

RADIO TODAY

1 Yearly

Caldwell-Clements, Inc., 480 Lexington Ave.

New York City

SEP 19 1935

General Business

- basic trends compared with year ago
- general business up 17%
- steel production up 50%
- electric-power output up 12%
- industrial production up 20-30%
- Stock Exchange sales up 300%
- construction averages up 20%
- travel to Europe highest since '29

Radio Outlook

- 60 to 100% production increase announced by leading set-makers
- set sales up from 2,027,000, 1st half '34 to 2,453,000 1st half '35
- third-quarter figures so far indicate 15 to 20% increase over last year
- industry leaders predict continuing sales pace this winter

Broadcasting

- broadcasting billings, network and local, for Sept. top 1934 by 20%
- return of favorites to Fall programs will keep interest at high pitch
- networks hang "standing room only" sign on available time; desirable hours practically sold out
- big chains hike Sept. income \$525,000 over last year

Farm Market

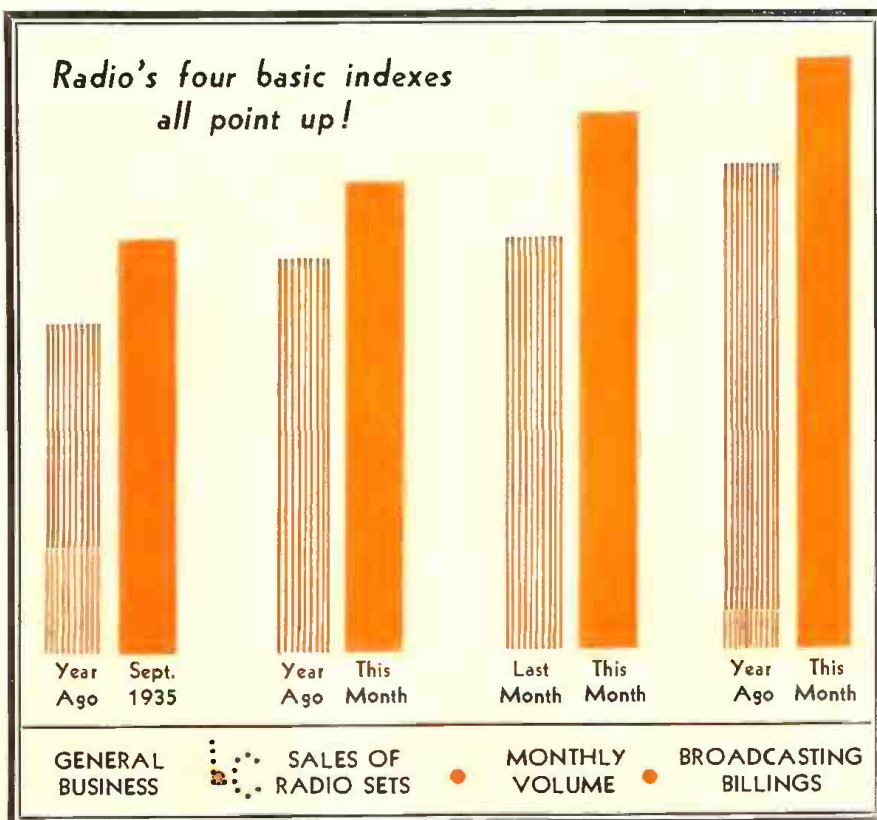
- farm income up average of \$36,000,000 a month over last year
- rising commodity prices, increased AAA payments, improve farm buying power
- wheat, corn, oats, hogs, butter, eggs up 30 to 100% compared to year ago
- sale of battery receivers doubles
- new windmill generator expected to open wider farm radio market

Tube Situation

- metal-type shortage still continues
- factory production vigorously pushed
- higher "metal" costs attacked
- future advantages for "metal" claimed
- 12% of new receivers, metal-tube exclusively
- tube types increased, eventually simplified
- new construction possibilities

The War Against Radio

- newspaper publishers blast broadcasting
- propaganda aims to discredit radio advertising (page 10)
- publication of distorted facts gives public wrong impression
- attack involves everybody in radio
- does it mean war?
- open break may mean expansion of news broadcasts
- will facsimile prove radio's weapon for counter-attack? (page 22)



TK6540
R 28

On the Air,
as *in* the Air

Showmanship



holds the crowds!

Showmanship of the kind that sustains and increases your market for finest radio receivers



Showmanship wins and holds the crowds—in the breathless “delayed opening” parachute drop, or the carefully-built radio program. Showmanship delivers the entertainment the whole world wants—thrills, laughter, tears, romance. Without these, there is no entertainment, no audience—and no receiver sales!

Showmanship has made the programs on NBC Networks the outstanding entertainment of radio since 1926. Day in and day out, sponsored and sustaining programs on NBC attract the greatest air audience in the world.

Your prospects are in this audience. They find radio worthwhile because of the fine programs they hear. NBC showmanship therefore makes a priceless contribution to your business.

For maximum sales effectiveness, feature not only the fine instruments you have for sale, but also the outstanding NBC programs. They are one of your biggest sales assets, providing the incentive to own better receivers for the reception of programs that were never so appealing to the public as they are today!

NATIONAL BROADCASTING CO., INC.

A Radio Corporation of America Subsidiary

NEW YORK • CHICAGO • WASHINGTON • SAN FRANCISCO

767
5673

Emerson Radio

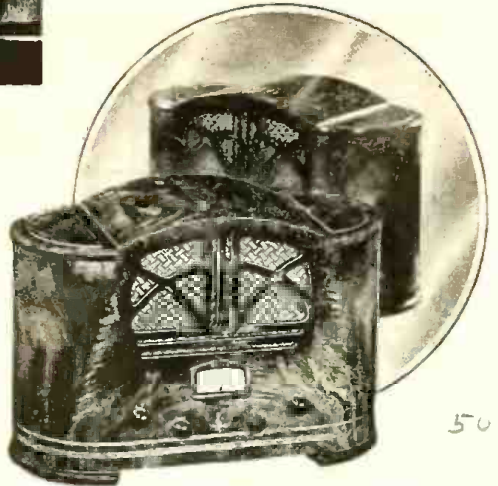
"Re-Creates
the Artist
in Your
Home"



19 GREAT MODELS—

Table types, Consoles, Battery and Auto Sets—\$14.95 to \$129.95. METAL TUBES—new, exclusive features—all backed by powerful promotion.

Distributors—Dealers—send for complete Catalog and details of the liveliest merchandising proposition in the industry.



"Duo-Tone" Model 107 — \$44.95
3-band, 6-tube AC-DC—with METAL tubes—Identical Grille front and back—dust-proof Dynamic Speaker.



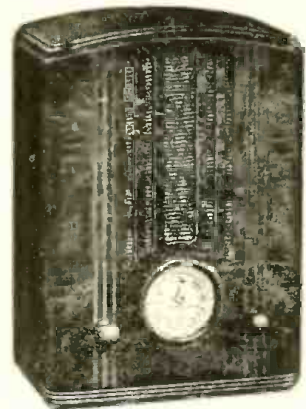
High Fidelity — Model 105 — \$129.95
11-tube console—continuous wave-range—16 to 555 meters—with METAL tubes—12-inch Dynamic Speaker—15 watts output.



Emerson Model 102 — \$89.95
8-tube AC—continuous wave-range—16 to 555 meters—with METAL tubes—10-inch Dynamic Speaker—7 watts output.



"Duo-Tone" Model 106 — \$34.95
2-band, 6-tube AC-DC—with METAL tubes—Identical Grille front and back—dust-proof Dynamic Speaker.



Model 110 — Compact — \$29.95
2-band, 5-tube AC-DC—Aeroplane Dial—dust-proof Dynamic Speaker—Walnut Cabinet



Emerson Model 101 (AC) — \$59.95
Emerson Model 101-U (AC-DC) — \$69.95
3-band, 6-tube—with METAL tubes—3 watts output — 10-inch Dynamic Speaker.



Model 108 — Compact — \$24.95
2-band, 5-tube AC-DC—Aeroplane Dial—dust-proof Dynamic Speaker—Bakelite Cabinet.



Model 109 — Compact — \$14.95
AC-DC Superheterodyne — illuminated Aeroplane Dial—Bakelite Cabinet.

NOTE: All Prices Slightly Higher in West and South. See Complete Emerson Line at National Electrical & Radio Exposition, Grand Central Palace, September 18-23.

EMERSON RADIO AND PHONOGRAPH CORP., 111 Eighth Ave., NEW YORK, N. Y.

ATWATER KENT

with

A NEW TONE REALISM puts Atwater Kent 'way up front on the selling line this year. Business is brisk, and you'll be hearing plenty over the air and in the magazines about the new engineering advances in metal-tube Atwater Kent Radios for 1936.

You know what a selling point the new metal tubes have already become. Look and see what Atwater Kent has done with them. In the laboratory, engineers have specially designed *new circuits* that get the utmost out of these new tubes. Add to this the precision workmanship for which Atwater Kent has always been famous, and the result is a new tone purity, a new realism in radio—true as Control-Room Reception.

ATWATER KENT MANUFACTURING COMPANY
A. Atwater Kent, President Philadelphia, Pa.

AGAIN THE ATWATER KENT RADIO HOUR GOES ON THE AIR!

Millions will hear the brilliant guest artists to be presented on the new series of Atwater Kent Radio Hours—Thursdays at 8:30 p. m., beginning September 19th over a Columbia coast-to-coast network. These millions will hear about *and will want* the radio with *Control-Room* Reception. When they step out to buy, that will mean business for *you*, if you're lined up with the radio they want—the new 1936 metal-tube Atwater Kent.



COMPARE this metal tube chassis with any other make at any price. See how Atwater Kent famous precision workmanship has adopted the new metal tubes to create a new tone realism.



MODEL 856. A 6-tube compact with METAL tubes, 3-range tuning, 7 tuned circuits, 3-gang condensers. Accurate 2-speed tuning, \$56.50.



MODEL 337. Standard and short-wave reception. 7 METAL tubes, 3-range tuning, 7 tuned circuits, 3-gang condenser. 2-speed tuning. \$64.50.



MODEL 184. A 4-tube compact. 4 tuned circuits, tone control. Illuminated dial. Vernier tuning. Rich tone quality. \$27.50.

10TH ANNIVERSARY · ATWATER KENT RADIO HOUR

Metal Tube RADIO

CONTROL-ROOM RECEPTION

1. In the Studio

MARCH OF TIME's actors, on the air five times a week for *Time* and *Remington Rand*, reenact notable news events before sensitive microphones.

2. In the Control Room

Director *Arthur Pryor, Jr.*, listening over radio speakers that capture every whisper from the studio, instructs the actors by signals through sound-proof windows. With the engineer, he hears the program true as life, perfectly broadcast.

3. In the Home

Now, with the new 1936 metal-tube Atwater Kent, you hear voices and music perfectly, as if you were actually listening in the studio control room.

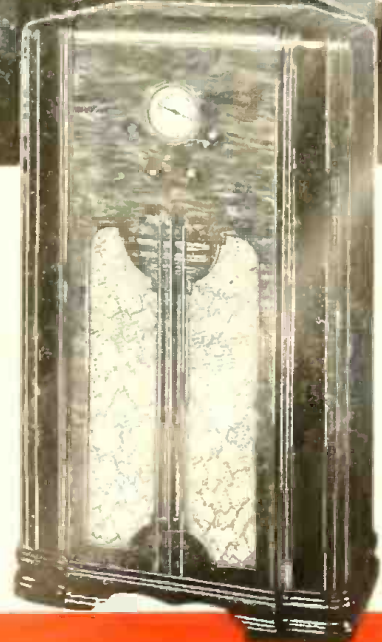


MODEL 328. (at left) An 8 METAL-tube console for standard and short-wave broadcast. Shadow tuning, 9 tuned circuits. 4-position tone control. Full tone quality, sharpened selectivity with the new Selectivity-Fidelity switch. Full vision dial. A radio that gives pride in ownership. \$99.75.

MODEL 317. (at right) Superb performance in foreign and domestic reception. 7 METAL tubes. 3 tuning ranges. 7 tuned circuits. Illuminated range selecting dial. Excellent tone quality in one of the smartest console cabinets Atwater Kent has ever designed. \$87.50.

A Complete new line for 1936. From a small compact set to a de luxe console model in A. C. models. Also Motor Car Radio and sets for 6-volt storage battery operation or air-cell battery power.

Prices f.o.b. factory and subject to change without notice.



COLUMBIA NETWORK · 51 STATIONS · THURSDAYS 8:30 E. D. S. T.

RAYTHEON

TRADE MARK

presents

"33 DEALS FOR YOU!"

Raytheon's 33 New Tube Deals

offer a wide range of service equipment, designed to meet 1935-36 conditions including the special requirements of metal tubes and octal sockets.

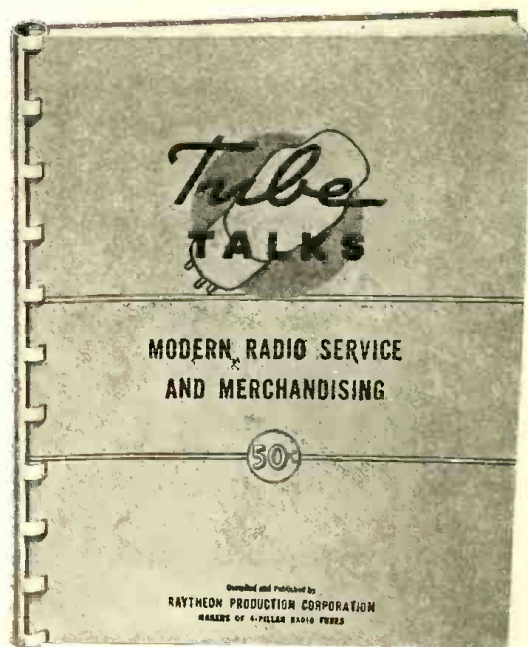
"TUBE TALKS" Modern Radio Service and Merchandising (including tube complements). This 48-page book is hot-off-the-press, full of sales ideas, service tips and constructive suggestions, which have been tried out and proved in actual practice. Subjects cover not only radio tubes but also include sound methods applicable to all radio products.

Finally, 30 of the 48 pages are devoted to a tube complement section which lists the types and numbers of tubes required by various model receivers of 25 well-known radio manufacturers. This data covers over 2,000 models. This information should be available for reference,

in all dealers' sales and service departments and by all independent service men.

This is the start of a service reference library. The binding, designed especially for this book, permits the addition of supplementary pages which we will supply periodically . . . We believe this book is unique and is worth many times the price placed upon it. First edition is limited **Mailed prepaid for 50c**

and



Ask your Jobber for complete details of Raytheon's New Tube Deals or write to

RAYTHEON PRODUCTION CORPORATION

General Sales Office: Dept. T 9, 30 East 42nd Street, New York

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to date



LOOK FOR THE RADIO
WITH
THE BIG BLACK DIAL

August 20
42,314 Consumers
have asked
the factory* for
particulars of the

1936

ZENITH
TRADE MARK REG.
→ LONG-DISTANCE ← **RADIO**

*In response to our
opening advertising

INVESTIGATE

ZENITH RADIO CORPORATION

3620 IRON STREET, CHICAGO, ILLINOIS

Visit the Zenith Exhibit, Booth No. 53, Main Floor, National Electrical and Radio
Exposition, Grand Central Palace, New York City

...AND PHILCO'S MARGIN OF LEADERSHIP CONTINUES TO GROW!

Philco, in 1935, had the biggest Spring in its history. Philco, in 1935, had the biggest Summer in its history. Philco enters this Fall with more orders on its books than ever before.—Philco today is employing 40% more people than in its previous record year of 1934.

¶ "Be sure you're right—then go ahead" is as good a motto today as when old Ben Franklin first set it in type.

¶ Philco has made that motto its own. With one important change! Philco's version reads "Be sure you're right—then *full speed ahead!*"

¶ Following that policy has meant top speed at all times in the development of worth-while scientific and engineering ideas.

¶ But a score of times in the past ten years Philco's adherence to another basic principle—"Proven worth is preferable to risky experiment"—has saved Philco dealers from embarrassing moments with dissatisfied customers.

¶ Philco dealers know they can put full trust in the decisions of the Philco research laboratories . . . the largest in the world devoted exclusively to radio engineering. That faith in Philco was a potent factor in making Philco the leader in the industry in 1930 . . . and keeping Philco first ever since!

¶ Philco is first

- in engineering
- in worth-while features
- in fine tone
- in foreign reception
- in cabinet design
- in complete selection
- in price range
- in value
- in national advertising
- in merchandising assistance
- in public demand
- in sales
- in DEALER PROFIT

PHILCO RADIO & TELEVISION CORPORATION

Philadelphia • New York • Chicago • San Francisco • Toronto • London, England

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RADIO TODAY

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M. CLEMENTS
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480 Lexington Ave.
New York City
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Vol. 1, No. 1

Basic indexes up 17%

★ The September business indicator points upward 17%, compared with a year ago, judging by substantial increases in all the components which make up the basic business index.

Conspicuous advances in key production figures for the month moved the general index upward to brightest levels since the leap which followed the temporary tonic of NRA two years ago. With estimated normal at 100, the index now stands at about 88—several points over last month, and nearly 13 points above a year ago.

Steel and construction soar

★ Iron and steel production rose 50% above figure for same period last year; meanwhile construction contracts show increased building activity to the tune of some 20%.

Money in circulation is up 4% over last year. Small in percentage, it means 215,000,000 in dollars, and that will buy a lot of 89-cent radio tubes!

Interesting luxury note is that number of Americans travelling to Europe is now at highest peak since '29. This shows tendency to spend, a healthy sign for radio—long considered a necessity item, though still in the semi-luxury group for a good many families.

Radio follows basic trends

★ Keeping pace with basic conditions, radio-set sales and broadcast advertising also show satisfying increases.

Preliminary figures so far for current quarter indicate 15 to 20% over last year for last half of 1935. Some manufacturers (they themselves state) have even had the temerity to schedule 60 to 100% production increases this Fall.

Set makers report sales for first half '35 around 2,453,332 units, com-

pared with 2,027,032 same period last year, with average price considerably higher. This ups 1935 half some 425,000 units, or about 21%.

Broadcast billings mount 20%

★ Sale of time shows broadcasting also following same upward swing. Broadcast billings in U. S. for September will top 1934 figures at least 20%. Total for sale of time local and network will reach \$6,166,770 this month, compared with \$5,121,314 September, '34. NBC will hike September income some \$223,000 over same month last year, while CBS figure is reported as \$299,000 up, an increase of 43% over September, '34. Billings at NBC this month are reported as over \$2,000,000, with CBS expecting at least \$1,000,000.

Network figures for 12 months ending August 31st are impressive. NBC reports total time sales \$30,887,415; CBS, \$16,843,144, total increase of some 23% over previous 12-month period ('33-'34).

Metal-tube shortage

★ While the production of metal tubes is still behind the demand, and undoubtedly will continue so for some time to come, factory executives feel that they are making good progress in catching up, so that by the end of the season, at least, metal-tube manufacture will meet all requirements. "Shrinkage" has been reduced, and air-leakage controlled, factory men declare.

Some radio-set manufacturers report that they are getting all the metal tubes they need; others have substituted octal-base glass tubes, or standard glass tubes in sets being shipped out during recent weeks for the 1935-36 season.

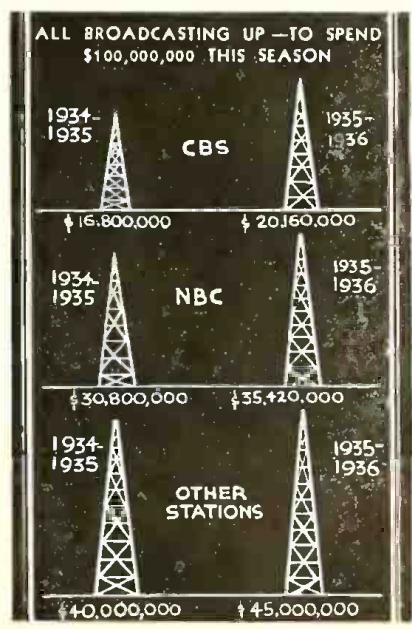
Retailers on upgrade

★ Retailing, after usual Summer lull, has again turned up, showing more than seasonal advance; expectation in most lines is for larger than normal increases this Fall and Winter, with possibility of slightly more than seasonal recession next Spring and Summer.

Retail sales, according to the National Industrial Conference Board, showed a tendency during the Summer to decline more than the usual seasonal amount, but are still well above 1934. Department-store sales show a gain of 7.8% over last year, while rural sales (including mail order) are up 28.6%.

Automobile sales form a bright spot in the picture, sales of passenger cars running consistently 25% higher than '34, while commercial car sales show an even greater increase.

Situation in radio trade is still somewhat unsettled due to indecision caused by metal tubes. Retailers and wholesalers alike are waiting for public to indicate its own choice, with opinion tending toward belief that





HE PROPOSED 'EM.

Here are two top figures in metal tubes today. W. C. White, GE engineer who developed the new tubes (left) and R. J. Cordiner, radio sales manager of General Electric (right) who has made merchandising history with them.



HE DISPOSES OF 'EM.

curiosity will bring unusually large store traffic this season.

With larger than normal number of prospects coming in to see what metal tubes are all about, most dealers lean to belief that good selling will result in sales of sets carried, whether metal or glass tubes are used. Increased store traffic due to new-tube curiosity is seen as biggest sales advantage this year.

Broadcast stations seek to increase power

★ Forty-two million people living in the United States are still outside of the primary service range of any broadcasting station. Such listeners can get only "secondary service"—occasional fortuitous listening when conditions are good—not steady, strong signals overriding static. Only solution is, of course, higher power all-round.

Recognizing this, Federal Communication Commission now turns more sympathetic ear toward more kilowatts. Report is FCC may demand all clear-channel stations to go to 50 kw., at least. Commish also looking more favorably on 500 kw. applications, which it formerly regarded with horror! Several of these aspirants to "match Crosley" are known to be getting quotations on giant transmitters—among them WGN, WSM, WHAS. Regional stations are seeking increases to 5 kw., raising the whole power level on a channel without altering the interference pattern.

Congressional meddling

★ Are dangers of political control of radio, feared since formation of the first Radio Commission in 1927, now becoming apparent?

Rep. Scott (D., California) just before Congress adjourned, introduced bill to set up Broadcasting Committee to investigate radio; demands of political, religious and social reform groups for more (and incidentally

free) time believed behind the movement.

Similarly instigated is Rudd Bill (Rep. Rudd, D., New York) which calls for reallocation of all wavelengths, with one-quarter of facilities reserved for non-profit organizations of the type mentioned above.

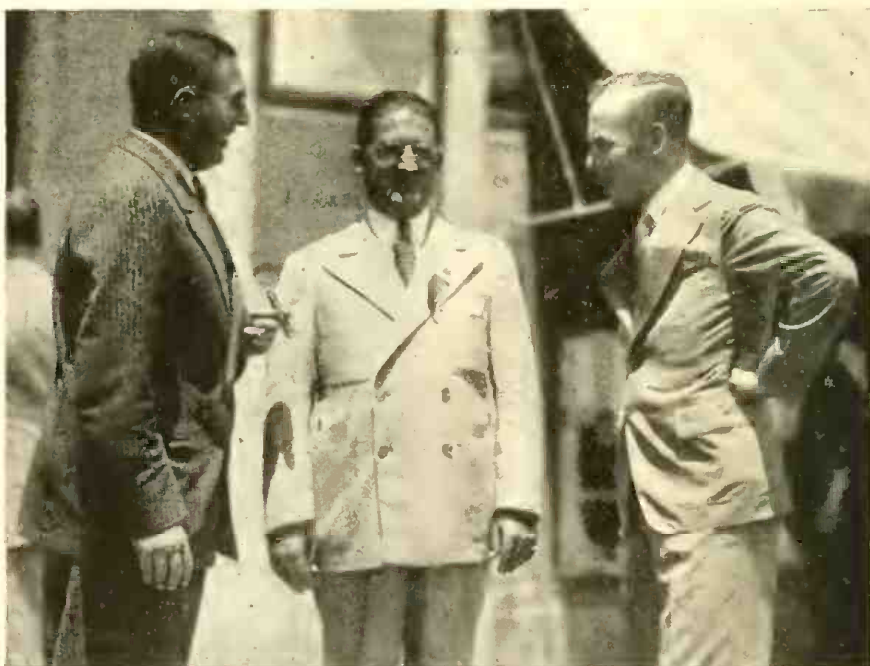
Typical of the anti-radio viewpoint in Washington is recent blast by Commissioner Payne, condemning radio as "battling for no rights" and "dangerous of becoming too influential politically;" and the Sept. 2nd complaint by Rep. Fish (R., New York) that KOA had "censored" his talk and demanding a Washington investigation.

With radio at mercy of selfishly interested politicians, future of broadcast set-up needs jealous guarding by those who want to see radio expand and progress, rather than become football for political oligarchies that are liable to change every four years.

Tragic irony

★ Ironic and pathetic were the circumstances under which the parents of Wiley Post learned of the death of their famous son.

Radio flashed the tragic news of the crash to countless millions the nation over; but sympathetic friends, calling on the senior Posts, were the first to bring them the news. Their set was out of order; and no newspapers reached the remote village for hours.



Life is a song — but only as long as the good old volume curve points upward. Happy harmony here is being supplied by Judson Sayre (center) newly appointed assistant to RCA-Victor's president—with words and music by Ray Rosen, Philly distributor (left) and E. T. Cunningham, RCA-Victor chief.

Radio in next election

★ The Republican National Committee started something when it chose a radio director in the person of Thomas G. Sabin, to organize political broadcasts for the presidential campaign, 1936.

Plans at the studios for the party ballyhoo are not complete, although indications are that when the broadcasts get under way, both the Republicans and Democrats will present regular programs on announced times and stations through the period, rather than spotting the material at random. Educational programs and band music, besides the regular verbal attack, have been suggested.

High-power abroad—Cohan

★ High-power broadcasting is more common-place in Europe than in the United States, reports Edward K. Cohan, technical director of the Columbia Broadcasting System, who has just returned from a summer inspection tour of a dozen countries over there. Besides the 500 kw. Moscow transmitter, 100 kw. stations are plentiful. Droitwich has 150 kw.; Luxembourg 250 kw.; Vienna 120 kw.; Rome 100 kw.

Russia now has thirty-three broadcasting stations of all sizes. Much of the time these are operated as a network, with wire or radio links between Moscow-central and the outlying transmitters. Short-wave connections have been used; in some cases the local outlet merely picks up and rebroadcasts the 500 kw. broadcast signal from Moscow.

Mr. Cohan was greatly impressed with the engineering refinements of broadcasting operations in England. The British Broadcasting Company has 2,000 employes, more than 40 per cent of whom are engineers.

Average price, \$76; 7 tubes

★ A survey of RADIO TODAY's listing of home receivers on following pages of this issue brings some interesting figures to light. The average price of receivers is \$76. The radios included range from \$9.95 in price for a table compact to \$985 for a 16-tube deluxe console.

About 12 per cent of the models are equipped exclusively with metal tubes and 19 per cent are supplied with a combination of metal tubes and glass tubes. Approximately 65 per cent employ the old-type glass tubes while the balance of 4 per cent represents the use of metal-glass tubes. Somewhat less than seven tubes is the average number found in the new model



What chance has a parts manufacturer between two set makers? George Scoville (left) vice-president, Stromberg Carlson, and Jim Skinner (right) president, Philco, look ready to take the victim over the hurdles. Victim (center) is Fred Williams, general manager, International Resistance.

radios. A comparison of four outstanding manufacturers shows that the average number of tubes employed in their receivers is practically the same.



Leo J. Fitzpatrick, general manager of WJR, Detroit, is the new prexy of National Association of Broadcasters. Known as a guy who "stands no nonsense," he is expected to make NAB's new year a lively one.

The all-wave and skip-band trend is being adhered to again this year, more than 85 per cent of the receivers having coverage on two or more bands. A few of the higher-priced models provide a band in the vicinity of 150 to 400 kilocycles, the percentage being slightly more than fifteen.

International plot

★ European ether is by no means sacred to the American manufacturers of radios, and since last June the RMA has been considering a serious invasion. The Export Committee of the Association, guided so far by Arthur T. Murray, Springfield, Mass., finds itself all mixed up amid the lofty and slow-moving negotiations by the State Department, involving new reciprocal trade agreements with continental neighbors, especially France.

Farewell to EAT

★ EAT, radio station at Addis Ababa, will probably be much in the news before this Ethiopian business is over. It is Emperor Haile Selassie's link with the outside world, and ordinarily works with London. Probably the first effort of the attacking forces will be to bomb EAT and blow it to bits, thus shutting off communication with Europe. And EAT is a brand-new job, too—in operation hardly a year!

THE WAR AGAINST RADIO

Newspaper attacks threaten livelihood of entire radio industry

★ AFTER seething behind the scenes for many months, the attack of the organized newspapers on radio broadcasting has finally been brought out in the open. In the headlines of newspapers all over the country, bitter charges are hurled against radio.

Does this mean war? Does this mean a long and bitter fight between two of America's great industries? Does it mean that America's two greatest mediums of public service and communication will lock horns in a battle royal, from which one or the other must emerge dominated and suppressed?

Does it mean prolonged hostilities between the 2,000 daily newspapers in the United States, and the 600 broadcasting stations?

Those are the questions everybody in the newspaper and radio worlds is asking today, after the publication of the latest blast against radio broadcasting by the American Newspaper Publishers Association, the organization that claims the membership of practically every large newspaper publisher.

While the newspapers' attack is aimed primarily at broadcasters, to discredit radio as an advertising medium, its eventual and insidious effects must be felt by everybody in radio—manufacturers, distributors, dealers and service men alike.

Stab in the heart

For broadcasting is the very lifeblood of the whole radio business. Broadcasting sells radio sets. Broadcasting is the foundation of the business of every radio set-maker, jobber, retailer and repairman.

If newspapers' attempt to discredit and weaken broadcasting succeeds, the direct effects will be felt all the way down the line. In every home of every man in radio.

Destroy the present high standards and necessary incomes of broadcasters—and radio factories will be empty, jobbers might as well call in their salesmen, dealers close up their stores, and radio service men get themselves jobs as office-boys with their local newspapers. "Grass will grow in the streets of our industry"—perhaps.

Looked at from any angle—that of the public or that of the radio

industry—this well-organized attempt to discredit broadcasting is serious. For it is nothing short of a widespread effort to have the finest programs now on the air withdrawn—the public deprived of its most popular and economical form of entertainment—chief contact with the outside world taken away from millions of city and rural homes.

Press conflict old

Conflict of interests between press and radio is nothing new. Years ago, far-sighted broadcasters saw the opportunity for radio to bring the people of America a fast-moving news service that would inform them of important news events all over the world, almost as soon as these happened; no need for waiting several hours for newspapers to be published and bought in the streets.

In fact, the birth of broadcasting itself, as every radio man remembers, actually occurred through a news broadcast—the election returns from KDKA at Pittsburgh in 1920.

For more than ten years—while newspapers saw circulation-building values in radio for themselves—radio and press co-operated in the public interest. Newspapers, somewhat unwillingly, gave publicity to radio program listings and even furnished news to broadcasting stations.

But a few years ago, a sharp change in the attitude of newspapers toward radio began to be apparent. Newspapers saw their advertising revenues decreasing rapidly, while radio advertising made great strides forward as a new form of reaching the public with a sales message. Newspapers began to fear this new force, both as a news service to the public and as an advertising medium for large national advertisers. One big press association is reported to have a standing order to its staff that even the word "radio" must not go out in its dispatches.

So newspaper publishers began definitely to turn against radio. Sniping began as early as 1930 and before, when some newspapers discontinued publication of radio programs. But even that unpopular move made dramatically apparent the strong hold that radio had obtained on public opinion. People turned from those program-less newspapers to the wiser newspapers which did carry the program listings. Radio had won its first press skirmish by sheer force of public interest.

Flash news

Hostile attitude of the press by now was such that broadcasters, feeling the growing antagonism of the newspapers, made preparations to set up their own news-gathering facilities. The Columbia Broadcasting System, in 1933, actually started and operated a widespread news service for the benefit of its listeners. The National Broadcasting Company made similar plans and had its organization ready to start full blast when and if the newspapers refused further co-operation.

But a quick move on the part of the newspaper interests prevented full operation of such plans. Press associations and newspapers moved swiftly to force broadcasters out of the news service field. Under implications of a threatened newspaper campaign to destroy radio broadcasting, and in order to prevent open warfare between the press and radio, the broadcasters agreed to formation of the Press-Radio Bureau early in 1934. It was an agreement signed literally with a gun pointed at the heads of the broadcasters. It was an agreement which irked the radio men who assented to it, and brought down on their heads bitter condemnation from the whole radio industry when the unsatisfactory results to radio listeners were revealed.

Nets up, 416%				
	National Newspaper Advertising	Year to Year Ratio (1923=100)	Radio Network Advertising	Year to Year Ratio (1923=100)
1928.....	\$230,000,000	100	\$10,252,497	100
1929.....	260,000,000	113	18,729,571	182
1930.....	230,000,000	100	26,815,746	261
1931.....	205,000,000	89	35,791,599	348
1932.....	160,000,000	70	39,106,776	381
1933.....	145,000,000	63	31,516,298	307
1934.....	163,000,000	71	42,659,461	416

PROPAGANDA!—

By the terms of this abortive compact, leading and powerful press associations agreed to supply incomplete news bulletins to radio stations, to a limited and restricted extent. In return for this abbreviated "service" (for which the stations paid) the broadcasters agreed to discontinue all plans for perfecting their own news-gathering facilities.

The Press-Radio Bureau service has, of course, never been altogether satisfactory to the radio industry nor to the public. Its news is limited to a few restricted five-minute periods a day; bulletins are skimpy and unsatisfying; listeners are referred to local newspapers for full details, and the news cannot be broadcast until it has been published elsewhere.

Radio scoops press

Also, the ill-starred Press-Radio Bureau, depending upon the press services for its news flashed to co-operating broadcasting stations, has made several bad boners for which radio got the blame. One after another, in a series of some of the biggest news events of the year, the press services got their first tips dead wrong, and sent out to broadcasting stations erroneous news flashes, which later had to be corrected.

Look at the record:

- Press associations told broadcasting stations the Macon hit a mountain; it fell in the ocean.
- Press associations said Hauptmann got life imprisonment; he was condemned to die.
- Press associations got the famous Gold Clause decision of the Supreme Court completely cock-eyed right from the start; more apologies and more corrections.

Meanwhile, new special radio news services for broadcasting stations have come into the picture—like Transradio—getting things right, getting them fast.

- got the Macon story right; got the Hauptmann story right; got the Gold Clause story right.
- first with confirmation of rumors of the deaths of Will Rogers and Wiley Post.
- first by half an hour with news of the death of Queen Astrid of the Belgians.

Radio cannot afford to be wrong; once the news is broadcast, it cannot be called back; newspapers have time to stop the presses, destroy the papers; radio must stand or fall on its own speed and accuracy.

Radio can not only get the news fast and right, but it can put the news into the homes of America min-

National Radio Advertising Off 70 P. C. in 1934
 448 Out of 635 Air Programs of Years 1931-'33 Abandoned, Survey Shows
 Home Appeal Analyzed

Show Big Drop In Radio 'Ads'
 70.6% of 1929-'33 Advertisers Off the Air During 1934
 Of the 635...

BROADCASTING EXPENSIVE ADVERTISERS, BUREAU
 High Mortality Among Radio Accounts Pointing Size of Audiences Reached by in Competition With High

RADIO AD PROGRAMS ARE DROPPED BY 187
 Sponsors Forsaking Air, Survey Shows; 79 Programs Studied
 There were 635 radio advertisements from 1929 to 1933, and 448 in 1934—a drop of 70.6%. This is shown by the following table:

MANY QUIT RADIO
 A SURVEY of radio advertising by the Publishers Association of New York Friendly, business manager of the radio, only to abandon the medium and here are the figures: Of 636 advertisements they have made in air coverage from 1929 to 1933, 448 or 70.6% quit in 1934.

MANY ADVERTISERS QUIT USING RADIO
 Survey Shows 70.6% of Those on Air From 1929 Through 1933 Had Dropped Out in 1934.

utes and hours before that same news can be read in the newspapers.

What the outcome of an open break between radio and newspapers will be, only time will tell. Meanwhile, the American Newspaper Publishers' Association, through its latest pamphlet, "Yardsticks on the Air," has made a definite attempt to discredit radio, both in the eyes of the public and in the opinions of national advertisers whose fine programs have made radio broadcasting the popular institution it is today.

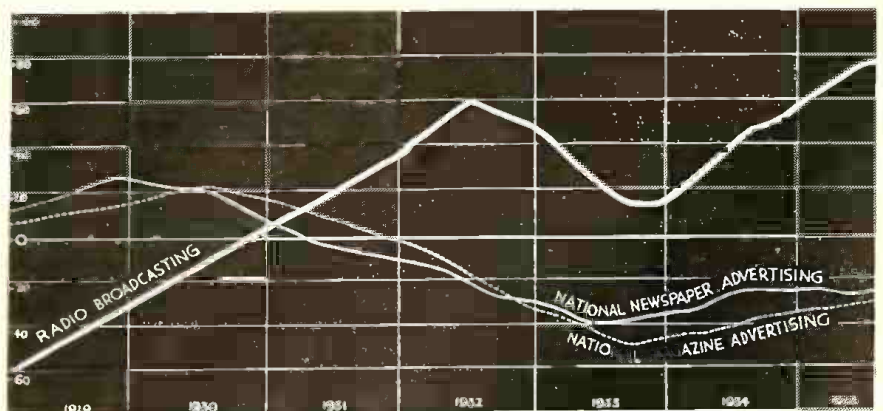
Full of distorted and misleading "information" this "analysis" of radio issued by the newspapers is laughingly akin to Italy's claims against Ethiopia. Only one part of the story is told and that part often inaccurate.

The theme song of the statistician who authored this specimen is that 70 percent of the advertisers who used radio in 1928 had dropped out by 1934. That's true, as far as it goes.

What the newspapers did NOT

(Please turn to page 30)

BUT HERE ARE THE FACTS!



Broadcast advertising has mounted while newspaper and magazine advertising declined (zero percentage equals 1928-1932 average)

RECEIVERS TODAY

★ SEPTEMBER plunges radio into the most interesting season of radio's most interesting year—the season which brings disclosure of the new models to the trade and public. During the past nine months, engineering and production departments have been laboring, literally night and day in many cases, to prepare the designs and the products which are now appearing for the 1935-36 season. We know that progress in the radio art has been, and still is, rapid, and it is interesting to review the advances which form the features of the present season.

Metal tube complications

As a plan of review, the developments of 1935-36 may be divided into those pertaining to circuits, and those more wholly mechanical. Each of these groups may be separated into items which are universal, or nearly so, throughout the industry, and those which are individual to one manufacturer, or at most a few companies.

Considering first the circuit developments of universal sort, the outstanding item of the year is of course the metal tube. Here the situation is made complicated by the use of more than one type of metal tube. For certain intermediate types partly glass and partly metal have been introduced as well as the

all-metal type. These additional types utilize previous structural methods to a considerable extent, and are therefore more readily produced this year. They are intended to be interchangeable with the new all-metal type of tube and thereby to assist in meeting the full tube requirements of the industry, until all-metal tube production is able to catch up. The all-metal tube is a revolutionary change in tube construction, and its advocates believe it will bring about, within a very few years, marked improvements in performance and reliability of tubes and receivers. Most of the receiver manufacturers have equipped at least several models with metal tubes this year, and there is little doubt that future receiver designs will utilize metal tubes extensively. The year 1935 will be remembered as the year of the metal tube introduction.

More tubes—better sets

It appears that a trend to more tubes in the medium and higher priced receivers is definitely established. The number of receivers using from ten to twenty-five tubes is considerably larger than last year. The additional tubes are used for better and more refined performance, such as less distortion, more output, better selectivity without effect upon fidelity, better volume control, better tuning indicators.

Also, it appears that there is a trend to somewhat greater emphasis upon the better receivers. It seems to be more recognized that both performance and reliability can not be built into the complex and critically adjusted instrument which is the modern broadcast receiver, for sale at \$13.98. Prices range from twenty to six hundred dollars, with "full performance" models, that is, models having features such as automatic volume control, bass augmentation, etc., ranging from about forty dollars up.

"Higher fidelity"

High fidelity has received attention and all manufacturers have improved tone quality in their better models with increased high frequency response and "cleaner" bass. A vital part of high-fidelity circuits is the "band-width control," and there has been considerable improvement in both constructional and performance aspects of this feature. Methods depending upon variation of inductive coupling between intermediate-frequency tuned circuits are standard practice.

Many manufacturers have introduced this year another wave band, that below 550 kc., for reception of weather reports sent out regularly by airways stations.

The use of additional wave-bands, or short waves, giving foreign broadcast, amateur and police call reception, should perhaps not be classed as a 1935 feature, as it became standard practice last year. The 1935 models conclusively show, however, that "short waves" have become an accepted and expected feature of broadcast receivers, and are here to stay.

"How's your antenna?"

The importance of efficient antennas is now widely recognized, and all manufacturers are making recommendation for, and many specific provision for, suitable antennas for broadcast receivers, especially for all-wave use. The importance of having good antenna installations can not be emphasized too strongly. They are indispensable to satisfactory foreign short-wave reception, and give worthwhile improvement even in domestic broadcast reception.

Accent on bass

In the sets themselves, a number of circuit developments are found to be widely utilized this year. Bass augmentation (whereby amplification



Midnight-blue mirror-glass Sparton console, chromium-steel trim, styled by Walter Teague, famous designer. Contrast with 1925 model

of the bass register relative to the treble is increased, on low volume adjustments) is practically universal, and has been refined in method and performance.

Chassis layouts better

In the department of mechanical features of the year, we find no radical innovations in cabinets, minor variations in design and decoration forming the differences from last year. But there is considerable improvement in details of chassis structure. It is noteworthy that parts such as trimmer condensers, electrolytic condensers, i-f transformers, upon whose quality continued satisfactory service depends, have been refined and improved in the new sets. Several manufacturers have introduced special features of construction aimed at simplifying the layout and wiring of the chassis, which are effective and generally excellent. Receivers have increased greatly in circuit complexity and number of parts during the past few years, and mechanical design has not kept pace in accommodating the added parts efficiently and reliably. It was often said of last year's sets that they resembled birds' nests in under-chassis appearance. This year apparently marks the beginning of efforts to improve in this respect of workmanlike layout. At least two manufacturers have eliminated scores of short wires and soldered connections by designing parts with terminals which fasten together directly. Improvements in this direction produce more efficient manufacture and greater reliability in service.

New dials

A number of special features have appeared. One manufacturer has a new form of dial which is particularly beautiful in appearance, especially when the set is turned on, and effective in use. Another type of dial has a scale which is straight and marked like a ruler, and the pointer travels horizontally back and forth. The graduations are printed on a cylindrical form which rotates through an angle as the wave band is changed. Since only one scale is exposed at a time, tuning is made exceptionally easy.

Another has a new tuning indicator tube of the cathode-ray type, instead of the previously used tuning meter or shadow meter. When the receiver is in operation the exposed surface of the tube is lumin-

ous with a green light. A dark sector extending downward from the center narrows as the station is tuned in, and when it is narrowest, the receiver is perfectly tuned for best reproduction. The indicator thus resembles an eye.

"Volume range expander"

One manufacturer has announced a circuit innovation of considerable importance. This is the "volume range expander." Broadcast station operation and phonograph recording

require some compression of volume range, that is, reducing loud sounds and increasing weak ones in order to overcome certain practical difficulties of transmission and recording. The original relative values of loudness can be restored at the receiver by circuits which make loud sounds louder and weak sounds weaker. Such a circuit is the "volume range expander" placed on the market for the first time this year. It is available in high priced instruments only, but should have influence in raising the standards and ideals of high quality sound reproduction.

TUBES TODAY

Metal-tube production behind

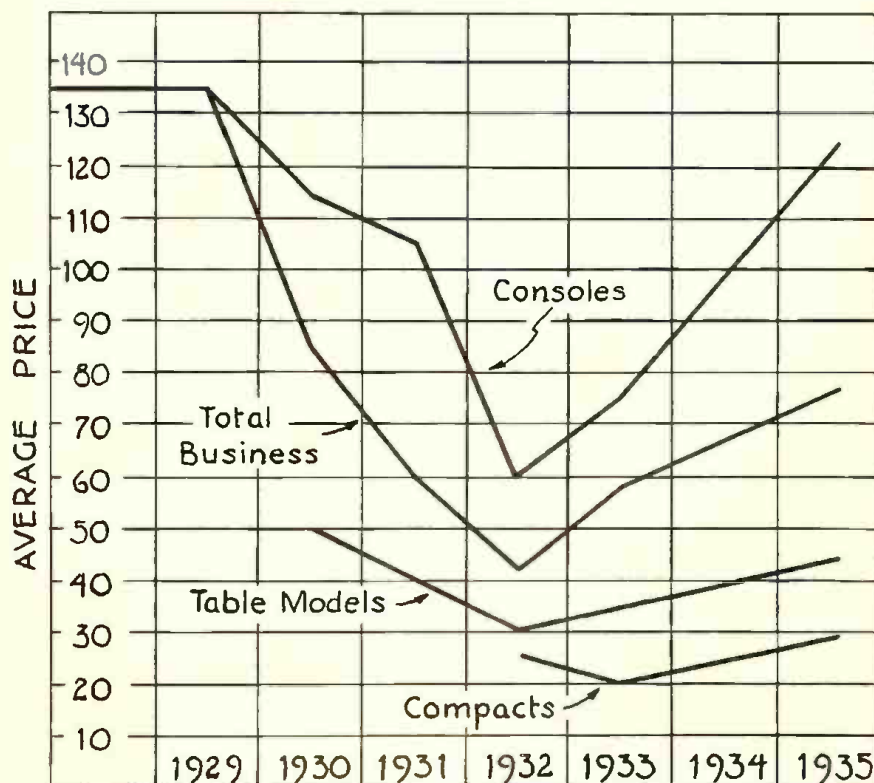
★ Delays in production, and higher initial costs of the new metal tubes, are two issues around which rages the present internal controversy in the tube field.

Revolutionary manufacturing processes were required for the new metal tubes; this has made refinements in factory methods difficult to plan at outset. With terrific pressure on the plant, the resulting "brute force" methods have meant high unit pro-

duction costs, factory men admit. ("More than a dollar a tube" runs one rumor.)

Demand for the metal tubes still exceeds the supply and will continue so probably the rest of the season. By next season, however, the slack should be caught up.

Shrinkage has been high on the metal tubes, some claims being made that 50 to 75 per cent of the tubes produced had to be discarded. There were many new fundamental problems faced in going to metal envelopes, but these are now being licked, fac-



Average price of all types of sets on the upgrade



Television is becoming a big-scale governmental enterprise in England. Here's a glimpse into the Baird studio in London.

At "Radiolympia," the London radio show, this leatherette-covered kitchen receiver was featured.

RADIO TODAY—IN PICTURES

Television, transceivers, crime detection, point future uses of radio principles

"Transceivers" which both send and receive 25 miles or more, may soon be a new general retail item for radio dealers.



Right—Radiations from this "frisker" detect the presence of any concealed weapon.



tory executives feel. Air leakage was one of the difficulties experienced in the early stages of metal-tube production. Such leakage troubles are now in hand, and are safeguarded against for customers' protection by holding back the tubes and re-testing them, thus giving a double-check on factory tests, before the tubes are shipped.

Meanwhile, some receiver manufacturers, unable to get their requirements of the metal tubes, are shipping sets with mixed tube complements, filling in with both standard glass tubes and glass tubes with the new octal base.

Glass vs. metal-tube costs

★ Against the metal tube is brought the complaint that it has unnecessarily increased the number of tube types required for the dealer's stock; also that the present higher prices of the metal tubes are raising the prices of radio sets to the public. Metal tubes are being furnished to set makers at prices nearly twice the cost of the familiar glass tube, and this has opened an opportunity for glass tubes with octal bases, which can be supplied at substantially lower prices. Similar differentials exist in the retail list prices of the various tubes offered for replacement. For example, the table shows the prices of glass, metal, and metal-glass equivalents.

Tube No.		Price to Set Mfr.	Retail List Price
6A7	glass	38 cents	\$1.35
6A8	metal	70 cents	1.70
6A8g	octal-glass	41 cents	1.70
0-42	glass	32 cents	1.10
6-F6	metal	60 cents	1.75
6-F6g	octal-glass	35 cents	1.40

On an average receiver, it is claimed that the difference in cost of metal as against glass tubes may add \$2.50 factory cost to the set, and that this item when carried to the retail purchaser at a multiplier of four, means an increase in retail cost of about \$10 per set.

Development expense—initial prices

★ Metal-tube advocates point out that despite staggering amounts of money spent on metal-tube development, some of the new metal-tube types are priced actually lower than were the corresponding glass tubes when originally introduced.

Thus the 6A7 glass tube above cited first appeared at \$2.20 list, in comparison with the initial metal price of \$2 list.

Similarly the 42 glass tube was originally priced at \$2, in comparison

with the initial price of the corresponding 6F6 metal at \$1.75.

More—or less—types

★ What will be the effect of the metal-tube program on retail tube stocks? In pre-metal days, the number of tubes needed was about 150 to meet all requirements. The metal line has added more. Since many a dealer sells only about 350 tubes a year, the necessity of carrying additional items puts a burden on the smaller merchant, driving tube business into hands of chain stores.

On the other hand, behind the metal-tube program is the purpose to handle all future tube requirements with a small number of types, so that dealers' stocks will eventually be much simplified, say those pushing metal program.

AUTOMOBILE - RADIO ACTIVE

★ The new policy of the automobile industry in bringing out its new models in October instead of at the first of the year, has brought new seasonal activity into the auto-radio field as well. The increasing number of sets installed at the factory has resulted in large initial Fall orders which have speeded up some radio-set makers' auto-radio volume by 100 per cent or more.

Latest word from Detroit also indicates that this Fall's auto radios give better reception and are more pleasing in appearance. Adoption of the steel roof by many of the automotive manufacturers has necessitated a change in the antenna system, as a result certain definite improvements have been incorporated.

By using an antenna of the plate or strip type under each running board, ignition noise is reduced; in addition this type antenna does not respond well to frequencies higher than the broadcast band, thereby eliminating much of the high-frequency interference which formerly forced itself past the first detector and made its way into the output.

The sensitivity of the receivers has been increased more than enough to compensate for the reduced antenna pick-up. Some of the receivers will give an output of one watt with an input of but a single microvolt. Improvements in filtering the ignition system and reduction of noise pick-up by the antenna, as well as better

Redesign— new construction

★ New possibilities for tube construction are unfolding as the metal-tube plan develops, say engineers on the job. At present, all hands agree, any advantage in performance comes from the extra shielding which metal construction provides, and reduction in microphonics.

Present internal construction follows closely old glass practice, but future models will be able to utilize metal envelope for radical redesign.

Preliminary laboratory experiments are being made with a "metal-spray" sealing process to replace electrical welding of the outer envelope. By first heating the parts, and then flowing on metal from a spray-gun, the inventor thinks he has a cheaper substitute for electric welding.

receiver design, have made it possible to successfully employ this higher sensitivity. Reception at a distance is increased accordingly.

Instead of the square, sharp-cornered cabinets, the Fall models are housed in cases of pleasing proportions and appearance with a definite leaning towards streamlining. Most of the automobiles are so designed that the controls become an integral part of the instrument panel.

Efforts are being made to increase the frequency response of the speaker—the most notable being the use of the header speaker attached to the ceiling above the windshield. The high-frequency response is considerably increased. Experiments are being conducted using the dash and other parts of the car as a baffle.

Other problems such as brake static, road static, tire static, antenna insulation are receiving much attention.

Aside to FHA

★ The RMA, thinking of everything, has a definite feeling that the FHA should not stop at the wrong place in its financing radio sales. The manufacturers have, optimistically, applied for the further financing of receiving sets selling at \$75 or more, which the FHA so far has avoided unless when the sets were built in. If the FHA allows refrigerators, argues the RMA, why not the more expensive radios?

THIS INTERLOCKING RADIO INDUSTRY

★ IF A FLY bites a horse in the neck, the horse is annoyed all over. You can't isolate the pain or the reaction. The horse isn't built that way.

Similarly, you can't do anything in any part of an industry as intimate and complex as radio, without affecting every other part.

Fifteen years of progress under the trial and error method in radio have shown that whatever development comes next, in research, broadcasting technique, retailing methods, or even just plain listening, will invariably affect everybody in the industry. From manufacturer to consumer—from Eddie Cantor to the service man around the corner—everybody in radio has a stake in whatever happens on its remotest fringe.

Radio today is as full of startling events as a free-for-all in a Klondike dance hall. New tubes, new sets, new selling methods, new programs, pop up overnight and are accepted as commonplaces almost before they're out of short pants. Facsimile and television have long since passed out of the stage of visionary speculation. Both are settling down onto a solid basis of laboratory achievement. Radio is beginning to juggernaut toward greater things.

So don't let any body tell you that radio is slowing up, that the industry's youth is behind it. After fifteen years of radio development since the beginning of broadcasting, *radio hasn't begun to get started yet!*

All in same boat

Out of the smoke and fire of the past decade of prosperity and depression, one fact stands out—like a lighthouse in a fog: *Common interests* thoroughly interlock all of the factors in the radio industry.

We've all got our dogs under the same table—we're all in the same boat—anyway you want to say it. New developments already announced, as well as those still in their formative stages, only serve to emphasize the close association between all the various elements in radio.

Look at it this way. Without research in radio and electronics, we'd have nothing to sell. Without deal-

ers and jobbers, manufacturers would have no market. Without manufacturers, the dealers and jobbers would have no products to distribute. Without broadcasters, radio sets would become useless pieces of mechanism. And without the radio industry and trade, broadcasters would have no listening audience.

When the manufacturer finds it unprofitable to produce, or the trade to distribute, then research has no practical use and drifts into the calm of an academic Sargasso.

Interlocked? Interdependent?

So much so that nothing in the future can dis-entangle the ties that bind the present factors in radio. Indeed, the future, with its new developments and services, merely presages stronger and more tightly cemented mutual interests between set makers, set sellers, set fixers, and program transmitters.

Must know

With interlocking interests and mutual problems so obvious, it is clear that every factor in radio must keep abreast of the developments in every other phase of the industry. Broadcasting, manufacturing, engineering, wholesaling and retailing are not now and probably never have been self-centered and independent functions. The need for frequent and authoritative interchange of news and information within the radio industry has never been more acute. The need will grow as new developments carry radio forward to public services and sales opportunities undreamed of a few years ago.

Broadcasters, for example, must keep abreast of new developments in radio products. With more than 20,000,000 automobiles in use, a fast upward surge in auto-radio installations may increase the broadcasters' markets and offer new circulation figures for broadcast advertising salesmen. Facsimile broadcasting and television, sooner or later, must inevitably reshuffle the whole structure of policies and methods in the preparation of radio programs and the sale of time. The market for radio on non-electric farms is right now taking on a sudden expansion, offer-

ing broadcast advertisers a better opportunity to reach the farm market. In all of these developments, the broadcaster as well as the radio trade has a vital concern.

And manufacturers must know what's going on, not only in manufacturing and merchandising, but in broadcasting and research. Manufacturers must know when new services such as facsimile and television will be ready for the market so that the trade and broadcasters may cooperate in the public interest for the inauguration of such services; they must know and assist in the solution of wholesale and retail problems, for without a prosperous distribution function, manufacturing can hardly hope for profits.

Tell Mr. and Mrs.

And the retail and wholesale trades themselves, besides being kingpins in merchandising, must be able to interpret developments in each of the other fields, not only from the standpoint of conducting their own businesses more intelligently and more profitably, but from the position of interpreting them to their customers.

Rural dealers, for instance, must keep fully informed as to new products that may revolutionize farm selling; city dealers must be alive to sales opportunities offered by experiments which may have their inception in the metropolitan areas; all dealers must keep in touch with new programs and the most popular programs to use as effective arguments in selling.

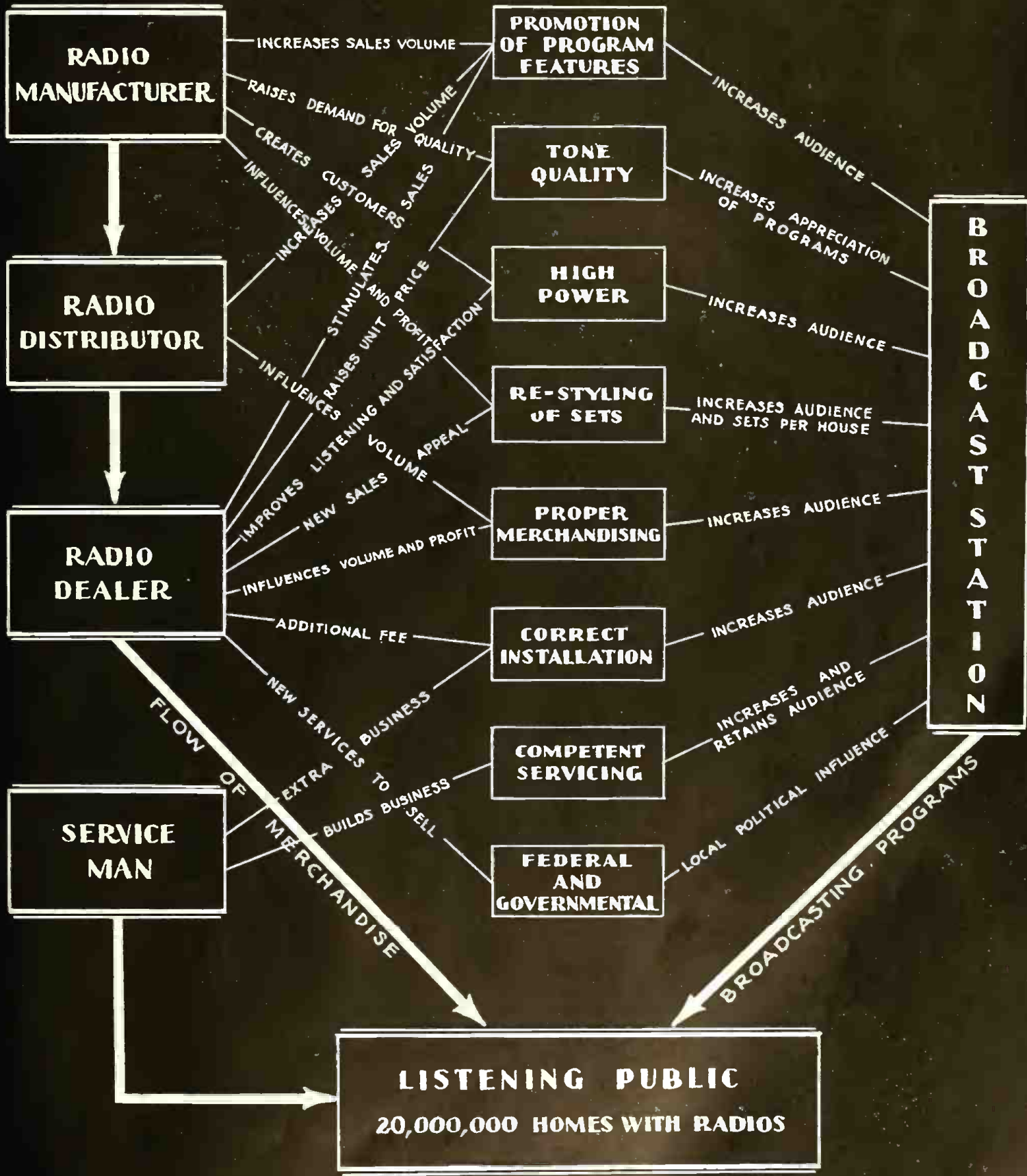
Service men, too, must know how to install and service new sets, new circuits, new types of radio products as they appear on the market. These are just a few of the interlocking interests of everybody in radio, but they serve to indicate the importance of keeping informed on every phase of the radio business.

Radio today is a fast-moving industry. The future offers tremendous possibilities. Some of these possibilities are already common knowledge, and are eagerly anticipated by the public. Others are still in the laboratory and no word of them has yet leaked out. But everybody in radio today is going to have to step lively from now on, to keep pace with these new forces.

Look at the record. Yesterday it was crystal sets, ear-phones and acid batteries. Today it's auto radio, new tubes, and flossy cabinets. Tomorrow it will be television, facsimile—and God knows what!

Yes, sir, this may be a cock-eyed business. But boy, it's going places!

HOW MUTUAL INTERESTS BIND ALL RADIO MEN TOGETHER



"ON THE AIR"—

Fall programs that will boost radio sales

NBC's fall galaxy

★ Strings of artists lined up by NBC for fall programs have the "must" quality for listeners. Always plans at Rockefeller Plaza for spectacular broadcasting events of a special nature, and chatter a-plenty about unusual hook-ups, but there's enough already announced on the regular programs to seize the interest of anyone subject to pull of big names.

Witness the date made by NBC with gala Grace Moore, September 16, when the radiant warbler of the hit movies will be heard on WEAf Red Net. Judging from the number of fans who flocked to "Love Me Forever," the singer now has a following de luxe.

Helen Hayes, woman of quality from the screen and stage, appears October 1, opening a series in which Miss Hayes' role remains the same. This feature, already a much-discussed spot, is scheduled for WJZ Blue Net.

Villa-bound Paderewski will play his first concert for an American broadcast for NBC-WJZ network in October. Totally Chopin, the program comes from the Paderewski quarters in Switzerland.

Eddy Duchin and his Fire Chief Players get back to the air on the same date, October 1, and Tuesdays. He's the one who sweeps the orchestra popularity contests, and this time he's on WEAf Red Net.

Also new and anticipated on NBC's list is the September 30 program titled Hammerstein's Music Hall. The Fitch Company, Cutex, Life Savers, Procter and Gamble, Ralston Purina, Lorillard, American Radiator, and Ludens all will have new programs.

Pope Pius XI.

The voice of Pope Pius XI will be heard on NBC-WEAF network on September 26 at 5:30 p.m. in an address and papal benediction delivered at the close of the Eucharistic Congress, Cleveland, September 23-26.

Jack Benny's new show September 29, will include Michael Bartlett, rocketing tenor who sang with Grace

Moore in her latest flicker. The Jessica Dragonette program will have the Cavaliers instead of the Revelers from September 13 to October 18. Mills Brothers return to NBC via WEAf Red Net, October 4.

The latter four of NBC's half-



Seventy years at a Steinway

dozen big "Fall Broadcasts" are set for September 12, 19, 21, and 26. They will preview autumn news in fashions, literature, football and art, in that order. Frank Healy is master of ceremonies and the biggest shots in each field will be heard.

Wheatena has dragged the widely-watched Popeye, the Sailor man, from the comics and has lauded him, with benefit of spinach, in the NBC studios with the mike turned on September 10. The Pacific coast network gets this feature three days a week.

Tuesdays in September over WEAf mark the new programs of Deems Taylor and Sigmund Romberg as commentator and conductor, assisted by various soloists. Composer Taylor is famous for "Peter Ibbetson" and other operas and is universally applauded as a musical critic, while Mr. Romberg has "The Student Prince" to his credit as well as melodies like "The Desert Song."

CBS signs headliners

★ Half a dozen of the country's favorites are in the impressive Autumn announcements from CBS. Columbia has more than its share of commanding air bills for September, returning some important stars to the air who rank second to none in listener interest, and sponsoring new names which rate sensational spots.

Alexander Woolcott, glib with some of the finest stories in the language, will greet his fans on October 6. Able Eddie Cantor and his stooge are due for October 6, and of course by that time the new daily schedule for the crack "March of Time" broadcast will be well under way.

A nation-wide WABC broadcast gets Lawrence Tibbett on September 24, on a program definitely the subject of talk among most musical fans. October 1 sees the appearance of Kate Smith again, with A&P, to sing three times a week and on the same day an elegant newcomer, Deane Janis, gets under way.

Atwater Kent will be back to CBS on September 19, pretentious as ever, concentrating on concert and operatic stars with a huge concert orchestra.

Harvester Cigar, Maltex, and Camel will have new programs for CBS on September 12, September 15, and October 1, respectively.

Henry and highbrows

Ford's CBS Sunday hour, September 29, uses top musicians until December 22. This list includes Jascha Heifetz, Lucrezia Bori, Julius Huehn, Dalies Frantz, Richard Crooks, Joseph Szigeti, Mischa Levitzki, Cyrena van Gordon, Kirsten Flagstad, Albert Spalding, Lauritz Melchior, Elizabeth Rethberg, and an operatic quartet consisting of Grete Stueckgold, Kathryn Meisle, Richard Crooks, and Ezio Pinza.

Two bright stars from the Metropolitan Opera will open a concert series on October 2 with WABC. Lily Pons, soprano, and Nino Martini, tenor, will be heard weekly with a concert orchestra directed by Andre Kostelanetz.

Burns and Allen, comedy pair without an equal, have been signed by the tomato juice section of Campbell's Soup, for a new series beginning October 2. CBS will add 29 stations to the old Burns-Allen network for these new Wednesday programs.

Phil Baker, one of the four-star radio personalities, has been signed by CBS for a Sunday series beginning September 29.

Mutual's merry-go-round

★ At a time when the go-round in Washington is specially merry and the place throbs with political intrigue, Mutual steps in and fixes a hook-up with listeners. Plans are not complete for the government feature but Drew Pearson and Robert Allen will be on the air October 1, with their famous low-down on capital developments.

"Lamp Lighter" Jacob Tarshish will return to WOR, WLW, and WGN, four days a week, beginning October 1.

The first part of the series of high-brow musical programs to be played by famous chamber music groups under the auspices of the Library of Congress Division of Music, will be heard exclusively over WOR and MBS beginning October 29, and running eight weeks. Topflight quartets and sextets, such as Kroll, Gordon, and Musical Art, will play Tuesday afternoons from 4 to 5.

"Jeannine in Lilac Time" debuts with MBS on September 23, sponsored by Pinaud. The feature has a spotlight vocalist from the West as "Jeannine" and a low register orchestra with a male octette.

Albert Payson Terhune's famous knack for telling engrossing dog stories will get a new medium on September 29, when original dramatizations of his tales will be heard over WOR, the Mutual System, and WNAC, Boston. The attraction was announced by Mutual on the 9th of August, and by NBC on the 12th.



National appetite for his chatter

WITH THE BROADCASTERS

Radio Research Bureau

★ Mission of the infant Radio Research Bureau is described as similar to the position of ABC (Audit Bureau of Circulation) in publishing. However, the new radio bureau will have to decide on methods of counting radio circulation before it can begin work, as leaders in the project do not yet agree on a sound approach. RRB will doubtless begin with examination of current methods for determining the right number of sets in the country, then to tabulation of auto radios and so on to accurate totals in reachable sets.

Means for measuring circulation will be expensive, and it is understood that broadcasters have financed the early activity of the new bureau. Meetings are being held now among the 15 gentlemen responsible for preliminary plans; Arthur B. Church, KMBC, Kansas City, is the key figure, and his first associates are John Benson, of American Association of Advertising Agencies, and Paul West, of Association of National Advertisers.

Representing National Association of Broadcasters on the committee are Edgar Kobak, NBC; H. K. Boice, CBS; A. J. McCosker, WOR, and J. O. Maland, WHIO, Des Moines. From ANA are M. H. Leister, D. P. Smelser, Harold B. Thomas, and Stuart Peabody. AAAA sends Fred Gamble, L. D. H. Weld, George Gallup, and Charles Gannon.

Small dailies resent radio

★ For those who imagine that all is well in press-radio relations, recent surveys present somewhat upsetting proof that the view is slightly over-optimistic. One side or the other still digs an occasional trench in the war that was supposed to be settled by the Press Radio Bureau.

Country-sides are strewn with publishers who consider radio a direct competitor in news and advertising, say the surveys, although the situation is more quiet among metropolitan sheets. One survey, made among the members of the Inland Daily Press Association, ended in the discovery that nearly 75 per cent of the publishers questioned consider "news-

casting" now a definite handicap to newspapers. It also revealed a decline in radio programs as paid advertising and disclosed that some editors are actually killing stories of speeches after they have been broadcast. The Inland publishers practically said that they were through giving radio news the breaks, and it was important to note that only six of them were mixed up in station ownership.

Reveals public's listening habits

★ What the listening tastes of the public are can now be ascertained both as to time and station. The commercial value of such information is very great just now — it becomes possible for the broadcaster to know the coverage and the percentage of people in a given area who listen to his station; and the sponsor of a radio program can readily determine the popularity of his entertainment. The manufacturer can find out what kind of programs the public desires and design his receivers accordingly.

In one form of listener analyzer a record of the hours the receiver was operated and the station to which the owner was listening, is obtained on a paper tape driven by a clock motor. The tape can be made of such a



Love her forever

length as to run for over a month, but a week is usually a sufficiently long period of time, for the record soon becomes *passé* and valueless.

Although perfected two and one-half years ago by Professors R. F. Elder and L. F. Woodruff of the Massachusetts Institute of Technology, the device has only recently been put into production.

With the information obtained from a survey using these instruments installed on some five hundred to a thousand receivers, the broadcaster would be in a position to talk to his customers in terms of the percentage of the listening audience who tune to his station. The advertiser can then know the effectiveness of his programs and advertising talks. A station management is able to obtain statistics on the value of various hours and charge extra prices for times when the listening public is greatest.

The cost of conducting a survey of a metropolitan area by this new method is about one-tenth of the cost of conducting a similar, though less comprehensive, survey by telephone. Outstanding is the fact that the record covers all hours of the day.

Radio's Pulitzer Prize

★ The annual uproar which accompanies the awarding of the Pulitzer prizes in letters may find itself duplicated in radio, if the provoking proposal of the Radio Manufacturers Association is taken

seriously as it deserves. The idea would be to pick yearly best features in broadcasting, similar to the plan of the Pulitzer board. Probably unaware of what they started in the way of critical fanfare, executives of the RMA, led by Powel Crosley, Jr., Cincinnati, presented the proposal to the National Association of Broadcasters, where it was roundly liked.

European programs—Royal

★ John F. Royal, NBC vice-president and program mentor, is back from 17 European countries and uses the word "radio-conscious" to describe it all. Propaganda broadcasting, "Listening groups," and a popular passion for American dance music are in his report.

Mr. Royal found the Germans planning a big new short-wave station. The Dutch still support their broadcasting by popular subscription. The Italians accent opera. All show a tendency toward world broadcasting.

Plans for coming NBC broadcasts from Europe were mentioned on Mr. Royal's return, and it appears that the war zone, if any, in Ethiopia, will receive NBC's serious attention. A trial pick-up of ancient history lessons from the Colosseum, the Acropolis, the Appian Way, and other famous historical spots is on the way. Broadcasts from Greenland and Iceland are also in the plans, as well as an increased number of exchanges with the British Broadcasting Corporation.

Hearing him "Tell the Judge"



Recognizing that everybody likes to listen in on court-room testimony, station WIP, Philadelphia, has been broadcasting traffic-court proceedings.

Advice to listeners

★ High time, say resourceful observers, we had some well-planned guidance in the mass of programs now rampant in the ether.

Check, says Mr. Pitts Sanborn, and points to the efforts of his Radio Institute of the Audible Arts, as an earnest and systematic endeavor in that direction.

The Institute, founded by the Philco Radio and Television Corporation, has had results. After only a few months of operation, its method has attracted the interest of several thousand scattered educators, librarians, and musical leaders.

The Institute originally contacted civic leaders, community centers, music groups, school executives, club officials, welfare leaders, library supervisors, and other key persons whose activity concerns local organizations. The list of correspondents soon mounted to 25 grand. It promised to become a clearing house for program ideas and criticism; it set out to sharpen the public appetite for the quality programs by accenting the advantages and special uses of the better program material. The Institute also outlined plans for lecture and discussion meetings, and listening groups, and it issued brochures with recommended programs and pertinent advance information. It got up a list of available literature on the subject and distributed it free. (Example: How To Utilize Radio in Teaching Music.)

Kathleen Goldsmith, Mr. Pitts' director, gets many letters from dealers who actually say that sales have increased because prospects made program discoveries through the Institute's work. Parent Teachers' Associations and similar organizations have taken up the idea of "listening groups." Elderly people and shut-ins have unearthed new program possibilities to interest them.

Studio on sidewalk

★ WIMB studios, Jackson, Mich., are on the ground floor and are doing plenty about the prospects for a street spectacle. Main Studio "A" has the look of a huge show window, resplendent with ultra modern fixtures, flood lights, and new style reflector buttons. Not content, WIMB has engaged artist Allan Thomas to do a huge 38 by 7 mural for a side wall and when the finished canvass gets the lights on it, it's supposed to be the most spectacular spot in Jackson.



Panorama of WOR 50 KW Broadcast Station

ISOLANTITE PLAYS AN IMPORTANT ROLE IN THE MODERN BROADCAST TRANSMITTER

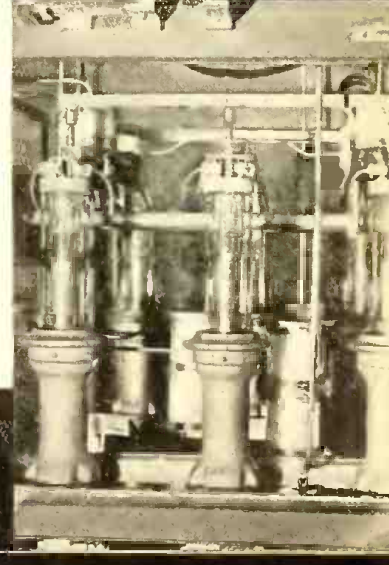
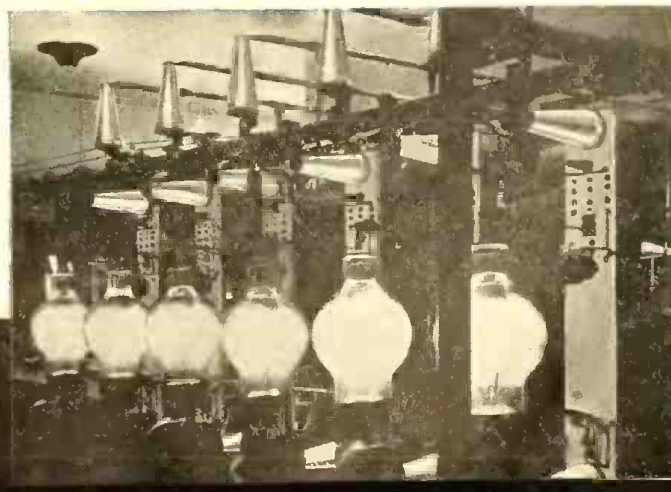
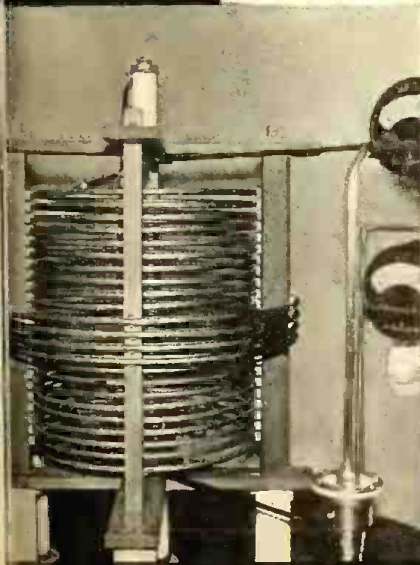
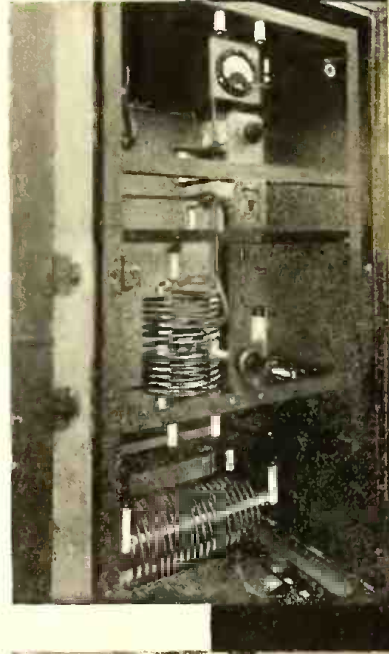
The 50 KW. Transmitter recently built by Western Electric for Station WOR employs ISOLANTITE liberally.

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

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

Represented by GRAYBAR ELECTRIC CO.

Isolantite
CERAMIC INSULATORS



WHAT DO YOU MEAN— RADIO FACSIMILE?

★ NEWSPAPERS and magazines printed by radio in homes everywhere!

Wait and see.

Just as the invention of the printing press abruptly switched the course of civilization many years ago, today "radio facsimile," a new and far more miraculous extension of the graphic arts is nearing commercialization, with the probable result of tremendous changes in present methods of the distribution of knowledge and news.

The new development will whisk printed pages into homes and remote places with the speed of light (or radio, which is the same thing) — with a stunning effect on publishing and advertising fields. In fact, a metropolitan newspaper, complete with headlines, display advertising, cartoons, all of them typographically up-to-the-minute, can now be laid down at the most distant fireside without the aid of physical transportation facilities.

Important news events will receive a new treatment. Within a few minutes after they happen, they will be recorded, in full printed display

with pictures, and will actually be delivered in reader homes. The present newspaper treatment, which requires at least six or eight hours, will be definitely outmoded.

Here are the details of the development.

In most cases, the Great American Family may sit around the radio all evening, let us say, but when midnight rolls around, the music is shut off, the family retires. But the radio set may be made to work the rest of the night, using the same tubes and waves. Switched to a button labelled "Radio Newspaper" the set will get busy with printing a news record in the regular newspaper page style. And in the morning the family will find in a basket under the receiving set, a complete newspaper, including headlines, pictures, display ads, style forecasts, weather reports, advertising offers, and whatever else is appropriate to the day. What is more revolutionary, the "radio" paper will include the news up to a few minutes before it is clicked out in the home. Compared with the metropolitan news sheet, which local families may have to travel a few miles to get, it will be a complete "scoop."

Radio research men call the new method "facsimile transmission" though it may well be dubbed "flash publishing" compared to the present method of newspaper production and delivery.

Works all 24 hours

It will be noted that this facsimile newspaper process has the special advantage of putting the broadcasters' costly and elaborate radio equipment to work during the early morning hours, when it is now standing idle. The 23 million receiving sets, too, now idle between the hours of 1 to 6 a.m. will have work to do that will be vital and important to their owners. The "cumulative" service, working during the night reproducing printed and pictorial matter will open limitless opportunities for new advertising revenues to the broadcasters, both in display service and in whatever other media this development may bring along with it. Since the radio newspaper will reach the very last receiving set throughout the country, no matter how remote, its advertising importance can scarcely be over-rated.

The new printing attachment needed in the home for the production of the radio sheet is so simple that its principle of operation is readily understood by those without a technical vocabulary.

It is generally understood that a radio loud speaker produces sound by vibrating a diaphragm, and that it is these vibrations, corresponding to the sounds of music, voice, etc., which set the loudspeaker diaphragm into movement. Thus, broadcasters send electrical vibrations corresponding to sounds made in their studios, to receivers throughout the land. If watched closely, the loudspeaker diaphragm can be seen to vibrate particularly when low notes (slow vibrations) are being reproduced.

It is apparent that if the incoming vibrations are fed to a control magnet on a moving stylus, rather than to a loudspeaker, the stylus (or moving pen) will be lifted on and off the paper as vibrations are received. It follows that if the pen or stylus can be made to move regularly across a paper in closely parallel lines, one

ND COMICS

THE NEW YORK SUN, WEDNESDAY, DECEMBER 19, 1928

TOONERVILLE FOLKS.

By Fontaine Fox.

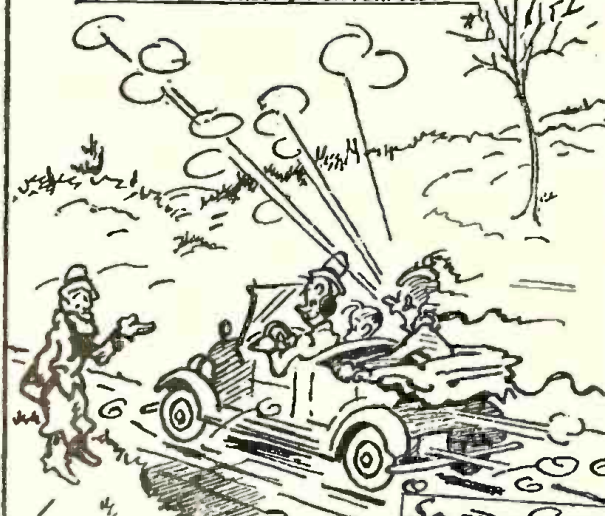
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THERE ARE THOSE WHO CLAIM THAT MRS. JOSIE WORTLE'S HUSBAND GOT HIS EARS FROST BIT ON PURPOSE.



INTERN NEW

City Me Inter

Almost every
century New
yorker has
heard some
thing about
the City of
the future.
The exhibit
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the most
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Newspaper page transmitted by radio facsimile process developed by C. J. Young, Camden, N. J.

TRANSMITTED
BY
FACSIMILE

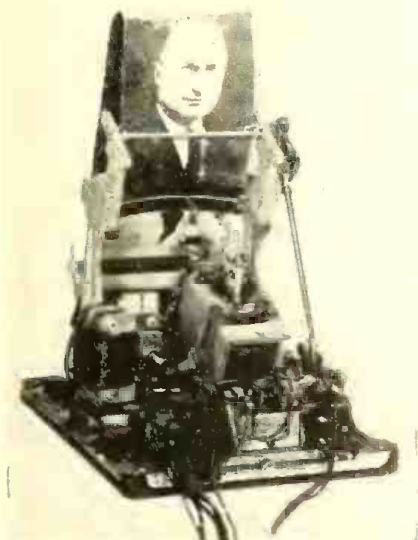
below the other, the lifting and lowering of the pen will produce a picture. Small type can be reproduced in the same way, if the stylus is delicately adjusted to lines made very close together.

The stylus or marker on the new facsimile systems may vary in type or design but in all cases it moves regularly across a paper in fine parallel lines, guided by the impulses received by the set in the same way that sound vibrations are reproduced in ordinary broadcasting.

Replacing the loudspeaker on the home facsimile receiving set that is thus needed (1) a magnet coil to vibrate the stylus instead of the loudspeaker and (2) a synchronous mechanism to feed the marker across the sheet of paper, a line at a time, following the photocell at the transmitter station. The synchronizing may be accomplished either by timing signals sent along with the impulses, or by the use of a synchronous-motor mechanism hooked to the power system.

The development of facsimile service in homes presents such boundless possibilities that some promoters of the system have been inspired to suggest that facsimile broadcasters be given a special set of shortwaves. Not confined to the early-morning period on the waves, the service would allow users to tune in on printed features of all kinds at any time of the day—a continuous “magazine of the air”—comic strips, magazine displays, roto sections, educational material, and dozens of printed features which may be developed for that use specially.

Facsimile broadcasting, it should



Facsimile receiver of W. G. H. Finch, Washington, D. C.

be pointed out, gives the networks a perfect method of getting printed radio programs into local homes, if the newspapers ever decide not to print them. The new service may give the broadcasters the final advantage over the newspapers in the matter of news presentation, also, if press-radio relations are not satisfactorily settled otherwise. Broadcasters now have it in their power to deliver a complete newspaper into radio homes, which may be the next step, with display ads to finance it. Plans for the use of facsimile coupons, to give advertisers a definite

check on audiences, have already been projected.

The inevitable commercialization of facsimile transmission seems certain to lead the current newspaper owners to a back seat. The process of news and ad distribution will take on a lightning speed which will mark present lumbering newspaper plants as relics of a by-gone day. Awakened to facsimile possibilities, its enormous advantage, its directness of operation, the public will regard *delivered* newspapers as ridiculously slow and obsolete, except for review material. Quick news will go to the air.

TELEVISION TODAY

★ **FIRST JOB** of the new joint Television Committee recently appointed by RCA and NBC, to operate under chairmanship of Dr. W. R. G. Baker, will be to coordinate present knowledge of television art.

Was found that specialists working with committee, while possessing profound knowledge of their own fields—cathode-ray tubes, transmitters, short-wave characteristics, etc.—were not sufficiently familiar with other possibilities outside own specialties. Television art is so complex that each specialist must know much about interrelation of his own field to potentialities in other divisions.

Field tests come next, and apparatus is now being built for these. That million dollars mentioned is really going to be spent, but it may be a year before field tests get fully going. “At least a year or two” before television turns into Fifth Avenue, is the cautious answer given to the question everybody asks.

INDEPENDENTS PLAN NETWORK

Plans for an independent nationwide television network have been discussed in New York and Washington during recent weeks. It is proposed to set up fifteen 20-kw. key stations at \$100,000 each; forty local 5-kw. stations at \$25,000 each; and 250 beam relay stations having a 25-mile range for interconnecting the network stations. Initial cost is estimated at four millions dollars, with operating cost of one million dollars yearly.

In Philadelphia, Philo T. Farnsworth has been demonstrating his television system to audiences in his Germantown laboratory. The transmission consisted of Mickey Mouse,

a musical comedy, and an orchestra's performance, and was received on a screen 5½ x 7 inches. While remarkable clarity for the images was claimed, at times they were observed to oscillate. The Farnsworth transmitter employs the oscillight and magnetic focussing in the studio pick-up.

Reinforcing the television development program is the announcement of FCC authorization for the coaxial television cable designed by the Bell Laboratories, to be laid between Philadelphia and New York. Such million-cycle cable, costing about \$6,000 per mile, offers a possibility of piping television programs over the country in the manner of today's chain broadcasts. The initial 90-mile installation will represent an investment of a million dollars, with terminal equipment for 200 telephone channels all carried over the single conductor.

ENGLISH PROGRESS

In England television has been presented to the public, but low-definition, 30-line pictures have been the rule. The transmissions, twice a week, last from half to three-quarters of an hour. Live talent is used and the pictures do have an entertainment value for short periods—on the order of half an hour. It is estimated that less than one hundred families in England have television receivers. The British Post Office hopes to have high-definition transmission late this winter or early in the spring. Ultra-high frequencies will be employed in presenting daily programs of about three hours' duration. The minimum price of television receivers available in Great Britain is estimated to be \$250.

WHAT I WOULD STOCK THIS FALL

Merchandiser talks about radio dealer's buying problems

By H. L. M. CAPRON*

★ MANY persons who have spent the best years of their lives in the radio business, and who certainly should know it, hold the opinion that the year 1935 will rival good old 1929 in point of sales. In support of this belief the facts and trends of the industry are freely quoted. They certainly point to a great year.

Nationally, about 63 per cent of the homes now have radio, ranging from a low of 24 per cent in Mississippi and 28 per cent in Arkansas, to a high of 96 per cent in the District of Columbia, 90 per cent in New York, 87 per cent in New Jersey, 82 per cent in Illinois and 80 per cent in Maryland.

In spite of this apparent market saturation, these are the facts which point to a banner year's business:

1. About 15,000,000 of the radios in use are from 3 to 7 years old, and may properly be classed as obsolete.
2. Excellent compact radios have found a very definite demand as personal and "second" radio.
3. The trend in unit sales has been sharply upward since 1932.
4. The trend in unit prices has been upward since 1933.

Flood tide

The flood tide of the replacement market has started to flow strongly, and this year the following influences will speed it up:

1. All-wave radio that will really give good foreign reception.
2. All metal tubes, around which a great selling story will be woven.
3. Higher fidelity, a much closer approach to really lifelike tone, which every radio owner wants.
4. The greatest collective manufacturer's advertising campaigns since 1929, which cannot but create a greater urge to buy these really better radios.

Each dealer will probably get his full share of this added business if he goes after it. And he may be reasonably sure that if he is not getting it, that his competitor is.

Planning your purchases and stock,

*For the past 14 years manager of one of the largest retail radio businesses in the world. Charts and figures compiled by Mr. Capron from original sources.

and your sales promotion, is going to be mighty important this year, too.

Too heavy stocks are certainly to be avoided, though one major manufacturer already reports sales in excess of supply.

Based upon the records of many stores in all parts of the country over a period of ten years, you may reasonably expect to do 8% of your total year's business in September, 11% in October, 14% in November, and 18½% in December. If you take your actual August business as 5%, the above ratios will serve as an excellent guide to your buying. Total business should range between 22% and 25% better than 1934.

Money in the pocket

Do not buy discounts, for long discounts are no more indication of profits than long odds are an indication of large winnings at the track. You have got to SELL the radio AND GET THE MONEY before you can count a profit earned.

Because of uncertainty in the tube situation, protect your position by having in stock sets using all three types of tubes—glass, metal, and the glass-metal combination.

Give full importance to the cooperative selling helps that the manufacturer will give you, and the long time reputation, too.

Based upon an annual business of \$10,000, a model stock would be comprised of:—

COMPACTS—33% of total units, and 12% of total value.

TABLE MODELS—40% of total units and 32% of total value.

CONSOLES—27% of total units and 56% of total value.

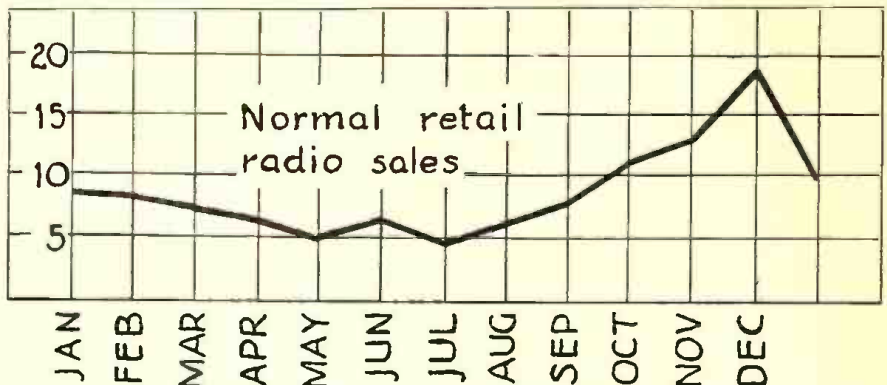
Within these broad classifications the ratios and price ranges constituting the best sellers are:

COMPACTS				
2	leaders	@	\$10 to \$15	\$30.00
2	"	"	20	40.00
4	"	"	25	100.00
1	"	"	30	30.00
1	"	"	35	35.00
				\$235.00
TABLE MODELS				
2	"	@	30	60.00
2	"	"	40	80.00
4	"	"	50	200.00
2	"	"	60	120.00
1	"	"	70	70.00
1	"	"	90	90.00
				\$620.00
CONSOLES				
1	"	@	50	50.00
1	"	"	70	70.00
3	"	"	110	330.00
1	"	"	125	125.00
1	"	"	175	175.00
1	"	"	275	275.00
				\$1,025.00

This model stock for a ten thousand dollar business has a retail value of \$1,880, and an average unit value of \$62.66. It is not a complete assortment, but concentrates in fast-moving price ranges, and is a perfectly safe commitment for October.

If your annual volume is in excess of \$10,000, this stock can be built up to one appropriate to your business by adding 50% in each price range and classification, and \$500 to broaden assortment and price range for each ten thousand dollars by which your business exceeds the base.

Model stocks should be maintained on the basis of actual sales plus the expected normal sales of the next month. The chart of monthly percentage of annual sales will be a guide in this direction. It is desirable to keep adequate stocks for current demand so that your customers may receive immediate delivery, and yet kept small enough so that ware-



Relative business the radio dealer should expect to do, month by month

housing, investment, interest, insurance, and handling may be within reason, and new developments, or a sudden shift in consumer preference may not require liquidation at a loss.

1. ANNUAL NATIONAL RADIO SALES

This chart tells a mighty interesting and important story.

In 1929 radio sales reached a peak of \$600,000,000.00 and fell to about \$130,000,000.00 in 1932. That is a loss of 78%. It is staggering. But look at the sales curve turn sharply upward in 1933 and 1934—while most business is making but small gains. That indicates the degree with which the replacement demand—and the “second” set need—has set in.

In 1934 we actually sold more units than 1928—and only 10% less than 1929. With metal tubes—all-wave—and higher fidelity we should sell more units in 1935 than in 1929.

All of the trends indicated on this chart breed encouragement—even enthusiastic optimism.

With a total of some 25,000,000 radio sets in use—and a normal replacement cycle of 5 years—it is indicated that normal replacement business should be 4,400,000 radio—plus 500,000 new families yearly—and we actually look forward to a normal sale of more units than our previous peak. What a business to be in.

If our normal business settles down to some 4,900,000 radio per year—it becomes quite apparent that our dollar volume—and that is what we “pay off” on—will be vitally affected by the “average unit price.” Every dealer can lend his efforts in his own interests as well as the industry’s—by advertising—displaying and selling—the highest quality, highest priced radio models.

2. BEST SELLING PRICE RANGES

This chart, when compared with the Sales Chart, plainly shows how pro-

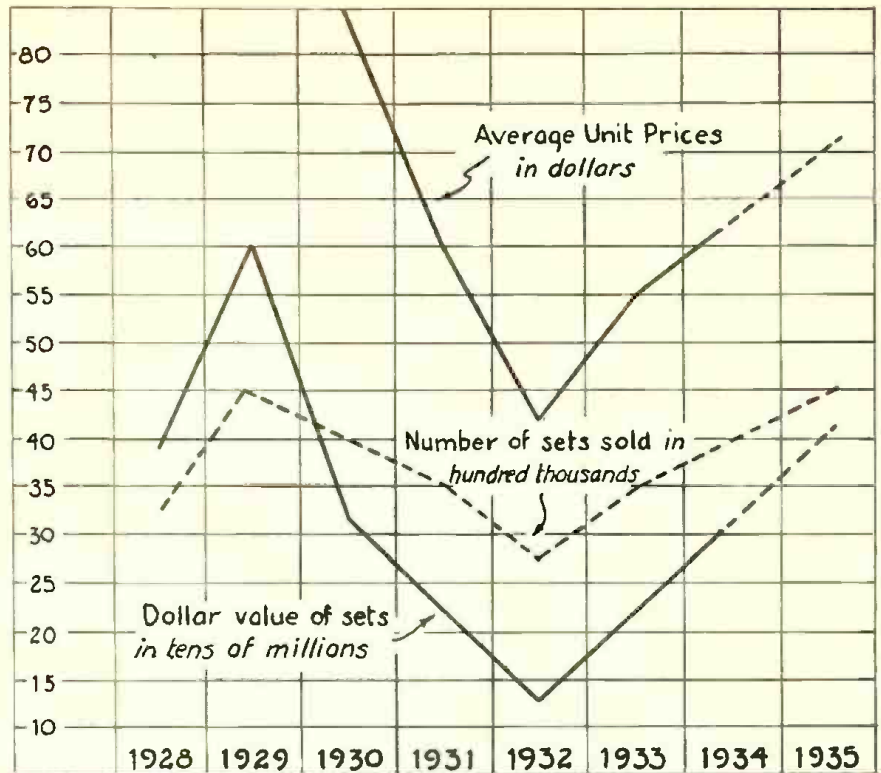


Chart No. 1—How total U. S. radio sales have run, year by year, compiled from Government reports

found an effect table models and compacts have had on our industry.

They tore down the average unit price and put everyone on his mettle to make a profit—and they weeded out the weak. But they revitalized the industry—perhaps revolutionized it. They broadened the market base greatly, and filled the need of the “personal radio.” Table models even overlap the console price demand, too—because it is a fact—that the table model, dollar for dollar, represents a much better radio. Doesn’t that chart indicate to you that the public is buying quality—and wants the best it can afford? It does to me—and that is very important in your buying and selling to keep in mind.

There is one sour note struck by this chart, too.

Notice that the 1935 trend in compact price range has turned down. Many manufacturers—in a mad search for sales—have given chain, department and some big radio stores compact radio sets built with low price as the only consideration. When these are consistently advertised—and superlatives are used to describe them—it is natural for the public to believe that a ten-dollar bill will buy a good little radio. That’s the power of suggestion.

\$10 jalopies

A very large number of stores are now selling these sets.

The writer has tested dozens and dozens of them—and has yet to see the first one good enough to put his name on.

Advertising and selling inferior radio at any price is a very short-sighted policy—if you want to stay in business. The customer certainly cannot be satisfied with a poor radio—and it is a fact purchasers soon forget what they paid—but long remember what they got.

Think twice before you buy such radio—and send the customer away having spent half what she should—with a radio that isn’t worth half what she did pay.

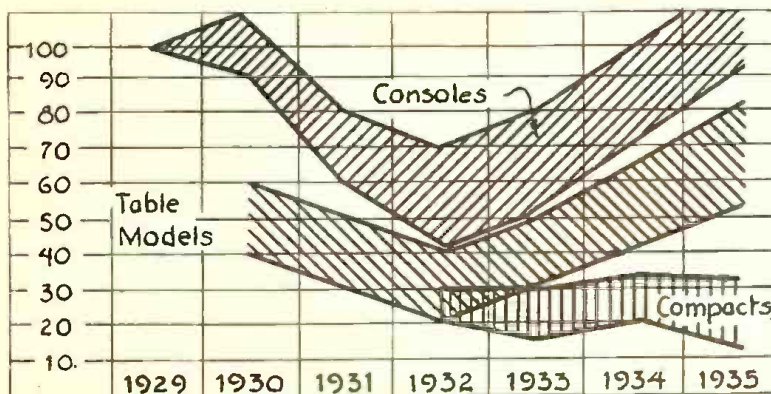


Chart No. 2—Price ranges of various types of sets

Quality

ENGINEERING

Ken-Rad

Radio Tubes

DEPENDABLE LONG LIFE

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

*Glass or Metal
Radio Tubes*



THE KEN-RAD CORPORATION
Incorporated

Division of
The Ken-Rad Tube and Lamp Corp.
OWENBORO, KY.

Also Mfrs. of
Ken-Rad Incandescent Electric Lamps

THE FARM MARKET FOR RADIO

★ Rural America's great radio market has long remained undeveloped, because not until now, Autumn, 1935, has there appeared the combination of factors which gives radio dealers special opportunities in the field.

Upturns in farm product prices, the more substantial after-effects of the first New Deal farm legislation, the development of completely satisfactory sets for unwired homes, and the appearance of reasonably priced sets not requiring the use of storage batteries, appear this Fall in a combination altogether new in its advantages to dealers.

Some two dozen of the leading radio manufacturers have by this time perfected improved sets to be offered to rural listeners at new low prices with all the features of the finest all-electrical sets built. The new batteries designed to accompany the improved sets are cheaper and smaller and have features of simplicity, constant voltage, high capacity, and long life which are certain to give dealers the final selling point where it is needed.

As the news reels have pointed out, the drought and dust storms are all past, and the agricultural areas have settled down to reaping good harvests for which better prices are paid. Rural disasters have been replaced by swelled incomes. The latest commerce report reveals that the national income from farm products in June was \$438,000,000, and that farmers of the nation received additional cash benefits from AAA payments boosting their total income to \$487,000,000. Last year at the same time the income from products amounted to \$422,000,000, and the cash benefits amounted to only \$29,000,000. Thus the farmers had \$36,000,000 more to spend for that single month than they had last year, and this is representative.

Untouched

Pointed researches among the ten million American families living in unwired homes show the untouched nature of the districts. Local ownership of telephones and automobiles has reached a much higher per cent than that of radios, even in proportion to the positions they hold in the levels of country life, and the ease with which they can be financed.

By this time, taxes for the farmers have been reduced at least one-third from their peak. This, together with

the fact that much of the first cash benefits paid through AAA curtailment was used to pay debts rather than to buy home equipment, again marks the farmer as a good radio prospect this Fall.

No longer do farmers have to be wealthy to be counted as promising radio sales prospects. When radio manufacturers first made a play for their business, after the all-electrical sets had swept the country, the cheapest air cell battery set they could buy was priced at about \$150 complete. Now, the field has been developed until sets may be bought for as little as \$32.50. With radio prices down, and farm budgets sound again, dealers should find a fertile field here.

Slow to see

E. E. Horine, engineer for the National Carbon Company, battery manufacturers, has pointed out that "manufacturers were slow to see the possibilities in the rural field, and even yet do not have in many cases a system of distribution which is flexible enough to reach all rural districts properly, due to exclusive territory plans."

"But the new scale of prices and the improvement of the sets show an awakening," was Mr. Horine's conclusion. His company became interested in the country's unwired homes about five years ago, and since then has spent thousands of dollars developing an improved battery for them.

Proof of the serious attention that other prominent manufacturers are now giving to these rural districts is the appearance of the new windmill generator. This device operates on the same principle as an automobile generator except that it is powered by a small and inexpensive propeller in the wind. Several manufacturers are now placing these units on the market and predict for them a great opportunity for creating radio sales in farm areas.

With broadcast programs steadily growing finer and more interesting, radio manufacturers have looked about to see where most of the families without home electricity service are living. It has been found that they are not grouped in the states which are regarded as typically agricultural, but are found in great numbers in states which are essentially industrial.

THE MOST IMPORTANT NEWS ON FARM RADIO IN 15 YEARS!

1 THE FAMOUS EVEREADY AIR CELL "1000 HOUR" "A" BATTERY



FORMERLY
\$850

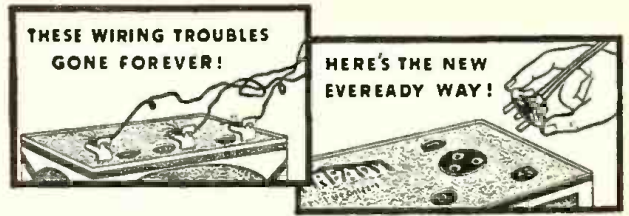
NOW
ONLY
\$595

Think of it! Only \$5.95 for the famous Eveready Air Cell "A" Battery! It never needs recharging throughout its life! Even if you use your radio set three hours every day, this battery will give you a full year's service. It brings you the finest, economical, trouble-free reception! Eveready engineers made this low price possible by concentrating more power-making materials into less space... giving you, also, a more convenient-sized battery.

Saves 1/2 to 3/4 your yearly "A" power cost!

Your initial expense is your *only* expense with an Eveready Air Cell. Because it never needs recharging, the Eveready Air Cell costs only about half as much per year as the average yearly cost of charging other kinds of "A" batteries, and only about 1/3 as much per year as dry "A" packs. And, in addition to this saving gone forever is the nuisance of recharging Battery or frequently

2 AND NOW, NO MATTER WHAT KIND OF BATTERY SET YOU OWN, YOU JUST **PLUG-IN** EVEREADY "B" AND "C" BATTERIES!



Each new Eveready "B" Battery and Eveready "C" Battery is equipped with a 3-hole socket and a handy removable plug. Wires from the set are connected to the plug and the plug stuck in the battery—as you plug in a radio tube—and the *correct* battery connections are made. When you need a new battery, you just pull the plug out of the old one and stick it in the new one. No wiring troubles! These new plug-in Evereadys can be put right on the set you now have, without any change in the set.

The socket holes are arranged so that they will go in only the *right* way—you *can't* make a wrong connection!

Start NOW—with your present set—to enjoy the trouble-free, economical radio entertainment these engineering feats make possible

Your dealer now has these great new Eveready Batteries. Stop in soon and let him point out the big advantages these Evereadys have over all other farm radio "B" and "C"

This is a reproduction of the opening full-page advertisement in a campaign announcing the new Eveready Radio Batteries to your farm customers! This campaign will open in 21 farm publications in October. Get ready for the customers it will send in. Call your jobber today and stock up on Evereadys!

RCA pioneering wins lead

Some people think pioneering never pays. Nothing could be further from the truth. The story of industrial progress is the story of those who have had the courage to pioneer. The names of the pioneers in America's steel, oil, automotive, railroad and other fields are written not only in the pages of history but on great industrial empires. In radio the pioneer is RCA. RCA traces its descent in an unbroken line from the great practical pioneer in radio, Marconi, on down through the other great inventors. It is today bigger and greater than ever before, the creator of the radio of yesterday, of today, of tomorrow! Grow with RCA and your profits grow with radio!

Pioneering pays RCA...

Year after year RCA has pioneered in radio, being the first to present discoveries, inventions and developments that have made radio what it is today. Vast sums have been made by those who followed RCA leadership—including jobbers and dealers. Still greater rewards await those who handle RCA products now and in the

future. And that's your chance. Today the public is becoming certain of the fact that if you must come to the original source. Let's look at the result of the public acceptance of the RCA products. These are the actual figures:

AVERAGE
RCA VICTOR
CONSOLE SALE

\$102



\$67

Average console sale
last year
(McGraw-Hill figure)

Already a great leader—RCA Victor C13-2, giving you the "Magic Eye", the "Magic Brain", and RCA Metal Tubes in a handsome console for only \$189.50 list! A terrific value with its three sure-fire features, its 12-inch speaker, its 5 bands tuning to 140-410 and 540-60,000 kilocycles! All prices f. o. b. Camden, N. J., subject to change without notice.



Leadership in the fine set field

RCA pioneering pays you

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ey want the best they
ource of radio—RCA.
his swiftly increasing
uth about radio. Here

Average console sale last year \$67
(McGraw-Hill figure)

AVERAGE RCA VICTOR CONSOLE SALE \$102

Look at that increase of \$35! That's 52%! That's the *extra* money that RCA Victor dealers took in against the general average of the field. Nothing produced this result but pioneering, plus aggres-

sive sales and advertising methods to make the public conscious of the facts.

Thus RCA has grown to leadership in the fine set field, dispelling forever the thought that there is money in cheapness. This year, there is no doubt we shall again far outstrip the industry, get more money for a quality product, make more money for our dealers. Pioneering pays. It pays us, it pays you, it pays the public. If you want to make real money in radio, feature RCA Victor!

WHAT DEALERS SAY

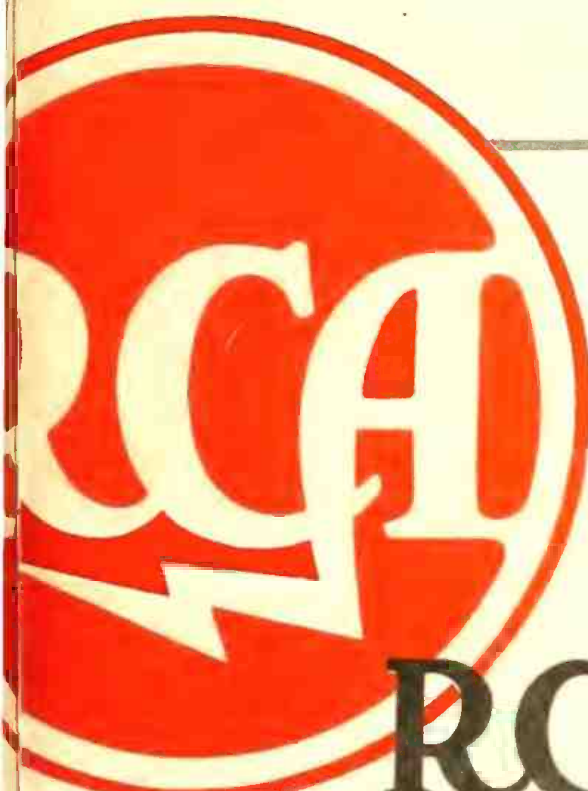
We were pleased to receive, in the form of advertising literature, statistics showing that last year RCA Victor consoles eclipsed the average console unit sale by 52%. We were greatly surprised at this figure due to the fact that our average RCA Victor console price averages far above the \$102.00 which you mentioned. We have every reason to believe on these 1936 models, that our average console sale will be much greater than last year.—Lauter's, Newark, N. J.

For the past twelve months our Radio Department has enjoyed the most profitable business than for any like period since 1929. We attribute this to the fact that the public is generally demanding radio merchandise of quality. The RCA Victor "Magic Brain" line introduced last Fall has played an important part in building higher unit sales in our department. The 1935 RCA Victor line will carry our sales to a new high this season.—Scruggs, Vandervoort & Barney, St. Louis, Mo.



The "MAGIC EYE"

The "Magic Eye" joins the "Magic Brain" and with RCA Metal Tubes gives the trade its great triple partnership of sales features for 1936, proving once more that IT PAYS TO PIONEER.



SEE THIS LIST OF RCA PIONEER ACHIEVEMENTS, EVERY ONE OF WHICH WORKS TO YOUR BENEFIT:

- First practical superheterodyne for home use.
- First power-operated dynamic-type loud speaker for the home.
- First tubes and radio powered from the light socket.
- First cathode-ray tuning indicator, the "Magic Eye".
- First unit known as the "Magic Brain".
- Network broadcasting.
- Commercial inter-continental short-wave communication.
- Marine radio.
- World-wide radio communication.
- And many others.

RCA VICTOR

RCA Manufacturing Co., Inc. • Camden, New Jersey

A SUBSIDIARY OF RADIO CORPORATION OF AMERICA . . . THE WORLD'S LARGEST RADIO ORGANIZATION. OTHER UNITS: NATIONAL BROADCASTING CO., INC. . . R. C. A. COMMUNICATIONS, INC. . . RCA RADIOTRON . . . RADIOMARINE CORPORATION OF AMERICA



RCA pioneering wins leadership in the fine set field

Pioneering pays RCA... RCA pioneering pays you

Some people think pioneering never pays. Nothing could be further from the truth. The story of industrial progress is the story of those who have had the courage to pioneer. The names of the pioneers in America's steel, oil, automotive, railroad and other fields are written not only in the pages of history but on great industrial empires. In radio the pioneer is RCA. RCA traces its descent in an unbroken line from the great practical pioneer in radio, Marconi, on down through the other great inventors. It is today bigger and greater than ever before, the creator of the radio of yesterday, of today, of tomorrow! Grow with RCA and your profits grow with radio!

Year after year RCA has pioneered in radio, being the first to present discoveries, inventions and developments that have made radio what it is today. Vast sums have been made by those who followed RCA leadership—including jobbers and dealers. Still greater rewards await those who handle RCA products now and in the

future. And that's your chance for more profits! Today the public is becoming more and more certain of the fact that if they want the best they must come to the original source of radio—RCA. Let's look at the result of this swiftly increasing public acceptance of the truth about radio. Here are the actual figures:

Average console sale last year \$67
(McGraw-Hill figure)
AVERAGE RCA VICTOR CONSOLE SALE \$102
Look at that increase of \$35! That's 52%! That's the *extra* money that RCA Victor dealers took in against the general average of the field. Nothing produced this result but pioneering, plus aggres-

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Thus RCA has grown to leadership in the fine set field, dispelling forever the thought that there is money in cheapness. This year, there is no doubt we shall again far outstrip the industry, get more money for a quality product, make more money for our dealers. Pioneering pays. It pays us, it pays you, it pays the public. If you want to make real money in radio, feature RCA Victor!



Already a great leader—RCA Victor C13-2, giving you the "Magic Eye", the "Magic Brain", and RCA Metal Tubes in a handsome console for only \$189.50 list! A terrific value with its three sure-fire features, its 12-inch speaker, its 5 bands tuning to 140-410 and 540-60,000 kilocycles! All prices f. o. b. Camden, N. J., subject to change without notice.

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RCA VICTOR

RCA Manufacturing Co., Inc. • Camden, New Jersey

A SUBSIDIARY OF RADIO CORPORATION OF AMERICA... THE WORLD'S LARGEST RADIO ORGANIZATION. OTHER UNITS: NATIONAL BROADCASTING CO., INC. ... R. C. A. COMMUNICATIONS, INC. ... RCA RADIOTRON ... RADIOMARINE CORPORATION OF AMERICA

The war against radio

(Continued from page 11)

point out, however, is the rate of mortality among these advertisers—the number who have failed and are no longer in a position to advertise in anything, anywhere; nor did they point out how many newspaper advertisers have similarly dropped out of newspapers in the same period of time. Those figures were suppressed, which can only lead to the conclusion that the figures are even worse if taken for the newspapers.

Included in their figures also were scores of small and unimportant advertisers who are no longer able to afford advertising of any nature; plus the large number of political and religious broadcasts, paid for in 1928, but now going on as sustaining programs. A.N.P.A. also conveniently "forgot" to mention that practically all available network time is now taken up by advertisers who *did* find radio broadcasting so successful as to warrant greatly increased time and expenditures.

As an indication of the erroneous presentation apparent throughout this supposedly authoritative bit of propaganda, A.N.P.A. picked a basic figure for the number of homes in the United States that is easily 2,000,000 *wrong*. Number of homes they estimate as 32,500,000, while everybody else including the Department of Commerce can find only 30,800,000.

Costs money

Groping for the few figures that might somehow be twisted to its advantage, the folder announces blandly that it had studied 79 programs (out of the thousands on the air) and found that the average cost to the advertiser to reach a million listeners is \$7,302.

Suspicious silence on the equivalent cost of newspaper advertising leaves it to us to point out (from the newspapers' own trade journal, *Editor and Publisher*) that the newspaper cost of reaching a million circulation ranges from \$12,000 to \$23,000; and what's more, the *true* figure for radio network advertising, according to *both* CBS and NBC actual figures, is between \$1,660 and \$2,410 per million listeners—just about 10 per cent of newspaper costs.

More hokey visible in the newspapers' campaign is the statement that "20 per cent of sets outstanding are unable to properly receive a radio message." How about it, service men and dealers? Is that true? Repeated accurate and authentic investigations

by leading radio groups reveal this figure of sets out of order as no more than 4 per cent at any time.

Vague and mysterious about the source of the figures, the pamphlet brightly exclaims that an average of only 36.4 per cent of the homes with radio sets have their sets turned on at any given time during the evening. So? Well, again, unprejudiced and impartial research organizations—carrying on their work—not in one town for a few weeks, but all over the United States constantly for a period of *years*—find this figure for "sets turned on" to average no less than 65%.

The "low-down"

Another point newspapers fail to state is the amazingly large number of newspaper readers who do *not* read the ads; and the fact that 90% of the newspapers of America are located in cities and towns, while radio serves every market—rural as well as urban.

Now that we have absorbed the propaganda, let's take a look at the **FACTS**—

During the same period of years "analyzed" by the A.N.P.A. (1928-1934), **RADIO NETWORK ADVERTISING INCREASED 416% WHILE NATIONAL NEWSPAPER ADVERTISING DECLINED 29%.**

In 1928, national newspaper advertising totalled \$230,000,000. By 1934, this figure had *receded* to \$163,000,000.

In 1928, radio network advertising totalled \$10,250,000. By 1934, this figure had *mounted* to \$42,659,000.

So far as total dollar volume is concerned, national newspaper advertising is still far ahead of radio network advertising, and will continue to be so; there is a limit to the time on the air available for advertising revenue.

But so far as young, vigorous, healthy growth is concerned, we'll let you draw your own conclusions.

And here are *more facts* to clarify the distorted picture of radio which the newspapers would like to have the public believe:

One of the largest national networks reports that 80% of all its advertisers on the air in 1934 were renewals from previous years; 97% of its gross revenue in 1934 came from advertisers who were on the air in previous years.

There we have a record of loyalty to an advertising medium, and a satisfaction with the results obtained that all the newspapers in the United

States of America put together could never hope to equal.

Yet "radio is failing as an advertising medium," they say to advertisers who have made millions of dollars through radio advertising. "Radio should not broadcast news," they also declare—with as little logic as radio could say to the newspapers that they should not publish cartoons, comic supplements or other strictly entertainment features.

Radio needs to present a united front against this attack by the newspaper interests who have disclosed themselves definitely as enemies.

Radio programs sponsored by national advertisers are the ones to which the public listens with the utmost pleasure and consistency. They are the ones to which receivers are turned week after week. If the newspapers are successful in their attempts to drag these programs from the air and devote those expenditures to newspaper advertising, broadcasters might as well rip down their stations and the rest of the radio industry shut up shop and factory.

So, if the newspapers want to blast radio right off the map as a medium of advertising and entertainment, okay boys, go to it. If there's going to be a battle, let's make it a good one.

If such a battle will speed the day when radio will broadcast full news services; if it will speed the day when the radio trade will have "radio facsimile" sets to make and sell, bringing new sales and profits to manufacturers and dealers, and new avenues of public service to broadcasters, let's have it. Yes, sir, if a battle will hasten all those events, boy, we're for it!

You're in it, too

But remember this isn't a battle involving just the broadcasters alone. Every man and woman who derives his or her income from radio is in this scrap, too. Receiver manufacturers (who last year spent \$5,500,000 advertising in newspapers); radio dealers (whose home-town advertising bills totalled another \$5,300,000); distributors, service men—are all part of radio's storm battalions. In public opinion, influence on legislation, business and personal expenditures, they exert a mighty wallop. And their hats are in the ring.

From any such struggle—if the newspapers insist on heading into it—there can be only one outcome. Public opinion, radio-industry influence and power, and sweeping technical advances, all point to a clear-cut victory for radio!

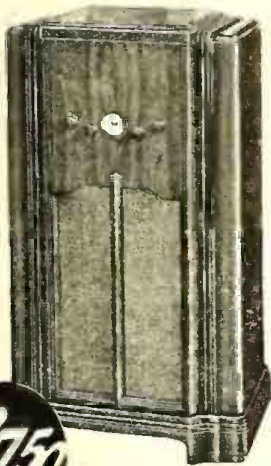
THE **NEW** in RADIO • AND **ALL** THAT IS **NEW!**

The New 1936 ~~CROSLEY~~ Line



\$19.99

THE
CROSLEY FIVER
Table and Console



\$37.50

CHASSIS—Five-tube superheterodyne. Two bands—Standard and police, amateur, aviation broadcasts. Illuminated full-vision airplane type dial—5 to 1 ratio drive. Tone control. New 6B5 Triple-Twin output tube. Full floating moving coil electro-dynamic speaker.

CABINETS—Half an eye can see their beauty and charm—equal in every way to their superb tone. Between these and the Constitution models are a full range of receivers for every purse and type of use.

From the Fiver, giving standard, police, aviation, amateur reception for \$19.99 to the **CONSTITUTION** five-band metal tube all-wave that gets virtually all that's on the air . . . the new Crosley 1936 Line leads the field. In every price range the Crosley gives more for the money in beauty, performance, selectivity . . . in everything that makes for radio satisfaction.

FEATURES! Innovations! Master-strokes of engineering. In this new 1936 radio line Crosley has tapped all the resources of experience dating back to the pioneering stage; all the creativeness and inventiveness of today. Never has a line so stepped out to capture the imagination of a country. Never a line with so many "want-able" features. Never a line with equal value for the radio dollar.

The beauty of the line is alone an eye-stopper anywhere. But the more you explain the in-built quality, the new features, the reason for the extraordinary tone, selectivity, truthfulness of reproduction . . . the more your customers will select—from this line—the set that best fits their means and their wants.

Everywhere the groundwork of **SALES** is being laid with this line. Get in on this from the start by getting in touch with your Crosley distributor.

THE CROSLEY RADIO CORPORATION

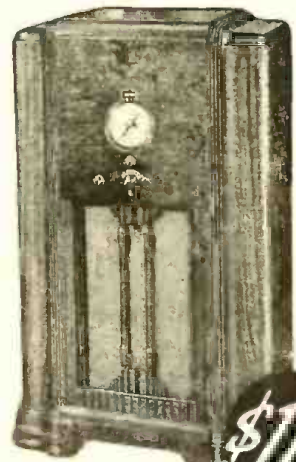
CINCINNATI POWEL CROSLEY, Jr., President
Home of "the Nation's Station"—WLW—500,000 watts
—most powerful in the world—70 on your dial.

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



\$19.99

THE
CROSLEY CONSTITUTION
Table and Console



\$37.50

CHASSIS

This all-wave 10-tube superheterodyne using all-metal tubes, commands the air. Five bands, receiving American, foreign, weather, amateur, police, aviation broadcasts. Shadow tuning. Automatic volume control. Full-vision airplane type dial. Tone control. Dual ratio tuning control. Full floating moving coil electro-dynamic speaker.

AMONG THE FEATURES...

Three-gang tuning condenser with many notable improvements.
New velvet action two-speed dial—planetary ball-bearing drive.
New high-wattage, metal-to-metal tone control—far superior to conventional tone control.

New triple-tuned I. F. transformer—far better selectivity, higher fidelity.
New H-Q-4-layer bank wound Litzendraht Broadcast coils—providing better signal-to-noise ratio.

All-metal tube and all-glass tube models—a set for every need.
NEW SHADOW TUNING. NEW 5-COLOR AIRPLANE DIAL
NEW COLOR-BAND DESIGNATION.

You're there WITH ~~CROSLEY~~

SELLING RECORDS

★ FOR the past few years the record industry has entered the Fall season with optimism, confidence and faith. Sometimes the optimism has materialized into sales, while in other years the volume has been disappointing.

This year, however, there is more than merely a feeling of optimism and faith in prognosticating record sales for the remainder of the year. For, strange as it may seem, the record industry this year went contrary to all precedents, and sales during the summer compared very favorably with the winter and fall sales volume of only a few years ago.

Record sales are increasing, not like a sky-rocket, maybe, but going up just the same. This is true of all types of music. And for the first time in quite a while, there is a definite upward trend in the demand for the better class of music.

Victor Library of Recorded Music

★ OUTSTANDING as an artistic achievement, as well as a merchandising feat in records, is RCA's new Victor Library of Recorded Music, undoubtedly the most luxurious collection of recorded music ever to come from the work of great artists. The taste which governed the selection of its 461 records is commanding and profound; the set makes a real bid for the title of the musical anthology of all time.

The new Library will be marketed this Fall—94 richly-bound volumes presented in a specially designed cabinet, along with a cunning index system which instantly locates records. The makers of the Library thus emerge from what obviously has been a long, painstaking and intelligent search for genuine musical excellence. The experts behind such a presentation have recognized the nameless advantage of choosing musical units in their purest and grandest forms.

The judges who selected the records for the Library include most of the critical genius of the country. The list includes Damrosch, Farrar, Heifetz, Rachmaninoff, Kreisler, Decms Taylor, Whiteman, and others. Their mission was to pick the music which meant the most to a knowing listener

—their final list is more than notable—it is extraordinary.

The key symphonies of musical history, concertos, and the finest solo instrumental works form the nucleus of the collection, and yet there is a discriminating attitude toward jazz, folk-songs, and "heart-songs" both modern and classic. The acknowledged operatic high-spots are included and all instruments are represented. In the attempt to give the set a basic educational quality, the judges were still able to select only the accepted masterpieces. The feat will be remembered as one of sheer discernment.

Actually, the Library includes 13 symphony orchestras, 37 famous vocalists, 9 leading concert pianists, 2 great opera companies, 4 violinists, 2 organists, 13 of the best dance orchestras, and many other epic selections. Deems Taylor has said that "anyone owning this collection has at his command a source of endless pleasure and diversion, to say nothing of a complete musical education."

The amazing range of the Library runs from solemn recordings of "Old

(Please turn to page 34)

Best sellers as we
go to press

BRUNSWICK

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

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

The Piccolino—Fox trot. (From "Top Hat"). Vocal by Fred Astaire with Leo Reisman and his Orchestra. **Toddlin' Along with You**—Fox trot. (From "Broadway Joe"). Leo Reisman and his Orchestra with vocal by Frank Luther—7488.

DECCA

Rhythm Is Our Business—Fox trot. **Star Dust**—Fox trot. Jimmie Lunceford and his Orchestra—369.

Sugar Blues—Fox trot. **Tear It Down**—Fox trot. Clyde McCoy and his Orchestra—381.

East of the Sun—Fox trot. **And Then Some**—Fox trot. Bob Crosby and his Orchestra—502.

VICTOR

I'm Gonna Sit Right Down and Write Myself a Letter—Fox trot. **You've Been Taking Lessons in Love**—Fox trot. "Fats" Waller and his Rhythm—25044.

Let's Swing It—Fox trot. (From Earl Carroll's "Sketch Book of 1935"). **Chinatown, My Chinatown**—Fox trot. Ray Noble and his Orchestra—25070.

12th Street Rag—Fox trot. **Sweet Sue**—Fox trot. "Fats" Waller and his Rhythm—25087.



RCA's sensational new Victor Recording Library, containing a distinguished collection of nearly 500 musical masterpieces

51% Sales Increase in Victor Red Seal Records

Victor Presents RACHMANINOFF
in his own
"Rhapsody for Piano and Orchestra"
on a Theme of Paganini

Played by the
composer, Leopold Stokowski and
the Philadelphia Orchestra

THIS is an historical document. For it
is less than four months since the
world's premiere of Rachmaninoff's latest
work.

Yet here it is, ready for you to hear in
your own home, in a superb new Victor
Higher Fidelity Recording, exactly as
played at the original performance—by
Sergei Rachmaninoff himself as the solo-
ist, with Leopold Stokowski and the Phila-
delphia Orchestra.

In its twenty-four exquisitely melodic
variations you will find gayety and melan-
choly, stardliness and charm, almost every
mood and modulation of which the piano
keyboard is capable under one of the
world's most famous pair of hands.

Hear this delightful masterpiece at your
local Victor dealer's. Three records, six
sides, in album, with explanatory booklet

Ask to hear also:
Mozart—Concerto in D Minor (Piano)
Edwin Fischer and the London Symphony Orchestra
Bach—Anniversary Album
Stokowski and the Philadelphia Symphony Orchestra
Strauss—Tod and Venetiana
Stokowski and the Philadelphia Symphony Orchestra

VICTOR RECORDS
RCA Victor Division
Manufacturing Co., Inc.
Camden, New Jersey

Even STOKOWSKI marveled!

NO one more intimately knows the process
and the progress of Victor Recording
than Leopold Stokowski. No one is more exact-
ing in the making of a record; no one more
proud of the finished disc. Yet even he, when
he heard the new Philadelphia Orchestra
recording of

TSCHAIKOWSKY'S FIFTH
delighted and amazed. For like a crystal
that condenses color and sharpens detail
when it reflects, this superb recording
brings back to the conductor something ap-
proaching his own ideal performance, a quality
of balance, warmth and clarity impossible
in an actual performance. If such a reason-
ably exaggerated, we invite you to
hear this incredibly beautiful recording, avail-
able at your dealer's.

PARSIFAL, ACT III
A Symphonic Synthesis

Great yet humanly passionate poem
Stokowski has made of certain music
of Wagner's Parsifal, it is dis-
tinguished with restraint. Parsifal may be,
as he said, a work of "enquiescent
incomprehensible half hours", yet in
words there is nothing but the
genius of Wagner's genius, a sym-
phonic element that makes Parsifal a
"social lovelessness" that made
truly a personage, but a force
basic. The recording is worthy
of the orchestra.

HEAR ALSO
Mozart in D Minor (Piano)
Fischer and the London
Symphony Orchestra

Quartet in G Major
The Opa, Preter and Mass
in B Flat Major, op. 130
The Quartet

VICTOR RECORDS
RCA Victor Division
Manufacturing Co., Inc.
Camden, New Jersey

Serge Koussevitzky and the Boston Symphony Orchestra contribute the First Electrical Recording of THUS SPAKE ZARATHUSTRA

SUCH is the range of Richard Strauss' "Thus Spake Zarathustra"—and such is its sweep
of dynamics—that no method of recording
has heretofore been able to capture it all.
That you can hear it now on your phono-
graph, without loss of a single tonal effect, is
a triumph of the new Victor Higher Fidelity
process of reproduction.

As one critical listener says of this new re-
lease: "I am sure that this album must usher
in a new era of recording. It has such un-
doubted earth-shaking power with no tremen-
tous quality, that at last we have something
to make us cry aloud from the bouzouki."
This magnificent tone poem is famous as a
special feature of the Boston Symphony Orches-
tra's current repertoire. When the recording
was made, a portion of it was broadcast over
national radio hook-up.

Those of you who heard this broadcast, fine
it was, will be struck by the superiority of
the recording over the very same performance
it came over the air. You can hear it at your
dealer's today.

ASK TO HEAR ALSO
"Ten Johnny Carter Number Home"
An American Overture
9 Parts. Played by Eugene Ormandy and the
Boston Symphony Orchestra, Record No. 8829

VICTOR RECORDS
RCA Victor Division
Manufacturing Co., Inc.
Camden, New Jersey

Cash in on the
rising demand
for these fine
recordings

Sales of Victor Red Seal Records increased 51% in 1934 over the previous year. The increase in sales of Masterworks during the last three months of last year was 154%! And in January and February of this year, Red Seal Records showed an increase of 68.2% over the same month last year!

Why these increases? Many things. Victor's unquestioned command of the great American orchestras, such as Leopold Stokowski and the Philadelphia Orchestra; the Boston Symphony Orchestra under the direction of Serge Koussevitzky; the Minneapolis Symphony with Eugene Ormandy conducting. Victor's brilliant achievement in Higher Fidelity recording. Finally, an aggressive promotional and advertising campaign. All these make a sure-fire winning combination.

Look at those figures and match them against your own sales. Dealers made good money in Red Seal Records last year, and a lot more money is being made selling them this year. Get on the Red Seal bandwagon—it is leading the procession. RCA Manufacturing Co., Inc., RCA Victor Division, Camden, N. J.

Shown above are three of the recent advertisements on Red Seal Records appearing in 5 National Magazines and 23 Metropolitan Newspapers

IT PAYS TO SELL

VICTOR RECORDS
THEY'RE HIGHER FIDELITY

RCA Victor, a unit of Radio Corporation of America... the world's largest radio organization. Other units: National Broadcasting Co., Inc. . . R. C. A. Communications, Inc. . . RCA Radiotron . . . Radiomarine Corporation of America.



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

*"The standard
by which others are
judged and valued"*

AUDAX

IN leading
Radio Stations,
Laboratories and
Universities —
wherever super-
lative pick-up
performance is
demanded —
today you find
AUDAX doing
duty. Engineered
to the nth power,
immune to summer
heat, humidity
and other climatic
conditions. Made
to suit every de-
mand from the
humblest midget-
combinations to the
HIGH FIDELITY
requirements of
fine transcriptions.
What is *your*
pick-up problem?

List prices \$9.50 to \$390.00
Special Recording Heads to Order

AUDAX COMPANY
500 Fifth Ave., New York

"Creators of High Grade Electrical
and Acoustical Apparatus Since 1915"



No. 100
Listed at
\$9.50

Kentucky Home" and "Annie Laurie" to the wondrous reproductions of Bach's most intricate concertos. Galli-Curci, McCormack, Schipa, Ponselle, Jeritza, Bori, Caruso, Paderewski, and dozens of such artists are well represented.

Sponsors of the new Library have presented it as "a collection that is to the modern music lover what Dr. Eliot's Five-Foot Book Shelf is to the booklover." It will be merchandised along with the new model radiophonograph, with 22 all-metal tubes and other new features. Early announcements of the Library have already netted its sponsors several hundred advance orders. The retail price of the Library is \$950.

Interest in record sales

The retailers as a whole would like to see the record manufacturers, as well as the manufacturers of radiophonograph combinations, feature records in their advertising to a far greater degree than has been evident. Some of the dealers maintain that in their respective localities there is a popular notion that the talking machine is as dead as the Ford Model T, and they feel that something should be done about it. This problem, of course, is perennial and applies to other industries as well as the record field.

One prominent executive of a jobbing organization maintains that there are not a sufficient number of dealers selling records at this time to give the public an adequate idea of the music that lies hidden in the record library. He points out that every day five or six calls are received from music lovers in his territory asking where they can purchase certain records which they need for their libraries. On the other hand, several pioneers in the record industry believe that the dealers who are merchandising records at the present time should apply more intensive selling methods, thereby getting their share of the record sales possibilities in their localities and building up a volume that will bring substantial profits. Such intensive merchandising would eliminate the necessity of spotting the dealers so close to each other that the sales volume for the individual dealers would be lessened. This theory undoubtedly carries more weight in the sale of the better class of music and the higher priced popular records than it does in the lower priced record field.

In preparing for the coming fall season, retailers who are not handling



Dancer Astaire, Brunswick Star

records at the present time will undoubtedly find it advantageous to look around their establishments and try to find available floor space that could be used for a display of records which would not necessarily involve the expenditure of a great deal of money. The three leading record manufacturers have perfected far reaching sales plans for the immediate future.

"BETTER RADIO RECEPTION" BROADCASTS

Next broadcast, WABC and Columbia network, Saturday, Sept. 28, 8:30 p.m., E.D.T., Dr. Orestes Caldwell, Editor "Radio Today"

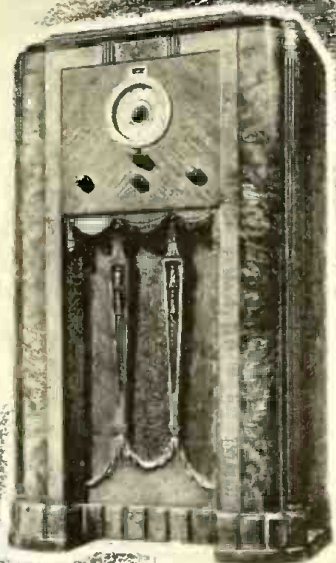
★ Continuing RADIO TODAY's series of broadcast demonstrations designed to instruct listeners in obtaining better reception through tube replacements, proper antennas, quality receivers, and competent servicing, the next broadcast will be given at the invitation of the Columbia Broadcasting System as above, under the title: "How to Make Your Radio Set Behave Better."

Previous network demonstrations have been given by Editor Caldwell over WEA and NBC Red network, Sept. 6, "Getting Your Radio Ready for Fall," and over WJZ and NBC Blue network, Sept. 9, "Tuning Up Your Radio for the Big Broadcasts Ahead."

Only STEWART-WARNER BRINGS YOU THE TWO GREATEST ADVANCES IN RADIO —



11-tube Ferrodyne Round-the-World receiver with metal-tube equipment, automatic station register, and new improved Diffusalite Magic Dial.



9-tube Ferrodyne Round-the-World receiver with metal-tube equipment, automatic station register and new Diffusalite Magic Dial.

● Stewart-Warner *alone* gives you radio's most sensational achievements . . . the metal tube and Ferrodyne. The Ferrodyne Chassis is an *exclusive* Stewart-Warner development, created especially for the all-metal tube . . . to get the utmost from every advantage the new tubes bring to radio!

Now we know you've heard plenty of sets, and some mighty good ones. We know you're inclined to be skeptical. But here's our proposition. Look at the new Ferrodyne. Listen to it. We'll leave it to your own good judgment: Isn't the Stewart-Warner Ferrodyne as fine a set as you've ever heard? That's proof enough, isn't it? We're willing to stake everything on your opinion!

Then—after you've heard this amazing new all-metal tube set, look into the unusual merchandising program Stewart-Warner has set up to help you sell. It's a sound plan. It's backed by sound selling ideas . . . newspaper advertising . . . and something new: your *own* local radio program with big-time talent! You'll find the Stewart-Warner story interesting, out-of-the-ordinary. Write, wire or phone today—we'll give you full details in a hurry!

STEWART-WARNER CORPORATION
Chicago, Illinois

STEWART WARNER

Ferrodyne RADIO

RADIO RECEIVERS FOR 1935-36

Compiled by Radio Today

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
Ansley Radio Corp., 240 West 23rd St., New York City					
D-1	\$69.50	Fort.	Phonograph	AC-DC	4g.
D-6	49.50	Table	550-1600	AC-DC	5g.
D-9	79.50	Fort.	550*15000	AC-DC	6g.
D-10	84.50	Table	550*15000	AC-DC	6g.

Models D-9 and D-10 with metal-glass tubes—\$5.00 additional

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
Atwater Kent Mfg. Co., Philadelphia, Penna.					
184		Table	540-1712	AC	4g.
237Q		Table	540-18000	6v.DC	7g.
285Q		Cons.	540-1712	Batt.	5g.
305Z		Table	540*16000	32v.DC	5g.
317		Cons.	540-18000	AC	7m.
328		Cons.	540-18000	AC	8m.
337		Table	540-18000	AC	7m.
412		Cons.	540-18000	AC	12c.
415Q		Table	540-1712	Batt.	5g.
435		Cons.	540*7500	AC	5c.
467Q		Cons.	540-18000	6v.DC	7g.
509		Tune-o-matic	540*15500	AC	9g.
545		Table	540*7500	AC	5g.
565Z		Cons.	540*16000	32v.DC	5g.
649		Cons.	540-18000	AC	9m.
776		Auto	540-1500	6v.DC	6g.
810		Cons.	540-18000	AC	10c.
856		Table	540-18000	AC	6m.
976		Cons.	540-18000	AC	6m.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
Belmont Radio Corp., 1257 Fullerton Ave., Chicago, Ill.					
401M	\$22.50	Table	540-1720	AC	4m.
404	39.50†	Table	540-1720	Batt.	4g.
540	25.00	Table	530-1720	AC-DC	5g.
580	39.50	Auto	520-1550	6v.DC	5g.
585	37.50	Table	530*19000	AC	5m.
680	44.50	Auto	520-1550	6v.DC	6g.
690	49.50	Auto	520-1550	6v.DC	6g.
777-L	74.50	Cons.	525-19100	AC	7m.
777-T	49.95	Table	525-19100	AC	7m.
880	64.50	Auto	520-1550	6v.DC	8g.
1077	94.50	Cons.	525-19100	AC	10m.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
The Capehart Corp., Fort Wayne, Indiana					
202	\$ 595.00	Cons.	150-18000	AC	9m.
302-D	795.00	Cons.	150-20000	AC	17c.
404-D	1095.00	Cons.	150-20000	AC	21c.
404-DR	1445.00	Cons.	150-20000	AC	21c.
405-D	1065.00	Cons.	150-20000	AC	21c.
405-DR	1415.00	Cons.	150-20000	AC	21c.
406-D	995.00	Cons.	150-20000	AC	21c.
406-DR	1345.00	Cons.	150-20000	AC	21c.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
Case Electric Corp., 1307 So. Wells St., Chicago, Ill.					
700		Table	All-wave	AC	7
701		Cons.	All-wave	AC	7
1001		Cons.	All-wave	AC	10
1003		Cons.	All-wave	AC	10

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
Crosley Radio Corp., Cincinnati, Ohio					
A145	\$ 36.95	Auto	535-1750	6v.DC	5g.
A155	47.50	Auto	535-1750	6v.DC	6g.
415-AA	19.99**	Table	535-1750	Batt.	4g.
425-H	25.00	Table	535-1750	AC-DC	4g.
505-MK	44.50	Cons.	535-4000	AC	5g.
515-AC	19.99	Table	535-4000	AC	5g.
525-B	29.95	Table	535-4000	AC	5g.
545-AD	25.00	Table	535-1750	AC-DC	5g.
555-KC	29.95**	Table	535-1750	Batt.	5g.
555-SA	49.95**	Cons.	535-1750	Batt.	5g.
615-C	47.50	Table	535-15500	AC-DC	6g.
615-M	59.50	Cons.	535-15500	AC-DC	6g.
625-E	69.50	Table	535-15500	6v.DC	6g.
625-NB	84.50	Cons.	535-15500	6v.DC	6g.
635-C	39.95	Table	535-15500	AC	6g.
635-M	54.50	Cons.	535-15500	AC	6g.
645-CB	47.50	Table	535-4000	32v.DC	6g.
645-MB	64.50	Cons.	535-4000	32v.DC	6g.
655-C	45.00	Table	535-15500	AC	6m.
655-M	59.95	Cons.	535-15500	AC	6m.
715-D	55.00	Table	535-15500	AC	7g.
715-N	69.95	Cons.	535-15500	AC	7g.
815-EC	59.95**	Table	535*15500	Batt.	8g.
815-NC	74.50**	Cons.	535*15500	Batt.	8g.
855-D	65.00	Table	535-15500	AC	8m.
855-N	79.95	Cons.	535-15500	AC	8m.
725-F	65.00	Table	150*22000	AC	7g.
725-P	85.00	Cons.	150*22000	AC	7g.
865-F	97.50	Table	150*22000	AC	8m.
865-P	97.50	Cons.	150*22000	AC	8m.
915-EK	85.00	Table	150*22000	AC	8g.
915-RA	100.00	Cons.	150*22000	AC	8g.
1055-EK	99.95	Table	150*22000	AC	10m.
1055-EK	115.00	Cons.	150*22000	AC	10m.

c. indicates combination of metal tubes and glass tubes in receiver
 g. indicates glass tubes in receiver
 m. indicates metal tubes in receiver
 mg. indicates metal-glass tubes in receiver
 * in kilocycle range indicates not continuous range between limits indicated
 ** less batteries
 † includes batteries.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
Electrical Research Laboratories, Inc., (Erla), 2222 Diversey Pkwy., Chicago, Ill.					
11M	\$44.95	Auto	540-1550	6v.DC	g.
14A72	84.50	Cons.	540*18900	AC	g.
14A82	69.95	Table	540*18900	AC	g.
19A68	34.95	Table	540*18100	AC	g.
19A71	59.95	Cons.	540*18100	AC	g.
20A71	49.95	Cons.	540*6300	AC	g.
20A73	29.95	Table	540*6300	AC	g.
25A72	69.95	Cons.	540-18100	AC	g.
25A74	49.95	Table	540-18100	AC	g.
31B72	79.95†	Cons.	535*18300	6v.DC	g.
31B74	59.95†	Table	535*18300	6v.DC	g.
32B69	29.95†	Table	540-1720	Batt.	g.
33B70	39.95†	Table	540*6300	Batt.	g.
33B71	59.95	Cons.	540*6300	Batt.	g.
34B71	69.95†	Cons.	540*6300	6v.DC	g.
34B73	49.95†	Table	540*6300	6v.DC	g.
35B70	49.95†	Table	540-18100	Batt.	g.
35B72	69.95†	Cons.	540-18100	Batt.	g.
36L71	59.95	Cons.	540*6300	DC	g.
36L73	39.95	Table	540*6300	DC	g.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
Emerson Radio & Phonograph Corp., 111 Eighth Ave., New York City					
1A	\$ 37.95	Auto	545-1500	6v.DC	5g.
5A	49.95	Auto	545-1500	6v.DC	5g.
6A	44.95	Auto	545-1500	6v.DC	6g.
34-C	44.95	Table	540*16000	AC	6c.
34-F7	49.95	Table	540*16000	Batt.	7g.
36	19.95	Table	540-3200	AC	5g.
101	59.95	Cons.	540*16000	AC	6c.
101-F7	69.95	Cons.	540*16000	Batt.	7g.
101-U	69.95	Cons.	540*16000	AC-DC	6c.
102	89.95	Cons.	540-19000	AC	8c.
102-LW	94.95	Cons.	135*19000	AC	8c.
103	31.95	Table	540-3950	Batt.	5g.
104	69.95	Table	540-19000	AC	8c.
104-LW	71.95	Table	135*19000	AC	8c.
105	129.95	Cons.	540-19000	AC	11c.
105-LW	134.95	Cons.	135*19000	AC	11c.
106	34.95	Table	530-4300	AC-DC	6c.
107	44.95	Table	540*16000	AC-DC	6c.
107-LW	49.95	Table	135*16000	AC-DC	6c.
108	24.95	Table	530-4000	AC-DC	5g.
108-LW	29.95	Table	150*1550	AC-DC	5g.
109	14.95	Table	540-1650	AC-DC	4g.
110	29.95	Table	530-4000	AC-DC	5g.
110-LW	34.95	Table	150*1550	AC-DC	5g.
111	39.95	Table	540*16000	AC-DC	6c.
111-LW	44.95	Table	135*16000	AC-DC	6c.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
Fairbanks-Morse Home Appliances, Inc., 430 So. Green St., Chicago, Ill.					
4015	\$ 24.95	Table	540-1720	AC	4g.
4115-B	29.95**	Table	540-1720	Batt.	4g.
5416	44.95	Table	540*18200	AC	5g.
5445	59.95	Cons.	540*18200	AC	5g.
5619	34.95	Table	540*7500	AC	5g.
5645-A	49.95	Cons.	540*7500	AC	5g.
6317	54.95	Table	540-18200	AC	6g.
6346	77.50	Cons.	540-18200	AC	6g.
6416-B	49.95**	Table	540*16500	Batt.	6g.
6445-B	69.95**	Cons.	540*16500	Batt.	6g.
8218	79.50	Table	140*18200	AC	8g.
8247	99.50	Cons.	140*18200	AC	8g.
8248	112.50	Cons.	140*18200	AC	8g.
10049	150.00	Cons.	140*18200	AC	10g.
10050	175.00	Cons.	140*18200	AC	10g.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
Freed Manufacturing Co., (Freed-Eismann), 127 W. 17th St., New York City					
A342		Table	550-1550	AC-DC	4g.
C-310AC		None	550*20000	AC	10g.
E-341		Table	550-1550	AC-DC	4g.
G-351-P		Table	550-3500	AC-DC	5g.
H-357-P		Table	550-3500	AC-DC	5g.
H-357-L		Table	550-3500	AC-DC	5g.
O-358-S		Table	550*15700	AC-DC	5g.
R-369-S		Table	550*15700	AC-DC	6g.
T-367-S		Table	550*15700	AC	6g.
T-368-P		Table	550-3500	AC-DC	6g.
U-363		Table	550*20000	AC	6g.
V-360		Table	550*20000	AC	6g.
W-380		Table	550*20000	AC-DC	8g.
W-382		Table	550*20000	AC	8g.

AC sets available with metal or glass tubes
 AC-DC sets available with combination of metal and glass.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
Galvin Mfg. Corp. (Motorola), 847 W. Harrison St., Chicago, Ill.					
57	\$37.95	Auto	540-1550	6v.DC	g.
75	47.50	Auto	540-1550	6v.DC	g.
100	64.50	Auto	540-1550	6v.DC	g.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
General Electric Co., Bridgeport, Conn.					
A-53	\$ 34. 50	Table	540*6800	AC	5m.
A-63	47. 50	Table	540*16000	AC	6m.
A-65	64. 50	Cons.	540*16000	AC	6m.
A-70	74. 50	Table	540-19500	AC	7m.
A-75	100. 00	Cons.	540-19500	AC	7m.
A-82	94. 50	Table	140*19500	AC	8m.
A-87	125. 00	Cons.	140*19500	AC	8m.
A-125	185. 00	Cons.	140*40000	AC	12m.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
General Household Utilities Co., (Grunow), Chicago, Ill.					
470	\$ 22. 50	Table	545-1720	AC	4g.
520	29. 95	Table	545-1720	AC-DC	5g.
580	39. 95	Table	545-18000	AC	5g.
581	49. 95	Cons.	545-18000	AC	5g.
620	59. 50	Table	545-18000	6v.DC	6g.
621	79. 50	Cons.	545-18000	6v.DC	6g.
640	49. 95	Table	545-18000	AC	6g.
641	59. 95	Cons.	545-18000	AC	6g.
680	59. 50	Table	545-18000	AC	6m.
681	69. 50	Cons.	545-18000	AC	6m.
720	49. 50	Table	545-18000	Batt.	7g.
721	59. 50	Cons.	545-18000	Batt.	7g.
761	87. 50	Cons.	150*18000	AC	7m.
871	99. 50	Cons.	150*18000	AC	8m.
1171	137. 50	Cons.	150*18000	AC	11m.
1241	167. 50	Cons.	150*18000	AC	12m.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
Halsol Radio Mfg. Corp., 120 East 16th St., New York City					
4M	\$ 9. 95	Table	545-1580	AC-DC	4g.
18M	59. 50	Table	545-18800	AC	8m.
50M	19. 95	Table	545-4000	AC-DC	6c.
AW6	29. 50	Table	545-18800	AC-DC	6g.
CA5	34. 95	Cons.	545-18800	AC-DC	6g.
CA8	69. 50	Cons.	545-18800	AC-DC	8g.
CM5	34. 95	Cons.	545-18800	AC	5m.
CM8	69. 50	Cons.	545-18800	AC	8m.
MA8	59. 50	Table	545-18800	AC-DC	8g.
MA53	29. 50	Table	545-18800	AC	5m.
MG3	34. 95	Table	545-18800	AC	6m.
MG5	14. 95	Table	545-1580	AC-DC	4m.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
Howard Radio Co., Belmont Ave., Chicago, Ill.					
47-U	\$ 17. 95	Table	550-1700	AC-DC	4g.
57-UA	29. 95	Table	550-4000	AC-DC	5g.
67-T	44. 95	Table	550-16000	AC	6g.
67-C	59. 95	Cons.	550-16000	AC	6g.
77-T	64. 50	Table	550-18000	AC	7m.
77-C	79. 50	Cons.	550-18000	AC	7m.
99-C	124. 50	Cons.	550-18000	AC	9m.
Grand	295. 00	Cons.	150*18000	AC	19g.
HA-3	37. 50	Auto	550-1500	6v.DC	5g.
HA-4	47. 50	Auto	550-1500	6v.DC	6g.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
International Radio Corp., (Kadette), Ann Arbor, Mich.					
26	\$22. 50	Table	540-1760	AC	4mg.
41	13. 50	Table	550-1600	AC-DC	3g.
43	16. 50	Table	550-1600	AC-DC	3g.
44	16. 50	Table	550-1600	AC-DC	3g.
47	16. 50	Table	550-1600	AC-DC	3g.
48	16. 50	Table	550-1600	AC-DC	3g.
52	29. 95	Table	540-18700	AC	5mg.
53	37. 50	Table	540-22500	AC	5mg.
61	39. 95	Table	540-22500	AC-DC	6c.
72	32. 50**	Table	540-4000	Batt.	6g.
120	49. 50	Table	540-22500	AC	7mg.
1200	69. 50	Cons.	540-22500	AC	7mg.

Available with metal tubes at additional price.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
Kingston Radio Co., Kokomo, Indiana					
55	\$19. 95	Table	550-1715	AC-DC	5g.
500A	34. 95	Table	540*16700	AC	5g.
600B	49. 95	Cons.	540-1765	AC	6g.
610A	37. 95	Table	540-1765	AC	6g.
700A	54. 95	Table	540*16700	AC	7g.
700B	64. 95	Cons.	540*16700	AC	7g.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
Laurehk Radio Mfg. Co., Adrian, Mich.					
AE-6	\$49. 50	Auto	540-1600	6v.DC	6c.
L-19	34. 50	Table	540-6000	Batt.	5g.
L-32	49. 50	Table	540-6000	32v.DC	4m.
L-42	34. 50	Table	540-16000	AC	5m.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
Noblitt-Sparks Industries (Arvin), Columbus, Ind.					
7	\$37. 95	Auto	550-1550	6v.DC	5g.
17	44. 95	Auto	540-1600	6v.DC	6g.
17-A	44. 95	Auto	540-1600	6v.DC	6g.
17-B	45. 95	Auto	540-1600	6v.DC	6g.
17-C	45. 95	Auto	540-1600	6v.DC	6g.
27	54. 95	Auto	540-1600	6v.DC	7g.
37	64. 95	Auto	540-1600	6v.DC	8g.
41	19. 95	Table	540-1750	AC	4g.
51	32. 95	Table	540*18000	AC	5g.
51B	34. 95	Table	540*18000	6v.DC	6g.
61	49. 95	Table	540-18000	AC	7m.
61M	57. 95	Table	540-18000	AC	6g.
62	59. 50	Cons.	540-18000	AC	7m.
62M	67. 50	Cons.	540-18000	AC	8g.
81	89. 50	Cons.	540-18000	AC	9m.
81M	99. 50	Cons.	540-18000	AC	9m.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
Philco Radio & Television Corp., Philadelphia, Pa.					
32B	\$ 65. 00	Table	540-3200	32v.DC	6g.
32F	79. 50	Cons.	540-3200	32v.DC	6g.
38B	49. 95†	Table	540-2500	Batt.	5g.
38F	65. 00†	Cons.	540-2500	Batt.	5g.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
Philco Radio & Television Corp., Philadelphia, Pa.—(continued)					
54C	29. 95	Table	540-3200	AC-DC	5g.
54S	35. 00	Table	540-3200	AC-DC	5g.
59C	25. 00	Table	540-1720	AC	4g.
59S	29. 95	Table	540-1720	AC	4g.
60B	29. 95	Table	540-4000	AC	5g.
60F	42. 50	Cons.	540-4000	AC	5g.
84B	20. 00	Table	540-1720	AC	4g.
89B	39. 50	Table	540-3200	AC	6g.
89F	57. 50	Cons.	540-3200	AC	6g.
116B	97. 50	Table	150-22500	AC	11g.
116X	175. 00	Cons.	150-22500	AC	11g.
610B	39. 95	Table	530*18000	AC	5g.
610F	49. 95	Cons.	530*18000	AC	5g.
611B	45. 00	Table	530*18000	AC-DC	5g.
611F	57. 50	Cons.	530*18000	AC-DC	5g.
620B	49. 95	Table	540-18000	AC	6g.
620F	65. 00	Cons.	540-18000	AC	6g.
623B	59. 95†	Table	530*18000	Batt.	6g.
623F	75. 00†	Cons.	530*18000	Batt.	6g.
630B	59. 95	Table	540-18000	AC	6g.
630CSX	79. 50	Spec.	540-18000	AC	6g.
630X	75. 00	Cons.	540-18000	AC	6g.
640B	69. 50	Table	145*18000	AC	7g.
640X	89. 50	Cons.	145*18000	AC	7g.
641B	75. 00	Table	530*18000	DC	7g.
641X	100. 00	Cons.	530*18000	DC	7g.
643B	79. 50†	Table	150*18000	Batt.	7g.
643X	100. 00†	Cons.	150*18000	Batt.	7g.
650B	79. 50	Table	145*18000	AC	8g.
650H	125. 00	Spec.	145*18000	AC	8g.
650MX	125. 00	Cons.	145*18000	AC	8g.
650PX	175. 00	Cons.	145*18000	AC	8g.
650RX	137. 50	Spec.	145*18000	AC	8g.
650X	100. 00	Cons.	145*18000	AC	8g.
660L	150. 00	Spec.	145*18000	AC	10g.
660X	137. 50	Cons.	145*18000	AC	10g.
680X	250. 00	Cons.	150*22000	AC	15g.
805	42. 95	Auto	550-1600	6v.DC	5g.
806	49. 95	Auto	550-1600	6v.DC	6g.
807	59. 95	Auto	550-1600	6v.DC	7g.
808	75. 00	Auto	550-1600	6v.DC	7g.
809	59. 95	Auto	550-1600	6v.DC	6g.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
Pierce Airo (De Wald), 510 Sixth Ave., New York City					
403A	\$17. 95	Table	545-1700	AC-DC	4g.
505R	31. 50	Table	535-1660	AC-DC	5g.
506R	22. 00	Table	545-4000	AC-DC	5g.
510B	19. 95	Table	535-1700	AC	5g.
605	44. 95	Auto	520-1500	6v.DC	6g.
606	39. 95	Auto	520-1500	6v.DC	6g.
609SA	27. 95	Table	545-4000	AC-DC	6c.
610SA	44. 95	Table	540-16700	AC	6c.
610SC	59. 95	Cons.	540-16700	AC	6c.
612SA	33. 00	Table	540-1700	AC-DC	6c.
612SB	31. 50	Table	535-1660	AC-DC	6c.
612SC	44. 95	Cons.	540-1700	AC-DC	6c.
805A	75. 00	Table	140-18000	AC	8g.
805C	95. 00	Cons.	140-18000	AC	8g.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
Pilot Radio Corp., 37-06 Thirty-sixth St., Long Island City					
41	\$ 29. 90	Table	545-1770	AC	g.
43	33. 50	Table	545*18800	AC	g.
123	49. 50	Table	545*18800	AC-DC	g.
183	49. 90	Table	545*18800	AC	m.
213	69. 90	Table	545-18800	AC	m.
303	99. 90	Table	530-23500	AC	m.
CX-63	89. 50	Cons.	545-18800	AC	g.
CX-68		Cons.	545-18800	DC	g.
CX-114	149. 50	Cons.	530-23500	AC	g.
PX-63	150. 00	Cons.	545-18800	AC	g.
PX-68	165. 00	Cons.	545-18800	DC	g.
PX-114	395. 00	Cons.	530-23500	AC	g.
X-63	67. 50	Table	545-18800	AC	g.
X-68	72. 50	Table	545-18800	DC	g.
X-73	64. 50	Table	545-18800	Batt.	g.
X-114	99. 50	Table	530-23500	AC	g.
103	42. 50	Table	545*18800	AC	g.
108	45. 00	Table	545*		

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Grunow Model 761—A powerful 7-metal-tube all-wave radio, including weather band. Lists at F.O.B. **\$87⁵⁰** Factory

Right—Grunow Model 520—A really amazing performer for the AC-DC prospect. Lists at **\$29⁹⁵** F.O.B. Factory

Left—Grunow Model 681—Six metal tubes and many Grunow features in a world-range radio covering 545-18,000 kc. Lists **\$69⁵⁰** at F.O.B. Factory



Grunow Model 1171—A cabinet of costly woods housing a powerful 11-tube Super Hi-Fidelity true all-wave receiver with 15 watts output and all Grunow advances. Lists at F.O.B. Factory **\$137⁵⁰**

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NEW
Grunow Radio
With **TONE-TESTED RESONATOR**
GENERAL HOUSEHOLD UTILITIES COMPANY • CHICAGO

RADIO RECEIVERS FOR 1935-36 — Compiled by Radio Today

(Continued from page 37)

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
RCA Victor, Camden, N. J.—(continued)					
BT6-5	64.95	Table	540*18000	6v.DC	6g.
BT7-8	62.95**	Table	540*18000	Batt.	7g.
C8-15	99.50	Cons.	540-18000	AC	8c.
C9-4	118.50	Cons.	540-18000	AC	9c.
C11-1	150.00	Cons.	540-18000	AC	11c.
C13-2	189.50	Cons.	140*60000	AC	13c.
C15-3	250.00	Cons.	140*60000	AC	15c.
D9-19		Cons.	140*18000	AC	9c.
D11-2		Cons.	140*18000	AC	11c.
D22-1		Cons.	140*60000	AC	22c.
M-101	44.95	Auto	540-1600	6v.DC	5g.
M104	49.95	Auto	540-1600	6v.DC	5g.
M108	57.95	Auto	540-1600	6v.DC	5g.
M109	74.95	Auto	540-1600	6v.DC	7g.
R-93	16.50	Record player		AC	
T4-8	20.00	Table	540-1720	AC	4g.
T4-9	24.95	Table	540-1720	AC	4g.
T4-10	19.95	Table	540-1720	AC-DC	4g.
T5-2	29.95	Table	540-3500	AC	5g.
T8-14	79.95	Table	540-18000	AC	8c.
T10-1	99.50	Table	540-18000	AC	10c.

Simplex Radio Co., Sandusky, Ohio

4Z	\$13.25	Table	540-1750	AC-DC	4g.
5C	19.50	Table	540-4000	AC-DC	5g.
5D	24.95	Table	540-4000	AC-DC	5g.
5E	33.50	Cons.	540-4000	AC-DC	5g.
5DA	24.95**	Table	540-4000	Batt.	5g.
5DA	33.50**	Cons.	540-4000	Batt.	5g.
5DB	31.95	Table	540-4000	6v.DC	5g.
5DB	40.50	Cons.	540-4000	6v.DC	5g.
5DF	33.95	Table	540-4000	32v.DC	4g.
5DF	42.50	Cons.	540-4000	32v.DC	4g.
6G	33.95	Table	540-16000	AC	6g.
6G	49.95	Cons.	540-16000	AC	6g.
6GH	33.95	Table	540-16000	AC-DC	6g.
6GH	49.95	Cons.	540-16000	AC-DC	6g.
6GM	39.95	Table	540-16000	AC	6m.
6GM	55.95	Cons.	540-16000	AC	6m.
8J	59.50	Table	150-22000	AC	8g.
8J	73.50	Cons.	150-22000	AC	8g.
8JM	67.50	Table	150-22000	AC	8m.
8JM	81.50	Cons.	150-22000	AC	8m.
T	37.75	Auto	550-1550	6v.DC	5g.
TA	33.95	Auto	550-1550	6v.DC	4g.
V	18.00	Table	540-4000	AC-DC	5g.
Y	21.50	Table	540-4000	AC-DC	5g.
Y	29.95	Cons.	540-4000	AC-DC	5g.

Sparks-Withington Co., (Spartan), Jackson, Mich.

506	\$ 29.95	Table	550-6000	AC-DC	5g.
516	39.95	Table	550-6000	AC	5g.
616	49.95	Table	530-20000	AC	6g.
666	69.95	Cons.	530-20000	AC	6g.
716X	79.50	Table	530-20000	AC	7g.
766	89.50	Cons.	530-20000	AC	7g.
966	110.00	Cons.	530-20000	AC	9g.
1086	200.00	Cons.	530-20000	AC	10g.
1166	170.00	Cons.	150-20000	AC	11g.
1466	240.00	Cons.	150-20000	AC	14c.

Stewart-Warner Corp., 1826 Diversey Pkway, Chicago, Ill.

1301	\$ 44.50	Table	530*18200	AC	5g.
1302	42.50	Table	530*18200	AC	5g.
1306	57.50	Cons.	530*18200	AC	5g.
1345	69.50	Cons.	545*6800	AC	6g.
1361	69.50	Table	545*18000	AC	7m.
1362	74.50	Table	545*18000	AC	7m.
1365	94.50	Cons.	545*18000	AC	7m.
1366	89.50	Cons.	545*18000	AC	7m.
1375	119.50	Cons.	140*18000	AC	9c.
1376	129.50	Cons.	140*18000	AC	9c.
1386	144.50	Cons.	140*18000	AC	11c.
1386	159.50	Cons.	140*18000	AC	11c.
1388	275.00	Cons.	140*18000	AC	11c.
1391	42.50**	Table	530-1750	Batt.	7g.
1395	57.50**	Cons.	530-1750	Batt.	7g.
1401	32.50	Table	540-4600	AC	5g.

Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y.

58-T	\$ 59.50	Table	540*18000	AC	6g.
58-L	78.50	Cons.	540*18000	AC	6g.
58-W	92.50	Cons.	540*18000	AC	6g.
61-T	66.00	Table	540*18000	AC	7c.
61-L	85.00	Cons.	540*18000	AC	7c.
61-W	99.00	Cons.	540*18000	AC	7c.
62	132.50	Cons.	540-18000	AC	8c.
63	145.00	Cons.	540-18000	AC	8c.
65	135.00	Spec.	540-1500	AC	9g.
70	495.00	Cons.	520-23000	AC	13g.
72	795.00	Cons.	520-23000	AC	13g.
74	985.00	Cons.	520-23000	AC	16g.
82	187.50	Cons.	520-23000	AC	10g.

L. Tatro Products Corp., Decorah, Iowa

M4616		Table	540-1740	6v.DC	g.
04626		Table	545*18000	6v.DC	g.
P4626		Cons.	545*18000	6v.DC	g.
Q5636		Table	545*18000	6v.DC	g.
R5636		Cons.	545*18000	6v.DC	g.
S6636		Cons.	545*18000	6v.DC	g.

Model Number	Retail Price Complete	Cabinet	Kilocycle Range	Power Supply	Number of Tubes
L. Tatro Products Corp., Decorah, Iowa—(continued)					
T6216		Table	550-3800	32v.DC	g.
U8226		Table	545*18000	32v.DC	g.
V5226		Cons.	545*18000	32v.DC	g.
W5236		Table	545*18000	32v.DC	g.
X6236		Cons.	545*18000	32v.DC	g.
Y6236		Cons.	545*18000	32v.DC	g.

United American-Bosch Corp. (Bosch), Springfield, Mass.

04	\$ 17.95	Table	540-3000	AC-DC	5g.
05	29.95	Table	540*15000	AC-DC	6g.
376N	69.90**	Cons.	540-1600	Batt.	5g.
385	39.95**	Cons.	540-1620	Batt.	5g.
386	59.95**	Cons.	530*19000	Batt.	6g.
430J	54.95	Cons.	540*18000	AC	5g.
430T	39.95	Cons.	540*18000	AC	5g.
480D	155.00	Cons.	540-22500	AC	10g.
505	29.95	Table	540-3600	AC	5g.
510	34.95	Cons.	540-3600	AC	5g.
510E	49.95	Cons.	540-3600	AC	5g.
524	43.95	Auto	540-1550	6v.DC	5g.
575F	65.95	Cons.	540-18500	AC	7c.
575Q	85.95	Cons.	540-18500	AC	7c.
585Y	79.95	Cons.	540-18500	AC	8c.
585Z	99.50	Cons.	540-18500	AC	8c.
595M	169.50	Cons.	150*18500	AC	10c.
595P	139.50	Cons.	150*18500	AC	10c.
634	48.95	Auto	540-1550	6v.DC	6g.

United Motors Service (Delco), 3044 West Grand Blvd., Detroit, Mich.

1101		Table	540-1725	AC-DC	5g.
1105		Table	540-4500	AC	5g.
1106		Table	540*6300	AC	5g.
1107		Table	540*15500	AC	6g.
1108		Cons.	540-18000	AC	6g.
1109		Cons.	540-18000	AC	8c.
1110		Cons.	150*18000	AC	10c.

Wells-Gardner & Co., Chicago, Ill.

26R1		Auto	530-1650	6v.DC	6g.
30D568		Cons.	535-18300	AC	10c.
32C570		Cons.	535-18300	AC	12c.
35G510		Table	525-1750	Batt.	5g.
35G560		Cons.	526-1750	Batt.	5g.
36D510		Table	530-1750	32v.DC	6g.
36D560		Cons.	530-1750	32v.DC	6g.
36F552		Cons.	535-46000	AC	16c.
37E508		Table	535-16000	Batt.	7g.
37E566		Cons.	535-16000	Batt.	7g.
37G508		Table	535-18300	AC	7c.
37G566		Cons.	535-18300	AC	7c.
37H508		Table	535-16000	Batt.	7g.
37H566		Cons.	535-16000	Batt.	7g.
37G510		Table	535*18300	AC	7c.
37J560		Cons.	535*18300	AC	7c.
39C568		Cons.	530-16000	Batt.	9g.

Westinghouse Electric Supply Co., 150 Varick St., New York City

WR-100	\$ 25.00	Table	540-4000	AC-DC	5g.
WR-101	39.95	Table	540*16000	AC-DC	6c.
WR-201	19.95	Table	540-3200	AC	5g.
WR-203	44.95	Table	540*16000	AC	6c.
WR-204	65.95	Table	540-18500	AC	7c.
WR-205	79.95	Table	120*18500	AC	8c.
WR-303	59.95	Cons.	504*16000	AC	6c.
WR-304	85.95	Cons.	540-18500	AC	7c.
WR-305	99.50	Cons.	120*18500	AC	8c.
WR-306	139.50	Cons.	120*18500	AC	10c.
WR-500	48.95	Auto	540-1500	6v.DC	6g.
WR-501	44.95	Auto	540-1500	6v.DC	6g.
WR-601	34.95**	Table	540-3900	Batt.	5g.
WR-602		Table	540*16000	6v.DC	6g.

Zenith Radio Corp., 3620 Iron St., Chicago, Ill.

4T26	\$ 20.00	Table	540-3700	AC	4mg.
4T51	39.95	Cons.	540-3700	AC	4mg.
4V31	39.95	Table	550-1800	6v.DC	4g.
4V59	59.95	Cons.	550-1800	6v.DC	4g.
5S29	39.95	Table	535*18500	AC	5mg.
5S56	59.95	Cons.	535*18500	AC	5mg.
6S27	59.95	Table	535*18500	AC	6mg.
6S52	69.95	Cons.	535*18500	AC	6mg.
6V27	69.95	Table	550*23000	6v.DC	6g.
6V62	89.95	Cons.	550*23000	6v.DC	6g.
7S28	75.00	Table	550*23000	AC	7mg.
7S53	89.95	Cons.	550*23000	AC	7mg.
9S30	85.00	Table	550*23000	AC	9mg.
9S54	99.95	Cons.	550*23000	AC	9mg.
9S55	119.95	Cons.	550*23000	AC	9mg.
12A57	139.95	Cons.	141*23000	AC	12mg.
12A58	159.95	Cons.	141*23000	AC	12mg.

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- Mixer Controls
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- Tone Controls
- Volume Controls
- Automatic Voltage Regulators
- Ballast Resistors
- Line Reducing Resistors
- Compression Rheostats
- Fixed Resistors
- Fixed Center Tapped Resistors
- Variable Center Tapped Resistors
- Flexible Resistors
- Metal Covered Heavy Duty Resistors
- Metal Covered Voltage Dividers
- L Pads and T Pads

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THE DAY OF BETTER SERVICE

Shoestring investment and haywire methods on the way out

By JOHN F. RIDER
Service Editor, RADIO TODAY

★ ONE of the reasons why chaos reigns in the servicing field is because it is possible for Tom, Dick or Harry to establish himself as a service man with a very small investment. It may not sound very pleasant to many servicemen, but the shoe string investment is on the way out. The average investment made by servicemen in testing equipment during years past has been less than \$150. The day is not far distant when, in order to be able to cope with servicing problems of the times, this investment is going to mount to at least \$500, and there will be many shops with an investment approximating \$1,000.

It is, of course, impossible to force a definite investment when an individual enters the service field—but the nature of the receivers, which will be coming in for service, will force the service station operator to acquire apparatus which will enable rapid operation. No finer investment can be made than in equipment which expedites testing. Time is extremely valuable in the service station and every ten minutes saved helps keep the operating cost down. Therein lie the profits.

Courage

Time and again service station operators have bewailed the high cost of apparatus. An analysis of the situation will show that servicing on the whole would be far more lucrative if the initial investment required to open a service shop would be \$2,000 instead of \$200. Fewer men would be in the business and the greater responsibility would tend to stabilize the industry.

We have traveled the country far and wide during the past 12 months. We attended very many service meetings. At each of these meetings one or more service station operators would be honest and confess that they have become very much disheartened at the low earnings available in the service field. The bad part of the situation is that most of these men were competent and had plenty of work, but found that earnings were small.

We have but one answer. What is

needed is the courage to charge a profitable price for work done. That is the crux of the entire problem. . . . Charge enough so that a profit is left. . . . It means the loss of some business—but that which is secured is profitable and while it may not appear so upon the surface of things, those jobs which are profitable seem to amount to more in dollars and cents than all of the business done at lower prices.

Must pay

The service industry of the nation must develop the courage required to cease paying for the radio entertainment of the American public. If Mr. John Public desires to have his radio repaired, he must pay the price. Altogether too many service men have served the American public at a sacrifice to themselves. . . . Many years of operation at non-profitable prices has wiped away all semblance of financial respectability.

The service industry as a group can well learn from their suppliers. When the service man buys a testing unit or some other piece of shop equipment he is forced to pay a certain established price. . . . No pay—no equipment. . . . Suppliers have the courage to charge the price which they feel they should receive for their merchandise, if they are to stay in business. . . . Servicemen should do the same. . . . Otherwise the finish is inevitable. . . . No business can continue without earning a profit.

(Please turn to page 42)

Hey—Doctor!



Birmingham, Ala., presents this.
At right note "sick radio" with
bandaged head and doleful face.

The **YAXLEY** 1936

Replacement Volume Control Manual



Yaxley doesn't believe in resting on its laurels. Its constant advances in volume control development prove that! The latest and greatest edition of the Yaxley Replacement Volume Control Manual proves it, too!

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INTERNATIONAL RADIO CORP.
ANN ARBOR, MICHIGAN, U.S.A.

"Originators of AC-DC Radio"

SERVICING — JOHN F. RIDER

(Continued from page 40)

... It hangs on and hangs on — but eventually it goes. ...

Too many servicemen lack the courage to turn a job down—to tell Mr. John Public that the price is so and so and that's that. ... The service industry, like any other industry, is entitled to a respectable income, so that the members can live like human beings. ... Courage is what is needed! ... Courage to refuse to do business at a loss! ... The courage to charge a profitable price!

Cathode-ray

Opinion is divided concerning the suitability of the cathode-ray oscillograph for use in the radio servicing field. We hail its exploitation as the start of a new era in servicing, with far-reaching influence. The "nays" claim that the instrument belongs in the laboratory and that the type of information made available through the application of the oscillograph is not necessary for successful servicing. As evidence, there is offered the spectacle of many years of servicing without the use of oscillography.

We cannot agree with these opinions. We have worked with the tube for more than nine years and the past eight months have been spent in a concentrated comparison of its merits during service operation, as against the usual routine mode of operation utilizing conventional apparatus. We have been firmly convinced that the introduction of the cathode-ray oscillograph as a servicing tool will prove beneficial to the service technician as well as the radio industry at large.

The cathode-ray oscillograph is not a highly technical device. Its operating principles can be comprehended as readily as the operating principles of any other testing unit. As to the value of the information which can be secured by applying the tube to practical use, it is our opinion, for what it is worth, that such information is extremely essential to satisfactory servicing and to the advancement of the servicing art on the whole.

It is freely admitted that the tube has use in the design of radio apparatus. As such, it must have use in the servicing of radio apparatus, in order to establish the existence of the conditions which were originally planned into the receiver or amplifier by the design engineer.

It has been said by those who are not in favor of the cathode-ray oscillograph as a serviceman's tool, that interpretation of the images is not within the realm of the servicing field. Particular reference is made to audio waveform patterns. The statement is true at this time, but there is no sensible reason why the statement should remain true. Technical advancement of the servicing industry is just as important as advancement in radio receiver design. However, it is admitted that the waveform test to establish distortion is an excellent means of checking the operation of the receiver. If this be true, why should the service industry be penalized, because during its routine study of radio principles, the subject relating to the images, which can be developed upon the cathode-ray oscillograph screen, was, shall we say, neglected or considered but briefly.

To new heights

Why should the radio industry develop equipment "down" to the servicing level? Why not develop apparatus which will bring the servicing industry "up" to the level of modern radio receiver design? An examination of servicing literature issued during the past ten years, shows almost a total absence of references to the audio system in the receiver. Perhaps this was due to the relative simplicity of the audio channels used in receivers, but now that audio channels in radio receivers are very much more complicated and public address amplifier manufacturing is an important industry, closer attention must be paid to what takes place in the audio part of the receiver.

Comprehension of the significance of waveforms is just as important as the function of the AVC system. It is a well recognized fact that a substantial amount of distortion may exist in a receiving system, or for that matter in an amplifying system, due to any one of a number of causes, related to dynamic rather than static conditions, which will not be evident to any but the critical observer. That, however, is not justification for declaring that receiver system or amplifying system to be satisfactorily serviced. The serviced system should be in perfect shape, without any question of operation left in doubt.

If the audio waveform test is valuable to the man who can interpret

the pattern and thus deliver a more perfectly serviced system to the customer, is it not preferable to teach the subject, so that the value of the test may be realized, rather than not teach the subject, not make the test and not secure the information? It is a perfectly normal request to make of the service industry, that it become technically more proficient. That it obtain a more thorough grounding in radio technique in order to be able to employ testing equipment which is on a par with modern radio receiver development. The proper application of the cathode-ray oscillograph places servicing capabilities at least close to, if not on the same level with modern receiver design.

Complicated stuff

It is impossible to deny that the servicing industry, being called upon to work on highly complicated apparatus, requires equipment which will enable operation upon this complex interlocked system with the ease and accuracy that was possible with the simpler receivers of years ago. Design engineers incorporate special dual channel audio systems in the effort to raise the standard of tone quality. . . . What apparatus is available for the testing of such systems by the service group? More and more of the receivers placed in the field contain specially filtered circuits in the speaker systems. What apparatus is available to the service group for the testing of such systems? Phase inversion systems were incorporated by design engineers, yet no equipment was developed for the simple and rapid methods of determining if that which the design engineer desired, was being accomplished in a service receiver.

Transmitter power has been increased all over the country. Receivers have been made more sensitive, yet very little attention, if any, has been devoted to troubles relating to these items in certain parts of the receiver. What is taking place in the oscillator system of a superheterodyne receiver? Can one assume that if the static operating potentials are correct, the oscillator output is correct? . . . Can one assume that since the static operating potentials are correct, that i-f amplifiers provide the correct gain and are not overloaded?

We recognize that if service tests are made too elaborate, the possibility exists of miscomprehension of the significance of the tests. . . . If that is one of the reasons why the cathode-ray oscillograph is tabooed

by some, then the problem at hand is the education of the servicing industry to realize that its function is the maintenance of radio receivers and allied units and not criticism of the systems. Everything points to even greater complications in radio receivers of the future. Who knows the extent of the complexity of the future television receiver? . . . Now is the time to start the education of the service field in anticipation of future requirements.

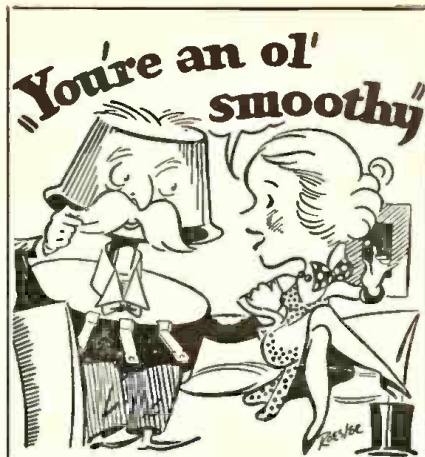
It has been said that some instrument manufacturers looked askance at the cathode-ray oscillograph, because they felt that it would provide a means whereby service men would be able to determine the efficacy of such units as oscillators. That may be true. . . . So what? . . . Is the answer the continuance of the manufacture of equipment which may be subject to such criticism, or is the answer found in the changing of the design, so that it meets present day requirements.

It has also been said that instrument manufacturers did not look with favor upon the cathode-ray oscillograph because it would replace certain units. In our estimation that viewpoint is wrong. Practically all existing service equipment, with the possible exception of the output meter, is related to static tests. The cathode-ray tube is essentially a dynamic testing device. That it may eliminate the output meter is a possibility, maybe a probability, but even if it does, the instrument manufacturers will not suffer. The exploitation of the cathode-ray oscillograph is going to mean the sale of audio oscillators, frequency modulators, etc. . . . In the long run, the instrument manufacturers will gain, instead of losing.

Costs money

We do not hesitate to make this statement directly to the service fraternity. It is not a matter of recommending increased financial expenditures on the part of the service group. Such apparatus is required for the correct application of the cathode-ray oscillograph and for the completion of service tests comparable with modern radio receiver design.

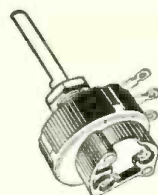
The day is gone when knowledge alone will bridge the gulf between modern radio receiver design and servicing capabilities. Equipment comparable with the work to be done and with the speed of operation required, is the order of the day. . . . The cathode-ray oscillograph is the first of these devices. . . . Many more will follow.



Yes sir

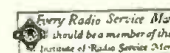
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SERVICE NOTES—RIDER

Using cathode-ray oscillograph

★ Ever since the start of the exploitation of visual alignment apparatus employing the cathode-ray tube, the matter of basic response curves to be used for comparison with the images appearing upon the screen, has been the subject of discussion. . . . What type of curve should be developed in the i-f. amplifier? . . . How can a serviceman align visually if he does not know the proper curve for the system? . . . These are the two leading questions hurled at men who speak about visual alignment.

The problem is not as difficult as it appears. Standard response curves for comparison are valuable, but it is possible to get along within them, that is, if the operator is familiar with the various types of response curves which may be developed with tuned circuit of the variety to be found in radio receivers. Incidentally, this type of information is also of value to the man who does not possess cathode-ray tube type of alignment equipment and who is using the conventional meter type indicators.

Basically, there are two types of response curves of interest in connection with alignment. One of these is the single-peak type of curve which results from loose or critical

coupling of the circuits involved, and the other is the dual-peaked or even triple-peaked response curve which results from over-coupling of the circuits involved.

As a general rule, the majority of i-f. transformers utilized in super-heterodyne receivers, unless otherwise stated, are of the loose-coupled type and when properly adjusted develop a single-peaked response curve. However, it is possible to develop double-peaked response curves by over-coupling the two circuits, usually found in these transformers. I-f. transformers which employ three coils are usually over-coupled and develop multi-peak response curves, usually of the dual peak variety.

Speaking in generalities, the response curve developed with a transformer is a function of the coupling between the circuit and the adjustment of the tuning trimmers. Units which are designed to develop a single-peak, when very accurately tuned have a sharp peak with steep sides. Incidentally, the steepness of the sides is a function of the efficiency characteristics of the unit. The more efficient the unit electrically, the steeper the sides and the greater the response to the peak frequency, which is the resonant frequency of the

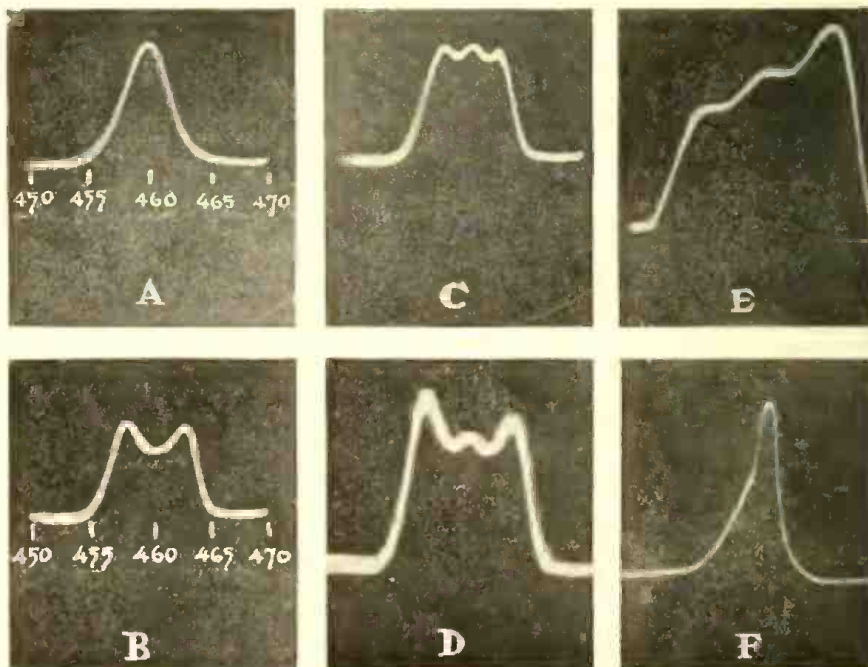


Fig. 1 — Unretouched photographs of cathode-ray patterns taken by John F. Rider, service editor of RADIO TODAY

transformer. The greater the effective resistance of the circuit, the lower the amplitude of the response curve for any given signal input and the broader the shape of the curve.

Response curves are spoken of as being symmetrical and asymmetrical (or non-symmetrical). Without any reference curves to guide the operator, the curve desired is that which is symmetrical in response, irrespective of the number of peaks; it may be a single peak or a double peak. A symmetrical response curve is one which shows equal response to frequencies which differ by like amount from the peak or resonant frequency on both sides. With this in mind, the operator working upon such tuned circuits can seek to attain symmetry of response with meter type indicators or with cathode-ray tube apparatus.

Lining 'em up

An example of a single-peaked response curve which displays symmetry is shown in Fig. 1a. This is an oscillogram of a response curve, peaked at 460 kc. and being swept by a signal which varies in frequency from 450 kc. to 470 kc. Note that the response of the circuit to frequencies within 5kc. below the peak frequency, is substantially the same as for frequencies within 5 kc. above the peak frequency. This oscillogram is not necessarily an indication of what would be a perfectly-aligned circuit with respect to the frequencies passed, for as you can see, response at 5 kc. below and above is substantially zero, but it is a good example of a symmetrical response curve. The correct curve, assuming desired 5 kc. response each side of the peak, would be of this shape; that is, symmetrical, but response at 5 kc. difference above and below the peak frequency, would be much greater.

Such symmetry can be secured with meter type indicators, by first aligning for maximum response and then noting the response at various frequencies within the desired band pass range, above and below the peak frequency. Operating with meter type indicators is by no means as effective as with visual devices which show the actual response curve, but if a man does not possess such equipment, he must work with what he has, hence this information.

An example of a symmetrical response curve for an over coupled circuit is shown in Fig. 1b. There are two peaks, rather than one, but the response of the circuit, to fre-

quencies which differ by like amount above and below the peak frequency is substantially the same. Such a curve can be said to be representative of the response when an i-f. system is adjusted for high-fidelity operation.

Once more we desire to call to your attention that we are speaking about the shape of the curve and not its frequency response with respect to the band pass required in a high-fidelity system. Note that the peaks occur are frequencies which represent like differences from the peak, above and below the peak frequency.

Flatten 'em out

If the adjustment specifications call for such peaks to occur at 7.5 kc. higher than the peak frequency and for 7.5 kc. lower than the peak frequency, and the amplitude of the peaks at these two frequencies is the same, the response will be symmetrical or sufficiently so, to be classed as being satisfactory. There is of course much more to the adjustment of such a circuit, in that the extent of the dip at the peak frequency can be more or less than is shown, with respect to the amplitude of the peaks. If a flat-top characteristic is desired, then the dip would be the minimum consistent with the maximum response over the entire band. The experienced operator can develop such a response curve with meter type indicators, without using the cathode-ray tube, but the time required would be many, many times that when cathoderay equipment is used.

Trick tuning

Symmetry is possible with a triple-peaked curve, just as it is with a double- or single-peaked curve. See figure 1c. As a matter of fact, the triple-peaked response curve was obtained with the equipment which developed the double-peaked curve mentioned before. The change from one curve to the other is purely a matter of tuning adjustment of the respective trimmers. An example of a non-symmetrical or a symmetrical response curve with three peaks is shown in figure 1d. The peak frequency is the same as in figure 1b. but the response of the circuit to frequencies higher than the peak is not the same as at frequencies which differ by like amount from the peak, but are lower than the peak frequency.

The lack of symmetry evident in figure 1d, is not the maximum. The extent can be far greater, as is evi-

(Please turn to page 47)

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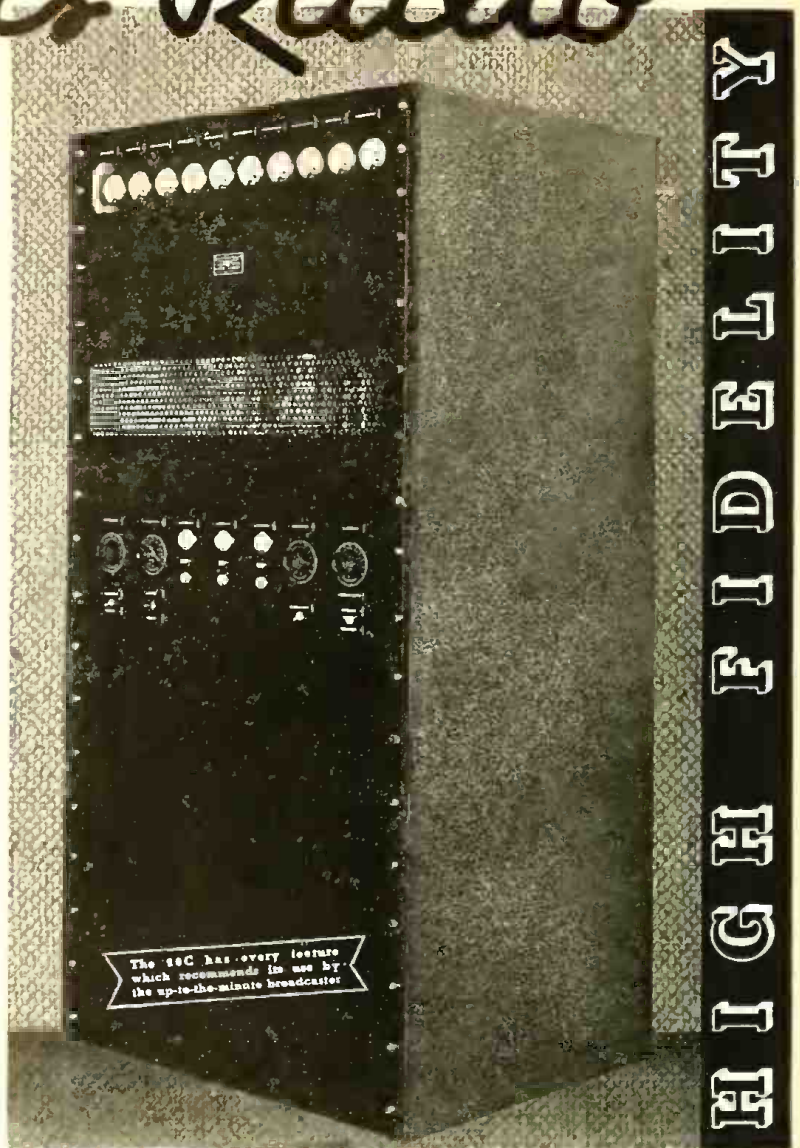
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REAR VIEW—OPEN

SERVICE NOTES—RIDER

(Continued from page 45)

dent in figure 1e. Lack of symmetry in the response of a single peaked circuit is shown in figure 1f. A circuit such as this offers greater response to the signals which constitute one sideband, than to the signals which constitute the other sideband. If sufficient effort is expended, the lack of symmetry can be established with meter type equipment, by, as stated before, noting the output response as the test oscillator frequency is shifted from the peak frequency. Referring to figure 1f, in contrast to figure 1a, the output indication would decrease very rapidly, as the test frequency is increased above the peak, whereas it would decrease much more slowly as the frequency is decreased below the peak.

The shape of the curve is a determining factor upon the band pass characteristics of the circuit. The steeper the sides and the sharper the peak, the more limited is the band of frequencies passed by the circuit, so that when making adjustments it is essential to temper to desire to secure maximum response at the peak with the need for most satisfactory response over the entire band, inclusive of the sidebands.

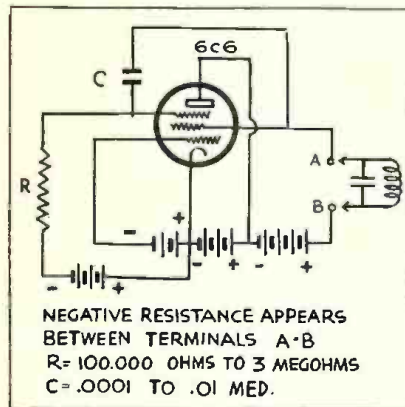
Considering all that we have said, the paramount thing to remember, unless specific information is supplied to the contrary, is to secure a symmetrical response curve of single or double peak, depending upon the type of transformer being aligned.

The 6C6 oscillator

★ We have been experimenting with a 6C6 negative resistance oscillator, with the idea of developing a multi-range test oscillator which would cover the audio, intermediate, and radio frequency bands and which would provide sine wave output, particularly over the audio spectrum. The results secured with a 6C6 tube used as a negative resistance oscillator have been so promising that we hazard the statement that the future will see such tubes used in this manner in commercial test equipment. Not only does this type of oscillator develop good waveform over its entire band, but also it is suitable for coil checking or comparison, can be modulated easily, and is extremely stable in addition to being extremely versatile.

The unit being worked on consists of a 6C6 using the negative trans-

conductance characteristic as an audio frequency oscillator; another 6C6 operated in like fashion, but over the i-f. and r-f. bands and a 6D6 as a modulated amplifier. The voltage output available from the oscillators is ample for operation, being about 10 to 12 volts over the audio, i-f., and r-f. bands up to about 4.0 megacycles. Linear modulation up to about 70 per cent is accomplished with ease, and since it is standard to use 30 per cent modulation, trouble from this angle is eliminated. Modulation of the carrier is accomplished in the suppressor circuit of the amplifier tube. The a-f. oscillator can be used as a source of the a-f. signal; it is sine wave from 40 cycles up to about 12,000 cycles and is also available for use as the modulating voltage.



One of the major advantages of the system is the simplicity of the oscillating circuit, consisting of a coil and condenser. Whereas the average oscillator used for a-f. voltage generation requires several controls in order to assure a sine wave output, this oscillator has but a single control, which need not be in use all the time. Incidentally, an iron-core line-to-line transformer is used over the audio band, yet the character of the output voltage wave is sine. . . . More at a future date.

Tone control

★ The tone controls in many receivers are connected across one of the output tube plates and the ground or chassis. In the event of breakdown of the condenser, a direct-current circuit is available through the condenser; such a circuit arrangement invariably results in damage to the control resistor, because current, due to the high voltage across the re-

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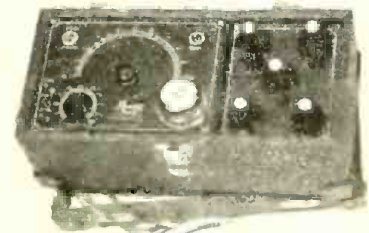
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SERVICE NOTES—RIDER

(Continued from page 47)

sistor, flows through the resistor. Replacement of the condenser in exactly the same manner as used before invites trouble, in the event that failure again results. Experience shows and the recommendation is made by several receiver manufacturers that a preferable connection for the tone control circuit is across the output transformer primary, instead of from plate to chassis.

Time and again, tone control resistors which will not be completely damaged have become noisy after being subjected to the comparatively high current flow occasioned by the breakdown of the tone control condenser. With the change in the connections named, breakdown of the condenser greatly reduces the hazards to the resistor, because the voltage applied across the resistor is the voltage existing across the winding only and is seldom enough to damage the resistor, particularly in view of the low d-c resistance shunt of the winding itself.

Arvin Model 7

★ In this receiver the 6F7 is used as an r-f. amplifier, employing the pentode portion and the triode portion is employed as the first stage a-f. amplifier. This is not reflexing, since the tube is a dual purpose tube, consisting of a triode and a pentode portion. The cathode is common. The i-f. peak is 170 kc. The balance of the receiver employs a 6A7 as a combination mixer-oscillator, a 6B7 as an i-f. amplifier and half wave diode rectifier and also AVC. The output tube is a 41 and the power supply employs an 84.

The following changes have been made in the receiver. A 200-ohm ¼-watt resistor has been added across the vibrator points in the power supply. The grid circuit of the 6A7 oscillator system originally employed a 100,000-ohm resistor. This has been changed to a 50,000-ohm resistor, rated at ¼ watt.

Oscillators in superheterodyne receivers

★ Time and again, servicemen attempt to increase the signal output of a superheterodyne receiver by increasing the operating voltages applied to the oscillator tube. This change is intended to increase the amplitude of the local oscillations fed

into the mixer tube, and thereby increase the amplitude of the resultant signal and total receiver output.

Such an increase in operating voltage is beneficial only if the output of the receiver oscillator is insufficient. However, if the output of the oscillator is sufficient, further increase will have no beneficial effects. The reason for this is that in heterodyne operation, the level or amplitude of the resultant signal is a function of the weaker of the two mixed signals and not of the stronger. The resultant output signal has an amplitude nearly proportional to the amplitude of the weaker signal.

It has been found that if the locally generated signal level is increased from equality, to several times the level of the incoming carrier, the increase in resultant voltage is less than 20 per cent. At the same time, there exists the possibility of overloading of the mixer tube, with consequent distortion. Considering all factors, such a change is not worth while.

New metal tube sets

★ Highlights, pertaining to circuit design of the new metal sets, as relating to service data, will be considered next month.

NEW BOOKS

"The Story of Radio"

By Orrin E. Dunlap, Jr.

★ ORRIN E. DUNLAP, JR., radio editor of the *New York Times*, authors a new edition of "The Story of Radio," first brought out in 1927. Current edition reviews the history of radio from early experiments to the present status of facsimile and television. Okay for anyone wanting radio in a nutshell available for quick reference.

Book's best feature is readability. Written as though "Radio," personified, is telling its own life story. Nice idea. Gives facts like dates and places with much less than the usual dryness. Well worth the \$2.75 if you are at all interested in the development of radio as a science and a business. New chapters on recent experiments especially notable. Published by The Dial Press, New York City, 1935. Price \$2.75.—RADIO TODAY



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September, 1935

TRADE NEWS

★ Roy Erlandson, identified with the radio and music industries for the past 16 years, is now sales manager of the Rudolph Wurlitzer Company, Cincinnati, Ohio, and will be in direct charge of all sales activities of the branch stores operated by this company in various cities throughout the country.

★ Henry Forster, one of the most popular sales executives in the radio industry, promises to have some very interesting news for his friends in the very near future. At the present time, Mr. Forster is making his headquarters at 1307 South Michigan Avenue, Chicago, Ill.

★ There was recently formed in New York City a new company known as the Exporters of America, Inc., which has established offices at 330 West 42nd Street. H. A. Silcox, who has been in the export field for many years, is head of this new organization which will be in charge of the export activities of a number of well-known companies including Sentinel Radio Corp., manufacturing transformers and electrical appliances.

★ V. A. Searles, formerly advertising manager of the Sparks-Withington Company for many years and one of the most capable advertising executives in the radio industry, is now in charge of advertising and sales promotion for the International Radio Corp., Ann Arbor, Mich., manufacturer of Kadette radio sets.

★ In Lynchburg, Va., Mayor Lewis E. Lichford had GE install a 250-watt transmitter and a receiver at police headquarters, as well as 7 receivers in police cars. The system is a one-way, medium-high-frequency affair which will also be used by the state police.

★ Jack Scanlan, former sales manager of the Muter Co., has been appointed general sales manager for Utah Products Co., makers of loud speakers, cabinets, and radio parts.

★ About 200 dealers from southern Mississippi and Louisiana hurried into New Orleans on August 16 at the invitation of the Interstate Electric Co. Crosley's

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This new line has everything needed in popular priced radio to help you do a substantial business at a good profit. 5- to 10-tube Superheterodyne models—Foreign Short Wave, Police and Broadcast bands.

PRIVATE BRAND SETS

A complete line of TRF sets for sales and promotional purposes to fill the need for low priced leaders and round out a complete line. Single band and two-band sets attractively styled. Exclusive cabinet designs and brand names for quantity buyers. Business solicited from small as well as large accounts—export business also invited.

Write at once for details and prices.

Licensed under RCA and Hazeltine patents

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SOLAR

Capacitors



WET
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*Reliable
 in every climate
 throughout
 the world*



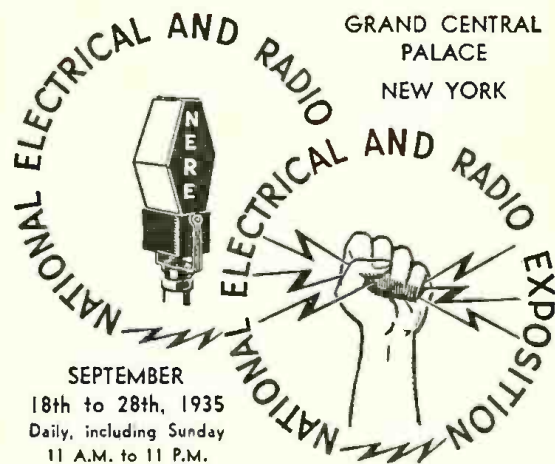
**WHEN IN NEED OF
 GOOD CONDENSERS—
 SPECIFY THE BEST**

Literature on request

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



LEADERS ON PARADE



We publish, with pride, the names of the exhibitors who will be represented at the forthcoming National Electrical and Radio Exposition to be held at Grand Central Palace, September 18th to 28th inclusive.

Air-King Products Co., Inc.
 Allen-Ingraham, Inc.
 Apex Rotarex Corporation
 Atwater Kent Mfg. Co.
 Brooklyn Edison Company, Inc.
 Bushwick-McPhilben Corp.
 (Sparks Withington Corp.)
 Century Products Co. of N. Y., Inc.
 Chicago Flexible Shaft Co.
 Rex Cole, Inc.
 Crosley Distributing Corp.
 Davega-City Radio, Inc.
 Electrical Testing Laboratories
 Emerson Radio & Phonograph Corp.
 Eureka Vacuum Cleaner Co., Inc.
 Fada Radio and Electric Co.
 The Fay Company
 Ferguson Radio Corp.
 Frigidaire Corporation
 General Electric Co. (Air Conditioning Dept.)
 General Electric Co.
 (Atlantic Division, Incandescent Lamp Dept.)
 General Electric Co. (Merchandise Dept.)
 General Electric Supply Corp.
 General Household Utilities Co.
 Gemsback Publications, Inc.
 Graybar Electric Co., Inc.
 Grolier Society of London
 The Hoover Company
 House Furnishing Review
 Kelvinator Corp. (Air Conditioning)
 Kelvinator Corp. (Refrigeration)
 Landers, Fray & Clark

E. B. Latham & Co. (Leonard Refrigerator)
 A. J. Lindemann & Hoverson Co.
 McGraw Hill Publishing Co.
 R. H. McMann, Inc.
 New York and Queens Electric Light and Power Co.
 The New York Edison Co., Inc.
 Petroleum Heat & Power Company
 Philco Radio & Television Corp., of N. Y.
 Pierce Airo, Inc.
 Pilot Radio Corp.
 Premier Division, Electric Vacuum Cleaner Co.
 Proctor & Schwartz Electric Co.
 "Radio"
 Radio & Electric Appliance Journal
 Radio Today
 The Radiobar Co. of America
 R. C. A. Mfg. Co., Inc.
 Royal Eastern Electrical Supply Co.
 Singer Sewing Machine Co., Inc.
 Stewart Warner Company
 Stromberg-Carlson Telephone Mfg. Co.
 Superior Cabinet Corporation
 Times Appliance Company, Inc.
 United American Bosch Corp.
 Warren-Norge Company, Inc.
 Warren Telechron Co.
 Westinghouse Electric & Mfg. Co.
 Westinghouse Lamp Co.
 Westinghouse Electric Supply Co.
 E. A. Wildermuth
 Zenith Radio Corporation

NATIONAL ELECTRICAL AND RADIO EXPOSITION

Sponsored by the Electrical Association of New York, Inc.

sales manager, H. E. Richardson, presented the new Crosley line with a flourish, and the southern district sales manager, George H. Lasley, made further remarks. Two Interstate executives, O. G. H. Rasch and Percival Stern, talked about credit, club-pay plans, and Crosley history.

★ New headquarters for the United Appliance Corp., Fort Worth, Texas, have been opened for radio distribution in 95 counties of North Texas. The new offices are in charge of Harry B. Savage and Tom R. McBeath.

★ A. G. Manke is a newcomer to the staff of General Household Utilities Corp. of Chicago. He was previously with Pilot Radio and Tube Corp.

★ J. F. Weldon, export manager for Atwater Kent, will soon have new merchandising plans completed for the new AK line abroad. Weldon left last month for Europe, North Africa, and Asia Minor.

★ Frank Zahner, globe trotter, fiction and radio writer, has been picked for sales promotion manager of the radio division of Krich-Radisco, Inc., Newark, N. J.

★ W. S. Rice, owner of a chain of music stores in South Carolina, which also goes in for tops radio lines, had added another outlet to the string with the opening of his new shop at 1318 Main Street in Columbia, S. C.

★ A Southern California group of distributor-executives, bearing the quaint tag of "Radio Booster Club," elected officers recently at Branch No. 1, Los Angeles. Score: J. T. Hill, president; J. J. Perlmuth, vice-president; Harry A. Lasure, secretary-treasurer; Carl Stone and Don Wallace, board members.

★ National Union Radio Corp., headed by S. W. Muldowny, has announced appointment of F. J. Wessner as general sales manager to follow H. A. Hutchins, gone to the advertising field. Wessner has been with National Union since its start in 1929.

★ The Electric Lamp and Supply Co., St. Louis, has been appointed distributor in the St. Louis territory for Stewart-Warner radios. H. S. Hollander, Electric Lamp head, recently took his entire sales force to the Stewart-Warner convention in Chicago.

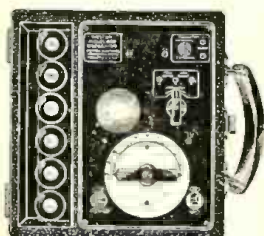
NEW THINGS FROM THE MANUFACTURERS

Complete listing of Fall model radios on pages 36, 37 and 39

DIRECT-READING TUBE TESTER

★ Tests both metal and glass tubes—direct-reading scale. Applies proper load values—indicates leakages and shorts. Four simple operations required. Meter protected against drainage—A.C. meter for line voltage adjustment. Attractive oak case. Model 430—net price \$18. Readrite Meter Works, Bluffton, Ohio.—**RADIO TODAY**

ALL-WAVE TEST OSCILLATOR



★ Test oscillator for serviceman—range from 100 to 22,000 kc. Special attenuator—constant output impedance of 200 ohms—minimum signal below one microvolt and maximum of 0.2-volt. Plug-in coils—uniform output over each band—new ranges can be added. Battery operated—self contained—triple shielded. Weight 12¼ pounds. Model 692—list price \$85. Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark, N. J.—**RADIO TODAY**

RESISTANCE BRIDGE



★ Accurate Wheatstone-type resistance bridge at moderate price. Simple in operation. Unusual electrical ruggedness. Unique internal construction—resistor elements wound on tapped strips. Taps set to extreme accuracy. Vacuum-impregnated—no variations from humidity. Holds calibration. Alloy resistance wire maintains constant resistance with reasonable changes in temperature. Net price \$29.70. Muter Co., Chicago, Ill.—**RADIO TODAY**

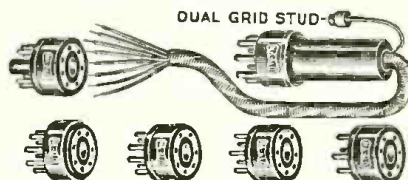
OIL-FILLED CONDENSERS

★ Hermetically sealed, oil-filled condensers rated at 1,000 volts D.C. Non-inductive. Suitable for high-voltage amplifiers and transceivers. Only 2 in. high by 1 in. square. Cased in metal can. Available in .05, .1, .25, .5 mfd. List price \$1.65 to \$2.00. Cornell-Dublier Corp., 4377 Bronx Blvd., New York City.—**RADIO TODAY**

HIGH-FIDELITY AMPLIFIER

★ Amplifier for public address. Undistorted output of 11 watts—maximum of 20 watts—gain of 108 db. Separate high and low frequency variable attenuators. High-fidelity speaker system with two low-frequency and a high-frequency tweeter—field supply and speaker filter separate from amplifier. Overall characteristic of amplifier and speaker essentially flat to 10,000 cycles. Amplifier and speakers—list \$425. Pacent Engineering Corp., 79 Madison Ave., New York City.—**RADIO TODAY**

METAL TUBE ADAPTERS



★ Kit of adapters and analyzer plug for modernizing test equipment—handles metal and glass tubes. Dual grid stud for glass and metal tube cap clips—5-foot 9-wire cable. List price \$5.35. Alden Products Co., Brockton, Mass.—**RADIO TODAY**

SHORT-WAVE SUPER

★ Short-wave superheterodyne with band switching from 9 to 175 meters. Two tuned r.f. stages on all bands. Calibrated band-spread dial. Iron-cored i.f. transformers. Crystal filter for signal—signal c.w. reception. Better than 1 microvolt sensitivity—ten tubes. Tuning and sensitivity meter. Available in kit or assembled. Model 5D—net price \$114 complete. McMurdo Silver Corp., 3354 N. Paulina St., Chicago, Ill.—**RADIO TODAY**

WIDE-RANGE TRANSFORMERS

★ Extremely wide-range transformers—35 to 225,000 cycles—2 decibel variation. High-permeability nickel-iron core. Cased in cast aluminum. Employed with balanced

push-pull tube circuits. Useful for television and wide-range sound. Available in three models—line to push-pull grids (741-G), push-pull interstage (741-J), push-pull plates to line (741-P). Price \$22.50. General Radio Co., 30 State St., Cambridge, Mass.—**RADIO TODAY**

HIGH-FREQUENCY PRE-SELECTOR



★ Two-stage radio frequency amplifier for use ahead of short-wave receiver. Increases signal strength—reduces atmospheric and tube noises, relatively. Coil switching mechanism—range from 12 to 200 meters. Antenna switched from pre-selector to receiver without disconnecting leads. Housed in metal cabinet. Model 302—available in kit or wired. J. W. Miller Co., 5917 So. Main St., Los Angeles, Cal.—**RADIO TODAY**

BEAT OSCILLATOR



★ Beat oscillator for use with short-wave superheterodyne—produces audible beat note in speaker. Used for reception of c.w. code signals—or tuning by “birdie” or whistle method. Range of 415 to 700 kc. Vernier adjustment for controlling pitch. Electron-coupled oscillator for frequency stability. Used with practically any radio. Power supply from receiver. 7 x 2¾ in. base x 7 in. List price—\$7.50. RCA Mfg. Co., Camden, N. J.—**RADIO TODAY**

(Please turn to page 53)

ACCOMPLISHMENT



● For some time we have been supplying the requirements of leading set manufacturers with a complete line of Metal Tubes for original equipment.

Beginning September 3, several thousand tubes a day have been shipped against orders from leading jobbers for replacement purposes. These shipments have been made up of balanced quantities of all types now being used as original equipment.

Our success with the new metal tubes has enhanced the position which we have held for over three years as the largest supplier of glass tubes for original equipment.

Inquiries regarding tubes for original equipment will be promptly answered if addressed to our New York Office at 500 Fifth Avenue.

Jobbers, take no chances—carry SYLVANIA tubes and be ready to take care of your trade!

Dealers and service men will profit by dealing thru a SYLVANIA jobber. Communicate with our factory for *FREE* Technical Supplement on the new metal tubes. Address Hygrade Sylvania Corporation, Dept. J-1, Emporium, Penna.

SYLVANIA

THE SET-TESTED RADIO TUBE

© 1935, Hygrade Sylvania Corp.



THE STOLEN DOLLARS YOU WILL NEVER SEE

Any failure of operation in a radio set, no matter how small, means 100% failure. The receiver sold or repaired yesterday and found faulty today will cause loss of countless dollars in good will to the serviceman, dealer, and manufacturer.

"Radio set users want, above all else, dependability. Inquiries among lay listeners show that whatever their interest in tone quality, sensitivity, or other refinements, they put above everything the matter of continuity of operation and freedom from service calls." . . . *Electronics.*



So read an editorial in one of the leading engineering magazines CORNELL-DUBILIER condensers are specified on government blueprints, used by all large broadcasting stations and demanded by engineers of the largest radio set and apparatus manufacturers in the country. This nation-wide acceptance is ample proof of C-D QUALITY and DEPENDABILITY.

Assure yourself of customer satisfaction and a profit by using CORNELL-DUBILIER electrolytic, paper, oil and mica condensers.

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NEW YORK

New! **MUTER** Interference Filters

STOP
Man Made Interference!

THIS "Traffic Cop" of Radio absolutely eliminates the man-made interference that comes in over the power line by merely attaching the Filter directly to the set itself. Sell these filters with confidence and guarantee their operation, because *they will do the job.* There's a real need for them. Write Dept. T-9. Ask your jobber or take advantage of our trial offer.

---MAIL THIS COUPON---

THE MUTER COMPANY
1255 South Michigan Avenue
Chicago, Illinois

Please ship me one Muter Interference Filter at your trial offer of \$1.80 (\$3.00 list, less 40%).

MUTER

NAME _____
ADDRESS _____
CITY _____ STATE _____

NEW THINGS

(Continued from page 51)

WIND BATTERY CHARGER

★ Generator driven by wind power. Employs 5½-foot propeller to utilize low winds. Charge 6-volt storage batteries. Also has capacity to light several rooms. Mounts atop any high building. Rugged and efficient construction claimed. Zephyr Power Co., Dodge and 11th, Omaha, Neb.—**RADIO TODAY**

SECTIONAL CABINETS

★ Sectional wooden cabinets suitable for storing small parts. Available with 2½ in. or 5¾ in. high drawers—two rows of former interchangeable with latter through use of removable cross partition. Sections 23¾ in. wide x 15 in. deep x 27 in. high. Two, four, or six drawers to a shelf. Exterior of white oak in medium finish. Model 1740—price \$27.10. J. D. Warren Mfg. Co., Montpelier, Ohio.—**RADIO TODAY**

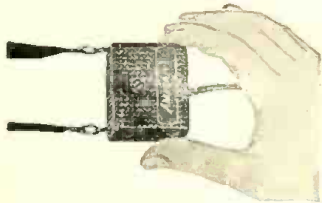
LOW OHM CARBON RESISTORS

★ Carbon resistors as low as 0.04 ohms—power ratings from ¼ to 10 watts—type LV. Withstand humidity conditions much more severe than specified by R.M.A. Conform to same standards of life, voltage, load, and overload characteristics set by regular Ohlhm resistors. Ohio Carbon Co., Lakewood, Ohio.—**RADIO TODAY**

STORAGE CABINETS

★ Handy storage cabinets for parts—9½x2½x4½ inches. Can be stacked to fit any available space. Obtained free with purchase of condenser kits. Tobe Deutschmann Corp., Canton, Mass.—**RADIO TODAY**

VELOCITY MICROPHONE



★ Midget high-impedance velocity microphone. Hangs from shoulders—always correct distance from mouth. Output constant within 1 db. with speaker's head in any direction. Excellent for lecturers and dinner speakers. Size of match box—weighs eight ounces. High-level and high-impedance eliminates need of separate pre-amplifier—works directly into grid of amplifier tube. Amperite Corp., 561 Broadway, New York City.—**RADIO TODAY**

CRYSTAL MICROPHONE

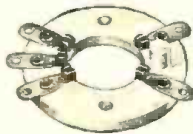
★ Diaphragm-type crystal microphone, designed for communica-

tions service in airways, police, and amateur radiophone systems. Linearly increasing response of 20 db. from 60 to 2,000 cycles and flat from 2,000 to 4,000 followed by gradual cut-off. Rising characteristic said to attenuate low frequencies, preventing overload—effective side-band power doubled. Model 70S—Shure Brothers Co., 215 W. Huron St., Chicago, Ill.—**RADIO TODAY**

HIGH OHMAGE RESISTORS

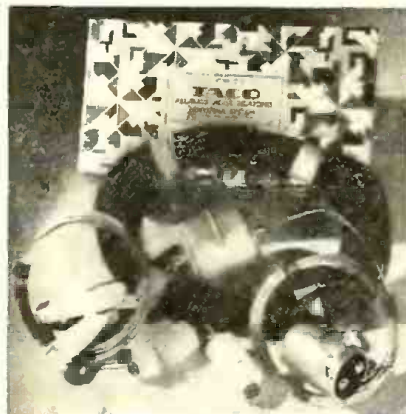
★ Three-watt carbonized resistors—100 ohms to 100 megohms. Low temperature coefficient of -0.0003/°C. Absolutely noiseless in operation—non-hygroscopic coating of lacquer for moisture-proofing. Resistance permanent with age—independent of voltage. Suitable for use in photo-cell circuits and high-quality amplifiers. Precision units available for use as meter multipliers. Three-watt 40 megohms—list price \$.90. Morrill and Morrill, 30 Church St., New York City.—**RADIO TODAY**

SOCKET FOR ACORN TUBES



★ Special extruded isolantite socket for ultra-high-frequency acorn-type tubes, 954 and 955. Only 1⅞ inch in diameter. Has alignment plug to insure proper insertion of tube. Tops and sides glazed for high surface resistivity. Terminals recessed on one side, permitting flat mounting to metal shield, thereby reducing interstage coupling. Hammarlund Mfg. Co., 424 W. 33rd St., New York City.—**RADIO TODAY**

ALL-WAVE ANTENNA KIT



★ Antenna kit comprising doublet aerial with twisted-pair lead-in, antenna coupler, and receiver coupler. All connections factory-wired and soldered—ready for installation with necessary insulators. Said to be highly efficient on broadcast waves and on short-wave broadcast bands—background noise reduced to absolute minimum. List price \$6.75. Technical Appliance Corp., Long Island City, N. Y.—**RADIO TODAY**

NOISE SUPPRESSORS

★ Complete line of noise eliminators for use with receiver or appliances. Extremely compact. Easily installed—between outlet and line plug with grounded lead. Model RN especially effective at frequencies from 150 to 20,000 kilocycles—sectional band-suppression construction—capacity of 3 amperes. Other models of both capacitive and capacitive-inductive types available from \$.40 up. Model RN—list price \$.50. Solar Mfg. Corp., 599 Broadway, New York City.—**RADIO TODAY**

SPACE-SAVER CONDENSERS



★ Midget electrolytic condensers for ultra-compact receivers. Available from 2-16 mfd. in 200- and 450-volt ratings. No sacrifice in service life. Popular where space is at premium or for replacing old condensers with greater capacity or higher working voltage. Size of 8 mfd., 450-volt—2 7/16 x 1½ x 11/16 inches. Aero-vex Corp., Brooklyn, N. Y.—**RADIO TODAY**

PHONOGRAPH-AMPLIFIER

★ Portable three-stage amplifier for AC-DC. Output of over five watts. Special hum balancing circuit permits use of push-pull type 48's on A.C. Electric turntable takes 16-inch records. Crystal type pick-up. Eight-inch dynamic speaker separate from turntable and amplifier. Addition of microphone allows for use as public address system. List price \$89.50. Ansley Radio Corp., 240 West 23rd St., New York City.—**RADIO TODAY**

DYNAMIC MICROPHONE

★ High-grade pick-up from 40 to 10,000 cycles, without regard to direction of sound approach. Application of modern acoustic streamline principles results in uniform response both with respect to frequency and angle of incidence of sound wave. Has desirable features of ordinary dynamic microphone but small in size (2½ diameter) and lightweight. Used with existing speech equipment at distances of several hundred feet. Graybar Electric Co., New York City.—**RADIO TODAY**



200% Overload Without Injury with MICROHM MICA CARD RESISTORS

Our type "H" 40 watt Mica Card units have been subjected, in laboratory tests, to loads up to 120 watts without injury. Size 1½" wide, 3¼" long by ⅛" thick. Their unique construction suggests many uses.

Write for further information and our new catalog.

PRECISION RESISTOR COMPANY
334 Badger Avenue - - - Newark, N. J.

MICROHM

WIRE WOUND RESISTORS

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FOR the convenience of our readers in obtaining Radio Books, we offer the services of this department. Outstanding Radio Books will be advertised monthly. These are available to you at the prices listed. No charge will be made for wrapping and mailing. Should you desire a book that we have not yet advertised, and the price of which you do not know, just send \$5 with your order and we will return the correct balance, or communicate with you if the list price exceeds that amount.

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Radio Trouble Shooting, by E. R. Haan. Takes the guess work out of Radio. Shows the service man quickly and efficiently exactly what is wrong with an inefficient set and how to correct the trouble. 328 pages, over 300 illustrations. **\$3.00**

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The Story of Radio, by Orrin E. Dunlap, Jr. New, revised, enlarged edition. 32 illustrations. The recent strides in television, photoradio, ultra-short waves, and in radio applications in man's fight against body ailments have led to this expansion of The Story of Radio, which should be on your bookshelf. **\$2.75**

Order Your Radio Books From

BOOK SHOP, RADIO TODAY
480 LEXINGTON AVENUE
NEW YORK, N. Y.

ELECTRONICS

"Frequency-modulation" on 7-meter band

★ Signs of a coming revolution in the broadcasting art—if broadcasting goes to the ultra-short waves—are now clearly visible to some engineers who have examined Major E. H. Armstrong's wide-band "frequency-modulation" system. This system, which is operating between the Empire State Building in New York and Haddonfield, N. J., near Camden, is giving a better signal in Haddonfield than the 50 kw. New York stations.

The superiority in freedom from static and tube noise and the entire absence of selective side band fading at a distance well beyond the fading zone, have been demonstrated repeatedly during a summer which has been marked by thunderstorms of great severity. On numerous occasions it has been shown that the 2 kw. 7-meter Empire State signal is far better than the high-power Philadelphia stations.

The new system employs frequency shifts as wide as 60 kilocycles.

The overall frequency characteristic of the transmitter and receiver is declared to be flat from 30 to 20,000 cycles, which accounts for the high fidelity of the transmission. The system is being successfully used for multiplex transmission of programs.

Electronic bull's-eye for Lake Placid gunners

★ When the Statewide Rod and Gun Club meets at Lake Placid, N. Y., in mid-September, a new photo-electric "gun" that shoots light instead of bullets, will be demonstrated. In the target is a photo-electric cell, or "electric eye." When the trigger is pulled, a focussed light in the gun-barrel flashes momentarily. If the light-beam is aimed at the photo-cell bull's-eye at that instant, the photo-cell records a hit, sending its own faint electronic impulse through amplifiers to ring the gong. At the same time a big red light is switched on with each bull's-eye rung up.

Similar photo-electric targets have been tested out by U.S. Army officials in an effort to develop a gun for target practice that requires no ammunition and will save Uncle Sam's money.

DE WALD Presents a Complete, New

Line Featuring METAL TUBES

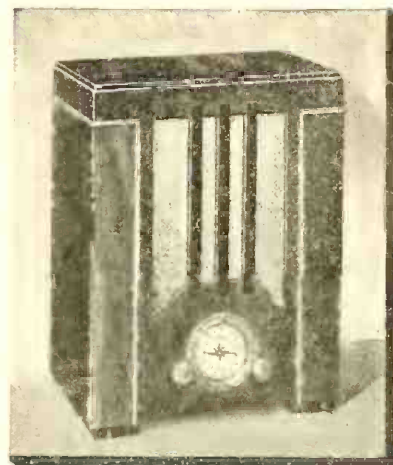
Surpassingly Beautiful Cabinets
 Broadcast, Police, World-Wide Ranges Pace-Setting Values and Performance



MODEL 610SA — 3 bands — 18 to 560 meters — 6-tube AC superheterodyne receiver.



MODEL 612SA — foreign and broadcast — AC/DC superheterodyne receiver — 17-55, 180 to 560 meters.



MODEL 510B — 5-tube, AC superheterodyne hi-gain receiver — 175 to 560 meters.

PIERCE-AIRO, INC.
 518 Sixth Avenue New York City

Licensed by RCA-Hazeltine-Latour MAKERS OF FINE RADIO RECEIVERS SINCE 1921 See us at Booth 13, Grand Central Palace



SCIENCE STRIDES Forward

The development of the cathode ray tube has opened a tremendous field with its applications and uses for test equipment and tuning apparatus. RIDER, in introducing

his latest book, "THE CATHODE RAY TUBE AT WORK," brings these developments within the reach of every serviceman. Whether you are the dealer selling to the serviceman or the serviceman repairing equipment — the importance of the proper tools — the importance of the proper information concerning the equipment you are selling or repairing, has long been acknowledged.

RIDER, through many years of association with the dealer and serviceman, is thoroughly familiar with the needs and requirements of the field.

"THE CATHODE RAY TUBE AT WORK" is now on your jobbers' shelves. Check these books and get the copies you require today.

Your standing as a business man in the radio field, or as a technician will certainly be strengthened by RIDER'S books

"The Cathode Ray Tube At Work"
 320 pages 6 x 9
 \$2.50 postpaid

RIDER JOHN F. RIDER PUBLISHER
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 1440 BROADWAY • NEW YORK

RANGERTONE, INC. ELECTRIC-MUSIC

Enables broadcast artist, advertiser, or station to obtain a noise-free, high fidelity record of any performance at a moderate cost.

RANGERTONE RECORDING EQUIPMENT RECORDS

NEWARK, NEW JERSEY

RADIO TOMORROW

Industry leaders see bright skies ahead

★ The usual ballyhoo about "the biggest season in radio since 1928" is heard on all sides. The unusual point is that this year it seems to be true.

Basic business indices (steel and iron production, construction contracts, electric power consumption, commodity prices) all show 20 to 100 per cent gains over this time last year. Basis for substantial increases in radio sales this Fall and Winter are laid on a sound foundation of definite improvement in buying power. Whether the public spends it for radio or something else would seem to be strictly up to the radio trade itself.

So far as the season immediately ahead is concerned, radio manufacturers, dealers and jobbers are planning on getting at least a 15 or 20 per cent greater volume than last year. Whoop-te-do about "heat last year" and "the best season in our history" at last seems to have a pretty good chance of becoming a reality — the Ethiopian in the Italian cabinet is mentioned above — will radio manufacturers, jobbers and dealers follow through to see that radio gets first whack at the somewhat looser purse-strings?

"INCREASE BASED ON SOUND PRINCIPLES"

Leslie F. Muter, President, Radio Manufacturers Association; President, The Muter Co., Chicago.

Every indication points to the largest radio year in our history, which is based on the following sound principles:

1. The quality and prices of the new lines are better than ever;
2. The all-wave features are reviving the enchantment of distance;
3. The broadcasting offered is greatly improved and diversified to meet all interests;
4. Radio today still offers the greatest value in entertainment, instruction, and service for the consumer's dollar.

"COMMITMENTS GREATER"

B. Abrams, President, Emerson Radio and Phonograph Corporation.

If the experience of the Emerson Radio & Phonograph Corporation to date can be used as a criterion, the 1935-36 season will prove to be a record period in the sale of small sets. Distributor and dealer commitments are far in excess of those during the same period a year ago. We report, also, that commitments on Emerson Consoles are already greater than

those for the entire season last year. I am very much encouraged with the outlook.

"CONSIDERABLE INCREASE"

Powel Crosley, Jr., President, The Crosley Radio Corporation.

To us here in Cincinnati it looks like we are going to have a big radio season.

Sales between now and January first should be quite considerably ahead of what they were last year. We anticipate a very considerable increase over last year as our new line has met with very excellent acceptance in the field.

"LARGER SETS WILL SELL"

E. T. Cunningham, President, RCA Manufacturing Company.

There is every indication that the new 1935-36 radio season will be the most outstanding in recent years. Business sentiment is high, purchasing power and the urge to spend is greater, and the added technical improvements incorporated in the new radio instruments should make more of the radio sets now in use obsolete.

I look forward to a substantial increase for the entire industry in the coming season. Public and trade acceptance of the "Magic Brain" receiver has encouraged us to increase our production more than 100 per cent over last year.

"ONE OF BEST YEARS"

E. F. McDonald, Jr., President, Zenith Radio Corporation.

Your inquiry reaches me on board my yacht in the Canadian wilderness of Georgian Bay.

Zenith Radio Corporation looks forward to this as one of its best years. Regards.

"20 PER CENT AHEAD"

P. R. Mallory, President, P. R. Mallory & Co.

From our intimate contact with customers to whom we supply radio parts, it is our opinion that so far this year the radio business is about 20 per cent ahead of the same period last year.

We are optimistic for the future and we can see no reason why this rate should not be continued at least through the balance of the season.

"NETWORK REVENUE 12 PER CENT OVER LAST YEAR"

Edgar Kobak, Vice-President, National Broadcasting Co.

Advance bookings for NBC networks show promise that the Fall of 1935 will be at least 12 per cent better than last Fall.

Actual revenue figures show that the up-swing is already started. With time at a premium, many Fall cam-

paigns are scheduled to start three or four weeks sooner than last year.

"NO MORE SWAPPING DOLLARS"

N. P. Bloom, President, Adler Manufacturing Company.

It is my opinion that the radio season ahead of us will be a *successful* season. By that I mean that, in the main, on the part of the manufacturer, distributor and dealer, the days of swapping dollars are about over. There is a definite trend on the part of the consumer toward better merchandise so that once again the interest of those engaged in fabrication and merchandising of radio is directed toward style and performance rather than price.

Men and organizations with courage enough to follow the trend, should do at least twenty-five per cent more business than they did last year.

"INCREASED DEMAND APPARENT"

G. E. Deming, Executive Vice-President, Philadelphia Storage Battery Co.

The advances of science and invention in the field of high fidelity radio reproduction during the past year have made possible a fuller enjoyment of the many excellent programs offered radio listeners. Greater public appreciation of the wealth of available radio entertainment has translated itself into an increased demand for quality instruments. The result has been record-breaking production for Philco during the first half of 1935, with indications pointing to even greater production during the next six months.

"FAR FROM SATURATION"

C. E. Stahl, Vice-President, Arcturus Radio Tube Co.

The transition of radio from a novelty to a home necessity is creating a demand for better radio equipment and this demand is still far from any saturation point. In addition, potentialities for a market for short wave sets have not been scratched and with the reception now obtainable, a tremendous market can be cultivated.

The only deterrent to a highly successful season might be the introduction of the metal tube. Irrespective of what its merits may be, the public may hesitate in accepting an untried product and on the other hand, may demur in accepting a set equipped with the old style glass tubes in face of the metal tube propaganda.

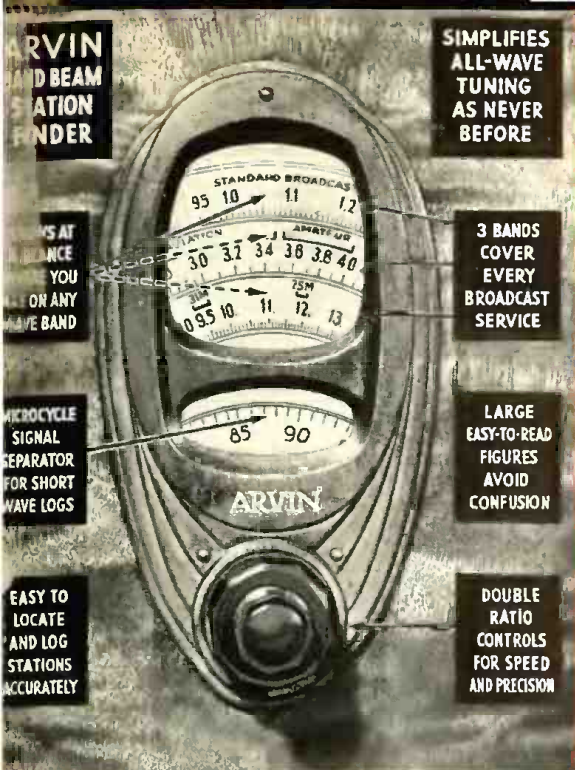
"12 TO 15 PER CENT UP"

Roy Burlew, Executive Vice-President, Ken-Rad Corporation.

Indications are that radio sales for the balance of the current year will exceed 1934 sales to the extent of perhaps twelve or fifteen per cent.

This situation can, however, be changed very easily if the set manufacturers engage in a further discussion as to the comparative value of metal tubes and glass tubes.

I might add that the present situation has placed the tube manufacturer in the middle of an argument in which he can not afford to actively engage.



SIMPLIFIES ALL-WAVE TUNING AS NEVER BEFORE

3 BANDS COVER EVERY BROADCAST SERVICE

LARGE EASY-TO-READ FIGURES AVOID CONFUSION

DOUBLE RATIO CONTROLS FOR SPEED AND PRECISION

ARVIN AND BEAM STATION FINDER

BALANCE AT ANY WAVE BAND

MICROCYCLE SIGNAL SEPARATOR FOR SHORT WAVE LOGS

EASY TO LOCATE AND LOG STATIONS ACCURATELY

ALL-WAVE TUNING

Simplified by

ARVIN

A bright beam of light shines through the glowing dials from behind—moves up and down on the major dial—and illuminates the central reading on the chasen wave band. The lower or secondary dial is controlled by the same dual-knob that operates the major dial. It is calibrated from 1 to 100, and is geared to make five complete revolutions to one trip across the large dial.

MODEL 81. Walnut veneered console, shown below, 40 1/4" high, 22" wide, 12 1/8" deep. An 8-tube all-wave superheterodyne covering all broadcast service. Oversized, full-range 12" dynamic reproducer. List price with tubes **\$89.50**

MODEL 81M. Same as Model 81, with 9 metal tubes. List. **\$99.50**

MODEL 62. Walnut veneered console, 36 1/2" high, 19 3/4" wide,

11 3/4" deep. 6-tube all-wave superheterodyne covering all broadcast service. Full-range 10" dynamic reproducer. List price with tubes... **\$59.50**

MODEL 62M. Same as Model 62, with 7 metal tubes. List. **\$67.50**

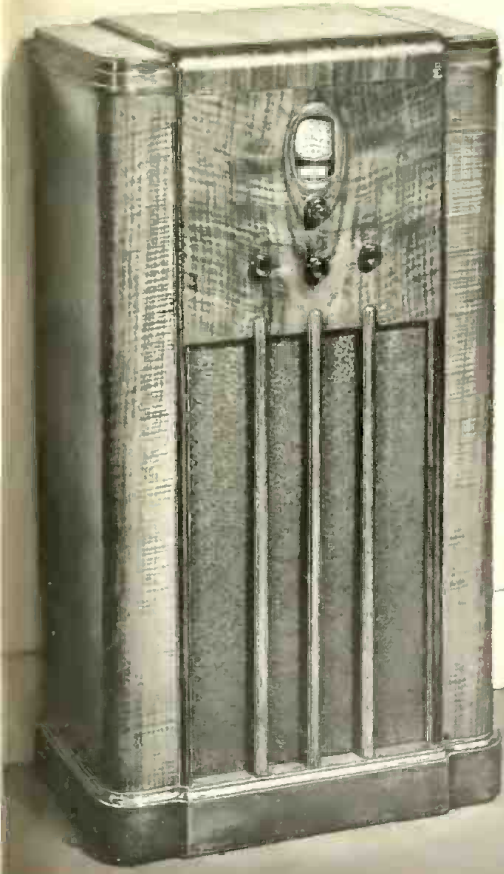
MODEL 62B. 5-tube farm radio, 6-volt battery operation. Standard broadcast only. Same cabinet as Model 62. List price with tubes... **\$54.50**

ACTUALLY—the easiest, simplest, most accurate tuning the radio world has experienced to date . . . and that's not all!

Metal tube models, of course! And numerous outstanding features such as . . . Center-Poised Tuning Mechanism with Double-Ratio Control for speed and precision . . . Automatic Wave-Route Director that balances antennae to circuit for each broadcast band . . . Powerful Full-Range Dynamic Reproducers with Multi-Point Tone Control . . . Double-Action Automatic Volume Control and Logarithmic Manual Control . . . True-Fidelity Amplifier Circuits, triple-tuned to insure true ratio of reproduction to the original broadcast . . . and many other features that make the new Arvins your best buy for radio profits.

Look at the attractive Arvin cabinets! They're designed to enhance the beauty of any room . . . Modern in every line, but not too modernistic. Listen to the rich, full tones of the new Arvins! Every one of the eleven models (including two battery-operated tablesets and one console) is truly outstanding in its price class . . . The new Arvins have everything your customers want, at prices they can afford to pay. This means more sales and greater profits for you. See your Arvin jobber!

NOBLITT-SPARKS INDUSTRIES, Inc., COLUMBUS, INDIANA



MODEL 61. A 6 tube all-wave superheterodyne covering all broadcast service. Full-range 8" dynamic reproducer. Walnut veneered cabinet, shown below, 21 1/2" high, 16 1/2" wide, 10 3/4" deep. List price with tubes **\$49.95**

MODEL 61M. Same as Model 61, except with 7 metal tubes. List price with tubes **\$57.95**

MODEL 61B. A 5-tube farm radio, 6-volt battery operation. Standard broadcast. Cabinet like Mod. 61. List with tubes **\$42.95**

MODEL 51. A 5-tube skip-band superheterodyne. Frequency range: 540 to 1750 KC—5.5 to 18.0 MC. Full-range 6" dynamic reproducer. Walnut veneered cabinet shown below, 14 1/2" high, 12" wide, 8" deep. List price with tubes..... **\$32.95**

MODEL 51B. 4-tube farm radio, 2-volt air cell battery operation. Standard broadcast only. Same cabinet as Model 51. List price with tubes. **\$24.95**

MODEL 41. A 4-tube AC superheterodyne in attractive, portable-sized cabinet 13" high, 10 3/8" wide, 7 3/8" deep. Frequency range 1750 to 540 KC. Covers all standard and some high-fidelity, police and amateur broadcasts. A really dependable low-priced set, built so well that you can sell it with confidence and assurance of customer satisfaction. List price with tubes..... **\$19.95**

Prices of all models are slightly higher, Denver and West



By the Makers of Arvin Car Radio



*Such popularity
is well deserved*

By popular approval, we again draw aside the curtain on Model A-125, accepted everywhere by dealers and the public alike as the radio sensation of the year. Here are a few of the many startling features that place Model A-125 in the spotlight of fame.



METAL TUBES

Equipped 100% with 12 all-metal tubes.

SLIDING-RULE TUNING SCALE

All stations listed in a horizontal line. "Easy to read as a ruler." Automatic two speed vernier tuning.

SENTRY BOX

Passes only the desired frequency, rejecting all others. Coils are mounted directly on switch points. Separate coils for each band and no tapped coils are used.

PERMALINERS

Sealed air dielectric trimmer condensers permanently maintain perfect alignment of all parts of circuit.

STABILIZED DYNAMIC SPEAKER

A 10 $\frac{1}{4}$ -inch speaker of new design. Projection welding assures permanent and perfect alignment of all magnetic paths.



PRECISION TUNING INDICATOR

Furnishes a refined vernier reading for any point on main dial.

SHADOW BAND TUNER

Indicates when receiver is in resonance with desired station.

ADDITIONAL FEATURES

Noise Control — Automatic TWO-speed Station Finder — Deluxe Console Cabinet — Antenna and Ground Connection Board for easy connection to G-E "V" Doublet Antenna.

Model A-125 and its full line of companion models are supported by a merchandising and powerful sales promotion program that is making radio history for franchised G-E Radio Dealers. Ask your General Electric Radio Distributor for complete details. Or write the General Electric Company, Section R-149, Merchandise Department, Bridgeport, Connecticut.



GENERAL ELECTRIC RADIO

With the tube that's "Sealed in Steel"

MERCHANDISE DEPARTMENT
GENERAL ELECTRIC COMPANY
BRIDGEPORT, CONNECTICUT

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