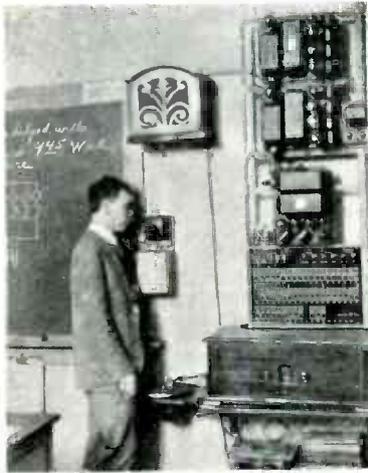
SOLD THEM

*are rapidly gaining
companionate line
ily understands*



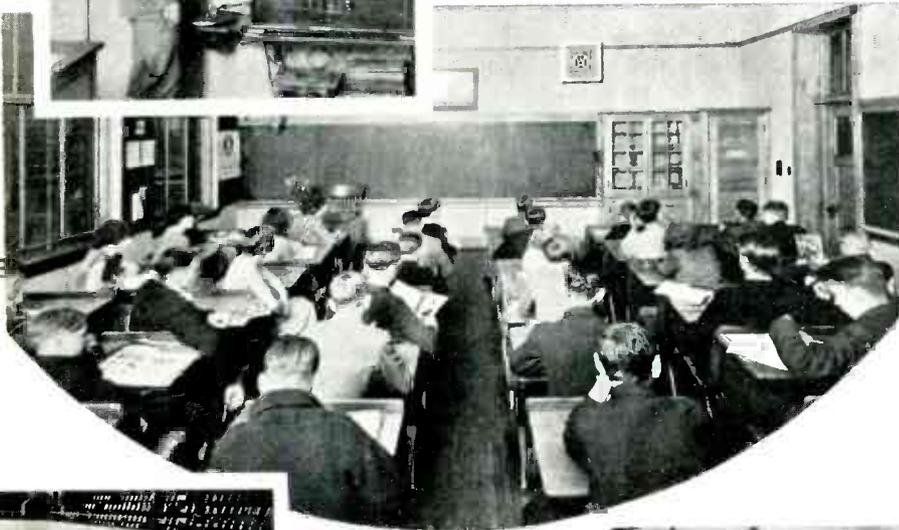
HOSPITAL

Patients at the Knickerbocker Hospital in New York no longer talk about their operation—which reduces wear and tear on visiting relatives and medical attendants. They listen to the radio instead (RCA two-channel installation)



SCHOOL

Readin', ritin' and radio more accurately describes the three r's dispensed by a modern schoolhouse. The boys and girls at Washington, Jr. High, Duluth, refrain from spitball practice long enough to receive a cheerful little carful from the sanctum sanctorum (Samson amplifier)



HOTEL

"Room with hot running radio and four-channel shower, umpty-ump dollars per diem," advertises the Pickwick Hotel, Kansas City. A centralized sound system provides sweet music for cash customers (Ortho-Tone equipment)

GYMNASIUM

Now that Sandusky Junior High's sound system includes the gym, little Johnny, down in the back row, deep-knee-bends when everybody else deep-knee-bends. The P. T. instructor's "one-two, one-two," spoken into a microphone, carries clearly to him (Simplex P.A. job)





The average prospect is created, in this retail operation, by outside "research" and brought to this little store for closing purposes only

JOE HUEBNER didn't know it couldn't be done so he went out and did it. "Why not sell radio sets, as well as automobiles?" a bright young jobber's salesman asked Joe just about the time business in Buffalo hit its first toboggan. "We'll teach you the ropes. You're just the type of dealer this man's industry needs."

The invitation was accepted. Today the Huebner Motor Sales Company, 2286 Genesee Street, Buffalo, employs four part time salesmen and last year it grossed \$40,000 from the radio department.

But why this particular "success" story? The answer is simple: The Huebner operation exemplifies—at a time when such an example is particularly needed—the value of the right kind of jobber co-operation and the fact that a sales set up such as Huebner's will ring the bell.

Speaking of jobber co-operation the only things that the H. B. Ackerman Company, through its contact man, O. J. Stayley, did to help this new and promising dealer get along were: drill Huebner in the talking points of the line until he could say them backwards; line up an A1 service and technical men; help secure salesmen and then gave them the same thorough training it gave to the proprietor; go out with Huebner and his men on both cold and hot canvasses; submit publicity and copy suggestions; check Huebner's accounting methods; bring him up-to-date on the status of the radio industry and emphasize particularly the dangers of the price-appeal pitfalls.

It was, perhaps, this last bit of sound advice, plus his automobile selling background, that started Huebner off on the right foot. Nothing very fancy from a store standpoint—overhead held to a minimum—but J. C. did a powerful lot of work among the "neighbors" on the North Side. Joe's just a plain sales plugger—that's all—with a peculiar tenacity for sticking to his prices and his policies.

And has it paid? This operation was personally checked, on the spot, by a representative of *Radio*

Retailing. J. C. Huebner enjoyed a radio business during 1930 which added \$4,000 net to his personal income. He discounts all his radio bills, averages \$141 per unit sale and has shown a steady but sure gross increase month by month.

Here are his policies summarized:

Pays the salesmen ten per cent.

Spends half his own time calling on likely prospects—not overlooking every business institution within a radius of two miles from No. 2286.

Has his serviceman call on all customers every third month.

Telephones ten "down the list" telephone subscribers daily.

Gets 20 per cent down.

Shows applicants for unreasonable trade-in allowances the old set "bone yard"—and asks them, "Would you?"

Shows the bargain hunters the bargain sheets and "give away" ads and convinces them that such merchandise must be taken with a grain of salt. Then he displays his full bag of tricks—acquired from the jobber and manufacturer—covering his own line and dwells upon the worth of that chain of three reputations behind the product.

Sells "up" from the midget by calling back on each buyer of a small set, at the end of 30 days with an offer which allows the full price of the first purchase towards the purchase of a console.

This then is the saga of a typical dealer who has demonstrated that this welter of "get a dollar today for tomorrow we may die" tactics *can* be surmounted, even in today's market. It is presented mainly for its inspirational value.

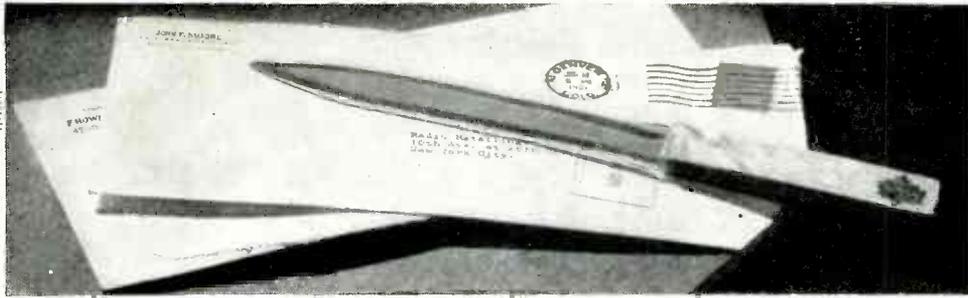
Huebner's methods are not unique. He has succeeded not by the "stunt" route but because he has followed the good old law of averages. This law declares that if a sufficient number of prospects are contacted there will materialize a more than self-sustaining volume of orders and a greater net profit for the man responsible.

Joe Huebner

PLUGGER



A recent convert to the ranks of radio retailers, this Buffalonian is applying unbiased thinking and fresh enthusiasm to his new endeavor



VOICES

from the

MARKETPLACE

For a More Rigid Tube Replacement Policy

Editor, *Radio Retailing*:

THE present 100 per cent replacement policy rampant in the radio tube trade is depriving the distributor and the dealer of the tube replacement market that should constitute their bread-and-butter business. The abuse of this practice, theoretically designed to take care of those defective tubes which slip by the rigid inspection of the modern tube plant or again the otherwise good tubes that are damaged in transit, has raised a condition in the industry which takes money from the pocket of every honest organization from manufacturer right through to dealer, and puts a premium on dishonesty on the part of a few unscrupulous individuals and companies.

In the early days of the tube industry, before technical advances had made the manufacture of radio tubes the exact science and art which it is today, a liberal replacement policy may have been necessary to correct the faults of production that crept past the factory inspection. The present danger lies in the fact that this liberal replacement policy has become just another method of cutting price, and frequently amounts to a policy of unlimited permanent guarantee on any and all tubes.

For the consumer, 100 per cent replacement means that he must pay the freight in higher prices for tubes which he buys from the honest dealer, so that the dishonest dealer can make an added increment on his sales. The dealer must carry the burden of meeting cut-rate competition and of the higher production costs directly traceable to replacement costs on *perfect* tubes that have been replaced. Conditions in the industry have brought about an appalling situation with respect to replacement claims. Particularly at this time, "trade-in" merchandising plans have resulted in the collection of thousands upon thousands of wornout tubes of various makes. Some of these tubes are from two to five years old, and many dealers have no scruples about sending them to the manufacturer and receiving new tubes without charge.

It is one thing for a distributor to deal with a tube

manufacturer offering so-called 100 per cent replacement, but it is quite another speculation as to how long he will be in business to make good on these boisterous guarantees. I am confident that the dealer and distributor will consider the situation in this light, and that the manufacturer will be better respected for drawing the line and insisting on sane restrictions.

It is quite evident that in the radio industry there is no such thing as any one getting together on any concerted plan of action for the good of the industry. Everyone is ready and willing to agree that there are many abuses, but no one is willing to agree that he is an offender or that he can do anything about it.

Therefore, we of the DeForest organization have decided to take a definite, independent, stand on this question, and to adhere to it regardless of whether others see the logic of our position and follow us, or simply persist in their suicidal tactics. That position is that tube replacements are for the sole purpose of replacing tubes that have, for some reason, either slipped past the inspection or have been damaged in transit. We know that under certain conditions such faults will show up within a certain definite time, and so we have instructed our distributors on how to translate the code in the tube which will determine its month of manufacture, while outlining to them on just what conditions replacements will be made. The whole plan will not in the least change the treatment accorded the honest dealer who is asking only his due in the matter of replacements.

Rather to our surprise, we have found the response to our new policy most enthusiastic and commendatory. For the most part our distributors see the point that the dealer who rides a replacement policy to the bankruptcy court is a liability rather than an asset.

The 100 per cent tube replacement evil is one which faces the entire tube industry and radio trade. Its value as a merchandising feature has been grossly over-rated. Radio jobbers and retailers, quite as well as tube manufacturers, are definitely money out of pocket by the promiscuous replacement of old tubes. It is suicidal for all concerned to persist in a practice which, forced upon all by competition, no longer has any value as cheap ballyhoo whereby to win over buyers.

Passaic, N. J. W. J. BARKLEY, *Vice-president,*
DeForest Radio Company.

"Automatics"

Stand Steadfast

Editor, *Radio Retailing*:

THROUGHOUT Radio's many vicissitudes, its varying list prices, its fluctuating supply and demand, its ups and downs of dealer profits, one allied line has stood like a rock. Since the automatic musical instrument—

the multi-disc phonograph for public amusement—was perfected, the manufacturers behind it have steadfastly maintained constructive dealer policies. They have given their retail outlets price and “obsolescence” protection. And the dealers handling this proposition have enjoyed steady and continuous profits—*cash* returns for public service and entertainment.

Yes, automatic musical instruments have played a big part in this drama of the automatic age. Contrast the relative stability of the manufacturers’ policies and of the steadily increasing public demand for the automatic record changing musical instrument with the erratic courses pursued by practically every other industry of modern creation.

Another proof of the contrasting success of the automatic musical instrument business may be had by observing the prosperity enjoyed by the manufacturers. When factories are shipping . . . dealers and operators are buying. Business has more than held its own in our line—it has increased constantly.

JAMES E. JOHNSON, *General Manager*
Chicago, Ill., *Western Electric Piano Company.*

▼
**June—Not January—
Is New Model Month**

Editor, *Radio Retailing*:

THE manufacturers are disrupting the entire radio trade by over-production, by dumping and by reducing the size and unit price of the radio receiver. These terrific abuses of dealer confidence are known by all.

But the greatest evil in the radio trade today is the

senseless change of new models at the beginning of the new year. The radio trade season begins in September, and should end about April. It should not begin in January and end in January, as many manufacturers are trying to make us believe. The bulk of sales are made in December, with small down payments. Now, before the customer gets fairly started on his purchase, he sees new merchandise on the dealer’s floor and immediately gets dissatisfied with his purchase and wants the new model. It is hard to convince him that the set he bought in December is just as good as the one he can buy in January. Not only that, but he will see advertised at cut prices, on all sides, the very model he has recently purchased; or there will be offered a trade-in allowance on the same set which he was denied. We, the dealers, are compelled to do this, so we can unload as quickly as possible the surplus stock on hand.

Why the manufacturers should change horses in the middle of the stream, in other words, give us new models in the middle of the season, is beyond the understanding of dealers. No dealer needs new merchandise in January when business is good. He wants to be left *alone*, to sell the models he sold in December through the middle of January, February, March and April. When business lags, beginning in May or June, he is *then* in a position to consider changes in models. June is the only sensible time to produce these new machines.

Another thing: it would be much better for the entire trade if all midgets were withdrawn from the open market, or else priced as high as the small console. There is too much emphasis placed on the low-price set.

I would like to see the manufacturers get together and save the radio industry before it is too late. The dealers are getting disgusted with foolish fireworks.

Scranton, Pa. P. C. PEUSER.

▼ ▼ ▼
And in response to last month’s editorial—

WHY NOT EXTRA SPEAKER JACKS?

“We Heartily Agree”

Technical Editor, *Radio Retailing*:

The contents of your contemplated editorial were noted with considerable interest, inasmuch as the Atwater Kent Manufacturing Company has for some time been aware of the widespread need and desire for a convenient method of attaching additional speakers or headphones to the later type receivers designed to operate with a single electro-dynamic type speaker.

Last season, in order to temporarily handle this situation, we designed for use with our last year’s model (1930) screen grid console sets, a special tapped output transformer which could be used in place of the regular output transformer in the set by simply replacing the latter in the chassis of the receiver—the two output transformers being interchangeable mechanically. The special transformer was equipped with an extra five-tapped secondary winding which would permit the use of anywhere from one additional magnetic speaker or headphone, up to as many as 30 additional magnetic speakers in the case of our “Model 66” set which used the type “250” tubes in the output.

For the individual who simply wished to use one extra speaker we suggested the use of another type output transformer, connecting the primary of same in parallel to the voice coil of the electro-dynamic speaker used with the set, and the secondary to the extra speaker.

We most heartily agree with your editorial that the field for equipment of this kind is almost unlimited, and we are urging our dealers to be alive to the advantages of going after this “plus” business, which means a bigger volume of sales and better satisfied customer-owners. Almost every radio equipped home is a prospect for one or more additional speakers, and undoubtedly many purchasers of console sets would be glad in-

deed to know of this simple and inexpensive means of supplying the pleasures of reception to additional rooms in their home.

L. A. CHARBONNIER, SERVICE MGR.,
Atwater Kent Mfg. Co.

“Frankly, You’re Wrong”

Technical Editor, *Radio Retailing*:

Frankly, I think you are all wrong. In the first place, we have not seen anything that could be called a “quality” magnetic speaker, and now that the public is so well educated and sold on tone quality, I think dealers would find it very difficult to sell extra speakers, if they were of the magnetic type.

In the second place, I do not think there are many families who want additional speakers at a remote point from the receiver, but they do want and can now have second complete receivers for upstairs or remote use. This gives the advantage of tuning in different programs to suit everyone’s taste.

I also take issue with your statement that a separate magnetic speaker near the hearers would be better to listen to than a dynamic speaker turned up to full volume in the next room. I wish it were true that with any speaker we could get as good tone quality with the volume turned low as can be had with the volume turned up fairly high. I have several sets in my home, but I like best to listen from the living room to a set located in the far end of the dining room.

In my opinion, not more than five per cent of the set owners would purchase additional speakers, and on this basis your suggestion would also be economically unsound.

W. E. HOLLAND, CHIEF ENGINEER,
Philadelphia Storage Battery Co.

It's a Music



Discounts Do Not Make for Volume Sales

"Discounts from the manufacturer are not the factor which makes for volume sales. Rapidity of turnover brings far more net money than does length of discount. Direct field assistance from the manufacturer is more important than gross dollars."

"The keen radio dealer will look for appliance manufacturers who do not sell discounts but for products that stand up and bring repeat business."

MAX HANOVER

IN NORWICH, CONN., a city of 23,000 people, the Hanover Curland Co. has been an outstanding figure in the musical instrument business for over a quarter of a century. It has prospered in a substantial way. It has always been an alert concern. Commencing as a piano, phonograph and musical instrument house it naturally became active in the merchandising of radio, in which business it has been engaged for nearly ten years. About two years ago, it branched into the retailing of electric washers, ironers, refrigerators, vacuum cleaners, clocks and other electrical household utilities, again meeting with splendid success.

Why—and how—is this conservative radio-music concern pushing major household appliances?

"With radio volume off a bit we considered the allied 'home making' lines, i.e., electrical appliances, as our next logical activity," states President Max Hanover.

"While we are now carrying a number of kinds of electrical household utilities used in the modern home, it has been our experience that the electric washer stands out as the easiest seller. It answers a very vital need in the average home. It does away with drudgery for

the housewife, saves the clothes and requires practically no servicing. And service, when service is required, and freedom from excessive service requirements in the merchandise, are of most important and essential value in the relation of the dealer and his patrons. It is the main factor in the reaction to the future good will of his business, especially when located in a small city where transient trade is small, and where the dealer must depend on repeat orders for other kinds of merchandise. The outstanding quality of the lines we handle is of vital importance to the success and continuance of our business," continues Mr. Hanover.

Hanover on Discounts

Listen to Mr. Hanover's mature philosophy concerning discounts:

"We have quite definitely established the fact," he declares, "that large discounts from the manufacturer are not a factor which makes for volume sales. Rapidity of turnover makes far more net money than does length of discount. Direct field sales assistance from the manufacturer is of more importance than the gross dollars

House

— plus —

Electric Washers
Ironers
Refrigerators
Cleaners
and Clocks



made on the individual sale. The successful and wide-awake radio dealer, who is interested in the future of his business, looks for both electrical appliances and radio sets made by reliable manufacturers. Not manufacturers who sell discounts but those who sell products which will stand up, saving service expense. This brings repeat sales from old customers, their friends and relatives."

In the present picture of the Hanover Curland establishment, the washer business runs a close second to radio and electric refrigerator revenue exceeds that made in its musical instrument department.

Every person with this outfit is completely sold on the indispensable value of these two appliances to the modern housekeeper.

"While there may be those who find fault with the machine age, everyone must admire the home which is

made more habitable through the use of these modern, time-and-labor-saving home appliances," says Hanover.

"The radio dealer must wake up to the fact that he is living in the 20th century. He must acquaint himself with those products which are best fitted to be placed in the modern home. He must learn how to merchandise them at a profit to himself. The time-tried sales methods of successful and dominant manufacturers of electrical appliances are usually at his beck and call, if he will but avail himself of his opportunities. If he is enthusiastic, if he knows his products and is sold on the household items he handles, he can't fail to turn them into a very profitable business for himself. We live in a time when we must be up and getting—not going!"

Hanover Curland has found no golden key to selling the household utilities. It works in the good old shirt-sleeve way. Salesmen are paid strictly on a commission basis. They are specialty salesmen, canvassing house-to-house. Their washing machine men sell nothing but washers, just as the radio salesmen specialize on the sale of radio only. The washer crew even have a truck of their own, distinctively painted and lettered in the standard manner, as recommended by the washer manufacturer.

Hanover Curland consistently ties up with the local newspaper advertising used by the manufacturers of the various lines which it represents. Bill-poster advertising is made use of in the territory adjacent to Norwich and also within the city limits. Ample and attractive window

displays are maintained, in the extensive show-windows of this store—five on one street and four on the other.

Just as soon as a customer completes paying for a radio or an electrical appliance, a systematic follow-up plan is operated, in an effort to sell some other item handled by this concern. It is very seldom that the follow-up sale is not made.

Truly, here is a dealer who has successfully and profitably fitted an electrical appliance sales picture into a radio frame. This firm refuses to be bound by tradition and in its pioneering has found the way out.



“CONCENTRATE on cheap sets and you get cheap trade. Stock elaborate models for people who can afford to pay for them and you do a profitable ‘class’ business.” So say the Ehrenreich brothers, proprietors of the Parker Radio Store, 406 Lexington Avenue, New York, who sold eleven \$580 automatic record changing combinations (Sparton) to an appreciative Park Avenue clientele last year.

“Dealers have become so involved in the competition for hundred dollar console business that they ignore the market for expensive equipment,” states Joe Ehrenreich. “While it is quite true that general business depression has made it more difficult to sell expensive jobs we still find enough people in our territory who want ‘the best money can buy’ to make it very much worth while catering to their tastes.

“In order to attract this type of buyer it is necessary to stock equipment which is the very last word not only in appearance but in electrical and mechanical perfection. It is also necessary that its superiority over less expensive equipment be immediately discernable to the untrained eye and in this direction we are aided materially by the automatic record changing feature. While I have reason to believe that this feature is rarely used in the average home the superiority of a combination of the automatic type over a non-automatic machine is so instantly apparent that the more expensive model is placed in a class by itself. It is *above* competition and, as is the case with ‘the best’ in any class of merchandise, commands its own price.

“The automatic record changing feature creates such an impression of ultra-modernity that superior tone quality, selectivity and general all around performance of the machines so equipped is taken for granted and it is rarely necessary to make a comparative demonstration of these somewhat intangible features. Curiously enough, we have found the high price of the fully automatic model a positive advantage when dealing with



Above Competition

Two Ehrenreich brothers sold eleven \$580 automatic record changing combinations in year to New Yorkers who wanted “the best.” \$330 in discs went out with the machines.

number of popular selections in each consignment.

“High pressure selling does not pay when catering to this class of trade. We circularized most of the lower Park Avenue apartment buildings early in the season and also sent direct mail pieces calling attention to the new automatic record changing combinations to the Tudor City development buildings. Prices were not mentioned in any circular. Six of the people to whom we sold automatic machines were not at all interested in cheaper models. The other 5 came into the store originally to see the better types of straight radios, were shown the automatic, bought. From this it is evident that quality trade is well worth while going after. This business is particularly profitable as the margin of profit involved is more than sufficient to cover sales expense.

“We will continue to push automatic record changing combinations of the more expensive variety this year as we feel that the business resulting from the sale of these models, though difficult to obtain in volume, is particularly profitable.”

wealthy people. Such customers are accustomed to paying good prices for unusual equipment and more often than not suspect competitively priced merchandise. We have tried to sell cheaper automatic models, with considerably less success, although it is quite possible that we may be able to move these to middle-class buyers when business conditions improve.

“The sale of records with the original purchase of automatic combination models has also been a particularly fine source of revenue. We induce each buyer to let us send a \$60 selection of records with the machine on consignment and so far have managed to sell at least half of each consignment with each automatic. This involved a considerable study of discs best suited for sale to this particular clientele and we soon discovered that the red-seal records sold better than others although it was necessary to include a

A Plan for Stabilizing Prosperity

WITH this number, the publishers of *Radio Retailing* place in the reader's hands, as a supplement, the carefully considered "Platform for American Business" prepared by the McGraw-Hill Publishing Company and offered as a constructive program for the building of a new and continuous national prosperity out of the present depression.

It will be noted that the Platform is built around four principal planks which have a bearing on every form of business activity. These planks offer much material for serious study by every American business man, to determine ways in which either directly or indirectly they fit into his own operations. They apply particularly to the several branches of radio: manufacturing, wholesale distribution, and retail sales. With all of these planks the radio man is deeply concerned. Summarized, the planks are:

- I Maintenance of present standards of living
- II Stable development of American business
- III Promotion of international co-operation
- IV Restriction of governmental encroachment on private enterprise

UPON the future extension and present holding of "1930 living standards." (Plank I) depends the measure of the prosperity of the whole radio industry. American working men and the American public gen-

Every radio dealer, distributor and manufacturer is vitally concerned in the recommendations offered by the "Platform for American Business," which accompanies this issue as a supplement.

erally, can buy radio sets in quantities only so long as the average earnings of American workers show a surplus over the cost of the necessities of life. For years, prior to 1915, the American wage earner had only a bare living wage.

Then with the greater earnings that came with war times, individual wages went up, and have remained at this latter higher level, even though costs of living have fallen. It is this surplus of earning power in the hands of millions of American families which has produced the record prosperity of recent times. It is this "spendable surplus" which the McGraw-Hill Plan seeks to continue, and which will have a tremendous influence on the country's future buying power for radio sets and other home-entertainment devices.

Because the McGraw-Hill Platform applies generally to all business in the present situation, and because it is particularly pertinent to radio's own special problems right now, every radio man will want to read the Platform, study it, and apply it thoughtfully to his own operations.



Use This Advertising Statute

THE following statute, or elaborations of it without substantial change, is an advertising law in the following 23 states:

Colorado	Kentucky	Nevada	Oregon
Idaho	Louisiana	New Jersey	Rhode Island
Illinois	Michigan	New York	Virginia
Indiana	Minnesota	North Dakota	Washington
Iowa	Missouri	Ohio	Wyoming
Kansas	Nebraska	Oklahoma	

The remaining states which have advertising laws, many weakened by the term, "knowingly" or "with fraudulent intent," are as follows:

Alabama	Maryland	Pennsylvania	Utah
Arizona	Massachusetts	South Carolina	W. Virginia
California	Montana	South Dakota	Wisconsin
Connecticut	North Carolina	Tennessee	

"Any person, firm, corporation or association, who, with intent to sell or in any wise dispose of merchandise, securities, service, or anything offered by such person,

firm, corporation or association directly or indirectly, to the public for sale or distribution, or with intent to increase the consumption thereof, or to induce the public in any manner to enter into any obligation relating thereto, or to acquire title thereto, or an interest therein, makes, publishes, disseminates, circulates or places before the public or causes directly or indirectly, to be made, published, disseminated, circulated, or placed before the public in this state, in a newspaper or other publication or in the form of a book, notice, handbill, poster, bill, circular, pamphlet or letter, or in any other way, an advertisement of any sort regarding merchandise, securities, service or anything so offered to the public, **which advertisement contains any assertion, representation or statement of fact which is untrue, deceptive or misleading, shall be guilty of misdemeanor.**"

Dealers, jobbers, manufacturers—get behind this instrument. Use it to clean up destructive advertising situations within your jurisdiction.

SERVICE SHORTCUTS



The Multi-Mu Tube

By R. O. Lewis, Grigsby-Grunow Co.

In a recent forecast article entitled "From the Laboratories" (page 21, January) we predicted early use of the Ballentine and Snow variable-mu tube in a commercial receiver. The tube has since been incorporated in "Majestic" superheterodynes and will appear in several other lines at the June trade show. Mr. Lewis' article is therefore of considerable interest to servicemen.

SINCE broadcasting began progress has necessitated higher and higher powered stations. The result of this development has been to increase the signal voltage applied to receivers operated in close proximity to such stations and this has brought about a condition which requires that an efficient receiver not only amplify very small voltages induced in the antenna by distant stations but also actually attenuate high signal voltages provided by locals.

The multi-mu tube makes it unnecessary to resort to double volume controls and similar mechanical devices designed to reduce input to the r.f. circuits when signal voltages which would seriously overload the amplifier are received. The amplification factor of the tube auto-

matically adjusts itself to the input voltage, becoming greater where sensitivity is required and less where high gain is unnecessary, and distortion of local programs is thus avoided without impairing dx performance. The variable amplification factor action of the tube classified as type '51 also permits the use of an r.f. circuit which materially reduces background noise.

Pre-selectors and antenna circuit band-pass filters developed to minimize cross-talk difficulties when tuning a receiver through nearby locals to a distant signal are obviated by the use of the '51, the tube automatically performing the function of such filters. Cross-talk of this variety has sometimes been encountered even when using the most selective circuits as the voltage impressed on the grid of the first r.f. tube by a powerful local, though slight, was sufficient to modulate the carrier of the distant station. The new tube, therefore, will usually be found in r.f. circuits.

The condition known as modulation distortion is rendered less troublesome by incorporation of the multi-mu in r.f. amplifier design. This condition is brought about due to the fact that ordinary r.f. stage tubes are often excellent modulators when the overall amplification of the receiver in which

they are employed is reduced by an increase in grid bias values. In such cases the percentage modulation of the signal from a broadcasting station is increased as it passes through the receiver and with many stations now nearly 100 per cent modulated any increase causes distortion.

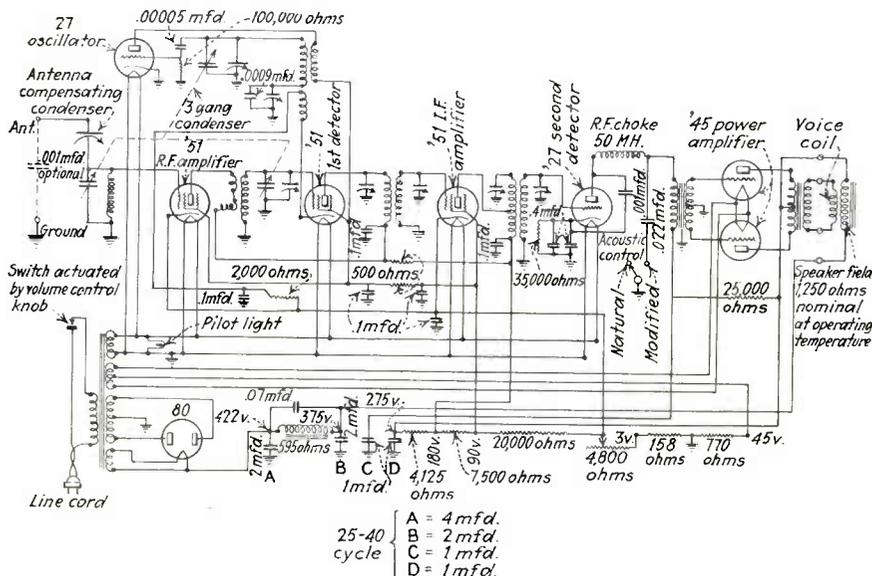
Filament, Plate, Grid Voltages

There are three positions in our circuit where the multi-mu tube is used to advantage—as a t.r.f. amplifier, as a first detector and as an i.f. amplifier. Nothing would be gained by its use as an oscillator or second detector in this design.

Applied as an initial t.r.f. amplifier in series 20 receivers, a 158 ohm fixed resistor in the voltage divider system assures a minimum of 3 volts bias between the cathode and the grounded control grid. The cathode, however, is connected to the arm of a 4800 ohm variable volume control resistor which gives a variation between 3 and approximately 9 volts control grid bias. Another resistance in the voltage divider system maintains the screen-grid at 90 volts positive potential with respect to the cathode. To the plate of this tube 180 volts with a normal current drain of 5 ma. is applied.

The cathode of the first detector, the second multi-mu tube, is also connected to the arm of the volume control resistor but in this return a resistance is inserted by which the cathode is maintained at 8 volts difference relative to the control grid. The first detector screen-grid potential is 90 volts with the usual 180 volts on the plate. Plate current is normally about 1 ma.

Voltages and currents associated with the i.f. amplifier stage are identical to values already given for the first t.r.f. tube. The three '51 filaments and those of the two '27's are operated from a common 2.32 volt power transformer winding. Another winding supplies 2.36 volts to the '45 filaments and still another 4.88 volts to the rectifier.



One Cause of Hum

By R. Findlay

Removing a.c. tubes from sockets with the power on is particularly bad practice when servicing sets equipped with elec-

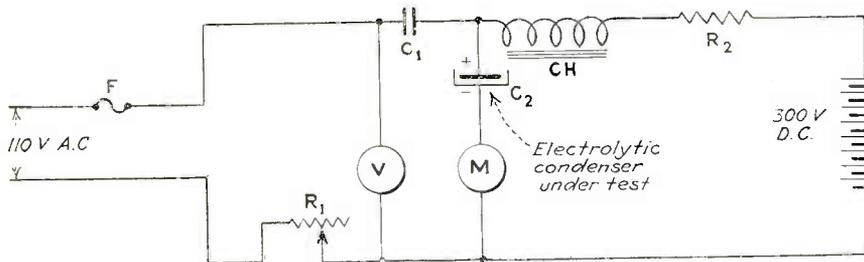
trolytic filter condensers. The removal of tubes lessens current drain on the power pack, the voltage instantly rises and this abnormally high potential is temporarily applied to the filter condenser.

The danger is not that the dielectric will fail, for such condensers are usually provided with an ample safety factor and are self healing anyway. But overloads eventually reduce the capacity of the condenser, often producing excessive hum. Midgets are particularly susceptible to this trouble.

Testing Electrolytic Condensers for Capacity, Leakage

By J. Calcaterra, Aerovox Wireless Corp.

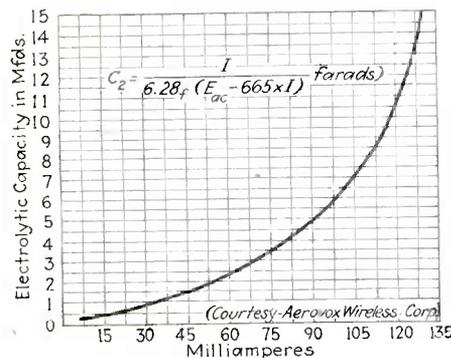
One of the simplest and most reliable methods of testing electrolytic condensers of both the wet and dry types makes use of the circuit illustrated. The instrument



can be constructed at low cost and is sufficiently accurate for service work.

The parts required are as follows:

- F—1 ampere fuse.
- C1—4 mfd., 600 volt d.c. working voltage, wax paper condenser. Only a wax paper condenser—Aerovox type 602 or equivalent—can be used in this position.
- C2—Electrolytic condenser under test. Polarity must be observed as indicated with respect to the 300 volt d.c. supply.



CH—30 to 50 henry choke such as is used in standard power packs.

R1—400 ohm rheostat capable of dissipating at least 200 mls.—Carter type SW-400 or equivalent.

R2—2,000 ohm resistor rated at 100 watts—Aerovox type 996 or equivalent.

V—0-150 a.c. voltmeter.

M—0-200 a.c. milliammeter.

The d.c. required may be either batteries or a standard power pack. R2 has sufficient resistance to protect the milliammeter from excess d.c. even in the event that the electrolytic condenser under test is shorted.

Operation

With the a.c. circuit open but the d.c. supply connected, the electrolytic condenser which is to be tested may be connected in the circuit *with due regard to its polarity*. The leakage current can then be read

on the milliammeter, this reading being sufficiently accurate for all test purposes.

The initial leakage reading may be rather high when the condenser is first connected but should rapidly decrease. The serviceman should not attempt to take a leakage reading until the condenser has been connected for at least five minutes. After five minutes the leakage current should have dropped to a comparatively low value of the order of .05 to .5 milliamperes per microfarad for a good condenser. The final leakage value will depend to some extent on the type of condenser, the capacity of the unit and the length of time it has been "off voltage" or on the shelf.

After the d.c. leakage has reached its final level, usually one or two milliamperes, the a.c. switch is connected and voltage adjusted by varying rheostat R1 to 110 volts. If the milliammeter is calibrated in terms of capacity by substituting condensers of known capacity in place of C2 and noting the current readings for the various standard capacities the capacity of the electrolytic condenser on test can be read

directly from the milliammeter scale. Calibration will always hold true, even with slight difference in the d.c. leakage of the condenser under test, if the a.c. voltage is kept exactly at 110 volts.

The d.c. voltage applied has little effect on capacity measurements and comparatively slight effect on leakage current. The polarizing d.c. voltage is not critical and may be somewhat higher than 300 volts, depending upon the peak voltage rating of condensers C1 and C2.

(ED. NOTE: The capacity of electrolytic condensers cannot successfully be measured in an ordinary bridge circuit. A d.c. polarizing voltage must be properly applied to the condenser, as described in this article, in addition to the a.c. voltage.)

Calibration

When no condensers of known capacity are available to serve as standards for the calibration of milliammeter M in micro-

farads the graph shown can be used to determine the capacity from the voltage and current readings obtained. In using this graph it is essential that condenser C1 be a 4 mfd. paper condenser.

If a.c. hum is present to an annoying degree in a receiver and the electrolytic condensers are found normal with respect to capacity and leakage current values it is always advisable to supplement the leakage and capacity test with a substitution test before definitely exonerating the filter condensers. Substitute condensers known to be good for those originally installed in the power-pack and note the hum level. Only by this double test method can electrolytic condensers be definitely eliminated as a possible source of trouble.

PILOT LIGHTS

If stuck for a knife when putting up an aerial, insulation can be removed from the lead-in wire by laying it flat on brickwork and pounding with a hammer. (The wire, not the brickwork.)

Don't try to push a screw-driver through plaster. Ease it through with a twisting motion.

If a set repeatedly burns out 2½ volt pilot lights try a Mazda 3.2 and your troubles will be over. There will be no noticeable difference in brilliancy.

Reversing the polarity of an a.c. plug sometimes reduces noise pickup from the light lines. (We don't know why but s'fact.) Try it on the next nasty apartment house installation.

When antenna and ground leads are carried to the set as a twisted pair touch first one and then the other to the aerial post with the receiver tuned in on a local. The one producing the loudest signal is the antenna. Tie a knot in it.

For the awkward corners: A bolt or screw may be held on the end of a screw-driver by folding a thickness or two of paper over the blade and then wedging the whole into the notch.

If enough antenna and ground wire is left slack in back of a set to permit it to swing out away from the wall at a 90° angle without ripping up a yard of upholstery tacks the next call will be lots easier.

Our Model Shop Corner



We pass the palm for the month's best well-equipped-shop picture to Brownies Battery Shop of Okmulgee, Okla. It is certainly a swell layout.

An A.C. Single-Meter Tube Checker

By J. P. Kennedy

I have constructed a portable instrument capable of checking all standard a.c. and d.c. tubes which should be of interest to other shops. This service accessory can be assembled at low cost, is completely a.c. in operation and is easy to run. It is not calibrated to indicate actual current and voltage values but makes it possible, rather, to quickly compare tubes known to be good with others. Actually, the operator compares the tube under test and a previously de-



termined standard with respect to mutual conductance by noting change in plate current caused by change in grid bias.

A low range voltmeter with an 8 milliamperes full scale movement, used in this case as a plate milliammeter, is the only instrument, while a neon glow lamp shunting this meter instantly shows up tubes with internal shorts.

Operation

In use the tube to be checked is placed in socket T1 or T2 and switch S4 is set to the proper filament tap. (Switch S5 is used in the position shown on the accompanying diagram for all three element and rectifying tubes and is thrown to resistor R3 only when screen-grid types are tested.) Next, the

a.c. line switch S3 is closed and the action of the neon glow lamp noted.

If both sides of the neon lamp glow the tube under test has an internal short and it should be immediately removed from the instrument and discarded. In such cases push-button switch S1 should under no condition be closed as this would apply the full a.c. line voltage across the meter, immediately blowing it out. If one side of the neon lamp glows, however, no internal short is present and it is safe to proceed.

Assuming that the tube is not shorted the next step is to press push-button switch S1. This connects the meter in the plate circuit of the tube and the neon lamp will immediately go out. The meter reading should be noted and then push-button switch S2 closed. Depression of S2 shorts out part of the grid bias resistor, thereby reducing the negative bias applied to the tube and increasing the plate current and it is the difference between the plate current with S2 depressed and with S2 open which is taken as the figure of merit. The greater the plate current difference the better the mutual conductance.

When the two readings have been taken and the plate current difference noted it then remains only to compare this difference with some previously determined standard. This standard may be the values obtained with tubes known to be good, charted, and preferably pasted within the cover of the instrument. Following are some typical values used as standards in connection with the particular accessory described:

Type	Button 1	Button 2
299	0.4	1.0
220	0.9	2.2
230	0.3	1.3
231	0.7	3.0
301A	0.3	1.3
326	0.4	1.7
327	0.4	1.7
324	0.2	0.6
112A	0.4	1.8
171A	1.0	4.4
345	1.0	4.5
380	4.0	Off scale

Some tubes such as the 350, 381 and 380, will kick the meter off scale when S2 is depressed. Simply note these tubes and use only the first reading when checking them. Were bias resistors to be proportioned to accommodate these tubes the deflection on 299's and 230's would be very low and difficult to read.

Screen-grid tubes are tested in exactly the same manner as three element types but with switch S5 thrown to resistor

R3 and the flexible lead clipped to the control grid terminal. In testing overhead heater tubes it is necessary to plug wire leads into the heater supply terminals of the five prong socket, carrying these to the proper connections at the top of the tube.

Construction

The parts used in the assembly of the instrument are as follows:

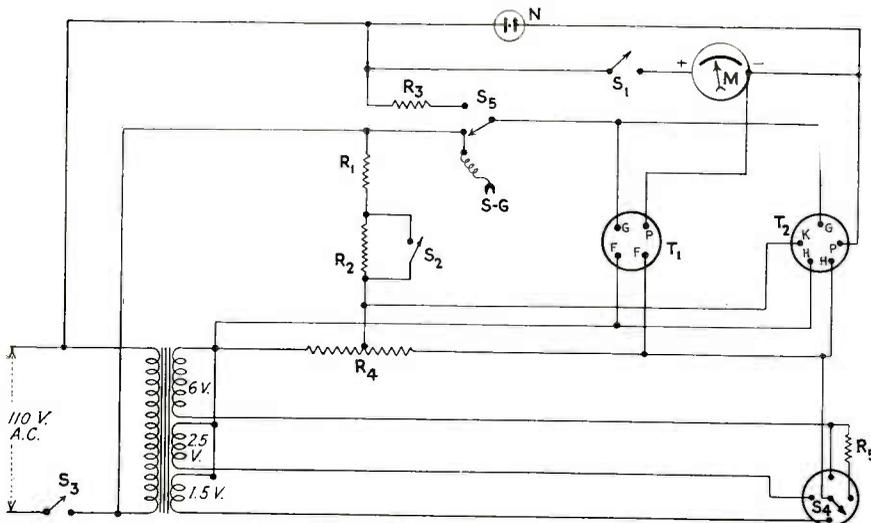
M	—Pin-jack voltmeter, 0-5 volts, 8 mil. full scale movement (used)	\$1.50
N	—Neon glow lamp, 120 volt, polarized type	.85
R1	—Resistor, 900 ohms	.15
R2	—Resistor, 6,000 ohms	.15
R3	—Resistor, 50,000 ohms (not critical)	.15
R4	—Resistor, 30 ohms, center-tapped	.25
R5	—Resistor, 4 ohms	.15
S1, S2	—Pearl door bell buttons	.50
S3	—A. C. line switch	.20
S4	—4 point switch (Yaxley or equivalent)	.50
S5	—Knife switch, SPDT	.10
T1	—Four prong tube socket	.25
T2	—Five prong tube socket	.25
SG	—Spring clip and flexible lead	.05
W	—Filament transformer	3.00
	Panel, 6½ in. x 8 in.	.85
	Walnut box, ¾ in. deep (outside), ½ stock	2.00
	Miscellaneous hardware	.30
	A. C. cord and plug	.60
	Pin-jack (for s-c cord)	.15
		\$11.95

The meter may be any range model 506 Weston voltmeter without altering the resistor values shown in the accompanying diagram as all of these models have 8 milliamperes movements. If the voltage range of the instrument is above 8 volts it will have a series resistor within the case and the case must be opened and this resistor shorted. (Ed. Note: Any good low range milliammeter or voltmeter may be used in this position but if full scale deflection requires more than 8 milliamperes the values noted for R1 and R2 will no longer hold. It will be necessary to select new values by experiment.) The meter used in the illustrated tube checker was obtained from an old Radiola set using 299's and was re-mounted in a flush type case. It might just as well have been plugged into the panel, using pin-jacks.

The neon tube used was obtained from a General Electric Company distributor and was manufactured by the Cooper Hewitt Electric Company. Any 120 volt neon glow lamp of the two section, polarized type may be used. It is mounted through a countersunk hole drilled in the panel. Friction tape bound around its base holds it firmly in place.

The filament transformer, in addition to supplying normal voltages to the various types of standard a.c. tubes, also supplies sufficient voltage for checking d.c. types although these are operated slightly below rating. The 1½ volt section is adequate for the new 2 volt types and the 2½ volt section operates not only the 299 series but also special 3 volt tubes of the 484 and 485 types. A four ohm resistor (R5) is used in series with the 6 volt winding when testing five volt, quarter ampere tubes. This resistor is omitted when checking 5 volt tubes with higher filament drain as the normal voltage drop in the small transformer used under load automatically reduces the excess voltage.

As originally purchased the transformer was in a case of awkward size. It was removed from this case, placed in a corner of the tube checker box and a pound of hot paraffin wax poured over it to protect it and hold it firmly to the wood.



The size of resistors R1 and R2 may be determined by experiment. The 345 type tube gives the highest reading on the instrument of all commonly used tubes. Plug a 345 in socket T1 and select a value for R1 (with R2 temporarily omitted entirely from the circuit) which will give about 90 per cent full scale deflection. Then select a value for R2 which will cut the deflection to 20 per cent of full scale when this resistor is placed in series with R1. R3 may be any value between 25,000 and 100,000 ohms.

Aligning Philco Supers

By R. F. Herr

When it is necessary to align the Philco superheterodyne, model 111, the following procedure is recommended. A Jewell 560 oscillator was used in formulating this routine:

IF STAGES: Connect the "A" terminal of the oscillator to the control grid of the first detector tube. The "G" terminal of the oscillator must be connected to the receiver chassis. Turn on the filament control of the oscillator about $\frac{1}{2}$ the total movement. The middle switch must be turned to the intermediate position. The tuning control of the oscillator must be set so that the oscillator signal is exactly 175

The Parts That "GO"

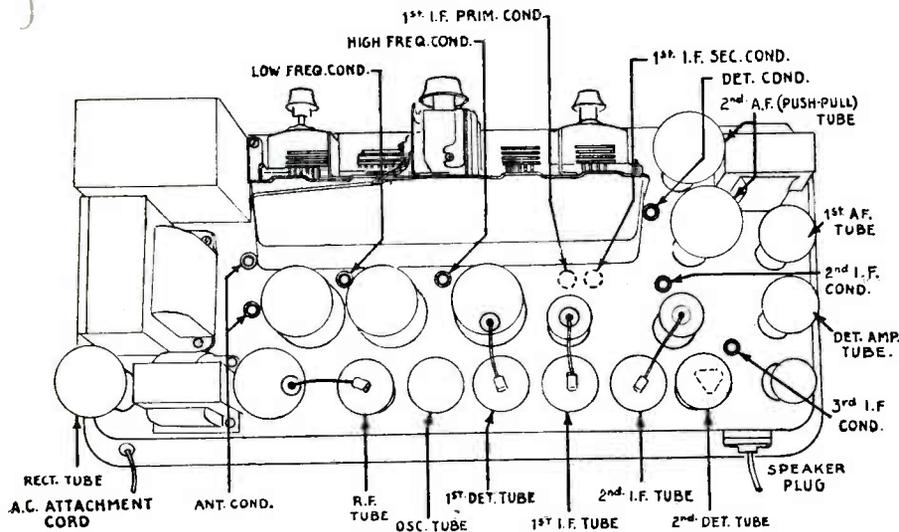
A survey just completed by Radio Retailing, with the help of service managers in 44 cities, produced the following interesting figures which indicate the replacement parts most often required in sets brought into shops for repair.

Sets	
36%	need new By-pass Condensers
25%	" " Audio Transformers
16%	" " Suppressor Resistors
15%	" " Power Switches
5%	" " Output Transformers

Power-Packs	
43%	need new Paper Condensers
25%	" " Dividing Resistors
23%	" " Power Transformers
14%	" " Filter Chokes
12%	" " Electrolytic Condensers

The average radio dealer carries \$262 worth of replacement parts.

Set up the oscillator for broadcast frequencies. Set the tuning control of the oscillator so that the oscillator signal is approximately 1,400 kc. While adjusting the high frequency condenser with the fibre wrench turn the station selector so that the maximum reading is obtained on



kc. This setting can be determined from the calibration data sent with the instrument.

Turn the volume control of the receiver on full. Set the attenuator control so that an audible signal is received in the speaker. Connect the plus and minus and low terminals of the output meter to the voice coil terminals of the speaker. Adjust the attenuator control so that not more than $\frac{1}{2}$ full scale reading is obtained on the output meter.

Using a Philco fibre wrench part 3164 adjust the 3rd IF condenser until the maximum reading is obtained on the output meter. Next adjust the second IF condenser and then the secondary and primary condensers of the first IF stage for maximum reading on the meter. During these adjustments it may be necessary to reduce the signal strength by turning down the volume control of the receiver so that the needle will not be deflected beyond the end of the scale.

HIGH FREQUENCY COMPENSATOR of the oscillator to the antenna and ground terminals of the radio receiver.

the output meter. The purpose of this adjustment is to line up the condenser so that 1,400 kc. signal is received best at 140 on the receiver scale. After the best adjustment is obtained, then adjust the detector condenser for maximum reading on the output meter.

Now change the setting of the oscillator to intermediate and reset the oscillator tuner to exactly 175 kc. Using the eighth harmonic of this signal, which is 1,400 kc., again adjust the high frequency condenser so that maximum signal is received at exactly 140 on the receiver scale. Readjust the detector condenser.

LOW FREQUENCY CONDENSER: With the oscillator set for broadcast frequency tune to approximately 600 kc. Then tune the receiver to the oscillator signal which should be received at approximately 60 on the receiver scale. Adjust the condenser until the maximum reading is obtained on the output meter.

ANTENNA CONDENSERS: With the oscillator set for 1,400 kc. tune the station selector carefully to the signal. Adjust the first antenna condenser and then

the second until the maximum reading is obtained on the output meter.

Reset the oscillator to the intermediate frequency position and tune it to 175 kc. Now tune the receiver to the eighth harmonic. The scale indicator should be exactly 140. Check the high frequency condenser at this time and make whatever adjustment is necessary.

While making adjustments the signal strength can be controlled by both the attenuator on the oscillator and the volume control on the receiver. Start with half scale readings on the meter and if necessary decrease the signal strength with either one so that the needle of the output meter will not be damaged.

All final adjustments must be made with the *normal-maximum* switch in the *normal* position.

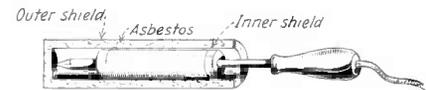
Soldering Iron Shield

By C. G. Enyart

I used to lose considerable time on outside service jobs waiting for my soldering iron to cool so that it could be replaced in my kit without doing damage.

To solve this problem I made up a shield for the iron in the following manner: I wrapped a piece of light gauge tin around the entire heating element and then wrapped over this inner shield three-quarters of an inch of sheet asbestos. Next, I made another tube of tin, with one end closed, just large enough to receive the first asbestos covered tube. About three-quarters of an inch of asbestos was stamped down into the closed end of this large tube and then the smaller tube was placed within it.

Now, when a job is completed, I insert the hot iron into the shield, put the whole



thing into my kit and get back to the shop ten or fifteen minutes earlier. The shield is left on the iron when it is first turned on. This causes it to heat quickly and there again saves my time.

Hum in Bremer-Tully

By H. H. Kemp

We have traced hum in several Bremer-Tully models S81 and S82 to a .275 mfd. condenser across one section of the filter-choke. If this condenser is leaky or open a hum will result, if shorted the set will not only hum but a slight glow will at times be present in the ballast tube. An analyzer will not show up the trouble in either case.

How Do YOU Do It?

Radio Retailing will pay \$3 or more for acceptable letters from experienced servicemen describing original methods, or equipment of interest to other shops.

Schematic diagrams and drawings need not be artistic, merely clear—we redraw them anyway.

Mail "kinks" to W. MacDonald, Technical Editor, Radio Retailing, 10th Ave. at 36th St., New York City.

BUILDING on SAND

▼ an Editorial ▼

DO TUBE manufacturers want the radio dealer as their logical outlet for the tube replacement business?

An odd question, this—in the light of accepted tube distribution policies—yet recent developments have provided ample cause for seriously asking it.

That large and reliable, that hard-working and long-suffering man, properly called, “ethical radio dealer,” is the hope of the tube manufacturer. Furthermore, the job of promoting the sale of replacement tubes can be performed properly only by these gentlemen who are in close touch with the set owner. And the percentage of total tube business represented by this replacement market is steadily growing. It shortly will exceed that obtained from the manufacturers of new sets.

In spite of these self-evident truths, it would appear that more than one tube manufacturer has seen fit to build his distribution house on a foundation of sand. He has adopted the course of immediate expediency, and apparently disregarded what tomorrow’s needs may bring forth.

Today the ethical retailer who buys his tube merchandise in ethical channels, gets the usual discount, and attempts to sell at list prices—as dealers still do in smaller communities—is met with competition of prices, on well known tubes, cut 40 to 55 per cent “off list” by mail-order houses, chain stores, department stores, and others.

What makes possible these low prices? Are the tube manufacturers to blame, or are there other parties along

the line who contribute to this constant under-cutting of the dealer?

These tubes are derived in devious ways and from a variety of sources. Sometimes distress stocks are sold in quantity by manufacturers to jobbers and dealers—the latter usually being chain organizations having centralized purchasing offices. Jobbers operating retail stores and chain-store outfits also make purchases in bulk from manufacturers or from overloaded distributors.

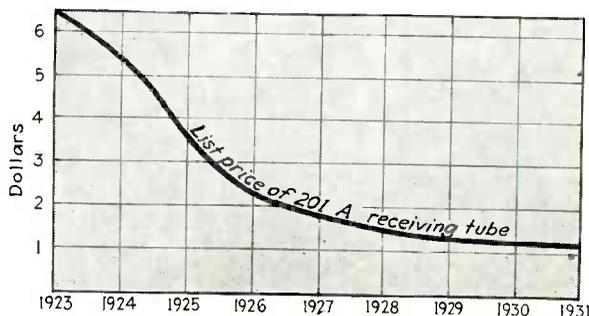
Tube manufacturers make a practice of supplying tubes in quantities, without cartons, to receiving-set manufacturers to equip their receivers as they are shipped out. The discounts that are being regularly granted on such “bulk” sales are extreme, and thus open up channels for abuse, which may seriously affect dealers.

It can be imagined that tubes introduced into the merchandise distribution channels at a discount of 70 per cent or higher may later turn up in surprising places. Set manufacturers may buy more than their own legitimate set requirements. They may be caught with an honest overstock and have to sell off some of their 70-per-cent-discount merchandise. Retailers pose as jobbers, and demand wholesalers’ discounts. Jobbers operate retail stores, and make large purchases as wholesalers, which they later resell as retailers, but at a sharp price concession. Chain stores, department stores and mail-order houses sometimes place their orders direct with manufacturers, and get wide discounts which they pass on to their public as cuts below list price.

Tubes furnished to distributors and dealers in replacement of faulty tubes also often find their way back across the retail counter under price-cut conditions. This situation has been made especially acute by recent “trade-in” offers which have resulted in the collection of thousands of old, worn-out tubes of various makes. Many dealers seemingly have no scruples about sending them in to manufacturers and demanding new tubes in their places. Such new tubes, having cost nothing, become candidates for price cuts.

These are some of the present-day abuses which have fastened themselves on the distribution of radio tubes to the public. But the principal troubles are those resulting from too wide discounts granted to agencies which compete unfairly with the legitimate dealer.

The best interest of radio and tube distribution de-



A typical example of how list prices have been reduced

depends upon a widespread distributing machine, which shall make a full line of tubes available everywhere, so that the public may buy easily and conveniently, as well as confidently. If this is the purpose to be accomplished, then other parallel links in the merchandising chain should be so adjusted as not to foul the independent dealer's operations.

If manufacturers can sell tubes at discounts as high as 70 per cent from their suggested list prices, one of two things is true: either they are selling their merchandise at a loss, knowingly or ignorantly, or, the list price is fictitious and does not represent the true retail value of the article.

What is the solution of this baffling problem?

With tubes, as with sets, obviously we must follow that one simple, self-evident formula which declares that to succeed as a manufacturer there must be established, and enforced, one—and one only—price to the consumer. And that a scale of discounts must be set up which will give the dealer and the distributor a fair profit; yet make price cutting unprofitable.

If present "suggested" lists are at a level where tube manufacturers cannot enforce protection for their legitimate dealers—then these lists should be lowered. If tube manufacturers' "guarantee" policies are so liberal as to permit unscrupulous dealers and distributors to take advantage of the return privilege to secure new tubes

at so low a price that they can give the horse laugh to the honest dealer—who needs must hold the bag and sell at manufacturers' announced prices—then the tube manufacturer should courageously turn down all unreasonable replacement demands.

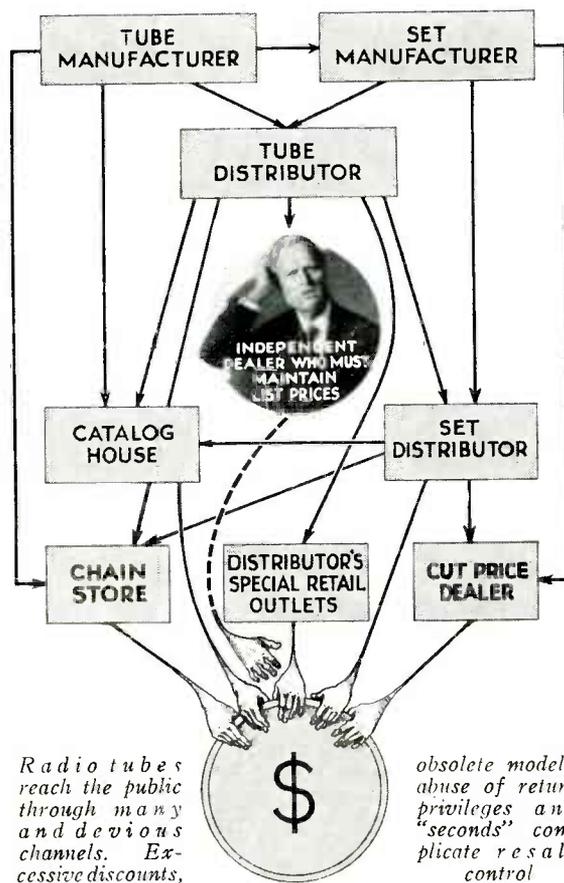
The solution of existing evils is a prompt revision of present figures with respect to list prices and discounts. They should be brought in line with the operating facts of tube distribution from manufacturer to retail dealer. Further it will be necessary to *dry up* the many present sources of supply of questionable quality tubes which now are offered to the public as "standard tubes at cut prices."

Only the co-operative action of every ethical tube manufacturer in the country can effect these remedial measures. But this job *must* be done. Either that or the legitimate radio dealer, the one and only personal contact with the consumer replacement market, will cease pushing tubes. And that market will purchase, during 1931, 50 per cent of all the tubes for domestic receivers which will be manufactured.

The above presentation of this matter voices also the overwhelming sentiment of the trade. For confirmation of this statement your attention is

directed to the recommendations of the Tube Committee of the Radio Wholesalers Association—unanimously approved at its national convention in Cleveland, Feb. 17. The essence of this report is given on page 49.

How the "Squeeze Play" Works



Sell Our Present Superb Reception Conditions

SO FAR this year radio reception has been remarkably clear. This ideal condition confirms the prediction made last year that with the coming "minimum" of the eleven-year sun-spot cycles, radio signal strength would return to the halcyon situation of 1920 and 1921, when a little 50-watt station could be heard 3,000 miles.

Now, from all parts of the North American Continent come reports that distance reception is at the best it has ever been in the history of modern receiving sets, and is continually improving. Indeed tests have shown radio reception to be two to five times as good as it was a year ago at this time. Stations are being heard clear across the Continent with ease, during the late evening hours. Distant programs now come rolling in with power and clarity which surprises veteran listeners.

An unexpected consequence of this improved reception, however, has been the increased fading and "mushing" of nearby stations after nightfall. To nearby list-

eners a large proportion of the stations' sky-wave energy is reflected down again from the Heaviside Layer to conflict with the direct ground wave (which was the only component usually heard heretofore). Fading is caused by the interaction of this night sky wave, and the direct wave, and with more energy being reflected from the Heaviside Layer at points close up to the station, the night-time ring of "fading area" is now brought in much closer than before. This accounts for the complaints of rapid fading and "mushing" of nearby stations which have been frequently heard this winter.

Since the position and condition of the Heaviside reflecting layer depend upon sun spot conditions, and on electronic bombardments coming from one central luminary, the coming minimum of sun spot activity is expected to make long-distance radio reception improve even further during 1931, and to produce still better radio conditions next winter and in 1932.

Highlights on the

March, 1931

Arranged for

RMA PERFECTS ITS SHOW PLANS

Four Conventions in One Can Be Covered at Chicago

Radio men who hock the family jewels and buy a ticket to Chicago for a glimpse of sets now being groomed for their June unveiling will get their money's worth this year. Three allied industries are to hold conventions in the same town on or near the RMA show dates. This will make it possible to attend all four by arriving a few days earlier or staying a little longer; thus killing several birds with one railroad fare.

As the trade has already been advised, the RMA shindig will come off during the week of June 8. The Institute of Radio Engineers will convene June 3-6, just a few days before. The Furniture Mart, with a wealth of radio cabinets as well as other furniture displays, runs from June 1 to 15, and the Music Merchants Association holds its annual get-together during the week of June 15.

Stevens Is Headquarters

Four hotels will house the radio men, the Stevens, scene of the 1929 show, the Blackstone, Congress and Auditorium. All of these are on Michigan Boulevard, the city's beautiful lakeside drive. About 30,000 sq. ft. of exhibit space will be available in the ball room and exhibition hall of the Stevens.

Entertainment and convention arrangements will be handled by Leslie F. Muter, appointed chairman of these two committees at a board of directors meeting held in Chicago early last month. There will be no increase in regular hotel rates during the convention and the usual arrangements for reduced transportation rates will be made.

G-G Co. to Merge with Majestic Household Utilities

At a joint meeting of Majestic Household Utilities Corporation and Grigsby-Grunow Company boards held Feb. 16, directors of the radio concern approved an offer for the conditional purchase of the refrigerator business on the basis of an exchange of stock, share for share. Special meetings of stockholders to consider the offer were called by both concerns.

The purchase is conditional upon approval of stockholders and subscription and sale of \$5,000,000 worth of six per cent first mortgage gold bonds on fixed assets of the combined companies having a net book value of \$15,899,429. In addition, the proposed merger and refinancing will result in combined net current assets of about \$9,000,000. Total net assets will represent approximately five times the par value of the bonds. The bonds are to be sold at a

price of 97½ and carry a stock conversion privilege for the balance of the current calendar year of 12 shares of the common capital stock of the company for each \$100 of bonds; for the calendar year 1932 ten shares; for the calendar year 1933 eight shares; and subsequently five shares.

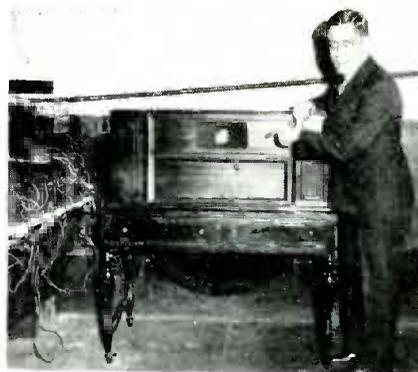
Bonds carrying the stock conversion rights will first be offered to the stockholders of the Grigsby-Grunow Company. Meanwhile they are being offered to creditors of Majestic Household Utilities and distributors and dealers of the refrigerator company subject to the prior right of stockholders to subscribe. B. J. Grigsby, president of both companies, points out that Grigsby-Grunow has only agreed to the merger in the event of the financing plan being completed.

RCA Carries 2nd Adverse Tube Decision to Supreme Court

The Supreme Court, which has twice refused to consider the famous "Clause 9" case, concerned with the legitimacy of the Radio Corporation of America's right to enforce the purchase of RCA tubes by set licensees, will again be asked to review it, according to David Sarnoff. This move is made necessary by a recent decision of the U. S. Circuit Court of Appeals in Philadelphia against the RCA, upholding a decision back in 1928 by the Federal District Court of Delaware that clause 9 was a violation of both the Clayton and Sherman anti-trust acts.

American Phonograph Company, of Albany, N. Y., is the exclusive distributor of the Story & Clark receivers in the Albany territory, which includes a part of Vermont and Massachusetts.

One of the First



Charles Chapman of Philadelphia is mighty proud of his home-built radio visor, so much so, in fact that he hates to hide a bit of it, and keeps the power supply and other units exposed to his friends' admiration. It may not look so good this way, but it certainly makes an impression.

Helen Keller, an Enthusiast



Helen Keller, world famous blind and deaf woman, and her secretary, Polly Walker, interview A. Atwater Kent. Subject: the further extension of the benefits of radio to the unfortunate.

Young, Jordan, Davin, Kenney Now with William Grunow

Nine ex-officials of Grigsby-Grunow have left the parental fold and gone over to William C. Grunow's rival camp at 221 North LaSalle St., Chicago; from which almost anything may happen—and probably will, when W. G. returns from his Arizona camp. These gentlemen, formerly occupying the positions with Majestic as noted, are: H. E. Young, sales manager; J. J. Davin, sales promotion manager; H. H. Bailey, manager traveling department; M. W. Kenney, radio and refrigeration engineer; J. D. Jordan, chief tube engineer; Charles Henry, chief inspector; A. C. Winan, purchasing agent; S. L. Arneson and F. A. DeLano.

Skinner Heads Philco

James M. Skinner, formerly vice-president and general manager of the Philadelphia Storage Battery Co., has been elected president, replacing Edward Davis, founder of the company, who will be chairman of the board. George E. Deming, for some time Philco works manager, is now executive vice-president and Walter E. Holland is vice-president in charge of engineering.

Major J. C. Defresne of Vancouver, B. C., has been appointed distributor of the General Electric radio for Vancouver and the lower mainland of British Columbia. Major Defresne is a pioneer of the industry.

News of the Month

Busy Readers

New York, N. Y.

Brunet, Schumaker RMA Directors

Two new directors have been elected to the Radio Manufacturers Association board, replacing J. L. Ray, formerly vice-president and general sales manager of RCA Victor and C. K. Throckmorton, executive vice-president of E. T. Cunningham. These men are E. E. Schumaker, president of RCA Victor and Meade Brunet, sales manager of RCA Radiotron.

About the Western Convention

The annual trade show and convention of the Western Music and Radio Trades Association is to be held in the Hotel Vancouver, Vancouver, B. C., July 7-10. Arrangements have been made to have a coastwise steamer, chartered for the occasion, pick up delegates at San Francisco and other points north along the Oregon and Washington coastline for the trip of Canada. The show will be confined strictly to the trade. Special arrangements are being made with the Canadian patent office to facilitate shipment of American equipment to Vancouver for exhibition purposes.

FRC May Get Full Control

Passage of the Dill-White bill by the Senate late last month may transfer direc-

FEWER MANUFACTURERS FAILED IN 1930

The RMA reports that during 1930 twenty-two failures of radio manufacturing concerns occurred, involving \$4,300,000. This compares with twenty-five in 1929 involving over \$12,000,000.

One credit extension approximating \$400,000 is recorded for last year against three the year before for \$4,000,000.

Overproduction last year was materially less than for 1929.

tion of the Radio Division of the Department of Commerce to the Federal Radio Commission. The bill has yet to go before a joint committee of Senators and Representatives for the ironing out of minor differences. Under the new arrangement the Commission would have full control of all things radio, patrolling of the ether and similar mechanical duties as well as allocation, power and similar problems which have been in its hands for some time.

Dickson Heads Atlanta Assoc.

Thomas G. Dickson, of the Myers-Dickson Furniture Co., was elected president of the Atlanta Radio Dealers' Association at the annual meeting of that body, Jan. 7.

Supreme Court Grants Writ to Independents

The Supreme Court of the United States issued a writ of certiorari Feb. 25, to review the validity of the Langmuir high vacuum tube patent. This alleged invention is owned by the General Electric Company and is licensed for radio use to the Radio Corporation of America. It is an important patent in the famous "patent pool," which the United States Government has sued to dissolve in its proceeding filed last May against the Radio Corporation, General Electric, Westinghouse, American Telephone and Telegraph and the General Motors Corporation.

The suit which has now reached the Supreme Court originated in the U. S. District Court at Wilmington, Del., in an infringement suit brought by the General Electric against DeForest four years ago. That court held the patent invalid and not infringed. The U. S. Circuit Court of Appeals at Philadelphia sustained this decision, but on a rehearing reversed itself last December, and upheld the patent.

New Pacific Chain Claims 9 Stations

United Broadcasting Company, the new Pacific coast chain headed by F. C. Dahlquist, who was general manager of the American Broadcasting Company network, now claims to have nine stations assembled for the new network. Station KFVB, Los Angeles, owned by the Warner Brothers, is "key" station, and the Warner Brothers are reputed to be backing it with their resources and with a view to expanding it ultimately to nation-wide proportions.

Modell Buys Landay Chain in New York

George L. Modell, president of the Modell Radio Outlet, Inc., cash buyer of surplus radio stocks and operator of a large auction outlet in Cortlandt Street, New York's radio row, has purchased the stock of the recently bankrupt Landay Brothers and is at present conducting a liquidation sale of musical instruments including radio receivers in three remaining retail stores and three warehouses of the defunct organization in Newark and Manhattan. Modell may re-open the Landay stores as legitimate outlets if the liquidation sale proves satisfactory.

Roger R. Thompson, for the past five years general sales manager of the refrigeration division of the Welsbach Company, has joined the Philadelphia Storage Battery Company in an executive sales capacity.

Westinghouse Stages Its "Columaire"



Radio's most daring design in receiver externals made its official stage bow to the radio dealers of the Cleveland district recently. Originated by Westinghouse, "Miss Columaire" was presented by Jim McKee aided by Jim Sidway, manager of the local Westinghouse Supply Company.

DeForest to Make Record Changers in Canada

Negotiations were recently concluded, at Fort Wayne, Ind., whereby the new Capelhart automatic record changer will be manufactured in Canada by the DeForest Radio Corporation, of that country. This exclusive manufacturing and distribution license was arranged by H. E. Capehart in conference with J. E. Hahn, W. M. Angus and A. L. Ainsworth, of the latter concern.

Westinghouse Set Design Prizes Awarded

Peter Copeland, young Newark, N. J., architect, has been awarded the \$5,000 grand prize in the recent Westinghouse contest to uncover new and original cabinet design ideas. Lucy K. Wilkes, New York housewife, received the second prize award of \$2,000 for her efforts and Charles Preston Bassett, another architect, Pittsburgh, copped the \$1,000 third.

No announcement has yet been made relative to the nature of the winning designs.

Knight-Campbell Organizes Mid-Western Distributors

The Knight-Campbell Music Company, Denver, Col., has organized a new company to be known as the Mid-Western Distributors, Inc. Both these concerns will occupy the five-story warehouse at 1608 Wyncoop St. This new company has been organized as a subsidiary to Knight-Campbell to specialize in the wholesaling of Victor products. James Robinson, recently district manager for Victor in the Colorado area, is the sales manager of this new concern.

Curtiss Co. Takes Philco Dealers on Cruise

Ensenada, in Old Mexico, was the setting for one of the most unusual radio conventions held in the southwest.

Climaxing a ten weeks' sales contest, about three hundred Philco dealers, salesmen and factory officials were the guests of H. R. Curtiss Company, Philco distributor for southern California, on a cruise to Ensenada.

Harry Boyd Brown and Robert F. Herr from the factory, were the principal speakers of the main meeting on Saturday morning. At the close of the meeting, Claude Foote, sales manager of the Curtiss Company, presented the winners of the Philco sales contest with their cash prizes.

Scoville Co. Adds Five to Staff

The Scoville Mercantile Company, Atlanta, Ga., Stromberg-Carlson southern representative, recently found it necessary to add five new men to its organization.

Lewe Sessions will handle territory including Tennessee, parts of Alabama and Mississippi. Paul H. Prince will cover the South Carolina and Charlotte territory. Louisiana, southern Mississippi and Alabama will be supervised by W. C. Knight. S. H. Manson and C. W. Watson, both of whom come to the Scoville company from Stromberg-Carlson, will also handle important territories.

DETECTOR LISTENS IN and hears that . . .



There will be no trouble getting films for the new low priced home talking picture machine Sprague Specialities is about to bring out as they have made arrangements with some of the leading producing companies which will make available for the home many high class one, two and six reel features.

Charles Gilbert, executive vice-president of Pilot, has transferred his activities to the plant at Lawrence, Mass. Sales in the United States and Canada are under the guidance of Harold T. Porter.

Dealers in the Peoria, Ill., territory now get their Victor products from the Klaus Radio & Electric Co. and those in Louisville, Ky., will be served by the Smith Radio Corp.

The Pacific Radio Trades Association is getting quite ritzy with its suite, no less, in the Hotel Bellevue, San Francisco. Recently moved its offices to this new address.

In this age of bigger and better mergers comes the announcement that the radio division of G. J. Seedman Co. and the Sanford Radio Corp. have joined hands, to operate as the Seedman-Sanford Corp. Sanford Samuel is president and G. J. Seedman, secretary-treasurer. General offices at 480 Canal St., New York City.

Jenkins Television has left Jersey City and is favoring Passaic, N. J., with its presence. A new location for its radio-vision transmitter is being sought so as to be nearer the source of program material and to serve the metropolitan New York area more efficiently.

P. H. Beck, recently with Echophone, is now sales director of Rogers and Goetz, Ltd., Pacific Coast distributor of Echophone.

Formerly with Concertrope of Indianapolis, C. O. Gooding has assumed a similar position with Allen-Hough Carryola, Milwaukee.

Tung-Sol lamps can now be shipped from New York. The company has established eastern division offices and warehouse in the General Motors Building, Broadway at 57th Street.

Copeland refrigerators are to be distributed in eastern Pennsylvania, southern New Jersey and Delaware by the Elliott-Lewis Electrical Co., Philadelphia.

The American Sales Company, formerly at 19 Warren St., New York, is now established in its new and larger office at 44 west 18th Street, we are told by the proprietors, Herman and Sam Klepper.

Manufacturers of radio equipment who are troubled with problems of design can now bring their worries to Charles D. White, formerly chief design engineer and plant manager for Kolster, who has just joined H. H. Eby as sales engineer.

Arthur L. Sullivan, genial eastern sales manager for Silver-Marshall, is now "at home" in a new office located in the Chanin Building, 122 East 42nd Street.

Every time a new radio set is put on the market, Sylvania engineers get one for their laboratory and try a set of tubes in it. The dealer is then furnished a chart showing the proper assortment of "Set Tested" tubes for the well known receivers.

Although the music publishing interests of the Oliver Ditson Co., Boston, have been sold, the Victor radio and record, Radiotron and musical instruments business has been retained to be conducted as Ditson Distributors, Inc. The Albany, N. Y., division will also function under the same name.

Aerovox has added L. H. Jackson, formerly of Ohio Carbon, to its Cleveland staff.

Every time a window display contest is held, J. Walter Johnson display manager of Ira F. Powers Furniture Co., Portland, Ore., draws a ribbon. Just won his tenth in a Jackson-Bell affair.

A member of Stromberg-Carlson's installation department since 1908, C. W. Watson is now in the field covering the New England territory.

We hear that John P. Rainbault, who has been in charge of radio sales for the General Electric Company in the New York district, has been made district appliance supervisor of its merchandise department.

LeRoy L. Rosenfeld is Audiola's new sales manager, replacing Charles W. Strawn, who recently left the company. Morris W. Rosenfeld, a brother, becomes sales promotion manager. Both boys came from Boston.

Triad Manufacturing Company, Pawtucket manufacturer of radio tubes, has appointed Edward Singer as Chicago district manager, with offices at 134 N. LaSalle Street.

Stern & Company, Hartford, Conn., distributor of radio and refrigeration products, has secured the services of Hugh C. Pullen as its specialist in charge of refrigerator sales. J. J. Denehan, formerly with the Victor Phonograph Company and various Majestic distributors, will represent the company in the Hartford district.

At the annual election held by the East Bay Radio Retailer's Association, Oakland, Cal., the following officers were elected for the new season: W. W. Gross, president; L. B. Quimby, vice-president; George H. Curtiss, secretary. New directors are William Gibbs, Harold Borin, Jack Henderson, R. J. Franck and Max Widasky.

Reporting the Indianapolis Convention

(Continued from page 27)

opinion that distributors should place estimates 60 days in advance and firm orders 30 days in advance in order to give manufacturers an opportunity to adjust production schedules. This procedure would be beneficial to the entire radio industry as it would tend to eliminate overproduction which is caused to a great extent by production schedules of manufacturers which are based on over optimistic estimates of distributors and manufacturers endeavoring to establish quotas over longer periods than 60 days. Also that any unfilled orders automatically cancel themselves with the expiration of a given month.

BE IT FURTHER RESOLVED: That distributors and dealers are entitled to a price guarantee protection in their contracts because the distributors costs are set by the manufacturers and are therefore the manufacturers responsibility. Stocks of distributors and dealers have been purchased in good faith based on the manufacturer's judgment of prices, designs and marketability, therefore in the event that a manufacturer finds it necessary to reduce his prices to distributors and dealers in order to move the merchandise on which his original judgment has been at fault, the distributors and dealers should be rebated for the difference between the new net cost and the old net cost on inventories as of the date change is effective.

BE IT FURTHER RESOLVED, that the RWA recognizes the justification of manufacturers requiring that each distributor maintain a properly equipped and efficient service department.

BE IT FURTHER RESOLVED, that when a manufacturer produces a model with fundamental mistakes in circuit or in design of component parts that it is his responsibility that such merchandise be repaired or replaced by the manufacturer without any cost to the distributor, such as transportation costs or repairs or replacements of any kind. Also that when such repairs are to be made by distributor or dealer, the manufacturer should supply his distributors and dealers with the necessary parts for such repairs on a memorandum basis and that the costs of transportation of such repair parts sent to distributors or dealers should be prepaid by the manufacturer and that the distributor should be reimbursed for the labor costs, and

BE IT FURTHER RESOLVED, that the manufacturers reimburse the distributors for any expense that the distributors may incur in the correcting of such normal defects as may develop in the manufacturers' product during the life of the manufacturers' warrantee, and

BE IT FURTHER RESOLVED, that the industry as a whole would best be served were all manufacturers to adopt and decide upon an equitable and standard warrantee.

BE IT FURTHER RESOLVED, that when a manufacturer finds himself in the position where he considers it necessary to liquidate an overstock of certain models he will first offer to his authorized dealers through his distributors such merchandise at the same prices the manufacturer could otherwise obtain in the open market.

Trend Toward Sets Priced "With Tubes"

The trend toward pricing sets "with tubes" was strengthened by the frank statement of two well known receiver makers that they shortly will quote sets complete only, and will ship them with a full complement of tubes. This is in line with the recommendation of the Tube Committee of the Radio Wholesalers Association, J. Newcomb Blackman, chairman. That part of the committee's report read as follows:

"Your Tube Committee recommends the continuance of the efforts of our association to bring about a general adoption of the plan of radio sets being priced, advertised and marketed only complete with tubes. We believe it provides the only assurance for the retail purchaser that he will receive his radio set equipped with the proper tubes to function in that set.

"The radio set manufacturer can now purchase tubes of standard quality at a price that enables him to furnish tubes as a part of the initial set equipment, and make an adequate profit. Radio distributors and dealers can, we believe, in no other way be assured of a profit on tube sales in connection with the initial equipment.

"We further recommend that radio tube manufacturers

be advised that we believe the wholesale distributors discount on tubes should be given and confined to wholesalers only, whose regular sales policy is that of selling at wholesale and giving service to the radio dealers in general."

Other resolutions that were adopted were as follows:

Petitioning the Federal Radio Commission to permit high power (50 kw.) on all of the 40 cleared channels.

Petitioning Congress not to pass the proposed bill allocating 15 per cent of our present wavelengths to educational institutions.

Against the present abuse of courtesy discounts.

Recommending smaller trade-in allowances.

That both the price and quality of midget sets be raised.

To expedite the completion of a plan for closer contact, through local dealer bodies, with the local newspapers—to control the publication of misleading and fraudulent advertising.

Intense Interest in Allied Lines

Distributors, as well as dealers, are acutely conscious of the desirability of adding allied lines. This was evidenced in striking manner by the deluge of requests which the writer received for further facts on appliances and on home movies with sound, following his address before the convention on these subjects. This talk will be printed in full in the April issue of *Radio Retailing*. The following, in part, was stated:

"Within a period of ninety days the radio dealers of America will have available for use in the home film libraries together with synchronized sound records thus assuring home talkies on a nation wide basis. Behind this home entertainment program are the millions of dollars of assets of fifteen individual concerns of the motion picture industry. These producers, with few exceptions, have already perfected home projection apparatus, with sound, and such devices will shortly be offered the public.

"Indicative of the scope of the film subjects already available are releases ranging from 'Felix the Cat' to 'All Quiet on the Western Front.' In all, not less than 200 sight and sound films and records are now ready.

"The radio industry is the accepted outlet for the distribution of this latest home entertainment device, inasmuch as the problems involved are electrical in scope. Many radio wholesalers already have signed distribution contracts and much interest is expressed by the radio dealers in the possibilities of this subject."

The New Officers

Election of officers for both associations took place Tuesday, February 17. Here is the new roster:

For Federated: President, James Aitken, Toledo, Ohio; vice-presidents, Louis Buehn, Philadelphia; George Gaertner, St. Louis; Max Shore, Chicago; David Trilling, Philadelphia; Lawrence Lucker, of Minneapolis, was elected secretary, and Robert Himmel, of Chicago, treasurer.

The officers of the Radio Wholesalers Association are: President, Louis Buehn, Philadelphia; vice-presidents, James Aitken, Fred Wiebe, David Goldman, Dave Trilling, and A. A. Schniederhahn.



New Products for

All announcements appearing on these pages are published without advertising considerations of any kind whatsoever.



Kenolo Variable Mu and Pentode Tube Set

A FIVE-TUBE r.f. receiver using a power pentode tube and variable-mu tetrodes has been developed by the Kenola Radio Corp., 136 Liberty St., New York City. The complete tube equipment consists of two special type 551 Arcturus variable-mu r.f. screen-grid amplifiers, detector, rectifier and "PZ" pentode audio amplifier. The power tube gives about three watts of undistorted audio power to drive a super electrodynamic speaker, 12 in. in diameter, concealed in the base of the cabinet.

Briefly, the characteristics of the circuit are: three stages of r.f., power detector feeding directly into a high power pentode output tube, no audio transformers, resistance capacity coupled throughout, only sixteen one-watt carbon resistances used in the entire circuit.

A special speaker tone chamber gives the effect of two dynamic speakers operating in unison, the announcement says. The cabinet is finished on all four side and stands 27 in. high. This set is sold equipped with tubes only and is priced at \$87.50.—*Radio Retailing*, March, 1931.



Remler Superhet Midget

HOUSED in a cabinet of authentic Colonial design, the new compact set put out by the Remler Co., Ltd., San Francisco, formerly known as the Gray & Danielson Mfg. Co., retails for \$77.50 complete. It is a superheterodyne set, calling for four 224's, two 227's, a 245 and a 280.—*Radio Retailing*, March, 1931.

Radiola 42

IN a cabinet practically the same as that which houses the new Victor Model R-14, is the new low-priced Radiola 42, which retails at \$91.50 complete. This set is a 7-tube screen-grid instrument. It stands slightly over 3 ft. in height, and is equipped with a special type of compound volume control, and improved dynamic speaker. A tone color control is also included.—*Radio Retailing*, March, 1931.

Dubilier Electrolytic Condenser

DUBILIER Condenser Corp., 4377 Bronx Blvd., New York City, announces the "Hi-Mike" condenser, a refined, semi-dry, high-voltage electrolytic condenser with the following features: Aluminum can 4 1/2 x 1 1/2 in.; interchangeable with other standard electrolytic units; available in upright and inverted mounting types; standard capacity of 8 mfd.; working voltage conservatively rated at 400, with peak of 430.—*Radio Retailing*, March, 1931.



Radiart "Amplitrope"

RECOGNIZING the rapidly growing demand for apparatus to furnish power for the distribution of music and speech over a large area and in many places, the Radiart Corp., 13229 Shaw Ave., Cleveland, Ohio, offers the "Amplitrope," an amplifying device complete with all necessary equipment, except radio set, microphone (where wanted), and speakers.

A radio set may be connected to it by using a Radiart radio matching transformer, and a microphone may be connected just as easily. Any other electrical source of sound may be connected to the Amplitrope by using the proper impedance matching input transformer. The output will operate both dynamic and magnetic type speakers. There are three different powered Amplitropes.

Each has a built-in electric turntable and pick-up, power amplifier, matching transformers and the necessary switching equipment. An external transformer is also furnished.—*Radio Retailing*, March, 1931.



Sentrola in Model B Cabinet

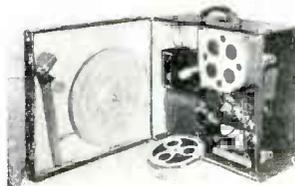
"Sentrola" Home Talking Movies

ANY home with a radio set can now have talking movies with the new "Sentrola" made by Sentry Safety Control, 13th & Cherry Sts., Philadelphia, Pa. The Sentrola may be had in a choice of two styles of console cabinet.

The projector and the turntable are enclosed in the top. The sound is amplified through the speaker of the radio. Both 78 and 33 1/2 r.p.m. may be used. If desired, the turntable can be disconnected to show silent movies, and, in the reverse, phonograph records can be amplified without the use of a projector. Libraries of suitable subjects are available from Universal and Columbia.

In Model A cabinet, with antique walnut finish, Gothic style, the list price is \$215. In Model B cabinet, of walnut, Spanish finish, Moorish style, the price is \$250.

A portable Sentrola is also offered, with the complete equipment enclosed in a convenient-sized case. The illustration shows the equipment as it lays in the case. The movies are shown through a small hole in the front and the turntable is inserted in a small opening at the top, on the outside. The list price of this device is \$198.50.—*Radio Retailing*, March, 1931.



Portable Sentrola

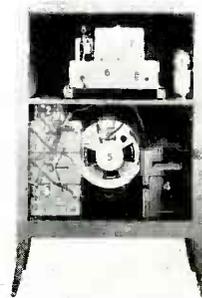
Polymet Midget Parts

PRACTICALLY every essential part for midget set manufacture is carried by the Polymet Mfg. Corp., 829 East 134th St., New York City.—*Radio Retailing*, March, 1931.

G-M Air-Cell Battery Set

DESIGNED to operate on an average of three hours daily for one year without recharging through the use of an air-cell battery, the General Motors Radio Corp., Dayton, has placed on the market the "Pioneer," priced at \$136, including batteries and tubes. This set was brought out to meet a rapidly-growing demand from rural sections, where lack of power lines bar the use of an a.c. set.

The cabinet is a Heppelwhite lowboy. This set is equipped with a tone-selector, air cell A-battery, and the circuit includes three stages of r.f., using 232 tubes, a screen grid power detector 232 tube, and intermediate audio amplifier of the 230 type, and two 231 power tubes in push-pull, making a total of seven. The speaker is a sensitive magnetic. Three heavy duty 45-volt B-batteries are needed, together with a C-battery.—*Radio Retailing*, March, 1931.



DeForest Royal Midget

LEE DeForest Manufacturing Co., Ltd., 1224 Wall St., Los Angeles, Calif., is making a "Royal" midget set, listing at \$69.50, and a compact portable model. These sets have screen-grid chassis with tone control and illuminated dial.

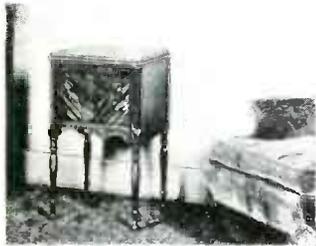
The mantel model comes in an attractive cabinet with beaded edgings on the curved top, and the portable set is square with carrying handle.—*Radio Retailing*, March, 1931.



Radio Retailing, March, 1931

Dealers to SELL

This editorial section is prepared purely as a news service, to keep readers of "Radio Retailing" informed of new products.



Capehart Model 900

Capehart Automatic Phonographs

TWO entirely new lines of automatics, one for home and the other for commercial use, have just been announced by the Capehart Corp., Fort Wayne, Ind. Featured in both is the new 10-12 capacity record-changing mechanism.

Leading the line of home instruments are two models with radio (t.r.f. screen-grid circuit or superheterodyne model—the latter at a slight increase in price), affording a full 45-minute record program.

Model 20, with doors, is 45 in. high by 28½ in. wide. Model 15, of the open face type, is slightly smaller.

There are also two smaller cabinets enclosing the record-changing mechanism with volume control, designed for use with a separate radio. They are Model 900, illustrated, and Model 1,000, which has generous storage compartment. A five-terminal impedance matching transformer is provided in



Capehart Model 15

both models, to make hook-up easy.

The commercial line includes two coin-operated models and a new installation for concealed or "mystery" music. Model 1 handles 10 to 14 records, and Model 5, the Capehart Junior, has the new 10-12 record mechanism. Model 2, designed for concealed installation, comes with an illuminated coin receiver.—*Radio Retailing*, March, 1931.

S-C Police Radio

STROMBERG-CARLSON Telephone Mfg. Co., Rochester, N. Y., has brought out a receiver for installation on police

patrol autos, designed to stand severe service. The complete receiver consists of the receiving unit, loud speaker, control box and two antenna plates.—*Radio Retailing*, March, 1931.



Story & Clark Console Petite

AS the new "console petite" set of the Story & Clark Radio Corp., 173 N. Michigan Ave., Chicago, Ill., is finished on all four sides, it may be used in any position in the room. It is completely portable, weighing but 35 lb., and stands 25½ in. high x 16 in. wide x 10 in. deep. The tube equipment calls for three 224's, two 245's, a 227 and a 280.

Unified control, that is, a single control to operate as a station finder, volume control, and on-and-off switch, is used. The speaker is a dynamic, and tone control is included.

The console petite lists at \$89.50, complete.—*Radio Retailing*, March, 1931.

Crosley "Wigit"

A 5-tube midget set, known as the "Wigit," to retail at \$39.75 complete, has been placed on the market by the Crosley Radio Corp., Cincinnati, Ohio. This set is one of the smallest, measuring only 12½ in. high by 11½ wide and 9½ in. deep. It utilizes three 224's, a 245 and a 280, and has a Mershon condenser, single tuning control, volume control and 3-gang tuning condenser. It is housed in Repwood cabinet.—*Radio Retailing*, March, 1931.

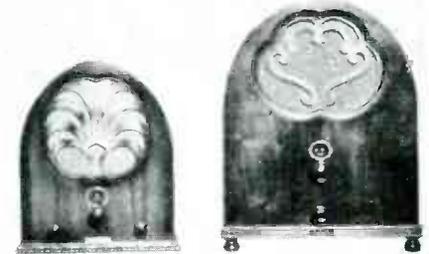


Keller-Fuller "Baby" Midget

A NEW note in midget radio construction has been sounded by Keller-Fuller Mfg. Co., Ltd., 1573 W. Jefferson Blvd., Los Angeles, Calif., with the advent of its "Junior Radiette" which is only 8x10x13 in.

The set is fully shielded and has a cadmium plated steel chassis, three tuned circuits, band pass selector, screen grid power detector, two stages of resistance-coupled a.f., tone control, phonograph connection, electro-dynamic speaker, electrolytic filter condenser, and uses three 224's, one 245 and a 280.

The accompanying illustration gives an idea of the size of the



"Baby" midget as compared with regulation size

new set, as compared with the regulation size Radiette.

This set is available in several different attractive cabinet designs, all of the same dimensions. \$49.50, complete.—*Radio Retailing*, March, 1931.

Pilot Console and Midget

PILOT Radio Corp., Lawrence, Mass., has brought out a midget in a cabinet entirely different from first model. It has a rounding top, with attractive panelling on the sides. The dial, switch and volume plates are made of bronze.

This set uses 6 tubes, namely, three 224's, a 227, a 245 and a 280. It is available for 115, 220, 240, and 125-volt 60 cycle a.c.

Littlefuse Labs., 1772 Wilson Ave., Chicago, Ill. These fuses are useful in tube testing equipment to safeguard the meters in case of shorted tube. They come rated at their actual blowing point in 1/100, 1/10, 1/5, 1/3, 1/2, 1 and 2 amps., ranging in price from 10c. to 20c.

Littlefuses are also offered for operation at 1,000, 5,000 and 10,000 volts in the above capacities, listing at from 35c. to \$1.—*Radio Retailing*, March, 1931.

Echophone Super-Het Midget

FOUR 224's, two 245's in push-pull, a 227 oscillator, and a 280 rectifier are used in the superheterodyne circuit of the new model just placed on the market by the Echophone Radio Mfg. Co., Ltd., 104 Lakeview Ave., Waukegan, Ill. This set has a tone control, electro-dynamic speaker and phonograph pick-up jack.

The cabinet follows the Gothic period, and is finished in figured walnut. The dimensions are 17½ in. high by 12½ in. wide. \$69.50, complete.—*Radio Retailing*, March, 1931.



operation, and 110 volt d.c. The list price is \$59.50, less tubes.

The deluxe console is an attractive Queen Anne lowboy, with sliding doors of burl walnut veneer, standing 33 in. high and 19½ in. wide. It has the same chassis and tone control as the midget, and is available in the same a.c. and d.c. models. \$79.50, less tube.—*Radio Retailing*, March, 1931.

"Littlefuses"

"LITTLEFUSES" are low range fuses designed particularly to protect galvanometers, delicate instruments, meters, etc. They may be obtained from the





Cinderella Washer

FOR the radio dealer who is interested in carrying an allied line, the Cinderella "bubble-action" vacuum washer, made by the Black & Decker Mfg. Co., Towson, Md., offers many possibilities. This small, compact machine is designed to do the daily job of washing linens, lingerie, etc., and is also useful as an auxiliary machine for apartment dwellers who send the bulk of their wash to the commercial laundry.

It can be also used to dry clean dresses, etc., by using a non-inflammable dry cleaning fluid.

The outstanding feature is that it washes thoroughly without mechanical agitation, and can therefore be used for delicate fabrics. Another advantage is its small size, as it can be easily tucked away. This washer lists at \$37.50.—*Radio Retailing*, March, 1931.



Victor R-34

VICTOR'S new 5-circuit, screen-grid, micro-synchronous set, priced at \$121 complete, is now on the market. It has a super-dynamic corrugated cone speaker and full vision tuning dial. The walnut-finished cabinet in the 18th century English style stands 41½ in. high by 25½ in. wide. Victor Division, RCA-Victor Co., Camden, N. J.—*Radio Retailing*, March, 1931.

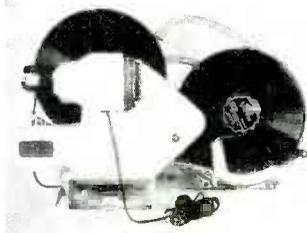
D.C. Screen-Grid Tube

A NEW screen-grid tube specifically designed for automobile and d.c. district radio operation has just been announced by the National Union Radio Corp., 400 Madison Ave., New York City. This tube, designated as the NY 64, is of the unipotential cathode type, having 6.3 volts. This tube is the result of experiments to produce a screen-grid tube which would have a low filament current at a filament voltage practically equal to the voltage of the automobile storage battery.—*Radio Retailing*, March, 1931.

Hardray Record Changing Mechanism

SUITABLE for compact home Sunits, but ruggedly built so that it will give satisfactory operation for the heaviest coin-slot machine duty, is the Hardray record changing mechanism, the product of Hardray, Inc., 644 Broadway, New York City.

The machine plays the records in an upright position. It plays twenty 10-in. records of any type, continuously, and will repeat or reject any desired record. The total operating space required is: length 22 in., height 14 in., and depth front to back, 11½ in. Complete with pick-up, motor and volume control, it weighs but 22 lbs. \$100.—*Radio Retailing*, March, 1931.



Outboard Motors

IT IS none too early for the radio dealer who contemplates adding supplementary summer lines to plan what he shall order.

Outboard motors have been found to be a profitable sideline by many, and dealers contemplating the addition of this type of merchandise, will be interested in the Evinrude and Elto motors of the Outboard Motor Corp., Milwaukee, Wis.

The Evinrude series vary in size from the folding model developing 2½ hp. to the 35 hp. four-cylinder model. They are priced from \$99.75 to \$375. With the electric starter, the price is slightly higher.

In the Elto line, all the models are equipped with Elto battery ignition. They range in power from 2½ hp. to 45 hp. The prices start at \$99.75 and run up to \$445.—*Radio Retailing*, March, 1931.



"Fixed-Variable" Capacitor

UNDER the trade-name "Variable," a small "fixed-variable" capacitor, designed to meet the requirements of the semi-variable or fixed variable capacitor in modern r.f. and super-het circuits, has been designed by the De-Jur Amsco Corp., 95 Morton St., New York City.—*Radio Retailing*, March, 1931.



Base Amplifiers

VERY compact and light in weight, the new series of base amplifiers being made by the Webster Electric Co. of Racine, Wis., is designed for use in homes, small halls, and for portable equipment, where light weight is essential.

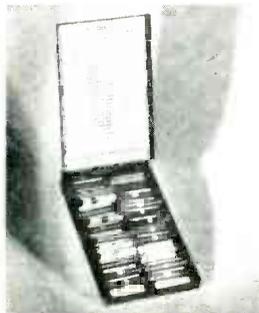
Although condensed in size (13¼x6x6½ in.) no sacrifice of tone quality, frequency response or volume has been necessary, according to the statement.

Three models are available for use with either a.c. or d.c. dynamic speakers, and they will be known as two stage "245" power amplifiers.

They range in price from \$52.50 to \$60.—*Radio Retailing*, March, 1931.

Pocket Size Resistor Kit

EXACTLY 24 resistor values, ranging from 100 ohms to 2 megohms, have been found to meet over 85 per cent of the resistor replacement requirements



of servicemen today. With this in mind, the Tilton Mfg. Co., 15 E. 26th St., New York City, has placed on the market its handy "Ex-Stat" pocket kit containing one each of the 24 needed values. The resistors are marked according to the standard color code adopted by the R.M.A. A chart inside the hinged cover facilitates the selection of the proper value.

Tilton also makes a larger kit containing 48 resistors (duplicates in the most frequently used value).—*Radio Retailing*, March, 1931.

Control Boxes for Centralized Radio

BEST Mfg. Co., 1200 Grove St., Irvington, N. J., maker of wall type speakers for centralized radio systems, described in a previous issue, also has available control boxes for such installations in which the volume control and station selector are not included in the speaker cabinet. They come in single, double or triple gang boxes, with molded Bakelite switch plates.—*Radio Retailing*, March, 1931.

Coin-Operated Automatic Phonograph

ENCLOSED in an American walnut case, equipped with glass and mirrors to afford a complete view of the record-changing operation, the automatic phonograph of the Allen-Hough Carryola Company, 115 W. Walker St., Milwaukee, Wis., lists at \$295. It is coin-operated, and from 1 to 6 nickels may be inserted at a time. Wall coin boxes can be furnished for booth and private dining room installations, at slight additional cost. The record-changer takes 10 records.

Allen-Hough Carryola also has available, as separate equipment, an automatic record-changer, with improvements over the previous model. This new mechanism includes a duacting record release bar and a reversing pick-up return, which permits playing of both 12- and 10-inch records.—*Radio Retailing*, March, 1931.



B & H 75-Volt Lamp

LIGHT intensity more than 40 per cent greater than previously available with a 16 mm. movie projector, is said to be achieved with the new 75-volt, 375-watt lamp just perfected by Bell & Howell Co., 1801 Larchmont Ave., Chicago, Ill. The statement says that a Filmo projector, when equipped with this new lamp, can easily project black and white pictures 12 ft. wide with satisfactory distinctness. This opens up a tremendous field for 16 mm. film, as this small projector can now be used in auditoriums, assembly halls, etc.

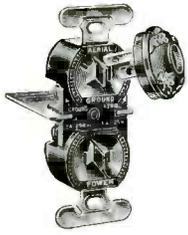
Basically the same as the photometer for Filmo movie cameras is the new B & H photometer for still cameras now available.—*Radio Retailing*, March, 1931.



Triad Marine Radio

A TRIAD marine radio, combining a broadcast receiver, position finder and compass in the one apparatus, was recently shown by the Pioneer Instrument Co., 754 Lexington Ave., Brooklyn, N. Y. This set will receive all signals to 1,200 meters. When used as a position finder, the radio gives the yachtsmen all the advantages offered by the government to assist large boats to ascertain their position by radio.—*Radio Retailing*, March, 1931.

Radio Retailing, March, 1931



Radio Outlet

FOR those living in apartment houses, the new combination aerial, ground and power radio connections, all combined in a single outlet, will prove exceedingly popular. This radio outlet, No. 2145, is made by the Arrow Electric Division of the Arrow-Hart & Hegeman Elec. Co., Hartford, Conn. It fits all standard depth wall-boxes, and takes a standard Bakelite duplex receptacle plate. To ensure correct connections, the aerial and ground plugs are set at angles. A divider plate keeps the aerial, ground and power circuit separated in the wall-box, meeting the requirements of the National Electric Code. The intended retail price, with cap, is \$2.30.—*Radio Retailing*, March, 1931.

Condensers for Superhets

A LINE of condenser units, particularly applicable to the superheterodyne receiving circuits, are being marketed by the DeJur-Amsco Corp., 95 Morton St., New York City. These condenser units are mounted on an insulating base of Isolantite. There are three types: duplex semi-variable, duplex variable and single variable.—*Radio Retailing*, March, 1931.



Weston Counter Tube Checker

RADIO dealers who realize the importance of testing tubes at the time of sale will be interested in the new counter tube checker offered by the Weston Electrical Instrument Corp., Newark, N. J. It operates from 110 volt a.c., variations in line voltage from 90 to 130 volts, being compensated for by a line voltage adjuster. Both a.c. and d.c. tubes having filament voltages of 1.5, 2, 2.5, 3.3, 5 or 7.5 volts, including '80 and '81 types of rectifiers, can be checked. A feature of this checker is that both plates of the '80 type rectifier tube can be tested without the use of an adapter. The net price to the dealer is \$50.63.—*Radio Retailing*, March, 1930.



Supreme Short Tester and Preheater

OPEN filaments and shorts between the various elements of the tube can be detected with the new short tester and preheater of the Supreme Instruments Corp., Greenwood, Miss. There are eight tube sockets, seven of which are for five-prong tubes, the remaining socket being for four-prong tubes. Six tubes can be preheated at one time.

A feature of this device is that it provides an indication of cathode to heater shorts and indicates all other shorts by the method of illumination of the bulb marked.

As tests on this device are readily understood by the average layman, it can be used advantageously on the counter to promote interest and comment. The list price is \$32.50, with a dealer's net price of \$22.40.—*Radio Retailing*, March, 1931.



Featherweight Headphones

THE secret of the midget-size, light weight and extreme sensitivity of the feather-weight headphone developed by the Trimm Radio Mfg. Co., 847 Harrison St., Chicago, Ill., lies in the use of highest grade cobalt steel for the magnets.

This unit is only 1 3/8 in. in outside diameter, 3/4 in. at its greatest thickness, and weighs but 1 1/2 oz. It is wound in any desired impedance.—*Radio Retailing*, March, 1931.

Sprague Condenser

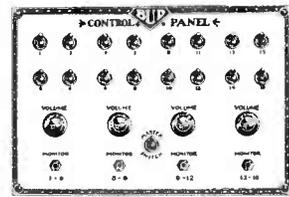
SPRAGUE Specialties Co., Quincy, Mass., now offers an inverted electrolytic condenser with single hole mounting.—*Radio Retailing*, March, 1931.



Dayrad Tube Checker

TYPE L self-biasing tube checker, the newest product of the Radio Products Co., Dayton, Ohio, indicates the "end of life" of all types of amplifier, power, and rectifier tubes. Six sockets are provided, so that tests may be made at the rated filament voltage. Manipulation is greatly simplified by the use of colored push buttons. The meter is of the D'Arsonval type with a 0-10 scale. This checker will also test separately both plates of '80 rectifier tubes. Another test can be made for noisy tubes.

This instrument can be had with or without lid in professional carrying case, and is furnished for a.c. operation.—*Radio Retailing*, March, 1931.



Bud Control Panel

FOR wiring schools, hotels, hospitals, clubs, etc., Bud Radio, Inc., 2744 Cedar Ave., Cleveland, Ohio, makes the Bud control panel, which takes up to 16 speakers. Service to any speaker or number of speakers may be discontinued by snapping the toggle switch. A volume control is furnished for each group of four speakers, as is a monitor jack so that the operator can tell from the remote position just how much volume is being transmitted to the speakers in that group. A master switch is also provided to turn off the whole system at once. This control panel is easily installed and if greater flexibility in volume is desired, a Bud No. 763 convenience outlet can be placed in each room, close to the speaker. The list price of the panel is \$35.—*Radio Retailing*, March, 1931.

Naxon Electric Clock

SYNCHRONOUS in type, the electric clock of the Naxon Electric Clock Co., 1113 N. Franklin St., Chicago, Ill., has less than thirty parts. Only one gear, it is explained, is used in the entire mechanism.

Two models of kitchen clocks and an office clock are now in production. Other models, such as the mantel, alarm and chime, will be added in a short time.

The kitchen models are offered in pastel green and ivory, and dark and apple green. The office clock is finished in walnut grain.

Present models are made for 60 cycle, 110-120 volt current only, but others for 25 and 50 cycle lines will be offered later.—*Radio Retailing*, March, 1931.

Dubilier Condenser Cartridges

INEXPENSIVE but reliable condenser cartridges for replacement purposes may be secured from the Dubilier Condenser Corp., 4377 Bronx Blvd., New York City. These large, flat, non-inductive cartridges are especially suitable for filter block repairs, and are available in capacities of 1/2 to 2 mfd., or in d.c. working voltages of 200 to 1,000. Small, flat, non-inductive cartridges suitable for by-pass repairs are also available in capacities of 1/2 to 1 mfd., and in d.c. working voltages of 200 to 400.—*Radio Retailing*, March, 1931.



Dayrad H-180 Test Panel

SUPERSEDING the radio test panel described and illustrated in the February issue, is the type H-180, both made by the Radio Products Co., Dayton, Ohio. Provision is made for practically every test necessary for the locating and repairing of radio receiving sets, amplifiers, etc. The list price of this instrument is \$195.—*Radio Retailing*, March, 1931.

"Mark Time" Switch

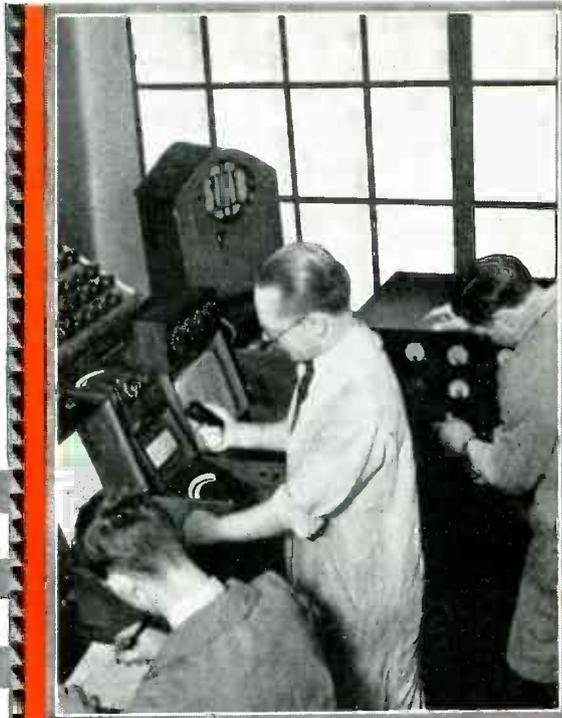
AN electric light switch containing a time element which automatically turns off the current at any predetermined time has been developed by M. H. Rhodes, Inc., Chamber of Commerce Building, New Haven, Conn. The time element is oper-



ated by throwing the toggle the desired number of times.

Each throw of the toggle is shown as intervals on the dial. The interval may be seconds, minutes or hours, depending upon the particular model. By setting the small side lever to "off," it can be operated as a regular switch, with the timing mechanism discontinued. Ordinarily, the switch is for breaking contact only, but the movement may be reversed by changing wire connections.

"Mark Time" switches are made in three models: seconds, minutes and hours. They may be used for controlling residential, factory, school and store window lights and signs, or for household appliances.—*Radio Retailing*, March, 1931.



Arcturus
screen-grid tubes
show

**HUM OUTPUT OF TWO
LEADING MAKES OF
SCREEN-GRID TUBES
Compared to ARCTURUS**

Hum At Normal Filament Potential:
Manufacturer No. 1 . . . 20 Millivolts
Manufacturer No. 2 . . . 14 Millivolts
Arcturus 7 Millivolts
*Arcturus shows 52% less hum than
average for all other tubes tested.*

**52% LESS
HUM**

in **laboratory tests**

With the increased sensitivity gained by using screen grid tubes as detectors, hum must be kept at a minimum.

In a recent laboratory test the hum of Arcturus Screen Grid Tubes was compared with four other leading makes. Results were startling. No tube tested showed such freedom from hum as Arcturus. Arcturus Screen Grid Tubes registered 65% less hum than one well-known tube, as indicated in the table by manufacturer No. 1; 50% less hum than another leading tube (manufacturer No. 2). The tubes of manufacturer No. 2 were found to have lower average

hum than any other makes investigated with the exception of Arcturus.

Unique construction features, exclusive with Arcturus, explain this unusual record. The Arcturus *Unitary Structure* method of assembling holds all elements rigidly in position; gives extra strength as well as improved performance.

Thousands of radio dealers have profited by Arcturus quality. The clear life-like tone of Arcturus Tubes, combined with quick action, will satisfy your customers, too. Write your jobber for more Arcturus facts.



ARCTURUS

"The TUBE with the LIFE-LIKE TONE"

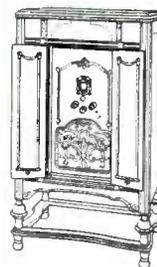
ARCTURUS RADIO TUBE COMPANY, NEWARK, N. J.

The HOT Line— that *keeps* HOT!



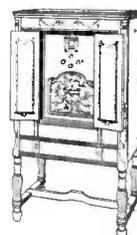
THE RADIO-PHONOGRAPH COMBINATION

List Price \$285, less Radiotrons. Remote control models at additional cost.



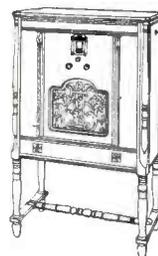
THE HIGHBOY

List Price \$179.50, less Radiotrons. Remote control models at additional cost.



THE LOWBOY

List Price \$142.50, less Radiotrons. Tone Control at \$5. additional.



GENERAL ELECTRIC RADIO is *still* a hot line: Records prove that in the first month of this year A NEW GENERAL ELECTRIC FULL RANGE RADIO WAS SOLD AT PROFIT EVERY two and a half minutes!

General Electric Radio will KEEP hot because:

- 1 Each General Electric Radio bears a name in which America's millions have confidence!
- 2 200,000,000 General Electric products in American homes are demonstrating constantly the dependability of *anything* that is "General Electric."
- 3 2,000,000,000 General Electric advertisements a year are building a continuously greater demand for General Electric products.
- 4 An enormous advertising campaign is stimulating General Electric Radio sales in your community.
- 5 The General Electric Radio Sales Promotion Plan is a *proved, successful* plan that *moves radios*.
- 6 General Electric's policies are made to protect the dealer—are founded on stability and permanence.
- 7 General Electric is in the radio business, not for one season, but for many years to come.
- 8 G-E Radio is supported by the greatest business builder in radio—the G-E Radio Certified Inspection Plan.

GENERAL  ELECTRIC
FULL RANGE RADIO



1931 Radio Service Work Demands a Portable Test Oscillator

A Necessary Instrument for Adjusting All Receivers

Radio frequency circuits in both Tuned Radio Frequency and Super-heterodyne sets must be adjusted to greater accuracy than is possible by the use of a broadcast wave.

The Jewell Pattern 560 Portable Test Oscillator gives the radio serviceman the only method of making these adjustments accurately.

Simplicity of operation, hair-line accuracy and assured reliability are achieved by constructional and design features found exclusively in the Jewell Pattern 560 Portable Test Oscillator.

Features of the Test Oscillator You've Waited for!

Self-Contained Batteries

The self-contained battery operated oscillator is unquestionably the best type of construction, as it can be perfectly shielded. While it is possible to obtain the same degree of shielding in an A.C. operated job, the cost of construction would be higher. The self-contained battery job also has the advantage of not being dependent on any outside source of power.

Leak-Proof Interlock Shielding

Every part of the Jewell Test Oscillator is enclosed by a combination aluminum and copper interlocking shield. An oscillator with less shielding is unsatisfactory.

Broadcast and Intermediate Bands

The Jewell Pattern 560 Portable Test Oscillator covers the broadcast band from 550 to 1500 K. C. and the intermediate frequency band from 125 to 185 K. C. The Jewell Test Oscillator has been designed for testing every Super-heterodyne receiver built today, and provides for future design in that it covers the entire band from 125 to 185 K. C.

Pattern 560 Test Oscillator complete with tubes, batteries, and output meter. List Price, \$97. Dealers' Price, \$72.75.

Pattern 560 Test Oscillator without output meter. List Price, \$82. Dealers' Price, \$61.50.

New '30 Type Tubes

Two tubes are used; one a radio frequency oscillator and a second to audibly modulate the radio frequency current generated by the first tube. Shielded tube compartments are of ample size and provide perfect shielding for the tubes themselves.

Output Meter

The Jewell Test Oscillator may be had with or without the Jewell Pattern 559 Portable Output Meter. The meter is carried in a pocket provided in the oscillator case. In use, it is placed near the receiver output circuit to which it is connected, eliminating long leads and preventing any possible coupling to the oscillator.

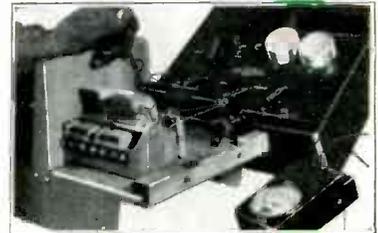
Easy to Operate

You do not have to study the instruction book to use the Jewell Test Oscillator. A wiring diagram and calibration chart is carried in the cover where it can never be mislaid.

Pattern 559 Output Meter only. List Price, \$15. Dealers' Price, \$11.25.



WHY YOU NEED A TEST OSCILLATOR



To align gang condensers



To locate defective R. F. coils



To peak intermediate stages



To adjust oscillator trimmers



To make gain tests

31 YEARS MAKING GOOD INSTRUMENTS
JEWELL

Built to the same high standards as the Jewell Tube Checkers and Jewell Set Analyzers

JEWELL ELECTRICAL INSTRUMENT CO.
1642-A Walnut Street, Chicago, Ill.

Please send bulletin describing the new Jewell Portable Test Oscillator.

Name

Address

mail The
Coupon



98%
pure tone

Clarion's greatest gift to Radio

ASK yourself what it is that every radio buyer wants most in the radio he's buying. You know the question he asks you first—the one point he brags about to his neighbors. TONE! That's it!

Now you can *guarantee* your customers perfect tone . . . unhesitatingly, unqualifiedly . . . when you offer them Clarion! Clarion, with its certified 98% *pure tone*, is the answer to every question every customer can ask about tone!

Clarion engineers studied modern super-broadcasting at its source. They literally dissected scores of stations. Then they came back and built the new 1931 Clarion—the radio with certified, guaranteed 98% pure tone!

Famous opera stars, well-known musicians acclaim Clarion's 98% pure tone. Their trained ears and unerring tone-appreciation give Clarion first place at once. Show

your customers the endorsements of these famous men and women . . . tell them of Clarion's guaranteed 98% pure tone . . . sell Clarion!

Write now for full details of Clarion's marvelous 98% pure tone, together with all other selling information. Don't wait—tomorrow may be too late!

NOTICE—Licensed by RCA and Affiliated Companies.

A

SERVICE RECORD

For the month of December, 1930, the national average of service Clarion Radio sets sold was *but two-tenths of one per cent*. We believe that this record has never been surpassed by any radio set made by any radio manufacturer. Think what that means—for every thousand sets sold, *only two required service after installation!*

TRANSFORMER CORPORATION OF AMERICA
OGDEN AND KEELER AVENUES, CHICAGO

Clarion Radio

Would you like to receive
a copy? Write to The
American Weekly, 959
Eighth Ave., at 57th Street,
New York City.



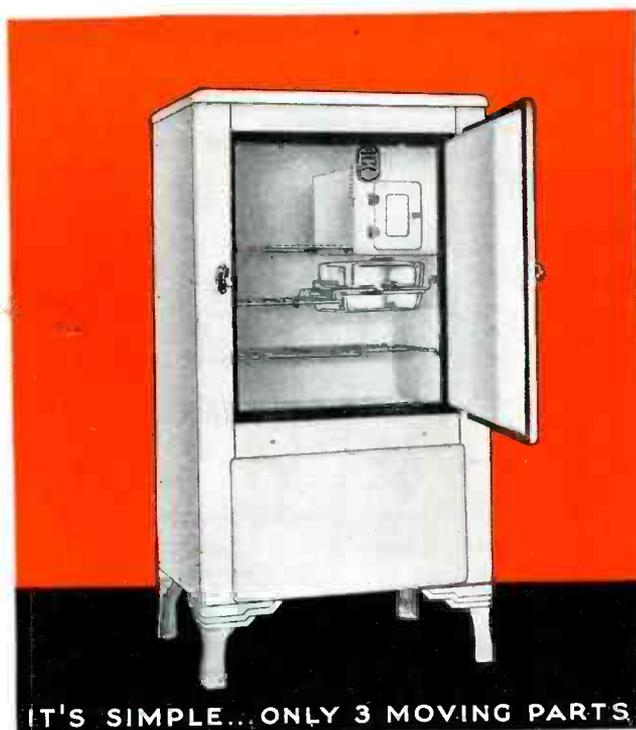
An advertisement in
THE AMERICAN WEEKLY
makes a real impression on *your*
customers. This magazine is reg-
ularly read by nearly six million
families, reaching twice as many
families as its nearest competitor.

Isabel Swayed as if About to Collapse, and
Don Lorenzo Caught Her in His Arms.

She whirled it was exposed twice. The loud, gasping
Shall I answer as yet?
"No, thank you, Noel," Isabel answered, and darted a hair.
(Continued on Page 12)

The NORGE

A SHORT LINE • SERVICE FREE



A complete new advertising and merchandising plan is now functioning for Norge . . . it is putting across Norge's quality features. (19 of them are original with Norge.)

It is giving Norge Dealers a real backing, drawing people in to "see the Norge" and *selling* the Norge.

The first BIG selling year with Norge after six years of steady, consistent growth, will establish many, many dealers in an enviable position.

The possibilities are inviting. To write now may be to get first complete detailed information in your locality.

NORGE CORPORATION, Division of Borg-Warner
654 EAST WOODBRIDGE ST., DETROIT, MICH.



JUST THREE standard models and two specials make up the Norge line.

Only Norge has the Rollator cold making mechanism . . . simple, just a

roller revolving in a permanent bath of protective oil . . . compact, almost everlasting.

The chassis, the complete refrigerating system, is replaceable, quickly, simply, no tools but a screw driver and wrench being required.

NORGE
WITH ROLLATOR

EVERY AMERICAN MOTOR CAR MADE TODAY CONTAINS MATERIAL MADE BY BORG-WARNER CORPORATION

Amazing New Clothes Washer Opens Big Profitable Market



Just plug Cinderella in any electric outlet and it does the washing in a jiffy—for only one cent an hour.



Cinderella is useful for the week's wash, and for quickly needed things that are washed every day.



Cinderella is a big seller to small families—especially to families with young babies.



Used with non-inflammable, non-explosive dry cleaning fluids, Cinderella dry cleans perfectly.



Cinderella is just right for apartment dwellers. It can be tucked away in small space when not in use.



This glass demonstrator shows Cinderella's "Bubble-Action" in action, and helps you make sales.



"It's just what I've always wanted. And it dry cleans, too!"

Cinderella \$37⁵⁰ Clothes Washer and Dry Cleaner

AT LAST the big market for a low-priced electric clothes washer has been opened up. Now thousands of women who never before could afford a clothes washer are buying the Cinderella—the amazing new Washer and Dry Cleaner that retails for only \$37.50.

Revolutionary in price, revolutionary in operation, too! By means of a new "Bubble-Action" washing principle the Cinderella eliminates the use of moving parts that wear out dainty fabrics or pull off buttons. Takes only 15 minutes to

thoroughly cleanse 14 diapers, or 10 pieces of lingerie, or 5 men's shirts, or the equivalent. Does a wonderful dry cleaning job on any material. And it costs less than a penny an hour to run!

It's your big opportunity for big sales and profits! Mail the coupon below for the Cinderella Sales Plan and learn how you can make a \$60 profit on each \$90 investment. Cinderella is a product of the Black & Decker Mfg. Co., world's largest manufacturer of Portable Electric Tools. Send the coupon now.



Black & Decker Mfg. Co.,
Towson, Md.

R.R.-3

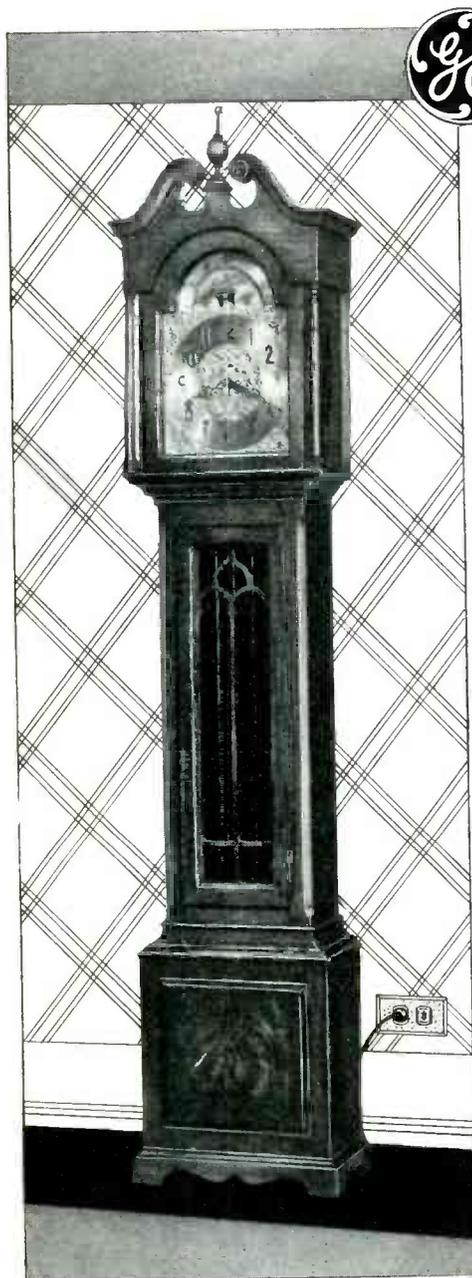
Please send me the name of my state distributor and the sales plan on the new Cinderella Clothes Washer and Dry Cleaner.

Name.....

Street No.....

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

The way to do a
VOLUME CLOCK BUSINESS
 is to put this Monogram to work for you

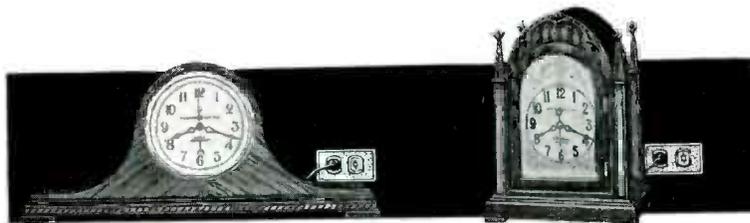


THE name "General Electric" on any home appliance is the public's guarantee of utmost satisfaction. The G-E Monogram is the accepted symbol of electrical quality and dependability. The G-E Monogram on a clock indicates something more . . . to wise merchants, it assures *their success* in building up a *profitable* clock trade with the least effort, and with *minimum* service or repair expense.

The immediate success of the General Electric Clock line . . . sales have established what we believe is a record . . . indicates a ready acceptance for these accurate, beautifully designed models.

All General Electric Clocks are self-starting . . . silent . . . and are powered with the well-known Telechron Motor—synchronized with the Master Clock at the local power-station—they require no winding, regulating or cleaning.

Regulated by comparison with Naval Observatory Radio Time Signals.



The DORCHESTER—Mantel type Tambour model. Mahogany, Spanish high-lighted—gold finish dial. One of several models for the living room. List price . \$33.00.

Model R-130—in Honduras Mahogany, Spanish high-lighted—lacquer finish. Westminster Chimes. List price \$38.00. (Other Mantel Chime models listing down to \$42.)

The HANOVER—a "Grandfather" model in Honduras Mahogany—colonial design—lacquer finish. Tubular Bell Chimes. List price . \$375.00 (Several other "Grandfather" models listing down to \$125.)

Section T-683, Merchandise Department
 General Electric Company
 Bridgeport, Connecticut

Send me at once all details and prices of
 Electric Clocks.

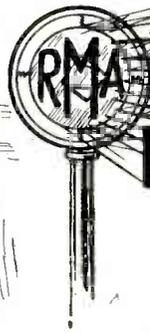
Name

Address

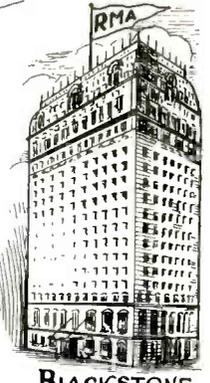
GENERAL  ELECTRIC
CLOCK



STEVENS HOTEL



**ANNOUNCING
BUSINESS FOR YOU
AT THE
FIFTH ANNUAL**



BLACKSTONE HOTEL

RMA Trade Show
AND 7TH ANNUAL RMA CONVENTION
CHICAGO
JUNE 8 to 12th



EVERYBODY WILL BE THERE

Every branch of the radio industry will be at Chicago during the week of June 8th. This will be the largest gathering and biggest annual event of the industry.

Thirty thousand (30,000) square feet of radio exhibits in Grand Ball Room and Exhibition Hall of Stevens Hotel.

ADMISSION TO THE TRADE ONLY. NO VACANT BOOTHS—ALL EXHIBITORS REQUIRED TO SHOW CURRENT MERCHANDISE. The newest and latest receiving set models and accessories will be displayed and demonstrated at the show and in hotel demonstration rooms, for the trade to see what the manufacturers offer for the coming season.

25,000 radio manufacturers, jobbers and dealers expected to attend.

Reduced railroad rates—special trains.

Official hotels—Stevens Hotel (headquarters), Blackstone, Congress and Auditorium Hotels, all within short walking distance on Michigan Avenue.

INDUSTRIES AND EXHIBITIONS

Radio industries, June 8-12—RMA, National Federation of Radio Associations and Radio Wholesalers Association.

Music Industry Convention and Show—June 15-17.

Institute of Radio Engineers Annual Convention—June 3-6.

Annual national "Furniture Mart" with 25,000 furniture buyers, jobbers, dealers and manufacturers—June 1-15.

Entertainment galore for visitors—Make a trip to Chicago for business and vacation combined.

Apply now direct to hotels for room reservations.

Invitation credentials for the trade show will be mailed to the trade about May 1st.



CONGRESS HOTEL

RADIO MANUFACTURERS ASSOCIATION

11-W. 42ND ST. N.Y. CITY

32 W. RANDOLPH ST. CHICAGO



AUDITORIUM HOTEL

Here's the Secret



of Perfect Performance!

PROTECTION against the damaging action of vibration is absolutely essential in every radio set. The multitude of delicate parts and frail connections requires the utmost in engineering design to assure efficient and lasting performance.

That is why practically every nationally known radio is equipped with Shakeproof Lock Washers and Shakeproof Locking Terminals. This positive locking method keeps all connections tight—and the greater the vibration the tighter it locks.

Shakeproof equipped sets, of course, require less service—and that means less expense and more profit to you. Use Shakeproof on your next service job and see for yourself how it improves performance and reduces customer complaints. Free samples will be sent on request—write for a supply, today!

SHAKEPROOF Lock Washer Company

U. S. Patents
1,419,564
1,604,122
1,697,954
1,782,387
Other patents
pending.
Foreign patents.

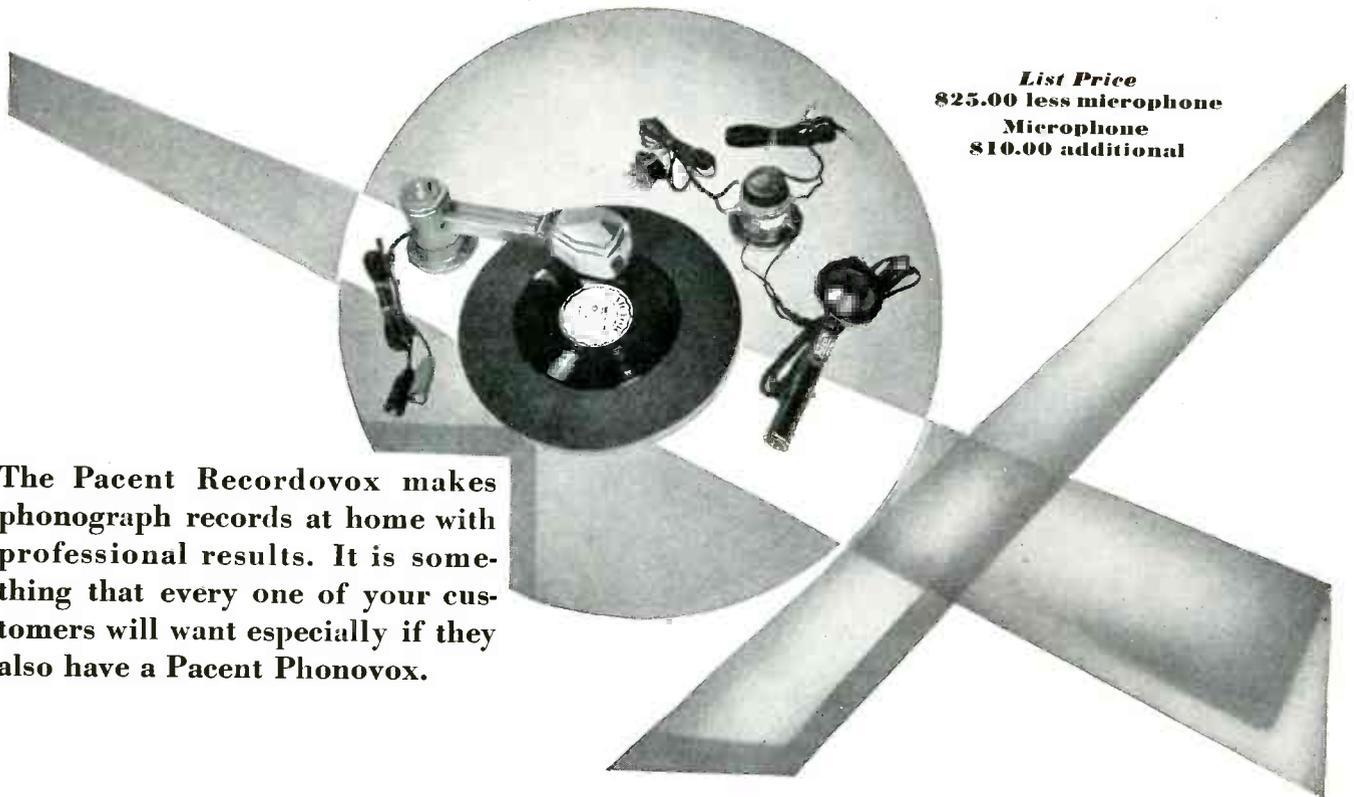
{Division of Illinois Tool Works}

2531 North Keeler Avenue, Chicago, Illinois



"It's the Twisted Teeth that LOCK"



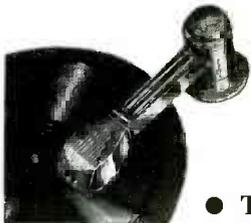


List Price
\$25.00 less microphone
Microphone
\$10.00 additional

The Pacent Recordovox makes phonograph records at home with professional results. It is something that every one of your customers will want especially if they also have a Pacent Phonovox.

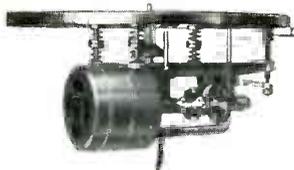
● ● PACENT OPENS *new* AVENUES OF BUSINESS

The New Master Phonovox
 List Price \$15.00
 Catalog No. 107



● The Pacent Phonovox gives new life to old phonographs, with an amazing tone quality, through the loud speaker of the radio.

Electric Phonograph Motor
 List Price \$25.00
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● Meets every requirement of radio-phonograph use. Has sufficient torque to cut even 10" records.

The New Oil Damped Phonovox
 List Price \$25.00
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● This Phonovox provides the finest reproduction available for talking "movies" and broadcast station work.

Adjustable needle pressure. Absolutely no rubber. Freezing is impossible.

Prices slightly higher west of the Rockies and in Canada

PACENT ELECTRIC CO., INC., 91 SEVENTH AVE., NEW YORK

Pioneers in Radio and Electric Reproduction for Over 20 Years.

Licensee for Canada: White Radio, Ltd., Hamilton, Ontario.

PACENT

WEBSTER ELECTRIC CO.

*Wherever
Sound Must
Fill Great
Spaces*

Webster Electric
Power Amplifiers

Schools . . Colleges . . Academies . . Institutes . . Hotels . . Convention
Halls . . Amusement Parks . . Railroad Depots . . Swimming Pools . .
Apartment Buildings . . Riding Academies . . Airports . . Stadiums . .
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Halls . . Play Grounds . . Civic Centers . . Race Tracks . . Ball Parks
. . Skating Rinks . . Public Parks . . Gymnasiums . . Yacht Clubs



THE new Safety Building pictured above, part of Milwaukee's great civic building project, has been equipped with Webster Sound Amplifying Equipment, installed by the Wirtz Company, Milwaukee.

It is but one of many recent Webster installations in public institutions and gathering places — a splendid example of the new type of market open to aggressive organizations in the radio engineering field.

Wherever people gather—wherever sound must fill great spaces—wherever speech and music must be amplified naturally and brilliantly, there is an excellent opportunity for a Webster Equipment sale.

Webster offers desirable advantages to well established organizations with sales ability and engineering facilities of high standards.

We solicit inquiries.



Webster Electric Company

ESTABLISHED 1909

Racine.

Wisconsin.



Webster Transformers Webster Electric Pick-ups Webster Power Amplifiers

Ken·Rad

Fine Radio Tubes

*Compare YOUR
Tube Set-Up with
the IDEAL*



How do you *know* that you have a tube set-up as good as Ken-Rad offers? You *can't* know until you check up and see! And you owe it to yourself to make this check . . .

KEN-RAD OFFERS THE IDEAL		KEN-RAD	CHECK YOUR TUBE SET-UP
QUALITY	The finest tubes made, assuring better demonstrations.	✓	
UNIFORMITY	The least variation in characteristics of any tubes.	✓	
REPUTATION	A background as old as the radio industry—an established reputation for quality and fair dealing.	✓	
STRENGTH	A financial rating of AAA-1—a position that is further strengthened by the company's old established lamp business.	✓	
ENGINEERING	A <i>licensed</i> tube—produced under the direction of one of the most able engineering departments.	✓	
SALES POLICIES	A merchandising plan that builds a profitable business for you and protects you on the business you build.	✓	
PROFITS	An attractive margin, and co-operation that enables you to make a profit.	✓	



You can make more money on Ken-Rad Tubes—and you can add further to your profits with Ken-Rad Incandescent Lamps. Write us for all the reasons why.
THE KEN-RAD CORPORATION, Incorporated, OWENSBORO, KY.
Licensed Radio Tubes and Incandescent Lamps

“EVEREADY RAYTHEON TUBES CUT SERVICE COSTS OVER 75%,” SAYS KANSAS CITY DEALER



THE NEW

Notice the *four* strong pillars. With this solid foundation, the many fragile parts in the tube can be assembled with watch-making accuracy, and cannot move a hair's breadth from their fixed position!

THE OLD

In ordinary tubes, the many delicate parts have only a two-legged foundation. *Two* supports instead of *four*! Jolts, bumps, vibration from dynamic speakers—all can impair their *vital* accuracy.

THAT'S the kind of tube to sell — one that keeps your customers satisfied with the service you give, and with the radio set you've sold them. And one that doesn't eat into your profits by demanding a lot of free service after the sale. Most dealers agree that 90% of all radio troubles are due to weak, worn-out or faulty tubes! Read what W. H. Lattner of the Van Bert Radio Shop, Kansas City, says about 4-pillar tubes:

“My experience with radio tubes had been mostly grief, and I believe that radio dealers and service-men are in the best position to know how much grief there could be in tubes, until I woke up to the fact that Eveready Raytheon 4-pillar Tubes were different and actually lived up to all of the claims made for them.

“In demonstrating sets, clear, undistorted tone is mighty important and I rely on Eveready Raytheon Tubes to clinch my sales.

“I really feel a debt of gratitude to you for giving us, radio dealers, tubes that have made it possible for us to cut our ninety-day free radio service cost over 75%. That's what Eveready Raytheon Tubes have done.”

Eveready Raytheons come in all types, to fit every standard A. C. and battery-operated radio in present use. Look at the illustration, and see why they're better. Call your jobber, or write us now.

★ ★ ★

Service-men! Information and sales helps, designed for your use, will gladly be sent to you free. Among them is a blue-print giving complete engineering data on 4-pillar tubes. Thousands of service-men are using this material to advantage. Write our nearest branch.

NATIONAL CARBON COMPANY, INC.

General Offices: New York, N. Y.

Branches: Chicago Kansas City New York San Francisco

Unit of Union Carbide  and Carbon Corporation



THE NEW **Echophone** RADIO

AN EIGHT TUBE
A SUPER-
HETERODYNE

That is

Sensationally New

Delightfully Different

Emphatically Better

\$69⁵⁰

**Complete with
Guaranteed Tubes**

ECHOPHONE, long recognized in the radio industry as an instrument of the finest proven quality in every detail, now challenges the world for superlative performance superiority under all conditions.

Echophone is unique in the compact arrangement of unit construction. Amazingly sensitive, it penetrates to extreme distances. Highly developed selectivity permits you to **USE** its great power without restraint or fear of interference by close-in stations.

see p.51 for tube line up

ECHOPHONE RADIO MFG. CO., LTD.

FACTORY: 104 LAKEVIEW AVE. WAUKEGAN, ILL.

PACIFIC COAST WAREHOUSE, 968 NORTH FORMOSA AVE., HOLLYWOOD, CAL.

this is tu-be a TUBE year!
heed the "writing on the wall"—
Concentrate NOW on selling tubes
—or get out of business!!



Send TODAY for this beautiful, complete

Champion Window Display

It will SELL more tubes for you!
It will liven up your entire radio sales!!
It's a PROFIT-MAKER for you!!!

CHAMPION RADIO WORKS, INC.
1290 Pine Street
Danvers, Mass.

ENDORSED ORDERS



WESTON
MODEL 565

The COMPLETE Radio Test Set

Radio dealers and service men from all sections of the country have given this new Weston test set, Model 565, their strongest endorsement. They have bought them.

Many leading service organizations are standardizing on Weston Model 565 because of its complete servicing scope and reliable operation. One exceedingly critical purchaser recently bought 65 Weston Model 565 Test Sets after a most careful comparison with the other test sets on the market for servicing scope, reliability of operation and price.

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 HH

WESTON

ELECTRICAL INSTRUMENT CORPORATION

581 Frelinghuysen Avenue, Newark, N. J.



RADIO WIRE PRODUCTS

ANTENNA WIRE LEAD-IN WIRES
ANTENNA KITS HOOK-UP WIRES
ANTENNA ACCESSORIES ANNUNCIATOR WIRES
LIGHTNING ARRESTERS CABLES

WRITE FOR CATALOG AND PRICES

If Your Jobber Cannot Supply You—Order Direct

CORNISH WIRE CO. 28 CHURCH ST.,
NEW YORK, N. Y.

Makers of the Famous

BRAIDITE HOOK-UP WIRE



One Permo-Point Phono Needle makes an automatic phonograph—Automatic—for more than 2000 plays.

This special phonograph needle is used and endorsed as standard equipment by leading manufacturers of automatic record-changing phonographs, portables, and radio phonograph combinations.

Permo Products Corporation
3623 Montrose Ave., Chicago, Ill.



The New Janette Type CA-20-F ROTARY CONVERTER

Changes
D.C. to A.C.

Lowest Priced
Converter Ever
Offered!

Only \$49.50
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\$49.50 is a record low price for a converter — and this price includes filter, cord, plug and A.C. receptacle. For 32, 115 and 230 volts D.C. Write for prices and details.

JANETTE MFG. COMPANY
555 West Monroe St., Chicago, Ill.

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A. C. Electric Plants

ONAN ALTERNATING CURRENT ELECTRIC PLANTS furnish the same current as city service—110 volt, 60 cycle, A. C. Operate Radios, Water Systems, Refrigerators, all household appliances.

Sizes 500 to 2000 Watts

Available from stock. No battery used except to start the engine. Ideal for places remote from electric service, for standby equipment, sound amplification, etc.

Also a complete line of D. C. models, 350 to 1,500 watts.

Some Dealer's Territory Available



D. W. ONAN & SONS

176 Royalston Ave., Minneapolis, Minn.

Ask YOUR Jobber ABOUT the New DEALER FRANCHISE ON PILOT BROADCAST RECEIVERS ~ ~ ~ AND PILOTRON TUBES!

Liberal and Positive Protection for both Dealers and Jobbers

What the radio industry needs in 1931 is conscientiously designed and built merchandise, conservatively produced and marketed, and covered by real policies of *protection* as to patents, changes in prices or models, and definite wholesale and retail territories in which to operate.

The jobber-dealer policy of the Pilot Radio & Tube Corporation is sensibly worked out, and spells safety and profit for all concerned.

The Pilot Midget has proved

unsurpassed in sales appeal and consumer satisfaction in the small-set field. In its newly designed 1931 cabinet, with its marvelous Tone Control, it is more popular than ever. The new Pilot Console is also a real seller, a genuine "buy" for any retail prospect. Pilotron tubes, to go in these sets, are reliable and profitable.

Midget, Console and Pilotrons are tried, tested and consumer-proved merchandise—not gambles on the part of Pilot, the trade or the public.

JOBBERS
write for our plan

•

DEALERS
write your jobbers

PILOT Console

\$79.50 Less Tubes

AC MODEL—2-P224 Screen Grid TRF, 1-P224 Screen Grid Power Detector, 1-P227 First Audio, 1-P215 Audio Output, 1-P280 Rectifier.
DC MODEL—4-P201-A's and 2-P171-A's.
Dimensions: Height, 33 in.; width, 19½ in.; depth, 13 in.

Illuminated Dial Knob Control
Tone Control - Phonograph Connection



PILOT Midget

\$59.50 Less Tubes

AC MODEL—2-P224 Screen Grid TRF, 1-P224 Screen Grid Power Detector, 1-P227 1st Audio, 1-P215 Audio Output, 1-P280 Rectifier.

DC MODEL—4-P201-A's, 2-P171-A's.
Dimensions: width, 17 in.; height, 18½ in.; depth, 8¾ in.

Illuminated Dial - Knob Control
Tone Control
Phonograph Connection

Act Now

Don't put this "ad" aside for future action—write for the vital facts now!

PILOT
RADIO & TUBE CORP.
LAWRENCE, MASS.

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PILOT IS MOVING AHEAD FAST!

SERVICEMEN-DEALERS You need this Book!

SEND for this book at once . . . the only exclusive **VOLUME CONTROL GUIDE** ever published. Gives volume control circuits—**22 diagrams**—so arranged that you can easily “shoot trouble” in practically any set ever built.



**MAIL
COUPON
NOW**

Index covers hundreds of sets . . . the product of ninety-nine different manufacturers. Service these sets with a mere handful of **CENTRALAB** volume controls. Send for the book now.

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Enclosed find 25c. for which send me your new **VOLUME CONTROL GUIDE**.

Name

Address

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**Insured
Radio
Delivery
Protection**

—For Both
Cabinet and
Junior Models

UNIVERSAL Cabinet size cover, shown here, is adjustable to all cabinet radios—Junior Model fits the new table type radios. Just two straps to fasten on large cover; but one to secure on the Junior. Quilted cover of strong, water-proof brown drill padded with thick layer of high-grade felted cotton—guaranteed not to separate unless actually torn.

UNIVERSAL Cover No. 15, shown here, \$6.00 (\$6.75 Colorado and West). UNIVERSAL Cover No. 10, Junior Model, \$2.50 (\$3.00 Colorado and West). Shipped Parcel Post, C.O.D. postage paid; on open account if you have account with us.

The Clifford W.
MAISH BEDDING COMPANY
1505 FREEMAN AVE., CINCINNATI, OHIO

**WASMUTH-GOODRICH
COMPANY**



Fine Radio Cabinets
fashioned by
Master Craftsmen

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Peru, Indiana

**ELLIS
MICROPHONES**
FOR **TONE**



ELLIS Microphones are world-famous for their true natural **TONE** Quality. **ELLIS TONE** Quality is attained by a combination of several features not to be found in any other microphone. You should have our catalog sheets with detailed specifications on file. Write today.

Export: Simons, 25 Warren St., N. Y. Cable. "Simonrice."
ELLIS ELECTRICAL LABORATORY
337 WEST MADISON ST. Sales Corporation Chicago, Illinois



The set that revolutionized radio

Seven years ago RCA sponsored the Super-Heterodyne.

Since then, the world's greatest group of radio engineers have spent weeks and months and millions of dollars in its further development.

Today, the Super-Heterodyne has reached the peak of perfection in the RCA Radiola.

Today, the American public recognizes the Super-Heterodyne as the last word in radio.

Today, the entire industry is swinging to the Super-Heterodyne.

Because it has advertised and featured this revolutionary new principle for 7 years, RCA Radiola is, and will continue to be, the fastest selling Super-Heterodyne on the market.



It's the line on which you can make *profits!*

RADIOLA DIVISION

RCA Victor Company, Inc.

Camden, N. J.

A Radio Corporation of America Subsidiary

RCA RADIOLA Super-Heterodyne

A New Idea in Radio Design

OTTAWA Radio (excellent receivers in attractive cabinets that combine utility with great decorative value) is a distinct step forward in radio merchandising.

The RCA licensed screen grid receiver brings in stations with vigor and natural tone quality. Thoroughly reliable and remarkably efficient. Four screen grid, seven Radiotron tubes, full range tone control, plus a dynamic speaker, provide results that are sure to please.

A Sure-Fire Sales Appeal

These attractive cabinets combine beauty with utility and add a new sales appeal that gets the business. Ottawa Radio fits harmoniously into the decorative scheme and the handy shelves provide convenient receptacles for books. Because it utilizes space so effectively Ottawa Radio is especially popular for small homes and apartments.



\$110.00 COMPLETE

Dealers Here is Opportunity for Increased Business!

Ottawa Radio is a popular seller. An excellent receiver and these attractive cabinets combine with popular prices to make sales. Just the thing to bring outstanding interest to your store. Be the first to learn all about this new and unique radio line. Mail the coupon for the complete story.



\$98.50 COMPLETE

Ottawa Furniture Company,
Holland, Michigan.

We are interested in your line of Ottawa Radios. Please send literature describing the complete line, together with prices and discounts.

Name
Address



Complete data on construction and repair of modern radio sets

These three books cover the entire field of building, repairing and "trouble-shooting" on modern broadcasting receiving sets. The Library has been brought right-up-to-the-minute in every respect, including the very latest developments in the design and manufacture of equipment. The recent interest in short-wave reception is reflected in a section which deals with the construction of this type of receiver.

Radio Construction Library

Three volumes, 993 pages, 561 illustrations, 6x9.

By **JAMES A. MOYER**, Director of University Extension, Massachusetts Department of Education and **JOHN F. WOSTREL**, Instructor in Radio Engineering and Supervisor in Charge of Industrial Subjects, Massachusetts Department of Education.

CONTENTS

VOLUME I.—Practical Radio: This volume presents the fundamental principles of radio so clearly and simply, that anyone of average training will be able to read, understand and apply them. In one chapter alone, it gives actual working drawings and lists of materials necessary for the construction of eight typical sets.

VOLUME II.—Practical Radio Construction and Repair: All of the elementary principles of radio construction and repair are given full consideration. An explanation of the necessary steps together with a description of the accepted practices, for repair and construction of radio are covered.

VOLUME III.—Radio Receiving Tubes: In this volume the essential principles underlying the operation of vacuum tubes are explained in as non-technical a manner as is consistent with accuracy. It gives the construction, action, reactivation, testing and use of vacuum tubes and applications for distant control of industrial processes and precision measurements.

THESE three books embody not only a thorough home-study course, but a ready means of reference for the experienced radio-trician. Step-by-step information is given on wiring, "trouble-shooting," installation and servicing to get the best tone quality, distance and selectivity in broadcast reception in all types of sets.

Practical data is given on radio equipment such as antenna systems, battery eliminators, loud speakers, chargers, vacuum tubes, etc., etc.

A section is devoted to the identification of common faults in receivers and methods of making workmanlike repairs.

The three books are profusely illustrated with understandable diagrams of hookups, connections, loud speaker units, installation work and antenna erection—as well as numerous photographs, tables and charts which clarify the text.

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It is your privilege to examine this Library for 10 days without cost. If the books prove satisfactory, send an initial payment of only \$1.50 and \$2.00 a month until \$7.50 has been paid. Otherwise return the books.

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Gentlemen:—Send me the **RADIO CONSTRUCTION LIBRARY**, all charges prepaid, for 10 days' Free Examination. If satisfactory I will send \$1.50 in ten days and \$2.00 a month until \$7.50 has been paid. If not wanted I will return the books at your expense.

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Home Address
City and State
Name of Company
Occupation R.R. 3-31
To insure prompt shipment, write plainly and fill in all lines.

The New
HOWARD
SUPER-HETRODYNE

That is both *new* and *super*. These two words accurately describe the new Howard Super-hetrodyne—first announcement!

It is new—in that its chassis has constructional features never used before in radio design—resulting in a Super-hetrodyne easy to understand and simplicity itself to service.

It is new—in that *this* Super-hetrodyne does not sacrifice tone quality in order to obtain its extreme selectivity. Its musical range cannot be excelled by that of any other circuit!

It is new—in that it employs the latest in tube development. Tubes which eliminate cross-talk, and permit amplification of strong or weak signals alike, without impairing reproduction. This new "Variable-Mu" tube will soon make its appearance in every up-to-date receiver.

It is new—in that every circuit is completely and effectively shielded—both electrically and mechanically!

It is new—in that it is not a Blooper! No squeals or howls to annoy the user or his neighbor. It is non-radiating.

It is new—in that distant stations become enjoyable programs—not merely "distance."

We announce this new HOWARD product in full confidence that it sets a new and higher standard in Super-hetrodyne construction and performance, and that with our known and established policy of controlled production, it will constitute a valuable asset to the radio trade.

Jobbers looking for the ultimate in Super-hetrodyne or Tuned Radio Frequency Receivers are urged to wire for sample and full information. The new HOWARD line has no superior in performance and no competition in price!

The new HOWARD Super-hetrodyne models are a companion line to the HOWARD Tuned Radio Frequency Receivers, in which, as recently announced, is incorporated the patented "Equable Circuit"—an exclusive HOWARD product.

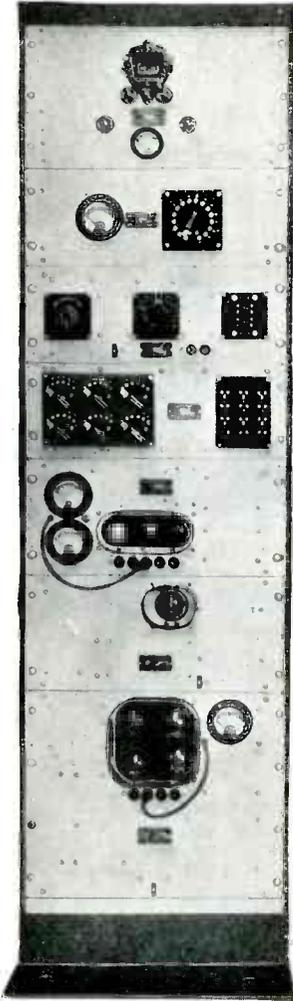
HOWARD RADIO COMPANY of Chicago

Factory and General Offices: SOUTH HAVEN, MICH.

Ample patent protection is afforded. The HOWARD RADIO COMPANY holds direct license agreements from R.C.A. and Associated Companies; and others.

A free copy of "The Super-hetrodyne Simplified" will be mailed to any dealer or service man on request. Address, Engineering Department, Howard Radio Company, South Haven, Mich.

AMERTRAN SOUND SYSTEM PANELS



Long recognized as typifying the "Standard of Excellence" in audio products, the Amertran line now includes a wide assortment of standard panels designed to fill every requirement for complete sound systems.

Amertran panels are so constructed that they may be assembled on racks in various combinations for every purpose. They are the best that engineering genius can produce with the finest of materials and workmanship.

Before placing these Sound Systems on the market, months of research were spent in perfecting them, and thousands of panels were built for special applications — tested for true fidelity and satisfactory service, both in the laboratory and in actual installations.

Suggested Panel Layout No. 2
(For Undistorted Outputs of 12.5 Watts)

Bulletin 1200 gives complete information and illustrations of Standard Amertran Panels. Write for it on your business stationery, and send specifications of your particular problem. Our engineering staff is at your service.

AMERTRAN

Send the Coupon for Full Information

AMERICAN TRANSFORMER COMPANY RR-3-31
176 Emmet Street, Newark, N. J.

Please send me Bulletin 1200 describing Amertran Sound System Panels.

Name

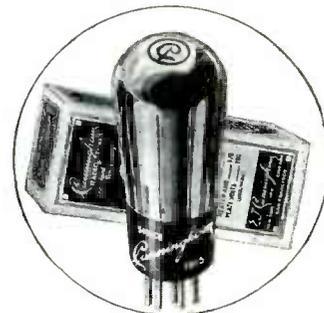
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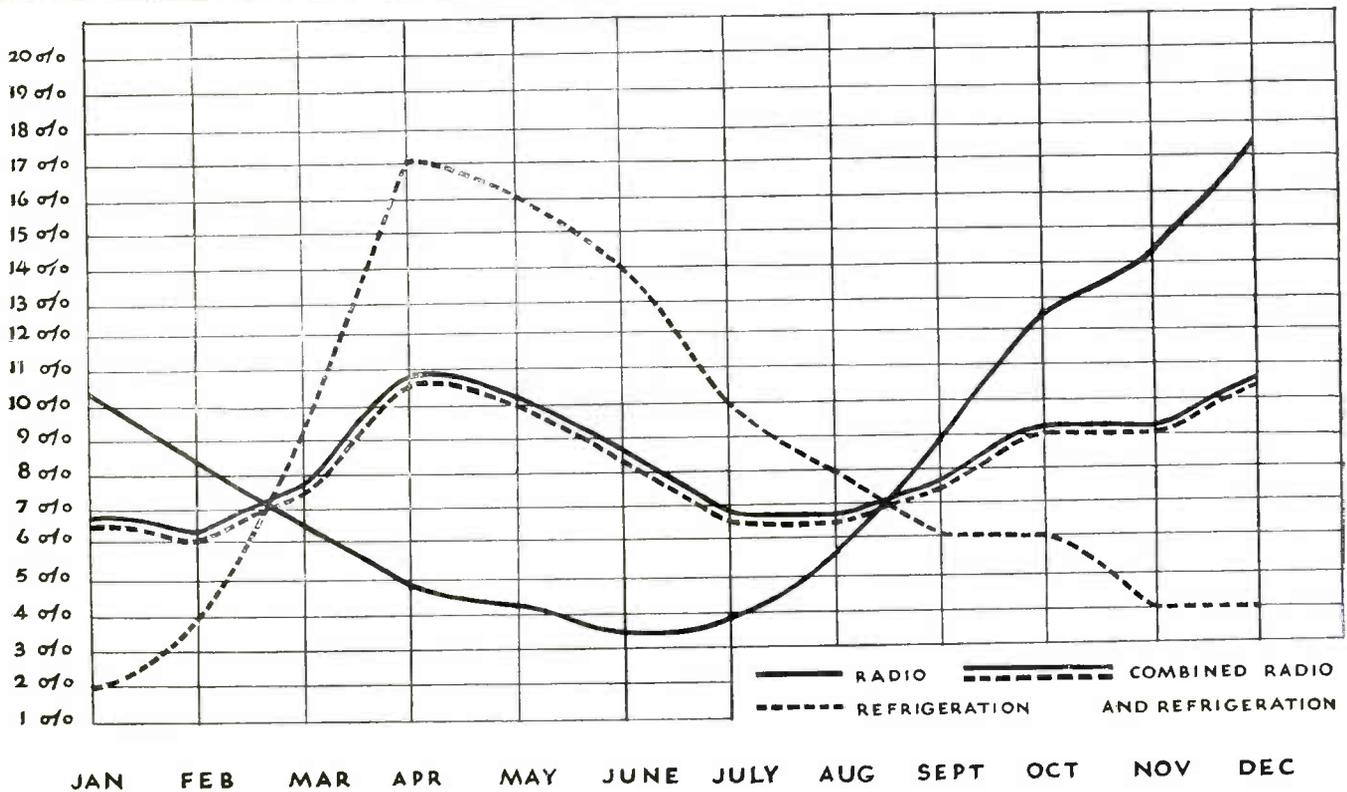
Cunningham RADIO TUBES

The Brand does make a difference!

CONCENTRATING our every effort on a single product for the past 16 years, as we have done, has enabled us to build up a national demand for Cunningham Radio Tubes, based on merit and quality. Recommend Cunninghams as initial equipment and for replacement.



E. T. CUNNINGHAM, INC.
NEW YORK CHICAGO SAN FRANCISCO
DALLAS ATLANTA



. . . PEAKS AND VALLEYS!

The chart above shows the radio peak selling season to be from September to March. The electric refrigeration peak is from March to August. Together, radio and refrigeration make the full twelve months of the year a peak selling season.

No other line offers radio dealers the opportunity for volume and profits that electric refrigeration offers. The electric refrigeration market is less than 15% saturated. In 1931, more than one million electric refrigerators, representing a volume of nearly three hundred million dollars, will be sold, a big majority of them during the next six months. And Kelvinator will sell the greatest number in its 17 years in the business.

The Kelvinator Line, which includes a Model for every size of home and every income,

ranging in price from \$174.50 to \$755.00 f. o. b. factory; the strong Factory and Field organization behind the product, and the unusually liberal features of the Kelvinator Agreement combine to make the Kelvinator franchise the most desirable in the industry.

The coupon below will bring the facts, without obligation to you. Send it to-day. The big buying season is just around the corner. Now is the time to get in on the ground floor and reap the profits that will be made this year with the finest line of electric refrigerators Kelvinator has ever built in 17 years devoted exclusively to electric refrigeration.

KELVINATOR CORPORATION
 14263 Plymouth Road, Detroit, Michigan
 Kelvinator of Canada, Limited, London, Ontario
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Kelvinator

(236)

KELVINATOR CORPORATION,
 14263 Plymouth Road, Detroit, Michigan

Gentlemen:

Please send me complete information about the Kelvinator Agreement.

Name _____

Address _____

City _____ State _____

Radio now handling _____



No. 400

Counter Tube Checker

A new tester gives dealer and customer the required tube value information. Mutual conductance test all tubes, including the new 2-volt tubes. Simple to use. Accurate, dependable. Connects to A.C. supply. Attractive baked enamel finish. All parts shielded. Complete with up-to-date chart.

\$12 NET—60 CYCLE \$13 NET—25 CYCLE



No. 245-A

Set Analyzer for Servicing

No service department is complete without this handy, practical tester.

Newly designed to meet the servicing needs of all

types radio receiving sets. Adaptable for every kind of socket test. Also continuity of circuits—a.c.-d.c., and all tubes including screen grid and rectifier. Checks line voltage. Charts for resistance, and capacity tests with full instructions furnished. Accurate. Compact. Simple to use. Durable steel case finished in a beautiful baked enamel.

\$12 NET

If not at your jobber's we will supply direct.

READRITE METER WORKS

Established 1904

BLUFFTON 6 College Ave. OHIO



TYPE 360-A
Test Oscillator—\$115

Performance

You judge a tool by the work it will do for you. Apply the same criterion when you are considering a test oscillator for servicing modern radio receivers. Check over the features of the TYPE 360-A Test Oscillator with your own requirements in mind.

FEATURES

1. A modulated signal is available at any point in the broadcast band as well as at 175 kc. and 180 kc., the intermediate frequency for superheterodynes.
2. The broadcast-band frequency control and the 175-kc. channel are calibrated, the latter at 1-kc. intervals between 175 kc. and 180 kc.
3. A calibrated oxide rectifier output meter, lead wires and test tools are included as regular equipment.

Further details are included in
Bulletin 932-T4. Write for it.

GENERAL RADIO COMPANY

OFFICES—LABORATORIES—FACTORY
CAMBRIDGE A, MASSACHUSETTS

MAYO

FOR

SERVICE MEN

REPLACEMENT

TRANSFORMERS, CONDENSERS RESISTANCES

Replace
with MAYO
"They're
Guaranteed"



Majestic Set Block

MAYO does not use surplus or salvaged condensers. All parts are manufactured in our own plant from new and the finest of materials.

Send for new Catalog—the most complete ever published

MAYO LABORATORIES, Inc.

Factory and Office

281 East 137th St., New York City



What are you going to do with this issue of **Radio Retailing?**

STUDY the statistics—yes; and the probable market trends—yes. And then what? Then you're going through the advertising pages to note what the manufacturers are saying, what they are showing, what their attitude is toward the coming year!

The Advertising Pages Are Significant

To you radio merchants—jobbers, dealers, distributors—these advertising pages are significant. This year it is more than ever worth while to have active, courageous, forward looking manufacturers backing you up.

The long, hard trail that lies just behind us has demonstrated the difference between the robot or slot-machine type of retailer and the real radio merchant. When the public demanded radios, dealers, jobbers and distributors seemed merely convenient channels for passing goods along to the consumer. "The consumer will come in and ask for my product," thought the manufacturer, "and

all the dealer has to do is to hand it out."

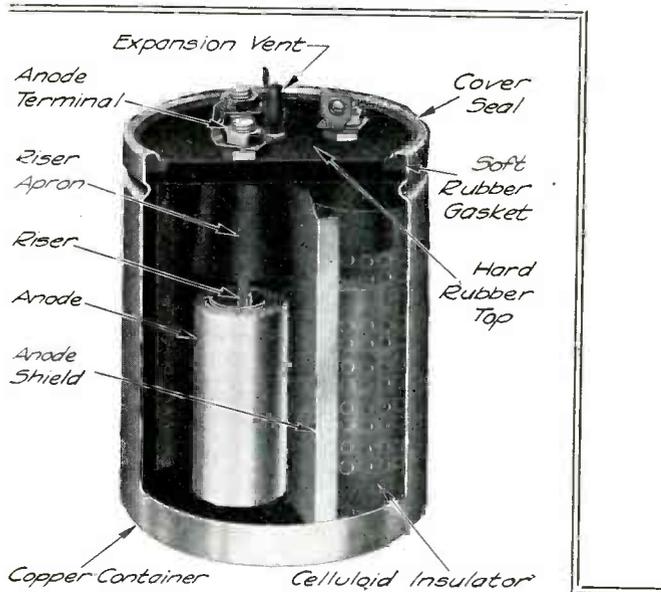
Good Dealers Deserve Manufacturers' Co-Operation

But, with the change in public buying power, good dealers were at once recognized for what they are—the real selling force of the radio field. During the past fifteen months extreme resourcefulness and business ability has been required of the radio trade. And it has met the test. Reaching out for additional lines to maintain his volume, the active radio dealer has preserved his organization, his financial standing, and his good will.

Now he is watching closely the manufacturers' advertising. Among those who advertise in *Radio Retailing*, he will find manufacturers and products worthy of his ability, his sales force, and his local prestige—manufacturers capable of co-operative activities that will make every one of those attributes *increasingly* productive!

RADIO RETAILING, ABC-ABP, A McGraw-Hill Publication, 10th Ave. at 36th St., New York

THE SOLUTION OF YOUR CONDENSER PROBLEM



MERSHON ELECTROLYTIC CONDENSER

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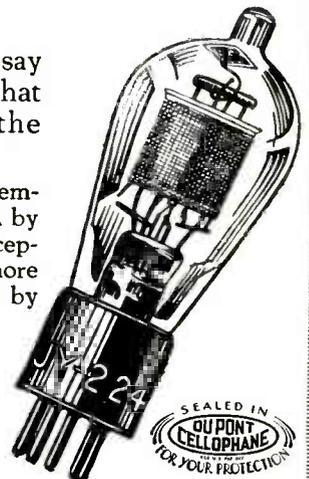
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IT'S not what we say about JRC tubes that counts—it's what the tubes themselves do.

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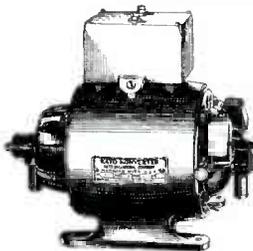
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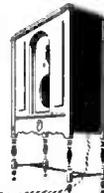
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SALES engineer, acquainted with jobbers, dealers and factories of Chicago territory. Eight years as factory sales agent, two years operating own retail shop. Can fit into any sales force, competent to do sales work with jobbers, sales promotional work with dealers or work with engineers. Graduate electrical engineer, 37 years of age. PW-138, Radio Retailing, 520 No. Michigan Ave., Chicago, Ill.

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Sideline salesmen for musical merchandise and sporting goods to dealers. Attractive commission. Targ & Dinner, Inc., 425 So. Wabash, Chicago, Ill.

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Transformer 1.1, 1½, 2, 2½, 3, 5, 7½ volts, 40 watts. Full instructions for building tube checker included, \$1.85. Add P.P. shipping wt. 4 lbs. A.B.C. all set trans. for —24, —27, —45, —71, —80, \$2.95. Shipping wt. 6 lbs. Add P.P.

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We guarantee to replace free any tube that does not give satisfaction.	224... .50	231..... .75
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Complete Line Always on Hand
20% With Order; Balance C. O. D.—All orders receive prompt attention. We do not substitute.

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De Wald Companion.
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NINE POINT FEATURES

- 1—Rugged chassis construction.
- 2—Triple screen grid tubes.
- 3—Screen grid power detection.
- 4—Fine quality audio system rendering excellent tonal fidelity.
- 5—Large size electrodynamic speaker.
- 6—Heavy duty power supply (AC 524).
- 7—Humless filter circuit, employing new type electrolytic condensers (AC 524).
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3—24's 1—45 1—80 (AC 524)
3—32's 1—30 2—31's (DC 632)
- 9—Chassis is housed in a beautiful burled walnut cabinet.

Biggest Money Making Midget Receiver on the Market

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Miniature Companion of the Famous

For A.C.
or D.C.
Current



Licensed
by
R.C.A.

First of all the De Wald Midget possesses a quality of tone found only in the highest priced standard size radios. Comparison will prove this to your own complete satisfaction. The superior tone quality of the De Wald with its attractive appearance and convenient size are the factors that sell it in ever increasing numbers. Second—you can fix your own list price for the De Wald and name your own profit. These are the reasons why you can make more money with the De Wald Midget than with any other on the market.

Some good territory still open. Write for particulars.



A.C. Model 724

Pierce-Airo Chassis
D.C. Model 727

PIERCE-AIRO, Inc., 113R Fourth Ave., New York City
MANUFACTURERS OF FINE RADIO SETS FOR TEN YEARS

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CROSLEY Startles the Radio World with these Fast-Selling Radio Receivers

CROSLEY SENIOR SUPERHETERODYNE (Pliodynatron) Series

The Crosley SUPER-ADMINISTRATOR



The New CROSLEY SUPER-ADMINISTRATOR is a truly magnificent cabinet of thoroughly modern design. It introduces a new development in super-heterodyne engineering — the PLIODYNATRON — a special oscillator tube used in the circuit to eliminate harmful harmonics and radiation. Sold at the low price of **\$109.50** Complete with tubes

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The New CROSLEY SUPER-RONDEAU is housed in an exquisitely magnificent cabinet, the sides and top of which are of genuine 5-ply walnut veneer. The set and speaker are the same CROSLEY SENIOR SUPERHETERODYNE (Pliodynatron) chassis and newest CROSLEY full floating moving coil dynamic speaker as used in The CROSLEY SUPER-ADMINISTRATOR. Priced **\$119.50** Complete with tubes startlingly low at.....

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Only 12½" high, 11½" wide, 9¾" deep

ASTONISHINGLY low in price as it is, The CROSLEY WIGIT incorporates THREE Screen Grid tubes, type -45 power output, Neutrodyne circuit, electro power speaker, Mershon condenser power pack, single tuning control, volume control, three gang tuning condenser, and many other features usually expected to be found in larger and more costly receivers.

Shipped with tubes in sockets, you need merely attach antenna and ground connections, plug into 110 volt A. C. house current, and immediately bring in any selection of programs you may wish.

The CROSLEY WIGIT fits into any surroundings because it is so small and unobtrusive. Several in a home so that all members of the family may have one, is not an unusual occurrence.

Get in touch with your Crosley distributor for further information about this radio marvel. It sells at the startlingly low price of.....

\$39.75
COMPLETE WITH TUBES

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YOU'RE THERE WITH A CROSLEY

CROSLEY RADIO



Why Make Set Selling Harder?

RCA Radiotrons help to sell even the finest receiver —
You don't have to apologize or explain! » » » » » » » » » »



Every Wed. and Sat. night the Radiotron Varieties, through its popular announcer John S. Young, sends this message to set owners from Coast to Coast:

"Why gamble with your radio enjoyment? When you buy one of the marvelous new sets now being offered, be sure to look inside the cabinet and make certain the set is equipped with RCA Radiotrons. RCA Radiotrons cost no more than ordinary tubes."

TODAY radio purchasers expect value for their money — and are making certain that they get it.

Wise radio set buyers are looking inside the cabinet to make certain that the tubes are Radiotrons. When they find unknown tubes an element of doubt enters their minds, throwing up a sales barrier. This barrier not only makes set selling harder, but results in lost sales and profits.

At a time when most tube manufacturers are curtailing advertising expenses, the RCA Radiotron Company is giving its dealers increased sales support. Twice-weekly broadcasting programs, a weekly schedule in national magazines newspaper advertising twice a week — these and many more activities are increasing the already existing public demand for Radiotrons — the fastest selling radio tubes.

Give your customers what they want. Insist that your distributor deliver your sets with Radiotrons.



RCA RADIOTRON COMPANY, INC. » » » HARRISON, N. J.
A Radio Corporation of America Subsidiary

RCA Radiotrons

THE HEART OF YOUR RADIO