

WESTERN Music and Radio Trades JOURNAL

The MISSION CONVERTER

GET BELOW 200 METERS! Join the throng of short wave enthusiasts and **LISTEN** to stations you've read about. **HEAR** the voices and music of foreign countries. **TUNE IN** on the new police broadcasts. Get the amateur radiophone conversations.

The **MISSION CONVERTER** transforms most any standard A.C. or D.C. radio into an efficient low wave receiver. All of the **TONE** and **SELECTIVITY** you now enjoy on the broadcast band, **PLUS** the additional far reaching distance performance possible with short waves. Anyone can make the simple two-wire connection and it is always ready for use. Does not interfere with the regular operation of the receiver.

The **MISSION CONVERTER** is self-contained in a handsome cabinet styled to harmonize with any receiver. The high quality construction and engineering has withstood every conceivable test. Here is the key to new fields of radio enjoyment.

*The
Whole
Wide
World
at Your
Finger
Tips!*

DEALERS!

Write, Phone or
Wire
AT ONCE
For Information
on This
Fast Selling Line

Manufactured by

CONSOLIDATED RADIO MFG. CO.
1455 Venice Blvd., Los Angeles
DRexel 6946

**SHORT
WAVE!
PLUG IN
TUNE IN
COMPLETE
WITH TUBES
NOTHING ELSE
TO BUY**



\$49⁵⁰

OUR NEW ALL WAVE CONSOLE

Combines the efficiency of our 9-tube Super Heterodyne with the world-wide distance ability of our Short Wave Converter. Every high quality feature, including PENTODE TUBES, VARIABLE MU TUBES and large MAGNAVOX DYNAMIC SPEAKER.

\$99⁵⁰

**LIST PRICE
COMPLETE
With Tubes
in Beautiful
Console Cabinet**

7-TUBE SUPERHETERODYNE MODELS FROM \$49.50 TO \$69.50

JUNE 1931



STEVENS HOTEL
EXHIBITION HALL,
BOOTHS 40-41-42-43
DEMONSTRATION ROOMS
No. 1400-1401-1401-A

At Chicago
GENERAL MOTORS RADIO
will present..

THE IMPROVED SUPER-HETERODYNE

in an entirely new series of

Radios and Radio-phonographs



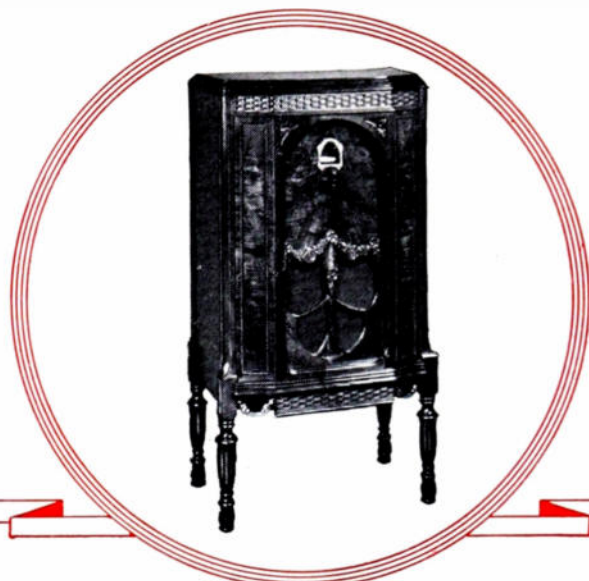
GENERAL MOTORS RADIO CORPORATION
DAYTON, OHIO

A MODEL FOR EVERY CUSTOMER

A complete price range . . . plus a retail sales plan that works

TUBES—The Brunswick 1932 models use Pentode, Variable-Mu, and Screen Grid Tubes. Subsequent advertisements and literature will define their number and adaptation.

COLOR TONE CONTROL—The Brunswick Color Tone Control visualizes musical tone in actual color on the tuning scale . . . Gold is the normal setting. To accentuate the treble, turn to blue . . . bass, turn to red . . . You can SEE as well as HEAR these tone variations.



MODEL 17—Lowboy walnut console of distinctive design. Superheterodyne, 9 tubes. Color tone control, Brunswick Uni-Selector, automatic volume control, dynatron oscillator, turret type tuning condenser, 12" super-dynamic speaker, two pentode tubes in output stage and power detector. Dimensions 41½" high, 21¼" wide, and 13½" deep. List price, complete with Brunswick tubes . . . \$149.50

Brunswick instruments have ALWAYS been famous for high quality, mechanical excellence and exquisite cabinets . . . as near perfection as human skill in design and craftsmanship can attain.

AND NOW . . . Brunswick offers you for the 1931-1932 season the most complete line of instruments in its history . . . list prices \$79.50 to \$265.00, complete with Brunswick tubes . . . plus a RETAIL SALES PLAN that will help you move these

instruments off your floors and into the homes of satisfied customers . . . at a profit!

There IS a difference in the musical quality of radio. Brunswick will prove it to your satisfaction, and you can easily prove it to your customer's satisfaction through the new Brunswick "Step-Ladder Sales Plan". Ask us about it. Its simplicity will surprise you . . . Its results will amaze you!

MODEL 12—A sensationally new idea in radio cabinetry. Miniature high-boy console. Recessed panel of rare crotched walnut veneer, giving beautiful two-tone effect. Hand-carved grille. Superheterodyne 7 tubes. Color tone control, Brunswick Uni-Selector, full range volume control, dynatron oscillator, turret type tuning condenser, 9" dynamic speaker and power detector. Dimensions 43" x 17½" x 10½". List price, complete with Brunswick tubes . . . \$99.50

MODEL 16—Lowboy console, finished in American Walnut. Superheterodyne 7 tubes. Color tone control, Brunswick Uni-Selector, full range volume control, dynatron oscillator, turret type tuning condenser, 12" dynamic speaker and power detector. Dimensions 38½" x 19½" x 14½". List price, complete with Brunswick tubes . . . \$119.50

MODEL 42—Automatic Panatrope-with-Radio. Plays 20 ten-inch records without attention. Also plays twelve-inch records manually. List price, complete with Brunswick tubes and 20 records . . . \$265.00



MODEL 11—Table model or midget type, walnut cabinet, carved grille. Superheterodyne 7 tubes. Color tone control, Brunswick Uni-Selector, full range volume control, dynatron oscillator, turret type tuning condenser, 9" dynamic speaker, power detector. Dimensions 22½" x 17½" x 10½". List price, complete with Brunswick tubes . . . \$79.50

MODEL 24—Graceful six-legged highboy cabinet with arched French doors, in matched ribbon walnut and high-lighted matched burled walnut, hand carved and fluted legs. Superheterodyne 9 tubes. Color tone control, Brunswick Uni-Selector, automatic volume control, dynatron oscillator, turret type tuning condenser, 12" super-dynamic speaker, two pentode tubes in output stage, power detector. Dimensions 45½" x 22¼" x 16¼". List price, complete with Brunswick tubes . . . \$169.50

MODEL 33—Lowboy combination Radio-with-Panatrope, finished in American walnut. Cabinet lid with balanced stay arm. Panels of matched ribbon walnut, turned and fluted legs. Superheterodyne 7 tubes. Color tone control, Brunswick Uni-Selector, full range volume control, dynatron oscillator, turret type tuning condenser, 12" dynamic speaker and power detector. 39½" x 19½" x 14½". List price, complete with Brunswick tubes . . . \$169.50

BRUNSWICK RADIO CORPORATION, NEW YORK—CHICAGO—TORONTO—Subsidiary of WARNER BROS. PICTURES, INC.

BRUNSWICK RADIO

Entered as Second Class Matter January 24, 1928, at the Postoffice at Los Angeles, California, under Act of March 3, 1879, \$2.00 a year. Western Music & Radio Trades Journal, Vol. XII, No. 6. Published monthly at 1220 Maple Avenue, Los Angeles, California.

Ken·Rad



★ ★ ★ ★ *This is the Acrometer—
the tube merchandiser, the dramatic tube
tell-tale that sees all, tells all and *sells all.**



ANNOUNCES THE

Acremeter



The first really successful plan to get the tube business . . .

★ Not an experiment—and not a theory—but a proved success . . .

★ Increases tube sales for dealers 200 to 1500 percent . . .

★ More than 400 Acremeters in use—backed by a sales plan that really sells tubes . . .

★ Positively the biggest merchandising development in the history of the tube business . . .

Acremeter is available only through Ken-Ratl. See it at the R. M. A. Show—Ken-Rad Space No. 50 and 51, Hotel Stevens. If you can't get to the show, wire or write us for the full story. It's too big and too important to miss.

THE KEN-RAD CORPORATION, *Incorporated*, OWENSBORO, KENTUCKY

Licensed Radio Tubes and Incandescent Lamps

Ken·Rad *Fine Radio Tubes*



NICE FRESH PENTODES — MIGHTY MU'S — GORGEOUS GADGETS

Sure! . . . Brunswick has 'em all . . . and many of 'em exclusively . . . But that isn't the *only* reason why Brunswick Radio and Panatropewith-Radio are the world's finest instruments for the reproduction of music. New devices and technical refinements mean very little in themselves . . . It's the way those refinements and devices are *used* that counts!

Of course, you'll always find in Brunswick instruments *all* the latest improvements and refinements in tube and circuit design. With the enormous combined resources of Brunswick and Warner Bros. Pictures, and the highly specialized radio and acoustical technique that forms the background of these two great organizations, you can be sure that

no *proven* development will be neglected in building Brunswick instruments to a standard of musical performance.

Brunswick gives *you* and *your customers* far more than "gadgets". To *you*, Brunswick offers an established dealer policy . . . sales to authorized dealers only . . . price protection . . . stability and strength . . . and the opportunity to concentrate on Brunswick with complete confidence in your future. To *your customers*, Brunswick offers enduring satisfaction with a musical instrument they will be proud to own through the years.

And remember that the Brunswick "Step-Ladder Sales Plan" will step-up your profits!

Brunswick Radio Corporation

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

BRUNSWICK RADIO

BE SURE TO SEE THE NEW BRUNSWICK INSTRUMENTS DESCRIBED ON PAGE 3.

WESTERN MUSIC and RADIO TRADES JOURNAL

"Published in the West for the West"

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The R. M. A. Trade Show in Chicago is over. Predictions that it would be the greatest show in history proved well-founded.

Manufacturers' exhibits, many of them sensational, presented the "new" in radio, that the trade has been long watching for. Unique radio furniture, perfectly designed and constructed receivers using radically new designs, tubes and parts were shown, together with carefully worked out merchandising plans and new policies for cooperation with the dealer. The Show was a success.

Coming directly on the heels of the R. M. A. Show is the announcement of the Los Angeles Radio and Electric Show Beautiful, in August, sponsored by the Radio and Music Trades Association of Southern California, Ltd. This will be the only radio show in the West, and deserves the support of all.

THE EDITOR.

JUNE, 1931

BYAM PUBLISHING COMPANY

Publishers of the Radio Dealers' Blue Book

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1220 MAPLE AVE., LOS ANGELES, CALIFORNIA Phone WEStmore 1972

New York: C. A. Larson, 254 W. 31st St.

Editorial Offices Maintained in San Francisco, Portland, Seattle, Salt Lake, Denver.

THE WESTERN

We Are Still in the Radio Business

LAST WEEK A DEALER WALKED INTO our office with the statement that he could no longer make his business profitable operating exclusively as a radio store. A few months ago, or a couple of years ago, we might have believed him. But today we are not so sure.

Radio dealers and jobbers, going to the Chicago Show, expected to see a great many exhibits of allied and accessory lines to radio. True, there were a few but not many exhibits of electrical lines, washing machines, specialties, etc.

With the exception of refrigerators, very few radio dealers have done anywhere near a profitable volume in any other lines than radio. The Chicago Show threw open their gates to the allied industry for them to place their product squarely before the radio dealers, but few manufacturers took advantage of the opportunity, either because they have nothing to show that they thought would be interesting to radio dealers, or because they thought the radio dealers would not make good outlets for their products.

It is not necessary for any radio dealer to adopt a hard shell, dyed in the wool, exclusive radio policy. But it might be a good plan and under certain conditions probably a very excellent plan to adopt a few electrical devices and items. There may be a good profit in them.

The facts might as well be looked straight in the face. Nine-tenths of the profits of a radio dealer is going to be made through the sale and service of radio, with the very complete lines that are now being shown by most of the leading radio manufacturers, and with Television in the offing the radio dealer has plenty of activity on which to exert his energies.

* * *

Keep John Public at Home

WILL ROGERS ONCE SAID IN A MAGAZINE article, "Henry Ford is the man who took millions of people out of one automobile and put them in another." Rogers went on, in more serious vein, to point out the actual tremendous effect on our social lives brought about by the advent of fast cars and smooth highways.

Many even lay the blame of the "jazz age," and downfall of the American home, so-called, on the automobile. No doubt there is much truth in this, for certainly the home life of the American citizen has suffered in recent years.

But RADIO is bringing it back again! At no time

since the great war have American people spent so much time at home as in the past year or two. And RADIO is responsible.

More and more is the radio dealer becoming an important factor in society, by selling Home Entertainment. Radios come first in importance, then phonographs, and now a little Television. He has a big job, and an attractive one—to keep the public Home-Conscious!

* * *

Concerning This Depression

THERE IS A GENERAL FEELING OF OPTIMISM spreading throughout the East, being the strongest on the far Eastern seaboard. The feeling is that general business has hit bottom and is already on the way back. We may expect business to get steadily better, though it may be a somewhat deferred and not astonishingly noticeable change.

One thing is certain. There is no need for the radio industry to be waiting around for some new invention or development of a panacea for sick sales. The prices we have here now as shown in the Chicago Show, with prices such as we have on the whole slightly less than last year, is the merchandise that radio dealers and jobbers will make their profit on in the next twelve months.

The thing to do is to adjust our businesses to sell that merchandise profitably. The manufacturers have done all they can do. The next move is up to the dealer. Any dealer who is not making a fair profit on his business by September 15 should get out of the radio business. He will be obviously not fitted to that business or he will have the wrong location.

* * *

Selling Up

ONE OF THE NATION'S VERY LARGEST and most prominent manufacturers put his very complete line of merchandise priced from the low-priced midgets to the high-priced combinations, so they have adopted a selling policy of "selling up."

They have plenty of low-priced merchandise to meet competition and to bring customers into the store. They are urging their dealers, jobbers, and entire sales personnel to put the selling pressure on the medium and highest-priced models. Advertising is to be directed almost exclusively to their medium-priced and better models.

Low-priced merchandise is one of the things we will have to have under present business conditions. Few dealers look upon such merchandise very favor-

VIEWPOINT . . .

ably, but it appears that such merchandise is one of the necessary evils of the business if we are going to meet the dump stock competition. Few dealers have made any profit from the sale of low-priced merchandise. Midget models are not necessarily to be considered as low-priced merchandise. Midgets selling for a fair price, are not so good selling for a low price. Some poorly assembled dump stock consoles are selling for less than good midgets, but by putting the sales pressure on better type of merchandise the unit sale is increased, the total volume of business is made greater, the service call per unit is usually less, and the business in every respect is more profitable.

"Selling Up" is a good tip for all radio dealers.

* * *

Learning About Television

RADIO TECHNICIANS AND SERVICE MEN in the West are beginning to wonder what they are going to do about Television. So is everyone in the trade, but for a long while yet, the new art will still be tied to the apron strings of experiment, development and engineering.

Television authorities, in advising young men who contemplate entering Television's work, agree that even a crack radio engineer is in for lots of difficulty when he tackles Television. Their reason is that while Television embraces much of radio, primarily it is an optical device, depending largely on mechanical engineering principles.

In order to learn Television, the radio technician should first study the subject of "Optics." A good book is "Physical Optics," by Woods. After this, the next important subject to master is Physics, since much of Television transmission and reception work is based on physical laws—particularly those dealing with Mechanical Engineering. Of course, a good short wave Television receiver is necessary, in any event.

* * *

Langmuir Patent Invalid!

CLIMAXING A 19-YEAR OLD LEGAL BATTLE, comes the news that the famous Langmuir radio tube patent has been declared invalid by the Supreme Court of the United States.

This ruling was handed down recently in the case of the DeForest Radio Company against the General Electric Company, in which the former contended that if the patent were not declared invalid, G. E. would have a monopoly on the manufacture of high vacuum tubes.

The possible results of this ruling are tremendous

Independent tube manufacturers, licensed under the Langmuir patent are in all probability in a position to regain their royalties paid to RCA, and in addition claim damages.

It makes possible innumerable applications of high vacuum tubes in a great variety of forms, by independent manufacturers who have heretofore been restrained by the patent. The high vacuum tube has proved to be an essential factor in a great many forms of electrical instruments, and the results of this case ought to speed up the development of other lines than radio, also.

About a year ago Steinmetz, the great scientist, predicted that within a few years great steps would be taken towards perfecting the application of electricity in everyday life, which, he stated, was only in the crudest state of exploitation today. According to Steinmetz, the time is approaching when electricity will be applied to heretofore unheard of conditions, supplanting many present forms of power.

If he is right in his predictions, the Langmuir ruling should have a considerable effect on bringing such a condition about.

* * *

Television—Not Yet

THERE HAS BEEN AN UNDERCURRENT OF feeling in radio circles that Television might possibly break as a profitable line of merchandise for the radio trade by the middle of the summer. It seems that this news is a little too optimistic.

For although Television is making tremendous progress experimentally, and there will be undoubtedly a number of Television broadcasting stations in the West within the next few months, nevertheless, the broadcast will be so experimental that it is doubtful that radio dealers will make any profit from the sales of Television apparatus.

Some experimenters believe that Television will be a considerable item in the radio dealer's line by the first of the year, but it is the belief of this writer that radio dealers should not start borrowing money on his prospective Television profits for at least a year from now.

There were only four Television exhibits at the Chicago Show, two being parts, or kits, and two being complete reception apparatus. No big Television "scoops" were exhibited, nor even rumors about the Show. As soon as Western Television stations go on the air, there will certainly be a considerable amount of business in kits, but the sale of Television apparatus to the average radio fan is considerably in the future.



Cartoon by Kem

THE Federal Radio Commission is about to modify the old General Order which provides that broadcast stations must stay within 500 cycles of their operating frequencies. With such a wide variation permissible, serious heterodyne interference is possible.

For example, if two stations are operating on the same frequency such as KGW and KTAR, and one gets 500 cycles off on the high side and the other deviates 500 cycles on the low side, the resultant beat note or heterodyne would be a shrill note of 1,000 cycles, which would be very prominent and quite capable of ruining reception of either station over a large territory between them.

However, with a maximum tolerance of 50 cycles, which is the modification soon to be effective, the greatest difference between the two stations frequencies will be 100 cycles, a low note which very few radio receivers will reproduce and which the ear would disregard in any event.

It follows that all stations which operate simultaneously with other stations in joint channels will be benefited by the new requirement, as their service areas will be increased by the absence of heterodyne interference. This applies to all "regional" and "local" stations, only the cleared channel fellows being unaffected.

Here is another step forward on the part of the Commission, and we look for many other improvements in the technical operation of broadcast stations to be required by their engineering division.

LOOKING AHEAD

with K. G. Ormiston

DON LEE, owner of KHL, has applied to the Federal Radio Commission for permission to erect an experimental television transmission station in Los Angeles. Farnsworth, of San Francisco, already has a license to transmit. It won't be long now!

THERE seems to be considerable activity among western manufacturers to incorporate short wave reception in broadcast sets, either by making combination receivers or selling separate adapters.

In reality, the public hasn't been clamoring for short wave reception. Some mighty fine short wave sets have been available for a long time, but the radio dealers have never so much as tried to interest John Public. But now that the manufacturers have incorporated the superheterodyne with pentodes and multi-mut tubes, they are looking around for something else to add that is new.

Personally, we believe that short wave reception holds very little for the layman. For the real radio fan, who knows what it is all about, the short wave field holds keen interest. The layman, however, if lucky, will locate about four or five stations, these being the short wave transmitters of WENR, KDKA, WABC, WJZ or WGY. These will fade and be somewhat static-infested. And he will soon lose interest, and go back to the regular broadcast band, where there are 600 stations to fish for. We've seen it happen so many times before.

BUT speaking of short waves, the public seems to be interested in eavesdropping on the new Los Angeles radio police system. The transmitting station operates on 1712 kilocycles, just 212 kilocycles above the broadcast band, and some broadcast receivers are able to bring them in. Other fans who have heard of the kick listeners are having by hearing the police business, are building adapters and other short wave gadgets to enable them to listen also. All of which is not in the public interest and actually should not be encouraged.

In the first place, the police system is not in the same category as regular broadcasting. It is direct point-to-point radio communication, and listening in on it is the same as listening to private messages being transmitted by radio telephone or telegraph.

There is a law which forbids the listener imparting to another person anything that he hears of this nature. The success of the system depends upon its secrecy, and if the general public, for the sake of enjoying a new novelty, chooses to equip itself with the necessary apparatus and listen, it will ultimately defeat the purpose of the costly police radio system.

Chicago started its police system by using WGN, a regular broadcast station, for communicating with the cars. This did not work at all, for the reason that when some major crime occurred, the police were unable to get through the traffic to the scene, because Mr. and Mrs. Public were there first. Furthermore, the smart criminal also listened to WGN constantly, and when

(Continued on Page 57)



WISE and OTHERWISE



PRODUCTION has been slowed down—and it looks as if it will have to be kept at "half speed." Production has out-run, not the ability to consume, but the ability of people to pay, for what they desire.

* * *

James A. Farrell, president of the United States Steel Corporation, recently stated to the World Foreign Trade Council: "An essential requirement of the present economic situation is an advance in commodity prices. When prices fall, buyers withdraw from the market. Rising prices stimulate buying and consumption, and a return of prosperous times. Anything which tends to postpone recovery in commodity prices, especially those influences which are unfair and uneconomic, should be discountenanced."

* * *

Looking for a Way Out

Building led the way out of the depression in 1921. Business is looking toward the construction industry for a possible way out of the present depression. There are hopeful signs of activity. Three separate movements sponsored by strong groups, are now working toward stimulating construction and the real estate market. The first is a movement to create a central mortgage bank, in order to make a better market for real estate securities. The second movement is an attempt to organize the manufacturers of building materials and equipment into a corporation, for financing residential building operations in large cities. The third movement is not really new, but is being pushed with new vigor—the financing by manufacturers of home modernization plans.

* * *

Federal Reserve Bank figures on department store sales in the principal cities of the United States, show decreases in dollar volume of goods sold, so far in 1931 as compared to the same period in 1930. General downward revision of commodity prices in progress since last summer, accounts for most of this loss. The indications are that the actual physical volume of goods, equals and in many departments exceeds the 1930 volume.

* * *

Cafeteria

Drug stores who have installed open display tables, have discovered that the public have a decided prefer-



By **SHIRLEY WALKER**
Associate Editor

ence for self-service. Many 10 cent items have been added—new items or regular merchandise packaged in 10 cent sizes. Selling 10 cent sizes of merchandise by the use of open display tables has resulted in a decided increase in the sale of standard size, higher priced packages of the same merchandise.

* * *

Plants as well as products are undergoing radical changes. The Simonds Saw and Steel Company are erecting an immense factory at Fitchburg, Mass., without a single window or skylight. Only artificial light is used—science has proven that artificial light can be made more uniform than daylight. Many other innovations are being provided in this factory—such as ventilation systems, and appliances to reduce all noise to a minimum. In order to rest the eyes, even the color scheme will be novel. The machinery will be orange, and the walls and ceilings will be blue, green and white.

* * *

A frozen yeast bar—a combination of yeast and ice cream—is soon to appear on the market. Distribution is now being secured and a national advertising campaign will soon make its appearance.

* * *

A new idea in merchandising bread has been developed by the M. Carpenter Baking Co. of Milwaukee. Three kinds of bread—wheat, rye, and whole wheat are produced in one loaf, to serve the varying tastes of each member of the family, without the necessity of buying three different loaves of bread.

* * *

Government Control?

There is a general feeling in big business against control of business by government for the protection of the public interest. But industry itself must proceed toward certain definite objectives to avoid the tendency toward government control.

Industry must assure security of employment, maintain American living standards, and co-operate intelligently in international business. If no outstanding leadership from individuals is forthcoming, then each industry and each concern, large and small, must courageously put forth intelligent effort to accomplish the three objectives mentioned above—and once again set American business on an even keel.

JUNE RECORD HITS

BRUNSWICK

- 6120—"Just One More Chance." *Bing Crosby*. Here is the tune Bing is rapidly making famous all over the West. The melody is new and unusual and the harmony unique. Bing makes the most of the words, which are interesting. A sure seller. Bing whistles and hums. "Were You Sincere?" *Bing Crosby*.
- 6116—"The Hour of Parting." *Victor Young*. A beautiful foxtrot, played in rumba style, and introduced by Burtmett's Biltmore Orchestra, under the title of "Blue Hour." A melody almost classical. "In the Candle Light"—*Young*.
- 6109—"Roll On, Mississippi." *Boswell Sisters*. A mighty hot number, sung, hummed, and what-not-ed by these popular singers. A toe-tickling rhythm with sound effects and hot accompaniment. The tempo changes from straight foxtrot to lowdown, and back again. "Shout Sister Shout." Another.
- 6114—"Nevertheless." *Jack Denny*. A smooth, rolling foxtrot with good rhythm and melody appeal. A tune you hear whistled everywhere. Tenor vocal chorus, accordion and baritone sax do clever work. "Stories."
- 6098—"Boy, Oh Boy, Oh Boy, I've Got It Bad." *Nick Lucas*. A tune they're all calling for. Lucas interprets it in a smooth, swinging manner, with guitar. "Let's Get Friendly." *Lucas*.
- 6104—"Now You're In My Arms." *Nick Lucas*. One of his latest, a good vehicle for his tenor voice and guitar. The number is especially adapted to his singing, with a smooth, flowing rhythm that makes it ideal for dancing. "Can't You Read Between the Lines?"
- 6107—"Fiesta." *Ben Bernie*. A new Rumba that has more melody and dance rhythm than many of the former ones. It is quite elaborately arranged, and Bernie uses plenty of Cuban sound effects and instrumental incidentals. "The Alpine Milkman." *Bernie*. A fast foxtrot, with comic words and monologue, a humorous take-off on yodelling with chorus of the orchestra boys.
- 6119—"I'm Gonna Get You." *Abe Lyman*. Here's a radio number that will sell. It is different from the usual run of dance tunes, and has good snappy words and music. Lyman's perfect rhythm adds much to the success of this recording. "It Looks Like Love." *Lyman*.

OKEH

- 404425—"Blue Again." *Louis Armstrong*. With more of his imitable trumpet licks, this popular colored entertainer has his own ideas about being blue. Bound to cheer anyone up. Louis sings. "When Your Lover Has Gone." *Armstrong*.

- 404423—"I Surrender, Dear." *Louis Armstrong*. Numerous requests were responsible for the recording of this popular hit. And Armstrong gives his own interpretation, with a variety of low-down trumpet breaks and choruses, trick vocal refrains, backed by nice rhythm by the rest of the band. "Walkin My Baby Back Home." Only Armstrong could take this tune and play it as he does on this record. Hot and how.

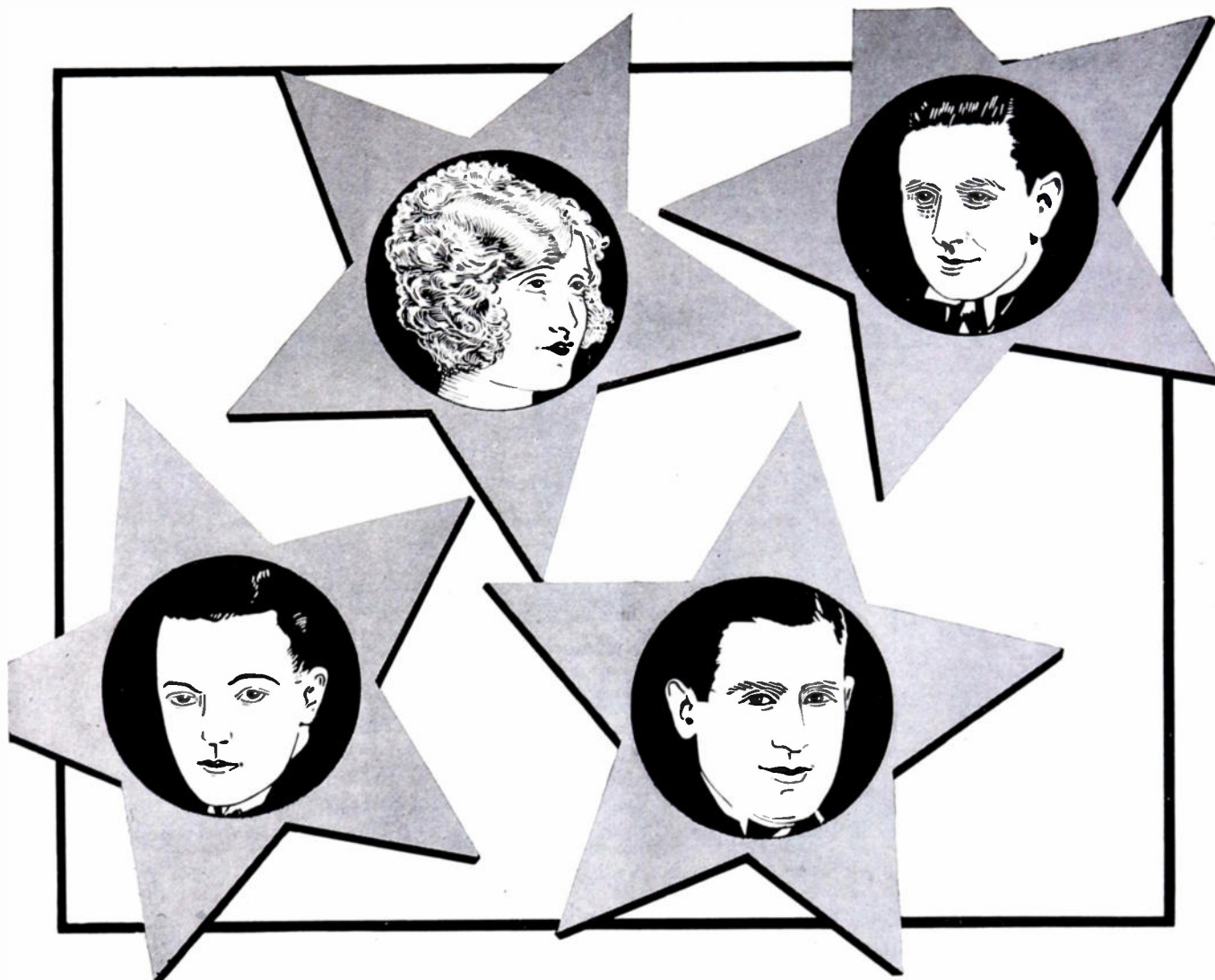
VICTOR

- 22702—"To Whisper Dear I Love You." *Gus Arnheim*. A very dreamy, melodious foxtrot. Violins and bass rhythm make a beautiful background for tenor song refrain by Donald Novis, Atwater Kent contest winner, who is with Arnheim at the Coconut Grove. "Why Shouldn't I?" A popular radio number, with vocal choruses by Loyce Whiteman. Sweet, rolling foxtrot.
- 22679—"You're Just A Lover." *Rudy Vallee*. This is a catchy love song with vocal refrain by Rudy, sung in his best romantic manner. "Two Little Blue Little Eyes." Vallee uses a clever and original vocal introduction, and is taken out by the whole band.
- 22681—"Olga." *King Oliver*. A slow, rhythmic foxtrot, with lots of good old instrumental hokum choruses. A swell dance tune. "Blue Blood Blues." *Jelly Roll Morton*. A draggy, lowdown blues number, with hot instrumental choruses.
- 22689—"I Wanna Sing About You." *Bert Lown*. Here is a light, airy foxtrot number with humorous words and catchy tune. Vocal refrain by male trio. "Now You're In My Arms." *Lown*.
- 22677—"You Don't Know What You're Doin'." *Henry Busse*. A good snappy foxtrot, with vocal refrain by Knox Pugh and chorus. "I'm Through With Love."
- 22678—"Fiesta." *Henry Busse*. Rumba, as interpreted by this well-known Paul Whiteman trumpet star and his band. Vocal chorus by Richard Barry. "Bubbling Over With Love." *Andy Sannelia*. Vocal chorus by Chick Bullock.
- 22670—"For You." *Leo Reisman*. A waltz, with vocal parts by Frank Munn. Nice and dreamy. "You'll Be Mine in Apple Blossom Time." A sweet foxtrot, with plenty of violins and simple sweet choruses.

- 22667—"Say A Little Prayer For Me." *London Mayfair Orchestra*. This one was recorded in Europe. It is a sweet foxtrot arranged very elaborately. Tenor song refrain. "Mine Yesterday, His Today." *The Troubadours*. A sad, lonesome, sentimental waltz tune, with sweet, simple melody.
- 22664—"I Had To Lose You." *Troubadours*. A very popular foxtrot, played in easy going dance style. Vocal chorus by Lew Conrad. "Broken Hearted Waltz." *Troubadours*. Pretty waltz with nice sweet trumpet solo parts.

COLUMBIA

- 24571—"There Ought To Be A Moonlight Saving Time." *Guy Lombardo*. A clever foxtrot, with a flowing, swinging rhythm that goes right to the toes. The words are unusual and witty. Lombardo plays it in slow, rocking tempo. There is a humming refrain and vocal chorus. "When the Shepherd Leads the Sheep Back Home." An exceptionally sweet foxtrot, played with the Lombardo expression and elaborate arrangements.
- 24631—"Now You're In My Arms." *Ben Selvin*. An easy-going, dreamy foxtrot. A Morton Downey number, the melody is new and different. Selvin introduces some good rhythm instrumental combinations. Contralto song chorus. "Poor Kid." *Selvin*. The kick in this number is the words, which concern a reputed "bad girl," are philosophical and unique. The melody is also good.
- 24621—"I Wanna Sing About You." *Paul Tremaine*. There is some very nice vocal trio work in this one. The melody is simple and bright, and Tremaine uses a deep, undulating rhythm with dominating guitar that hits the spot. "Gabriel Blow Dat Horn." A pretentious arrangement, of semi-spiritual type. Hot foxtrot.
- 24561—"On A Night Made For Love." *California Ramblers*. And still another Rumba foxtrot. The songs are in English, by a male trio. Melody is different, and the Ramblers put a lot of kick in the rhythm. "Fiesta." *Ramblers*. A snappy Rumba with hot rhythm for dancing. Male trio sings.
- 2455D—"My Cradle Sweetheart." *Henri Gendran*. A new kind of mother song, in the form of a very sweet, slow foxtrot. "With the Help of the Moon." *Gendran*.
- 2452D—"Ho Hum." *Ted Lewis*. This yawning spring fever number ranks among the best sellers this month, as it did last. Lewis adds his own characteristic style, and makes you sleepy just to hear his realistic yawns. "One More Time." A hot one.



HERE'S WHY COLUMBIA RECORDS *are always short-time tenants!*

COLUMBIA'S popular disc releases never linger long on your shelves. The biggest reason for their quick, profitable turnover is the ace staff of customer-pulling *stars* that make Columbia records.

They're all stars whose popular appeal has been thoroughly proven on stage, screen and radio. So they're stars who are bound to *sell records* for you.

Here you can see the faces and names of some

famous Columbia recorders. They're artists whose performances are known and loved from coast to coast. And they're just a few of the many great entertainment personalities who are recording *exclusively* for Columbia. Don't you want a share of the bigger record business these stars are bringing in? Send for our latest release sheet and best-seller analysis. *The Columbia Phonograph Co., Inc., New York City. In Canada: Columbia Phonograph Co., Ltd., Toronto.*

Columbia



Records

A Scientific Service that is also a . . . SELLING SERVICE

JOIN US AT THE RMA SHOW

Chicago—June 8th to 12th
Ballroom Booths B 1-2-3
Headquarters and Private
Exhibit
16th Floor, Stevens Hotel



IN the copper-screened testing room of the Sylvania laboratory you will find Sylvania Tubes undergoing a dramatic and rigorous test.

They are being tried out in a standard set of every one of the makes listed on this advertisement. They are being passed only after meeting the highest standards of tone . . . distance . . . volume . . . sharp-tuning. This scientific set-testing service is actually a SALES SERVICE for you. It proves to your customer that the tubes you sell are right for his set. And it proves it in the easiest possible way!

Write for a copy of the new Certified Test Chart, showing the proper tube assortment for over 300 makes and models and including a signed statement by the man who directs Sylvania's skilled engineers. We want you to learn for yourself how you can join successful dealers everywhere in faster sales and quicker profits from Set-Tested Tubes. Address Dept. W-6-1, Sylvania Products Co., Emporium, Penna.

Apex
Atwater Kent
Audiola
Bosch
Brunswick
Clarion
Colonial
Crosley
Edison
Erla
Fada
General Electric
General Motors
Graybar
Grebe
Gulbransen
Howard
Kennedy
Kolster
Lyric
Majestic
Philco
Radiola
Silver Marshall
Sonora
Sparton
Star-Raider
Steinite
Sterling
Stewart Warner
Story & Clark
Stromberg Carlson
Victor
Westinghouse
Zaney Gill
Zenith

Sylvania

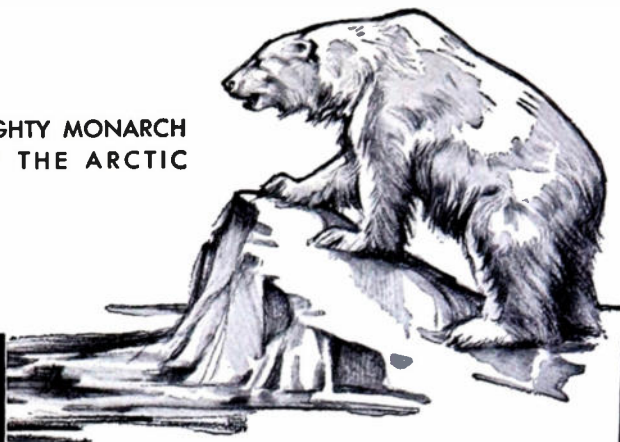
Reg. U.S. Pat. Off.

THE SET-TESTED TUBE



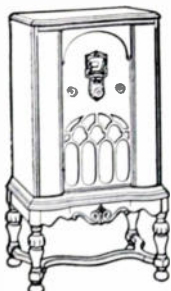
Licensed under RCA Patents

MIGHTY MONARCH
OF THE ARCTIC



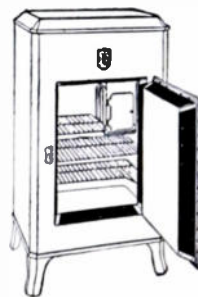
Value!

... Secret of the success of Majestic



The spectacular success of Majestic in the radio set manufacturing business was based definitely upon giving the public quality of the highest type at the lowest prices at which a quality article could be produced. This Majestic accomplished by modern methods of purchase, manufacture and merchandising.

Now Majestic has brought its highly developed methods and experience to the refrigeration field and gives to the American housewife *all* essential and desirable features... with finest construction... at prices all can afford to pay. Success here has been so rapid that even Majestic's huge plants are, at the moment, oversold. Radio dealers interested in a fast-moving, very-profitable summer item should communicate with the nearest Majestic distributor.



GRIGSBY-GRUNOW COMPANY, CHICAGO, ILLINOIS

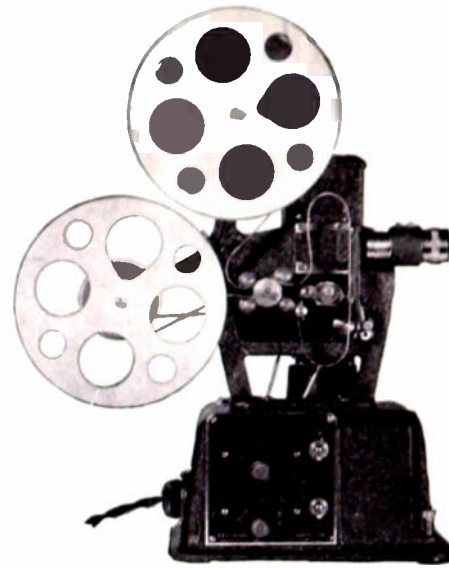
Makers of

Majestic

RADIO and REFRIGERATOR



*DeVry Home Movie Camera with
F. 3.5 lens. Model 57 . . . \$57.50*



*Powerful, quiet, fan ventilated
Home Movie Projector \$98.50*

Here is the Line They Are Asking for This Summer

Home movies are an all year 'round seller but summer time is the big selling season. The demand is already created. Home movies are gaining tremendously in use and popularity year by year.

Q. R. S. DeVry have been filling that demand since 1900. Thousands of DeVry projectors are found in the school auditoriums, lecture halls, and homes of America, projecting clear, brilliantly illuminated, flickerless pictures.

Q. R. S. DeVry cameras have been carried to the ends of the earth, wherever pic-

tures must be made under difficulties, and brought home without failure. Whenever Hollywood's cameramen have a difficult shot to make, a ship from the top of a mast for instance, it is usually a DeVry that turns the trick. And every Q. R. S. DeVry camera and projector is made so ruggedly and carefully that it is guaranteed for one year with no charge to owner or dealer for adjustment.

A popular priced, quality line that is proving itself a money maker for many radio and music dealers. Write and get the details.

Phil Lasher, Ltd.

Q. R. S.-DeVry Distributors
300 Seventh St. San Francisco

Mail This Coupon—NOW

Gentlemen:

Without obligation on my part please give me information on the merchandising of the Q. R. S. DeVry Home Movie Line.

Name.....

Address.....

Listen To This —!

- One Pentode
- • •
- Three Screen Grids
- • •
- Five Tubes
- • •
- Dynamic Speaker
- • •



Neat Sturdy Construction

At The Astonishing Price of

\$17⁹⁵
Net, Complete with Tubes

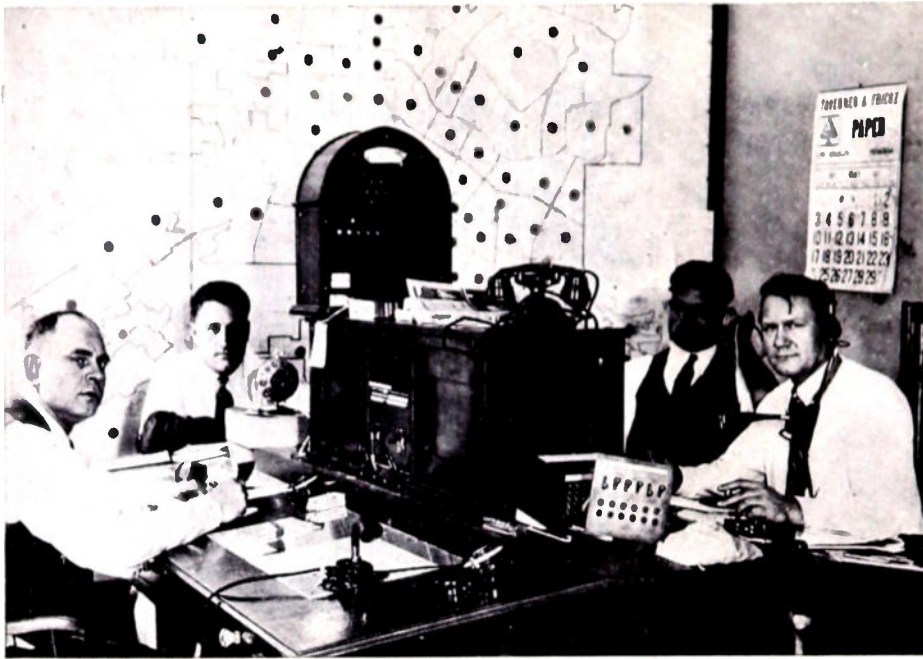


The high quality and low price of the Custom Built Receiver is the result of topmost efficiency in engineering, purchasing, manufacturing and assembling. It is quality merchandise that you can sell to your customers with absolute assurance of sustained satisfaction.

Any type of chassis or receiver made to your specifications, at rock bottom prices. Motor car radios, motor boat radios, short wave sets, short wave adapters, all-wave sets, police radios, made from our designs or yours. Write or wire.

Custom Built Radio Company

4267 SOUTH VERMONT AVENUE
 LOS ANGELES, CALIF.



Radio Control Room at L. A. Police Headquarters.

POLICE RADIO

Puts a New "Kick" in Public Interest

It is significant that perhaps the greatest advance in criminal detection and crime prevention for many years may be credited to radio.

But even more significant is the recognized fact that the arrival of wide-spread police radio broadcasts has increased the public interest in radio with one of the biggest impetuses in years. In metropolitan areas everyone who owns a set is continually trying to tune in on police broadcasts, and get all the latest "dirt" at the time it actually occurs.

Since Captain Sparks of the Sparks-Withington Company sold the State of Michigan the idea for the state police, the plan has spread like wildfire all over the country. Without a single exception, success and enthusiasm has been reported from every city which has installed such a system.

Increased Interest

At present, however, practically the sole value of the police radio to the radio dealer is the fact that it has greatly increased public interest in radio in general. From all information, there is very little chance that the radio dealer will be an outlet for the sale and maintenance of these systems. The systems are sold usually at factory prices, allowing a scant margin to an independent dealer, and in many cases his service shop is inadequate to afford the necessary service for the police cars.

Then, too, the receiving sets are usually purchased from the manu-

facturer of the transmitter, which excludes the dealer, in most cases, from anything but a nominal commission should he procure a municipal prospect. These commissions are usually in the neighborhood of two or four per cent.

Perhaps the most recent metropolitan purchaser of a police radio system in the West is Los Angeles.

Factory and jobber cooperated with a local radio dealer and electrical technician to handle the large system, after the bid was accepted. Two transmitters were erected, one at the city hall, and the other on a high point in one of the city parks. When a complaint comes in by telephone, it is first broadcast from the city hall transmitter and a few seconds later is re-broadcast from the other station.

Use Short Waves

The station broadcasts on an allotted frequency of 1712 kilocycles. The cruising cars are equipped with short wave automobile sets which are locked at 1712 kilocycles. The only control used is the volume control.

The city is divided into 15 divisions, each of which is divided into patrol districts. One car is assigned to each patrol district and is given a designated number, the first figure of which indicates the division and the second the patrol district. All numbers beginning with "1" belong to the Central Division, and so on. Each car is provided with three carefully drawn maps, which are

suspended on a roller from the ceiling of the car. One map shows the central ten divisions, and is divided into patrol districts. The second map shows the other five outlying divisions and the radio patrol districts in each. The third map shows the patrol districts in the particular division to which the car is assigned.

In this particular frequency band, interference is a factor to be contended with. It is often necessary for a patrol car to leave a particularly bad reception area and travel to a better one to get good reception. For this reason, each message is broadcast three times, at one-minute intervals, to give any car ample time to find a good reception spot if it is in a poor area.

Interference Spotted

In this connection, it is interesting to note that the police department has become an important factor in the matter of discovering and reporting radio interference. Every operator is instructed to report a bad area, caused by leakage from electric insulators, power transformers, X-rays and therapeutic machines. The short wave sets are excellent investigators, and operators are required to send in their interference reports to the head of the Communication Division for action.

One operator is required to stay in the car at all times, when on patrol. During meal times, one man is required to listen for messages while the other eats, and returns to take his place.



Captures like these are common when the radio system is used. The police are on the scene before the bandits are through working

After the message is acted upon and the complaint investigated, the officers in charge are required to telephone in a report immediately to the complaint board and give the following information:

1. Time consumed to reach destination after receipt of message.
2. Action taken, arrests made, etc.
3. A test call is broadcast twice an hour, at 15 minutes and 45 minutes past the hour. If the call has not been received after allowing three minutes for variations of time-pieces, the officers must call the complaint board and a service car is sent to correct the trouble.

Record Time

On one occasion, when bandits were reported as being "on a job" at a certain address, it took only 50 seconds from the time the call was received until a disturber was apprehended and the report called in. The patrol car happened to be in front of the house at the time. Without the radio system, the distance might just as well have been several miles.

At the central office an operator has a map of the city before him, with the numbers of the divisions and districts removable. When a car is sent out on a call, the number

on the map of that particular patrol district is turned over. It remains turned over until the officers out on the call report back to the central office, whereupon the number is placed face forward again, to indicate that the car is on duty and ready.

A radio tie-up with burglar alarm systems has also been provided. An operator is in constant attendance at a large board on which are hundreds of signal lights. Each light is connected to a burglar alarm in a certain bank or similar institution. Immediately a light blinks, indicating the alarm has been tripped, a call is broadcast to the patrol car on duty near that particular location, and within a few moments the police are on the scene.

Noiseless Operation

An innovation that is taking the noisiness out of having a station AC receiver turned on for periods of time during which there is no signal, has been made on one make of police radio gaining favor. Although the set is kept constantly turned on and tuned in to the station wave length, with the new device, the loud speaker remains turned off until a signal comes through. Ordinarily with an AC set turned on but

not tuned in to a station there is a constant hum, with occasional splashes of static. When the station comes on the air, on the new set, the carrier wave sounds a bell in the set. The operator then turns on the speaker and receives the call.

Before starting actual operations, the Michigan State Police conducted tests for several weeks to determine whether the system would actually blanket the state. And even though the station was in the police broadcast band, below the normal range of receivers, nearly a thousand letters poured in in answer to the requests for reception reports. Forty-one states were heard from, and letters were received from various parts of Canada, including British Columbia, Manitoba, Nova Scotia, Ontario and New Brunswick—practically a continent-wide coverage.

An interesting extract from "The State Trooper," the official publication of the Michigan State Police, says:

"If casual listeners-in states on both the East and West Coasts reported splendid reception on receivers not built for low wave bands, might not central police agencies of these many states, equipped with specially-built police receivers, be linked in a nation-wide network?"

U. S. APEX – OUTSTANDING HIT – R. M. A. SHOW

NEVER BEFORE SUCH
VALUES

Every New Radio Idea
Incorporated in these

NEW

1932

MODELS



Dealers Note:

IF YOU ARE LOOKING FOR REAL

Stability -- Performance -- Outstanding Value

See

YALE RADIO ELECTRIC CO.

1111 WALL ST.

LOS ANGELES, CALIF.

PHONE WEStmore 3351

RIDE «
 THE WAVE
of
 SUCCESS
with
 U.S. APEX
and
 Gloritone
 RADIO

featuring

The PENTODE and FULL RANGE MU TUBES

AUTOMATIC VOLUME CONTROL METER TUNING

SUPERHETERODYNE *and*

• Engineered with precision, housed in cabinets of beauty and distinction—and offered at prices which make them the greatest dollar-for-dollar value on the market . . . there are the factors which account for the outstanding success of these up-to-the-minute radios.

The sensational increase in sales volume during 1930 and early 1931 has startled the industry. The success of the U. S. Radio Line has literally swept the country—and is still gaining momentum! Really a quality radio at a popular price. We offer full dealer co-operation and complete promotional material. Write or wire TODAY!

United States Radio & Television Corp.
Marion, Indiana

Model 10-B
 10 Tubes
 Superheterodyne
 4 Tuned Circuits
 Pentode and Full
 Range Mu Tubes
 Automatic Volume
 Control
 Meter Tuning
 List
 Price
\$99⁵⁰
 Complete with Tubes



Model 26-P
 Five Tubes • Pentode Tube
 Illuminated Dial
 Dynamic Speaker
 List Price
\$49⁹⁵
 Complete with Tubes



Model 8-B
 Eight Tubes
 Superheterodyne
 Pentode and Full
 Range Mu Tubes
 Automatic Volume
 Control
 List
 Price
\$79⁹⁵
 Complete with Tubes

Table Model Same
 as Above
\$67⁵⁰
 Complete with Tubes




**Always A Good Radio
Now Infinitely Better**

DRESS UP Your Business!

Window Displays, unique decorations and NEON billboard means PROFITS to PREST and DEAN

By HAROLD J. ASHE

OUR window displays are our best advertising medium," declared Fred Dean, one of the owners of Prest & Dean, pioneer radio dealers, Long Beach, California.

"We have repeatedly checked up on results from our window displays and know that they pay big returns for the attention that we give to them," Dean continued. "We have never kept a separate account of what we expend on our window displays, as that is all lumped under advertising expenditures.

"For instance, our Christmas window cost us about \$40. This created an unusual amount of comment among Christmas shoppers. Aside from this, which is in itself good advertising, we were able to trace four or five vacuum cleaners sales to the window. The vacuum cleaners were part of the display and they had no other advertising to back them up at that time. People came into the store after viewing the window and sales to that number were made that we know were traceable to the window."

Displays Are Seasonal

Prest & Dean are strong for seasonal displays, including Easter, Fourth of July, Labor Day, Thanksgiving and Christmas, and have special set-ups for such occasions, carrying out the idea of the day.

Their window displays are changed every four or five days at the most. One of the biggest factors in gaining the first attention of the window shopper has been the Old Spanish architectural motif that has been carried out not only in the windows, but also in the store itself.

Dean explained that when the store was remodeled that it was their purpose to make the sales floor as

attractively inviting as the windows, and to serve as a fine background for their floor displays.

Rough-hewn timbers and antiqued boards are used even in the accessory and cashier's counter, over which is built a red-tiled sloping roof, also built over the private offices.

Strangely enough, this attractive interior design did not cost as much as a more orthodox arrangement.

"While a standard job would have cost us between \$5,000 and \$6,000, the old Spanish design cost us only about \$4,000," explained Dean.

Used Set Display

From the standpoint of location, the least desirable window on Fourth Street contains a permanent display of used sets, though the individual sets themselves are constantly being moved. Dean explained that this window alone had been instrumental in making the firm a satisfactory profit on their used sets last year. A separate room extends back from the window in which surplus sets not close to the window are stored for inspection by prospects. A partition separates this room from the main sales floor, so that its necessarily tightly packed array of used sets does not clash with the carefully arranged new set displays.

"We have a certain class of trade who watch this window for used sets," stated Dean. "Whenever they see what they are interested in they come into the store. Many of them are regular customers of the used set department and they all depend upon this window to keep themselves posted on what we have. Most of them would not come in except to inquire about specific sets that they see we have on hand, demon-



This rustic wall adds to the beauty of the store and forms a good background for window displays.

strating clearly that the permanent window display is necessary to profitably move our used merchandise."

"Sold" On Billboard

For eight years Prest & Dean have had the same deluxe billboard on American Avenue, so that it has become almost a landmark in the city. Dean has always been "sold" on this billboard, which costs them \$80. However, about a year ago its value as an advertising medium was more than doubled, Dean said, by putting the firm's name on the billboard in Neon lettering. Considering this added value to the firm its cost was nominal—\$26.20. It is kept lighted twenty-four hours a day.

"We have had innumerable comments on the Neon billboard," declared Dean. "indicating that it is attracting the attention of a great many more people than before the Neon installation."

Dean foresees the necessity of electrical appliances being added to the merchandise carried by a radio shop. Already the firm carries vacuum cleaners, electric washers and electric refrigerators.

Add Appliances

"We are now getting ready to add other household appliances," stated Dean. "We want to be able to make full use of our clientele and that can't be done with radios alone. Once a new set is sold another cannot be sold for two or three years, at least. However, if we have a full line of appliances we can continue to sell to our customers and greatly increase our volume of sales per year per customer. Incidentally, as it costs a great deal to make the original contact on the radio this ex-

(Continued on Page 57)



-nearer and nearer comes radio perfection

Among the few pioneering manufacturers who, in the past, were responsible for the major developments that changed the entire trend of radio, Sparton has been one of the leaders. Of these major improvements, Sparton has been the exclusive sponsor of several, and among the foremost in the development of others. ▲ Now comes Sparton

THE **SPARKS-WITHINGTON** COMPANY, JACKSON, MICH., U. S. A.

Pioneers of Electric Radio without batteries of any kind

(630)

again, with new things . . . comparable in importance with All-Electric reception (the first Sparton triumph) and other noteworthy accomplishments which are history now.

▲ The new models, announced June first, embody features which promise to set a new standard of radio performance. See and hear the new Spartons at the radio shows.

SPARTON RADIO

"Radio's Richest Voice"



DC Consoles

MIDGETS, television, unique radio furniture designs and electrical specialties "stole" the R. M. A. Show, which opened with the largest assortment of interesting radio apparatus displayed in its history.

Superhets in Majority

Superheterodyne circuits constituted a large majority, although many midgets and even consoles retained the tuned radio frequency type. List prices continued to remain at low ebb generally.

Two Television Exhibits

Television equipment was displayed by two concerns, Shortwave and Television Corporation, and Jenkins Television Laboratories, Boston, Mass. Both drew considerable attention among the trade, and aroused much discussion.

Midgets Still in Lead

As was the case last year, the midget receiver was apparently the leader among the new products on display. Every manufacturer had a model or two of the mantel type, both superheterodyne and t. r. f. While several of the midgets were small "pee-wees," the general trend was toward a slightly larger, superhet type. Most of these midget chassis were also contained in small console models. Midget prices ranged from \$37.50 to around \$72.50. Most of the models used pentodes and variable-mu tubes.

New Tubes

Tube manufacturers for the first time displayed the new variable-mu,

pentodes and other new types. Among those featured were the latest automobile tubes. While designed to reduce the drain on the automobile battery when installed in auto sets, they lend themselves for use in sets designed for rural use where there are no power lines.

Screen grid tubes continue to be manufactured and used in large quantities. They are not displaced by the variable-mu because the latter is used only in circuits designed especially for it. The variable-mu does, however, take the place of the screen grid.

Unique Radio Furniture

Perhaps the most interesting development shown in this year's exhibitions was the prevalence of unique cabinet designs. Radio furniture at the Show revealed a wide variety of appeal, shape, wood, decorations, patterns and size.

Artisans of the cabinet makers have ingeniously contrived to conceal the radio chassis, speaker and even dial controls, in the furniture itself. Such pieces as tables, desks, secretaries and commodes had radios concealed from view. One manufacturer incorporated a radio in a grand piano. Another has controls disguised as drawer knobs and handles on period furniture.

Auto Sets Prevalent

The prevalence of automobile radios was very noticeable. Advances made in the past year in auto receivers permit excellent results as to sensitivity and tone. Remote control for the auto set has been devised, making it possible to install the set in more convenient

places in the car, with the same results.

Short wave receivers were numerous, and a general return of the customer appeal of distance was apparent among delegate discussions.

And Now—the Stenode

A new circuit introduced, close on the heels of the superheterodyne, is the Stenode. It is designed to provide a maximum of selectivity through the use of a special circuit in which is introduced a mechanical oscillator in the form of a quartz crystal. The radio signal in passing through the Stenode circuit is actually "forced through an exceedingly narrow aperture," and then re-constructed by means of a "corrective" circuit placed in the audio system.

Many Sidelines

Electrical appliances for the first time were exhibited as merchandise for the radio dealer. Several lines of electric refrigerators, unusual



Superhet Midgets

High- of TRADE

Lights the S H O W

types of improved electric washing machines, at low prices, ironers, aeroplane horns, etc., were exhibited prominently.

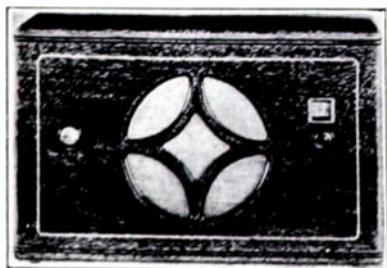
Two unusual electric ironers were shown—one which eliminates the use of hand pressure and smooths out the clothes before pressing; the other a "cordless," receiving its electrical contact through the stand while at rest.

It was estimated that approximately 25,000 visitors were registered at the Show, coming from practically every state in the Union, and Canada. The honor of making the first group registration was shared by Los Angeles, Boston, and New Orleans delegations.

Fill Hotels

Four lake-front hotels, the Stevens, Blackstone, Congress, and Auditorium were filled to overflowing. Streets were decorated in honor of the occasion, and the new mayor of Chicago, Anton J. Cermak, welcomed the radio men to the city at the opening meeting. Dr. Julius Klein, Washington, D. C., assistant secretary of commerce, delivered the principal address.

Meeting in Chicago, with the Radio Manufacturers Association, in



Novel Cabinet Designs

addition to the newspaper radio editors, were: Radio Wholesalers Association, National Federation of Radio Associations, and the Radio Press.

TELEVISION

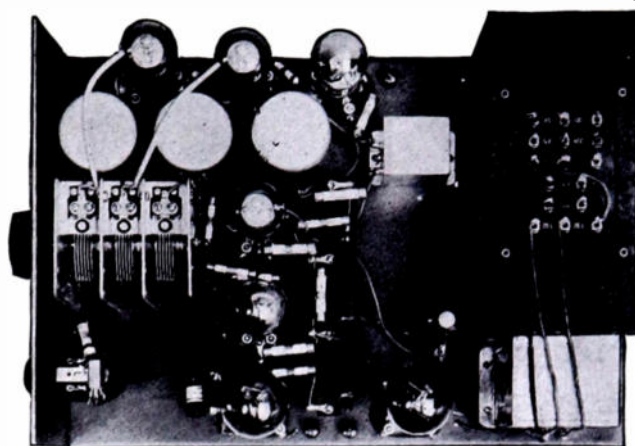
PROBABLY the first actual contact made by an appreciable number of radio men with Television, was at the Chicago Trade Show. Clearing up many questions, doubts, and rumors which have been circulated among the trade, the television equipment exhibited at the Show revealed its actual status and progress accomplished to date.

In the opinion of Bond P. Geddes, executive vice-president and show manager, the radio industry is preparing itself for the introduction of television into the home, and by fall or winter the new art should be in its preliminary stages.

The "Crystal" Stage

"This fall and winter should see television in the 'crystal stage' through which the sound receiver passed ten years ago," Geddes said.

At the present time, television manufacturers, realizing that radio only progressed so swiftly because of the experiments of the amateurs and "radio bugs," are turning to the public to help solve the problem. Instead of attempting to force the public in general to buy an elaborate



Television Sets

expensive televisor, they are also putting them up in the form of "kits," for the individual to assemble himself.

The kit usually consists of a motor, a scanning device, belt, framing device, Neon lamp and lens. All the purchaser has to do is assemble the parts in a cabinet of his own design and construction. The kits list from \$50.00 up.

Freed Goes Television

An announcement that recently surprised the trade more or less was the entry of Arthur Freed, radio pioneer, into the television field. Freed has formed the Freed Television and Radio Corporation, with offices in New York. It is expected that the products of the new company will go under the name "Freed-Eisemann," familiar to the radio trade, and the firm organized by the Freeds year ago. The company will still continue the manufacture of radios, it is reported.

At present there are 19 television stations in operation. With the exception of five in Illinois and Indiana, they are all on the Atlantic Coast.

Progress Slow in West

In the West, the progress of television has gone more slowly. At the present time there is not a single television station west of Chicago, although several radio stations are awaiting the proper time to start negotiations. It is also reported that several motion picture studios are experimenting on the new art. The Pacific Coast is especially well equipped with talent for television broadcasting when it does break.

"BACK TO THE FARM"

Appealing to the Large Rural Market Manufacturers are Producing Models for DC use Equal to AC Performance

A SIGNIFICANT feature of this year's Show in Chicago is the definite indication that the industry has started a "back to the farm" movement. It has gained such momentum that nine leading set manufacturers exhibited the new type air cell battery-operated receiver.

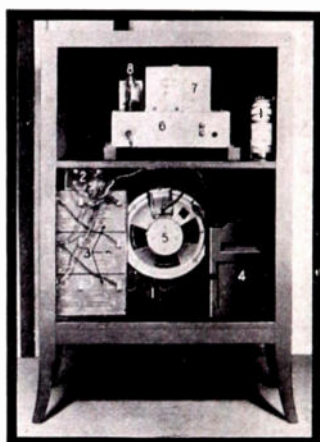
This is in striking contrast to last year's convention in Atlantic City, when battery sets received comparatively little attention. Exhibitors not only displayed their air cell sets this year, but are, from all indications, laying extensive plans to invade the long-neglected market of some 4,000,000 potential buyers living beyond the power lines, who are without any kind of a radio. In addition to these, several million are reported to be still using the obsolete old battery sets.

The accepted explanation is that not until this year has there been a battery-operated set in which all of the unfortunate features of the old type battery receivers are eliminated, and which offers to the unwired home the same quality of re-

ception and economy enjoyed by the city user.

Employ New Circuits

The new sets employ the latest circuits, some of them with dynamic speakers, and all of them similar



Interior view of one of the new DC console models for farm use. Has all the qualities of an AC set.

in appearance and operation to AC sets. They range in style from midgets to elaborate consoles. Hand-

operated rheostats, filament volt-meters, and other old devices, have been eliminated, and the receivers are snapped on and off with a simple switch.

Storage Battery Discarded

Cost of operation has been reduced in these sets, largely by the elimination of the storage battery. "A" current is derived from a revolutionary type of "breathing cell" battery, used with 2-volt tubes.

With only 2,000,000 of the 6,000,000 unwired homes in the country enjoying radio reception today, several leaders in the industry have expressed the belief that the air cell sets will be one of the most important items in the radio trade

Government Aiding

Added to the fact that there is a satisfactory set available to farmers is the helpful influence of the Department of Agriculture in Washington, which is exerting every effort to induce farmers to buy radios both for pleasure and as an aid to the business of farming.

"TRAFFIC-GETTERS"

By H. G. BLAKESLEE

A PARENTLY those days when fifty to a hundred people came daily into the radio dealer's store, either to buy or to "just look" are no more.

Yet this "traffic" still goes by the door, and what we want to do is to route it into the store.

Many went to the Chicago R. M. A. Show for the purpose of finding those items that would again bring in the public in a buying frame of mind, as in the old days.

New Tube Testers

In looking at the exhibits in this light, we found that nearly every manufacturer of tube testing equip-

ment and tube companies have brought out new store and counter testers, so the dealer can ask the customer to come to the store for tube testing, instead of sending an increasingly busy service man to their homes. These tube testing devices were among the most prominent "traffic-getters" shown.

Record Changers

New types of automatic record-changers were in abundance at the Show. All of the new combinations are automatic and reasonably priced. Units are designed for use in window demonstrations, for constant programs in the store doorway, and demonstration. All tending to assist the stopping of traffic

and detouring it into the radio dealer's place of business.

Condensers-Transformers

Excellent displays of condenser assortments for replacement, repairs to obsolete sets, and transformers for the same purpose were shown at the Show, all for the purpose of bringing the repairmen and set-tinkerer in with the other traffic.

Electric Signs

New style electric signs are offered by various manufacturers, all with appeal to the passing consumer to come in and see, be convinced, and buy.

Short Wave Kits

Short wave kits were very much in prominence and interest in them was strong. Automobile radio installations, from all indications at the Show, showed an increasing popularity.

Here It Is!

NEW MERCHANDISE

Displayed at the

R. M. A. TRADE SHOW

ABC WASHER

Model 77 Spinner

This new electric washer, manufactured by Altorfer Brothers Company, Peoria, Ill., has spinner dryer of seamless Armco metal. It spins water by centrifugal force through small openings in top ring. This model rinses, blues, starches and dries. All parts exposed are rust-proofed. Revolving turret locks in any position. Tub and dryer compartment finished in porcelain enamel. Suds are returned to washer and rinse-water to the tubs in one operation, without a pump.

ACREMETER

A visible tube analyzer and tube salesman, a product of the Acremeter Company, Everett, Wash., and merchandised solely by the Ken-Rad Corporation, Owensboro, Ky. The cabinet is finely finished in walnut, and is 33 inches wide and 54 inches high, with ample drawer space for tube stock.

This instrument tests all types of tubes, pre-heating sockets and space is provided for additional tubes. It indicates shorts automatically by a series of glow lamps, and also the gassy contents of tubes. Equipped with highest type easily readable meters and line voltage control.

Accompanying the Acremeter, the company provides a thorough merchandising



Acremeter

plan and service for dramatizing the sale of tubes. This service is available to the dealer through jobbers in all territories.

AC SPARK PLUG

New Spark Plug

A spark plug that improves radio reception in automobiles, motorboats, and police cars, has been developed by the AC Spark Plug Company, Flint, Mich., a division of General Motors. The new plug is designed to eliminate interferences caused by the ignition system in the car, without the use of external devices.



Bosch Model 20L

AMERICAN BOSCH

The new Bosch radio receivers are the 20J, 20K, and 20L consoles, all of which incorporate the new power pentode superheterodyne chassis developed by Bosch engineers. Two Pentodes are employed in the chassis, with three type 551 Variable-Mu's, two 227.

Model 20J

A console, simple yet dignified in appearance with striped walnut side panels, decorative tuning panel and grill, offset by a frame of inlay veneer in Zebra wood. It is open-face, and is 39 inches high, 24 inches wide and 14 inches deep.

Model 20K

A full open-face console with a marquetry pattern of inlaid contrasting woods in the center panel. The cabinet is 39 inches high, 24 inches wide, and 14 inches deep.

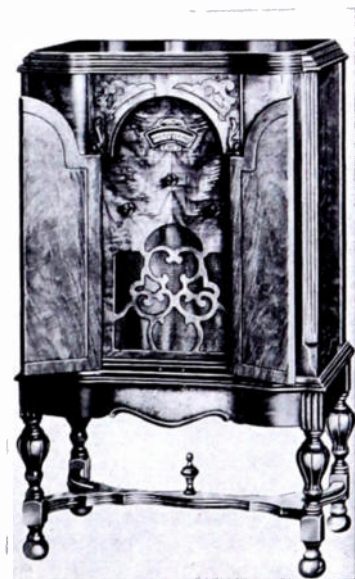
Model 20L

Has tall sliding doors which pull back to reveal the ornamental tuning panel and grill, in carved wood. It is finished in blended elm burl and striped walnut veneers, with slightly bowed side panels of selected quarter matched butt walnut. Dimensions, 44 inches high, 25 inches wide and 14 inches deep. All three models have Line-O-Lite tuning.

APEX

Model 8-A

With tone and automatic volume control, this new eight-tube superhet receiver stands 17 3/4 inches high, 16 inches wide, and 11 1/4 inches deep. The three tuned circuits employ three 227, one 80, three 51, and a 47 pentode. A Utah dynamic speaker is used. The attractive cabinet is of walnut. List price, \$67.50, complete with tubes. Manufactured by U. S. Radio & Television Corp., Marion, Ind.



Apex Model 10B

NEW MERCHANDISE

Model 8-B

An eight-tube console model superheterodyne, using the same chassis as the 8-A. The walnut cabinet is 40 $\frac{3}{4}$ inches high, 25 inches wide, and 14 $\frac{3}{4}$ inches deep. Listing at \$79.95, complete with tubes, it has three tuned circuits, tone control and automatic volume control.

Model 10-B

A 10-tube console receiver, using a superhet pentode chassis. The tubes are: Four 27, one 80, three 51, and two 47. The chassis employs a Utah dynamic speaker, and includes tone control and automatic volume control, four tune power circuits, and meter tuning control. The walnut cabinet is 41 $\frac{1}{2}$ inches high, 25 $\frac{1}{2}$ inches wide, and 15 $\frac{1}{2}$ inches deep. List price, \$99.50, complete with tubes.

Model 26-P (Gloritone)

A t.r.f. table model, using five tubes, three tuned circuits. Employs three 24, one 80 and one 47 pentode. The walnut cabinet is 17 $\frac{3}{4}$ inches high, 15 $\frac{1}{4}$ inches wide, and 8 $\frac{1}{2}$ inches deep. Utah dynamic speaker. List price, \$49.95, complete with tubes.

Model 26-B (Gloritone)

A five-tube t.r.f. console set, 37 inches high, 22 inches wide, and 11 inches deep. Tubes are: Three 24, one 80, and one 47. List, \$59.50 complete.

ARCTURUS

Type 551

By shaping the plate current-grid voltage characteristic so as to minimize the higher order curvature over an extended range of control grid voltage, the new Type 551 Variable-Mu tube is designed to divide cross-talk by a factor of several hundred. This latest product of the Arcturus Radio Tube Company, Newark, N. J., eliminates distortion of signals from high power stations caused by non-linear relation between the R.F. output voltage and the R.F. input voltage. It minimizes hum in AC receivers due to modulation of the carrier by low-

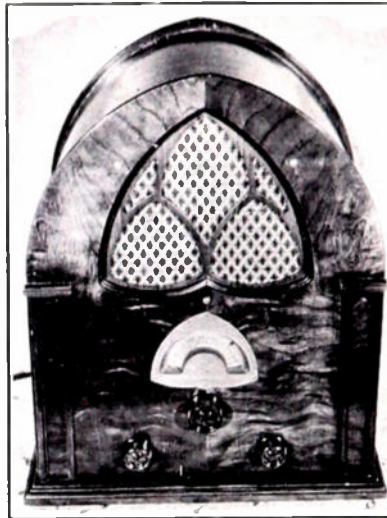


frequency hum voltages, and obviates the use of antenna potentiometers, local-distance switches and double pre-selectors.

PZ Pentode

Because of its increased power sensitivity, the Arcturus PZ Pentode delivers

an output of 25 watts with but 117 volts output, as compared to the 245 triode having a maximum output of only 1.6 with an input of 35.4 volts. This permits the operation of the Pentode at maximum output directly from the detector. The PZ Pentode has nearly four times the power sensitivity of the 245 power tube.



Atwater Kent Compact

ATWATER KENT

Golden Voiced Compact

This new superheterodyne table model uses six tubes; including a 247 pentode. Designated as Model 84, the Compact is 19 inches high, 15 $\frac{5}{8}$ inches wide and 9 $\frac{5}{8}$ inches deep. The superhet chassis is housed in a cabinet of Gothic cathedral design, and weighs 40 pounds, packed for shipping. List price \$72.50, complete with tubes. Manufactured by Atwater Kent Manufacturing Company, Philadelphia, Pa.

AUDIOLA

Model 610

There are six tubes in this mantel model set, manufactured by the Audiola Radio Company, 430 South Green Street, Chicago. The circuit employed is t.r.f., with the Pentode tube. The walnut cabinet is 18 inches high, 15 inches wide, and 10 $\frac{1}{2}$ inches deep. It is equipped with tone control, full vision dial and Jensen dynamic speaker. Tubes used are: one 224, one 227, one 247, two 51 and one 280. List price, \$51.00, less tubes. Shipping weight, 33 pounds.

Model 810

This Audiola model is an eight-tube superhet with Pentode and Variable-Mu, housed in the same cabinet as Model 610. Has tone control, full vision dial, and lists at \$60.00, less tubes.

Model 612

A six-tube t.r.f. Pentode console receiver housed in a walnut cabinet 39 $\frac{1}{2}$ inches high, and 23 $\frac{1}{2}$ inches wide. Has the same tube specifications as Model

610, and includes tone control, full vision dial and Jensen speaker. As in other models, Phantom Light Pointer is provided. List price, \$65.00, less tubes. Shipping weight, 76 pounds.

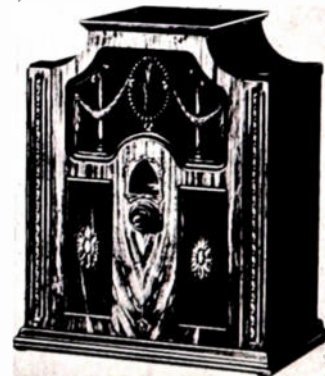
Model 814

The "big boy" of the Audiola line. An eight-tube superhet, using Pentode and Variable-Mu tubes, housed in a cabinet 42 $\frac{1}{2}$ inches high and 24 $\frac{1}{2}$ inches wide. Front panel and overlays are of figured imported woods. List price, \$81.00, less tubes.

BRUNSWICK

Model 11

A midget model, in attractive walnut cabinet. The superhet chassis employs three Brunswick type 24 tubes, two 51 Variable-Mu, one 47 Pentode, and one 80. Additional features are the new "color tone control," dynatron oscillator, turret type tuning condenser, and 9-inch speaker. Dimensions: 22 $\frac{1}{2}$ inches high, 17 $\frac{1}{2}$ inches wide, and 10 $\frac{1}{2}$ inches deep. List price, \$79.50, complete with tubes.



Brunswick Model 11

Model 12

This miniature highboy console is housed in a cabinet of matched ribbon walnut and burled walnut with small moulding. Hand-carved grille, turned and fluted legs. This superhet chassis employs three 24, two 51, and one 47. Has color tone control, Uni-selector, volume control, dynatron oscillator and turret type tuning condenser. Is 43 inches high, 17 $\frac{1}{2}$ inches wide, and 10 $\frac{1}{2}$ inches deep. List price, \$99.50, complete.

Model 16

Lowboy type console, finished in American walnut. Sloping front side panels of butt walnut capped with carved overlays. Recessed carving above Uni-selector panel, turned and fluted legs. Superhet, using three 24, two 51, one 47 and one 80. Cabinet is 38 $\frac{1}{2}$ inches high, 19 $\frac{1}{2}$ inches wide, and 14 $\frac{1}{2}$ inches deep. List price, \$119.50, complete.

Model 17

Lowboy console with distinctive carving effects. Basket-weave carvings on front and apron, overlay

NEW MERCHANDISE

carvings near front legs and floral carvings above Uni-selector panels. Uses superhet chassis, with three 24, two 51, two 47, and one 80, with the same additional features, and 12-inch speaker. Is 41¼ inches high, 21¾ inches wide, and 13½ inches deep. List price, \$149.50, complete.

Model 24

Graceful six-legged highboy with arched French doors. Carved moulding at top and bottom, and hand-carved, fluted legs. The same chassis as Model 17 is used, and the same features. Overall dimensions of Model 24 are: 45½ inches high, 22¾ inches wide and 16⅞ inches deep. List price, \$169.50, complete with Brunswick tubes.

Model 33

Lowboy combination Radio-with-Panatrope, finished in American walnut. Front side panels capped with carved overlays, and carvings on either side of apron, above fluted legs. The cabinet lid is provided with balanced stay arm. Tube specifications: three 24, two 51, one 47, and one 80. Also has other new Brunswick developments. Dimensions: 39¾ inches high, 19½ inches wide, and 14⅝ inches deep. List price, \$169.50, complete.

Model 42

Automatic Panatrope - with - Radio. Handsome cabinet of butt walnut. Plays 20 ten-inch records without attention, and also plays 12-inch records manually. List price, \$265.00, complete with tubes, and complement of 20 records



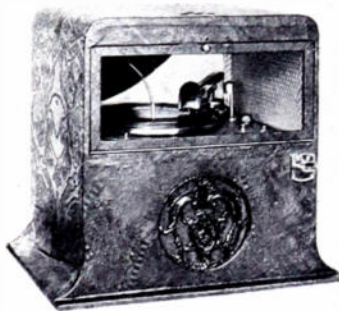
Brunswick Model 12

CARRYOLA

Midget Coin Phonograph

Developed by the Allen-Hough Carry-

ola Company, Milwaukee, Wis., this new small-size, coin-operated automatic phonograph lists, fully equipped, for \$195.00. The new Carryola Midget is substantially the same as the larger Cabaret model. It is encased in a Fabrikoid-covered cabinet which is scuff proof, stain proof and durable. It is compact and can be placed on a counter or table. The cabinet is 21¼ inches wide, 19¾ inches high. A Samson reproducing amplifier consisting of two stages of push-pull amplification, coupled with a seven-inch Utah dynamic speaker, are used. The record-changing mechanism plays and changes ten 10-inch records automatically. It is equipped with a multiple coin slot, permitting the insertion of from one to six nickels. The coin receptacle has a theft-proof lock.



Carryola Midget

CECO

New Tube Series

Types 235, 236, and 237 comprise a new series of tubes manufactured and exhibited by the CeCo Manufacturing Company, Providence, R. I. The type 235 has characteristics closely approximating those of the screen grid type 224, with the addition of Variable-Mu characteristics that permit smooth volume control by varying the grid bias from 3 to 40 volts negative. It has the following characteristics: filament voltage, 2½; filament current, 1.75; plate voltage, 250; grid voltage, -3; plate current, 6.5 MA; screen current, ⅓ of plate current max.; plate resistance, 350,000 ohms; and mutual conductance, 1050.

Type 236 is of the screen grid type, designed primarily for radio frequency amplification and power detection. Type 237 is a general purpose tube which can be used as detector, amplifier, or oscillator. Both tubes are of the high vacuum type and employ indirectly heated .3 amp. cathodes, designed so as to permit wide variations in filament voltages.

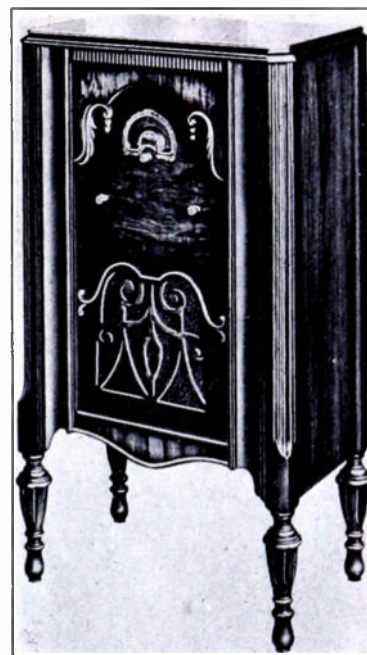
CLARION

Model 80

This new Superhet Midget, manufactured by the Transformer Corporation of America, Chicago, is a seven-tube set 19 inches high, 16 inches wide, and 10½ inches deep. Tone control and the new improved Clarion dynamic speaker are provided. Tubes used are: one 24, one 27, one 45, one 80, three 51, and one 47. List price, \$67.50, complete with tubes. Shipping weight 46 pounds.

Model 81

A seven-tube console model 35 inches high, 20 inches wide, and 12 inches deep. The tube specifications are the same as for Model 80, and the same features are provided. List price, \$67.50 complete. Shipping weight 67 pounds.



Clarion Model 91

Model 90

An eight tube superhet mantel type 19 inches high, 17 inches wide, and 11¼ inches deep. This midget model has automatic volume control, in addition to tone control. List price, \$79.50, complete. Shipping weight, 50 pounds

Model 91

This is an eight-tube superheterodyne console, 38 inches high, 22 inches wide, and 13 inches deep. Housed in a cabinet of richly grained walnut. Automatic volume control and tone control are provided, together with Clarion improved dynamic speaker. The model uses the same chassis as Model 90. List price, \$99.50, complete with tubes. Shipping weight, 79 pounds.

CROSLEY

Five-Tube T.R.F. Sets

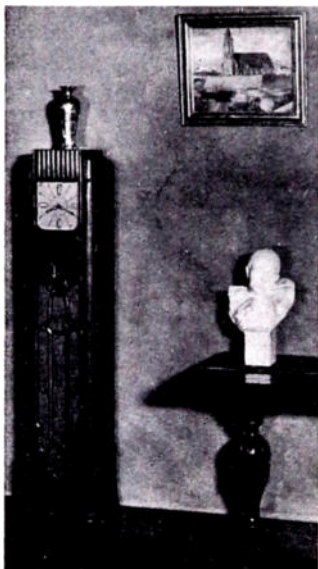
Five chassis and eleven cabinets are included in the new AC line manufactured by Crosley Radio Corporation, Cincinnati, Ohio. Three of these chassis are entirely new and present the latest developments in radio engineering. A new five-tube t.r.f. chassis is available in three cabinet models—the "Show Boy," a small mantel type at \$51.50 with tubes; the "Sonneteer," a 35⅝ inches high console at \$63.50 complete, and the "Oracle," a pier clock model 61 inches high, 14 inches wide and 9¾ inches deep, at \$103.50, complete with clock, tubes and

NEW MERCHANDISE

speaker. This five-tube chassis uses one 247 Pentode, two Variable-Mu, one 224 and one 280.

Seven-Tube Supers

A new seven-tube superheterodyne Pentode chassis is also available in three cabinet models. The "Super Buddy Boy," a mantel set at \$67.50 with tubes; the "Songster," a 35 inches high console at \$83.50; and the "Musical," a console 36 inches high, 23½ inches wide and 13¾ inches deep with large auditorium speaker at \$98.50.



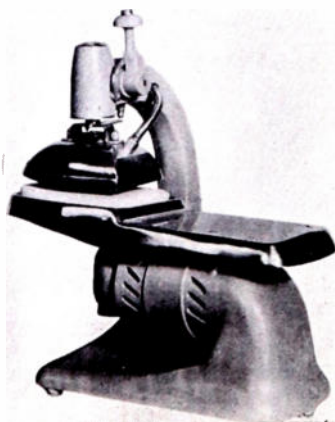
Crosley Oracle

Pliodynatron

The Crosley "Superheterodyne Pliodynatron" chassis uses seven tubes, six of which are screen grid, and one 247.

Ten-Tube Models

Two consoles, one a combination radio-phonograph, are available with the new 10-tube superhet chassis; the "Monstrel," a highboy with doors, listing at \$137.50 complete, and the "Troubadour," a combination at \$210.00 with tubes. This 10-tube chassis employs two Pentode 247 in push-pull, two Variable-Mu's, two 224, three 227, and one 280.



Crosley Moto-Iron

Crosley "Moto-Iron"

Crosley distributors are enthusiastic over the new electric iron, designed by the Crosley Radio Corporation. The Crosley Moto-Iron operates on a new principle. The ironing pad is vibrated by a small electric motor which pats out the wrinkles in the fabric, instead of crushing it. Exertion of pressure on the iron is unnecessary. Manipulation of controls is practically eliminated. The Moto-Iron is small and easily operated, and can be placed on any convenient table and stored in a cupboard.

DAYRAD

Type L

This self biasing tube checker tests for end of life, short circuits, open circuits, etc. Manufactured by the Radio Products Company, Dayton, Ohio. It is a compact, six-socket checker, that tests all new types of tubes, including pentode, new 2-volt, new 6-volt, new screen grids, etc. The sockets are arranged and conveniently marked for testing either at the store, or in the user's home. Four different colored test buttons. Dealers' price, \$27.60.

DEJUR-AMSCO

Tuning Accessories

A complete line of dials, dial lights and escutcheons is manufactured by DeJur-Amsco Corporation, 95 Morton Street, N. Y. C. Approximately 100 different styles of dials are made, anticipating every dial requirement. The six general designs are: Full vision, sector vision, sector vision bevel, direct drive, direct drive bevel and large direct drive. The dials are available in tan and white scales, with either hundred divisions or kilocycle graduations.

Tracking Condenser

A special tracking ganged condenser combination designed to eliminate padding arrangements and from two to five superhet parts. Condensers are available in two, three and four gang units, comprising one special oscillator section and standard tuning sections.

Transitor

A high-gain special type intermediate frequency amplifying transformer stentode for sets. Made in three broadcast types. Under average circuit conditions the units may be peaked anywhere from 167 to 183 kilocycles.

DELCO

Police Auto Model

Two new radio receivers, designed especially for police work, are now in production by the Delco Radio Corporation, Dayton, Ohio. One, of the automotive type, uses the Pentode tube. Volume is controlled by means of a combination switch attached to the floor, turning on the radio and at the same time operating the volume through a variable resistor which regulates the potential on the three r.f.

tubes to give volume variations. The new receiver uses three 224, one 12-A and a transformer-coupled Pentode. All tubes are spring mounted. In order to minimize drain on the car battery, the filaments of the r.f. tubes are in series, while the detector and audio tube filaments are in parallel. Drain amount to 2¼ amperes.

The chassis is mounted on a universal bracket fastened by bolts, and held in place by two spring clips for quick replacement. Battery cable, control cable and speaker connect with plug-in connectors, and are easily detachable. These cables are shielded, and automatically grounded to their receptacles. The aerial is copper screen wire. No soldered connections or spliced wires.

The station set is housed in a cabinet of the cathedral type, in butt walnut. It is 19 inches high, 16 inches wide, and 10½ inches deep. Tone control is provided, and also an antenna coupler, eliminating interference from teletype and other electric equipment common to police stations. The set can be locked on any station between 1500 and 2600 kilocycles. Uses four 224, one 245, and one 20. The set operates directly from 110 volts AC, but can be supplied for 50 or 60 cycles or from 25 to 40, if desired. Dial is illuminated.

ELECTROMATIC

New Record-Changer

Changes ten 10-inch records automatically, repeats any record desired, and plays any make. Also plays 12-inch records and repeats automatically. Three-second interval between records. Records rejector permits instant change, insulated motor suspension on adjustable sub-base. Easy to install—three-point bolt suspension. Made by the Electromatic Record Changer Corp., 2212 South Paulina Street, Chicago.

ENTERPRISE

Cordless Electric Iron

This new type electric iron has no cord attached to it, but instead heating is done through connection with stand while at rest. The only plate is a heating element of high voltage. The cord is connected to the stand. Connection is made through non-oxidizing contacts. It is made in two models, one for industrial and one for home use. Available in DC and AC. Heating element is of nichrome wire wound on edge and embedded under pressure in a heat retaining mineral. No mica used. Thermostatic control prevents overheating. Handle is air-cooled. List price, \$8.95.

ERLA

Miniature

The newest product of Electrical Research Laboratories, Chicago, is a miniature Pentode receiver. It is very compact, being only 13 inches high, 13 inches wide, and 9 inches deep. The chassis is scientifically designed and

NEW MERCHANDISE

engineered around the new tubes, Pentode and Variable-Mu. Only four tubes are used: one 35, one 24 detector, a 247 audio and one 280 rectifier. This new Erla miniature is available in two models—Model 21P at \$29.75, and Model 22P at \$39.50. Model 22P contains a self-starting, front set, electrically operated Telechron electric clock.

DC Model

The new Erla receivers are also available in a DC model, the same size as the AC models, and also a four-tube set, using the new type DC tubes, two 236 and two 238.

EVEREADY

ER-233

A power Pentode for use in output stage of battery operated receivers.

ER-235

Variable-Mu for use as an amplifier.

ER-236

Screen grid amplifier tube for use in automobile and 110-volt DC receivers especially designed for its use.

ER-237

Detector and amplifier for automobile and 110-volt DC use.

ER-238

Power pentode for automobile and 110-volt DC sets.

ER-247

Power pentode. All of the above tubes are of the four-pillar construction.

FADA

Model 51

A seven-tube superhet table model with power pentode, listing at \$69.50, complete with tubes.

Model 45

An eight-tube superhet console with push-pull pentodes, listing at \$112.50, complete.

Model 48

A deluxe model 10-tube superhet low-boy with automatic Flashograph, automatic volume control, tuning silencer, tone filter. List price, \$147.50.

Model 49

Deluxe 10-tube superhet highboy, with all features of Model 48. List price \$175.00.

FLINT

Peter Pan Midget

This tiny midget is not as tall as a telephone, and weighs less than 10 pounds. Uses screen grid and pentode tubes. Manufactured by Flint Radio Corporation, Ltd., Los Angeles.

FREED-EISEMANN

Two Basic Lines

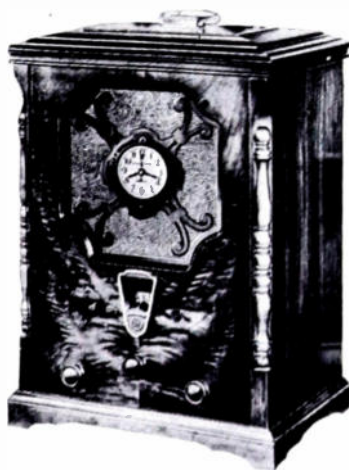
In addition to television equipment, the Freed-Television and Radio Corporation, 130 West Forty-second Street, New York City, is manufacturing two lines of radios—a midget and a console in DC and AC.

The DC chassis employs two stages of screen grid radio frequency using 236 tubes, in its first audion stage a 237 is used and a 236 screen grid as a detector. In the DC output circuit, four 238 pentodes are used. In addition to the normal pilot light, it is equipped with an emergency light which only flashes when something goes wrong with the filament circuit. Its 6.3 volt tubes draw .3 amperes, and less than 35 watts, making its operation inexpensive. Tone control is provided. Available in a midget model and a console model.

GENERAL ELECTRIC

G. E. Midget

Incorporating the Pentode tube, the new G. E. Midget, introduced by the General Electric Company, Bridgeport, Conn., stands 15½ inches high. The cabinet is of brown walnut finish, in cathedral design. Ranged below the escutcheon are three control knobs for



G-E Junior With Clock

on-and-off, tuning and volume. The chassis, including the power supply system, is one complete shielded unit. The set is t.r.f., with two tuned circuits.

G. E. Junior

This new compact set is an eight-tube superhet, 19¼ inches high, 13¾ inches wide and 10 inches deep. The cabinet is eighteenth century clock design, with antique bronze handle on top for carrying. Equipped with newly perfected supercontrol screen grid tube which minimizes cross-talk and distortion. Tubes tested with set at factory and shipped in sockets. New type tone control furnished, and phonograph in-

put terminals. List price, \$72.50, complete with tubes

Junior With Clock

This receiver has the same specifications as the G. E. Junior, with the addition of an electric clock, operating on the same current outlet as the set, but independently. The set is shielded against interference from clock.

Junior Console

Using the same chassis as the Junior, an eight-tube superhet, the Junior Console is in matched walnut, 38½ inches high, 21¼ inches wide, and 11¾ inches deep. The cabinet is Early American. List price, \$89.50, complete with factory-tested tubes. Shipping weight, 56 pounds.

Combination

The new G. E. radio-phonograph combination uses a nine-tube superhet chassis. It embodies home recording unit. Phonograph has new improved reproduction, using the same tone control as radio. Cabinet is of massive design with narrow doors. List price, \$285, less tubes. Shipping weight, 162 pounds

Highboy

This model also uses the nine-tube superhet chassis, and stands 48 inches high, 27¾ inches wide, and 16¾ inches deep. Early American cabinet design, with narrow doors that do not project beyond cabinet when open. Has local-distance switch, tone control, and remote tuning which is extra. List price, \$179.50. Shipping weight, 127 pounds.

Lowboy

An open-face type of Early American design. The chassis is the nine-tube superhet, with four screen grid tubes. It is 43 inches high, 27½ inches wide and 13 5/16 inches deep. Includes tone control and local-distance switch. List price, \$142.50, less tubes. Shipping weight, 122 pounds.

Four-tube Midget

The newest addition to the General Electric line. Smaller than the Junior, this t. r. f. midget uses four tubes—two 224's, one 80 and a Pentode. The chassis is shielded. Height, 15¼ inches, width, 10¾ inches; depth, seven inches. List price, \$37.50, complete with tubes.

GENERAL MOTORS

Valere

Using the eight-tube superheterodyne chassis, which employs variable-mu and pentode tubes, this model is contained in an attractive cabinet of light walnut finish, imparting both depth and richness to the wood. Its curved pilasters are of highly figured Oriental wood and maple burl, with center apron and front panel of quilted maple. This set has full automatic volume control, and lists at \$99.50, including tubes.

NEW MERCHANDISE

Cosmopolitan

This model is equipped with the 10-tube superhet chassis and is housed in a handsome cabinet ornamented with the popular "linen-fold." The center apron and front panel are of butt walnut, with a newly designed sliding panel of the same material. List price, \$129.50, complete.

Imperial

An impressive appearing instrument with the 10-tube superhet chassis, housed in a large cabinet patterned after the Stuart period. Ornamentation is elaborate, with pilasters, center panel and door of figured butt walnut. List price, \$149.50, complete.

Standish

An end-table design, of Early American type. Antique wax finish with worn effect, suggestive of age. Has self-contained aerial; can be moved anywhere. Uses seven-tube superhet chassis. List price, \$95.00.

Pioneer Battery Set

A console model, designed to operate 1000 hours continuously. Uses a t.r.f. chassis, with four 232, a 230, and two 231. Magnetic speaker. Equipped with tone control, local-distance switch.

Louis XV Console

Delicate and flowing lines are designed in this cabinet, with decorated serpentine front, carved cabriole legs, and light moldings. Contains a drawer in the top. Employs the 10-tube superhet chassis, and lists at \$185.00.



G-M Louis XV Combination

Louis XV Combination

Also resembling a chest of drawers, the handles of which conceal the controls, this model is of solid American walnut, with hand carvings. The automatic phonographic device permits the playing of 10 records automatically. List price, \$350.00, including tubes.

Warwick

Fashioned to resemble an Early English occasional table, made of solid Philippine hardwood, with antique mahogany finish. Arcaded front panel, with floral design and fluting incised in solid wood. Equipped with built-in aerial and has seven-tube chassis. List price, \$95.00.

Cromwell

Constructed of oak, it resembles a hutch or occasional table, and has a serviceable drawer in the top. Lunette carving on upper frieze, channelled detail on the pilasters and carved top brackets. High-lighted antique wax finish. Employs the 10-tube superhet chassis, and lists at \$160.00.

Abbey

Early English design, of solid Philippine wood, antique mahogany finish. Has Gothic arches in the pilasters, flutings in front rail, and alternating lunette design. Contains the 10-tube superhet chassis, and is priced at \$165.00.

Queen Anne Commode

Top and front are of butt walnut in rich contrasting shades. Cabriole legs are ornamented with solid wood carving. Tambour effect on the sliding door, and is finished in high-lighted antique. Uses the 10-tube chassis. List price, \$175.00.

Winslow

Early American in design, it resembles a chest of drawers. Made of crotch walnut with herringbone inlay. Spoon-foot cabriole legs, carved skirt, hand-rubbed finish and old brass handles produce a Colonial effect. The three upper drawers are real, the lower two conceal the control panel. Ten-tube superhet, listing at \$225.00.

Queen Anne Combination

A radio and phonograph with the 10-tube superhet chassis. Plays either 10 or 12-inch records with record changer. Its front is of highly figured butt walnut, with shell ornaments and delicate molding. Has folding doors. List price, \$250.00, complete.

Tudor

Also of the end-table type, symbolic of Seventeenth Century English. Made of solid oak, decorated with incised strapwork ornament on front and back, with linen-fold carving. Worn effect produced by finish. A seven-tube super with self-contained aerial, listing at \$95.00.

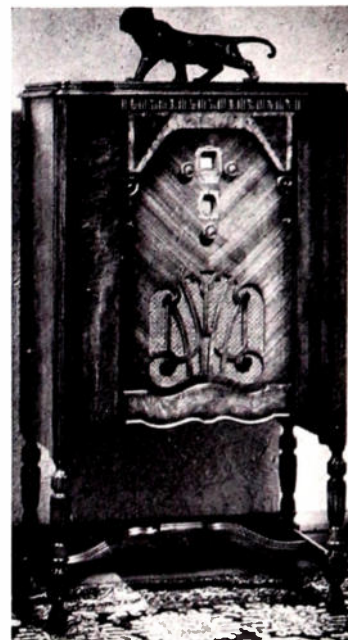
GULBRANSEN

Model 235

The newest radio achievement of the Gulbransen Company, Chicago, is this 10-tube Vari-Mu, Pentode Superheterodyne. The tubes include four 235 Vari-Mu, and two 247 in push-pull. The set is equipped with both manual and automatic volume controls, tuning meter and power switch. Height, 44 inches; width, 24 inches, and depth, 14½ inches. List price, \$97.50, less tubes.

Model 135

This seven-tube superhet circuit includes two 235 Vari-Mu, one 247 Pentode and two screen grids. A full-floating condenser assembly banishes



Gulbransen 235

howling. Compensating dynamic speaker. Fine walnut woods and solid wood carvings are combined in a 40-inch cabinet. List price, \$68.00, less tubes.

Mantel 130

A seven-tube superhet receiver equipped with two 235 Vari-Mu, one 247 Pentode and two screen grids. Has 2-4 microvolts per meter accompanied by 10 kilocycle separation. No cross-talk or tube noises. Compensating type dynamic speaker. List price, \$58.00, less tubes.

HOWARD

Model 40

An eight-tube superheterodyne model, manufactured by the Howard Radio Company, South Haven, Mich. The cabinet is a console, finished in walnut, and is 39½ inches high, 22½ inches wide, and 16¾ inches deep. The chassis employs two 227, one 280, three 51, and two 247. The speaker used is a Special Howard Tone control is provided. Shipping weight, 121 pounds.

Combination

Using the same chassis as the Model 40, this radio-phonograph combination is a walnut console 44 inches high, 31 inches wide and 19¼ inches deep. Tone control. The speaker is a Special Howard, with automatic phonograph switching arrangement.

Model 10

This Howard model is a midget 13½ inches high, 11½ inches wide, and

NEW MERCHANDISE

7½ inches deep. The circuit used is t.r.f., using one 224, one 280, two 51, and one 247. Speaker, Special Howard.

Model 20

Another Howard midget, this time a superhet using seven tubes: two 227, one 280, three 51, and one 247. Employs tone control, and uses Special Howard speaker. Cabinet is 17½ inches high, 14⅞ inches wide, and 11½ inches deep. Shipping weight, 32½ pounds.

Model 30

Using the same chassis and tube set-up as Model 20, this model is a walnut console 40½ inches high, 22¼ inches wide, and 14½ inches deep. Tone control.

INSULINE

ICA Envoy

Incorporating the pentode power tube, variable-mu screen-grid tubes, tone control and phonograph pick-up jacks, the ICA Envoy Midget receiver is virtually a standard broadcast set reduced to most compact dimensions for use in any part of the average home.

The chassis employs two new type variable-mu tubes, and the tuning system provides selectivity and sensitivity over the entire wave length range of 200 to 600 meters.

The ICA Envoy Midget is designed for A. C. operation on 110-125 volts and on 220-240 volts, a model being available for each voltage range. There are also D. C. models for use on 110-volt and 220-volt D. C. circuits now offered by the Insuline Corp. of America, 23-25 Park Place, New York City.

Pocket Tool Kit

Of the general appearance, size and convenience of the conventional fountain pen, the new neutralizing and aligning tool kit now introduced by the Insuline Corp. of America is certain to be always available where and when needed. The kit comprises an insulated handle screwdriver, and a large and a small socket wrench, fashioned in ICA Bakelite. It resembles the usual fountain pen and is provided with a pocket clip. There is ample insulation and distance between adjustment and hand of user to eliminate all body capacity.

JACKSON BELL

Model 88

An eight-tube screen grid superhet using Multi-Mu and Pentode tubes. Uses Magnavox speaker, has tone control, semi-automatic volume control, and reaches as low as 180 meters. Two tone cabinet. List price, \$59.50 complete.

Model 89

A nine-tube superhet with Variable-Mu and Pentode. Uses three Variable-Mu, two Pentode, two 27, one 24, and one 80. Pentodes are transformer-coupled in

push-pull. Semi-automatic volume control, full tone control. Rust-proof cadmium plated chassis, full-vision vernier dial with shadow-pointer. Two-tone walnut cabinet. List price, \$69.50 complete.

Grandfather's Clock

Measuring 6 feet 4 inches in height, this eight-tube superhet is a new J. B. development. The cabinet is of solid walnut or mahogany. Has full-floating dynamic speaker. List price, \$99.50, complete.

JENKINS TELEVISION

JK-20 Receiver Kit

This television receiver kit, developed by Jenkins Television Corporation, Passaic, N. J., includes all necessary components ready for mounting on a metal platform—wires, nuts and bolts, together with metal front panel. A power pack is included for the full AC operation of the set. The following DeForest Audions are used: Two 427, four 424, one 445 power, and one 480 rectifier.

The assembled receiver is of the self-contained AC single dial tuning type, covering the 100-150 meter band. Ample radio frequency amplification is provided, and regeneration discarded. Front panel carries a large tuning dial connected with the ganged tandem condensers, as well as a small volume control knob combined with on-off switch. The Jenkins JK-20 receiver may be used with any television. List price, \$69.50.

JENSEN

Model PM-1

A permanent magnet speaker, compact and light, has been designed by the Jensen Radio Manufacturing Company, Chicago. The cone and moving coil structure follows that used in the electro-dynamic speaker. The Tym-Flex one-piece molded cone is employed. It is intended for use in battery sets, hotel and apartment installations and amplifier systems. No field coil is employed and the life of the magnetic structure is said to be indefinite.

Model J-1

This new Jensen electro-dynamic type has a cone diameter of six inches over all, and is designed for the smallest midget and mantel types. All connections are completely enclosed.

JESSE FRENCH & SONS

Tudor Combination

A seven-tube superheterodyne console, 37 inches high, 21 inches wide, and 13 inches deep. The cabinet is of burl walnut. The chassis employs two 224, one 227, one 280, two 251, and one 247 Pentode. Equipped with tone control, phonograph attachment and dynamic speaker. List price, \$129.50, complete with tubes. Shipping weight, 85 pounds.

Devon Mantel Type

Using the same seven-tube superhet chassis as the Tudor Console, this receiver is 18½ inches high, 14 inches wide, and 11½ inches deep. Tone control is furnished. List price, \$69.50, complete with tubes. Shipping weight, 40 pounds.

Tudor Console

This model has the same chassis and cabinet as the Tudor Combination, without the phonograph attachment. List price, \$89.50, complete with tubes. Shipping weight, 68 pounds.

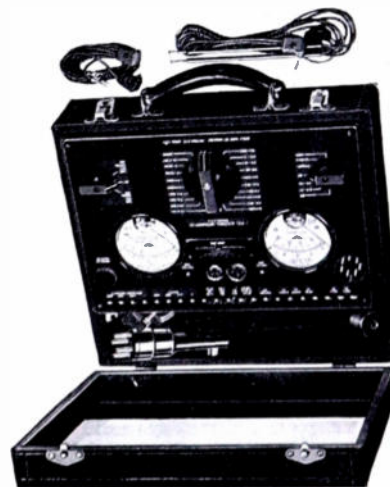
Tudette Mantel Type

A five-tube t.r.f. model, using one 280, two 51, and one 47. Has tone control and dynamic speaker. List price, \$54.50, complete. Shipping weight, 27 pounds.

JEWELL

Pattern 444

This Set Analyzer, just announced by the Jewell Electrical Instrument Company, Chicago, makes socket current and voltage tests on all sets, including those having variable-mu and pentode tubes. In addition to the direct socket testing, 24 measuring ranges are available at quick connection pin-jacks for use with test leads. The instrument has non-shatterable glass covers, and test cable and plug detachable at panel. List price, complete with test leads and prods, AC line test plug and cord, speaker voice coil clips and battery, \$112.00. Dealer and servicemen's price, \$84.00.



Jewell Pattern 444

Pattern 535

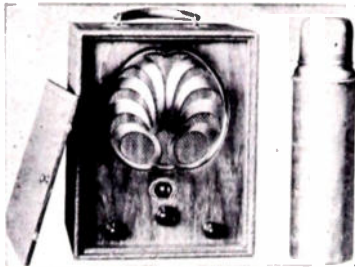
This Tube Seller has a black panel 30 inches high and 28 inches wide, on which are mounted an 8½-inch meter for indicating tube test readings, a smaller meter to show when the line voltage adjustment is properly set, pre-heater and short check sockets and short indicating lights, and a separate test socket for each type of tube. Suitable for wall mounting. Dealer's price, \$111.00. Glass sign, \$12.00 extra.

NEW MERCHANDISE

KELLER-FULLER

Vacation Model

A timely model recently developed by Keller-Fuller Manufacturing Co., Ltd., Los Angeles, is the "Radiette" Vacation Model. It is an extremely compact set, built into a handsome brown leatherette-covered case with



Vacation Model

convenient handle for carrying. This model uses five tubes; three 24, a 45, and a 280. It has a three-gang condenser, full electro-dynamic speaker, tone control, dial light, and phonograph jacks. An all-electric set. List price, \$49.50.

KENNEDY

Coronet

This new model, manufactured by the Colin B. Kennedy Corporation, South Bend, Ind., is a t.r.f. Pentode type, using five tubes; one 24, one 80, two 51, and one 47. The cabinet is designed for mantel use, and is 17 inches high, 12 inches wide, and 10 inches deep. Eastern list price, \$44.50, complete; slightly higher in West. Shipping weight, 16-18 pounds.

Sovereign

A seven-tube superhet lowboy. Equipped with tone control and large concert type dynamic speaker. The cabinet is walnut, with hand-carved decorations and fluted, turned legs. Eastern list price, \$97.50, complete.

Imperial

Seven tubes, including two Variable-Mu's and a Pentode, are used in this large superhet midget. The walnut cabinet is 20 inches high, 14 inches wide, and 11 inches deep. Tubes: one 24, two 27, one 80, two 51, and one 47. Tone control is provided, with Kennedy "selections" control. List price, East, \$67.50, complete with tubes. Shipping weight, 20-24 pounds.

Globe Trotter

A short wave superheterodyne converter in a simple, attractive cabinet, suitable for use with all types of receivers. Independent power supply, long-short-wave changeover switch incorporated. Two dials. Tubes used are one 24, and one 27. Eastern list price, \$42.50, complete.

Royalette

A smaller lowboy type cabinet, incorporating the five-tube chassis of the model Coronet. Height, 38 inches; width, 20 inches, and depth, 14.

LYRIC

Model S-6

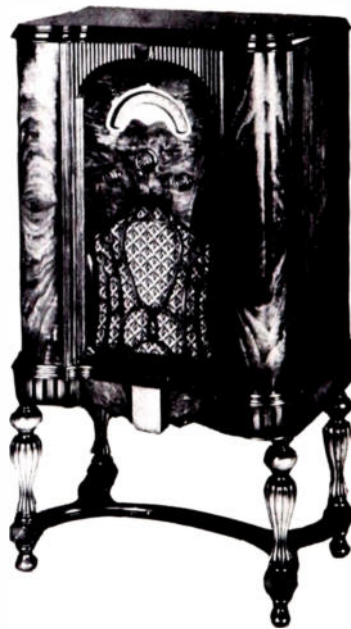
This new model Lyric, manufactured by the All-American Mohawk Corporation, North Tonawanda, N. Y., is a midget, housed in a cabinet of matched butt walnut with an offset maple burl top of modern design. Employing Pentode and Multi-Mu tubes, Model S-6 uses one 24, one 27, two 51 or 35, one 47 and one 80. A midget type speaker is used. List price, \$49.50, complete.

Model S-7

A model of Vogue design, this Lyric model is a superheterodyne midget, slightly larger than Model S-6. Tube specifications: two 24, one 27, two 51 or 35, one 47 and one 80. Multi-Mu and Pentode tubes are used in this model, as well as a midget type dynamic speaker. List price, \$69.50, complete with tubes.

Model S-8

The S-8 a full-sized Console model of Hepplewhite design, with rounded pilasters adding a touch of the ultra-modern to the re-set center piece of



Lyric S-8

the control panel, surmounted by a keystone arch of inlay walnut. Beaded legs are of selected walnut. Tube specifications: one 24, two 27, two 51 or 35, two 47, and one 80. List price, \$99.50, complete with tubes.

Model S-9

Lyric "Super Superheterodyne" is the name given to this console. It is available in two models—one with open control panel, and one with sliding desk type doors. The cabinet is of Sheraton design, finished in matched stump walnut. The tendency is towards pleasing curves, fluted legs, matched panels, and reset control

panel. Tubes: one 24, two 27, three 51, two 47, and one 80. Both Pentode and Multi-Mu tubes are used.

MAGNAVOX

Models 144, 142 and 143

These new models have improved sensitivity and tone quality, and are available for use in every type receiver. The complete speaker structure is assembled with one screw, making assembly and accessibility easy. Cone measurements: Model 144, 6 $\frac{3}{4}$ inches; Model 142, 8 $\frac{1}{4}$ inches, and Model 143, 10 $\frac{1}{4}$ inches.

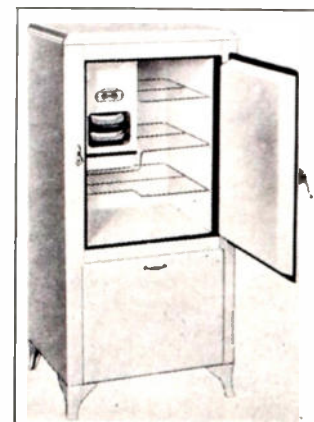
MOHAWK REFRIGERATOR

Models 5, 10, 15

This new electrical refrigerator is manufactured by the All-American Mohawk Corporation, North Tonawanda, N. Y., makers of Lyric radios. All three of these standard models are constructed of rust-proof steel, lined with white seamless porcelain, with the exterior of smooth velvet Duco. Model 5 has two ice cube trays, freezing 28 cubes per tray. Model 10 has three trays, freezing 28 cubes per tray, and Model 15 has four ice cube trays. These models have the Chill-R-ator, with eight speeds for fast freezing; start and stop switch, thermostatic temperature control, chromium plated hardware, broom high legs, motor and compressor mounted on 2 $\frac{1}{4}$ -inch live cushion rubber.

Models 20, 25

In addition to the characteristics of the above three models, these two have the following special features: two doors for added storage space. Model 20 has a capacity of seven cubic feet, shelf area of 10.6 feet, three ice cube trays, porcelain interior and exterior, with fruit tray, designed with a narrow wleft door and wide right door. Model 25, in addition, is electrically lighted, the light switching on and off with the action of the doors. Has a capacity of 8 $\frac{1}{2}$ cubic feet, shelf area of 11 cubic feet, four ice cube trays, chill tray and fruit tray. Three-inch insulation of Dry Zero in a moisture proof wrapper is used in both models.



Mohawk Model 5

NEW MERCHANDISE

NATIONAL UNION

Ten new tubes have been developed by the National Union Radio Corporation, 400 Madison Avenue, New York City. Four are automobile radio tubes, two are AC, and four are two-volt battery tubes.

PHILCO

11-Tube Superhet Plus

The most powerful model ever manufactured by the Philadelphia Storage Battery Company, Philadelphia, Pa. It is quadruple screen grid, using four 24, four 27, two 45, and one 80. Has double-tuned input circuit, automatic volume control, sensitivity switch for increasing power on poor stations. Includes Philco tone control, illuminated station recording dial equipped with glowing arrow for precise tuning. Available in the following cabinet models, designed by Norman Bel Geddes.

Highboy

Executed in American Black Walnut and matched butt walnut with figured instrument panel. Sliding doors in center—matched butt walnut.

Lowboy

American Black Walnut and matched butt walnut, in hand-rubbed lacquer finish. Instrument panel in figured black walnut, framed in V-matched oriental wood.

Radio-Phonograph

Equipped with automatic record-changer holding 10 or 12-inch records. American Black Walnut, and matched butt. Instrument panel in tapis biscara fabric in new designs. Sliding doors.



Philco 11-Tube Super

Nine-Tube Superhet

Double-tuned input circuit, push-pull, balanced throughout. Uses four 24, two

27, two 45, and one 80. Thoroughly shielded, with new improved dynamic speaker, tone control, and precise tuning dial, sensitivity switch. Installed in the three following models:

Lowboy

Done in American Black Walnut and V-matched oriental wood, in hand-rubbed lacquer finish.

Highboy

American Black Walnut cabinet and figured walnut, with arch of V-matched oriental wood. Pilasters in pin stripe walnut and quilted maple decoration.

Seven-Tube Superhet

A new Philco chassis using the pentode, thoroughly shielded, with improved dual volume control, electro-dynamic speaker, and two-position Tone Control. Uses four 24, one 27, one 47, and one 80. Available in following models:

Baby Grand Super

Complete with tone control, new improved speaker, illuminated recording dial, in American Black walnut, with hand-rubbed lacquer finish. Is a table model. Provided with sensitivity switch.



Philco Baby Grand Super

Lazyboy

About the size and height of an end-table, designed to be placed alongside an easy chair. Controls are on the top of the set, recessed, for use as table. In hand-rubbed lacquer finish, the top is in matched oriental wood, and pin stripe American Walnut. Antenna, ground and AC connections are in a single flat cable.

Baby Grand

A compact table model in genuine American Black Walnut, figured panel, arch of V-matched oriental wood. Is 17½ inches high, and 16 inches wide.

Highboy

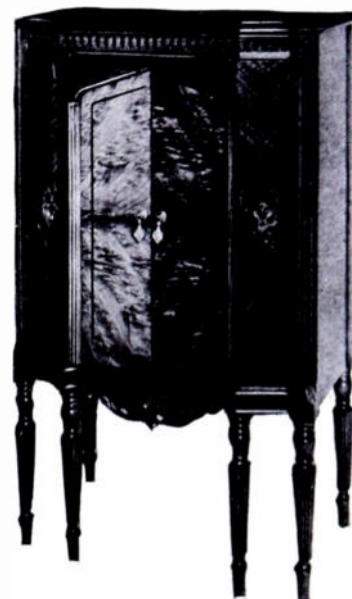
Figured black walnut and oriental wood, with scroll-carved arch and pin striped pilasters. Tone control, illuminated dial, etc.

Radio-Phonograph. Figured black walnut with scroll-carved arch, and other Philco features.

PILOT

Seven-Tube Chassis

This superheterodyne chassis is used in both midget and console models.



Pilot De Luxe

It includes automatic volume control, full vision station selector, tone control, phonograph connection, and uses both variable-mu and pentode tubes. Both cabinets are of two-tone walnut. Manufactured by Pilot Radio & Tube Corporation, Lawrence, Mass. List price of Midget superhet, \$59.50, and that of console, \$74.50.

Open-Face Console

Made of solid walnut. This superhet model uses a ten-tube chassis, and includes, a nine-inch, specially-made speaker, automatic volume control, tone control, full vision dial, phonograph connection, and visual tuning indicator. List price, \$116.00.

DeLuxe Console

Uses the same chassis as the open-face model. List price, \$139.00.

Table Model Universal

Combination short wave and broadcast wave set that tunes from 15 to 650 meters without the use of plug-in coils, all wave shifting being done from the front panel by a single knob. Intended primarily for foreign reception but is also excellent for broadcasts. The table model requires a loud speaker; the console has a built-in dynamic speaker. List price of table model, \$99.50, and of the console, \$149.00. All standard Pilot models are intended for 110 volts 50 or 60 cycles AC. Special models are also available for D and battery operation.

NEW MERCHANDISE

RCA RADIOTRON

RCA-233

The filament employed in this new RCA Radiotron is of the coated ribbon type and consumes as little power as possible, consistent with satisfactory operating performance. The low filament current drain makes this tube particularly applicable for use in combination with the RCA-230 and/or the RCA-232 in sets where the economy of current consumed is an important factor.

RCA 233 is a screen-grid tube designed primarily for giving large audio output, with relatively small input signal voltages on the grid. This is made possible by the addition of a "suppressor" grid between the screen and the plate. The suppressor is connected inside the tube to one end of the filament, and is effective in practically eliminating the secondary emission effects which limit the power output from four-electrode screen-grid types.

In comparison with three-electrode power amplifiers of the same plate current drain, the pentode is capable of producing greater power output. Furthermore, the pentode has the design feature of greater amplification than is possible in a three-electrode amplifier, without serious sacrifice in power output.

The new RCA-233 is not interchangeable with any other existing type of RCA Radiotron.

RCA VICTOR

Radiolette

A new powerful little set only 15 inches high, and weighing 16 pounds. Employs four RCA Radiotrons, including Pentode. Has tone and volume control, station-finding dial. List price, \$37.50, complete. Manufactured by RCA Victor Company, Inc., Camden, N. J.

READRITE SET ANALYZER

Model 700

Manufactured by the Readrite Meter Works, Bluffton, Ohio, this new model Set Analyzer tests all new and old tubes by the grid swing method. Battery furnished. Compact. Has an attractive leatherette carrying case 10¾ inches by 3½ inches by 8 inches. All meters may be used individually, and a selector switch simplifies tests for socket voltages. Dealers' price, \$15.00.

SENTINEL

Model 109

This is an eight-tube superhet, using two 24, two 235 or 551 Variable Mu, two 47, one 227, and one 280. Sensitivity is obtained through the double screen grid detection, high-gain f. f. stage, and double-tuned bandpass transformers. Includes calibrated dial, and pilot lamp, complete chassis shielding and moisture-proof tapped field speaker. Model 109 Console is housed in an American black walnut cabinet of the Louis XIV period. List price, \$99.50, complete with tubes.

Model 106

"Portrola" is the name of this eight-tube superhet receiver. The cabinet is of end-table height, narrow and compact. Controls and illuminated dial are installed on the top side. There are two handles on the sides. Speaker



Sentinel 106

grille is in front panel. Chassis uses three 24, two 27, two 45, and one 80. List price, \$89.50, complete with tubes.

Model 108A

A seven-tube console, superheterodyne, using two 24, two 51, one 47, one 27, and one 80. Tone control, tuned antenna, calibrated, illuminated dial. Modern in design, the cabinet is of matched walnut. List price, \$79.50, complete.

Model 108A Midget

Uses same chassis as Model 108A. Cabinet is of matched walnut with bird's-eye maple overlay, and is 18½ inches high, 14 inches wide, and 11¼ inches deep. List price, \$69.50, complete.

Model 111

A four-tube midget using one 24, a 51, a 47 and a 280. Calibrated dial, shielded heavy-gauge chassis. Dimensions: 14½ inches high, 10 inches wide, and 8¼ inches deep. List price, \$37.50, complete. Manufactured by United Air Cleaner Corporation, Chicago.

SHORT WAVE AND TELEVISION

Television Receiver

Two recent developments of the Short Wave and Television Corporation, Boston, Mass., are the new Television Receiver and Universal Short Wave Receiver. The television receiver may be purchased in kit form or completely made up, and represents an

advance in optically-amplified scanned-neon-lamp television.

In an attractive cabinet, it contains the compact scanning apparatus designed by Hollis Baird, and all units are provided with phonic motor control, insuring alignment of the picture so that it will not swing out of place once it has been tuned in. The unit is plugged in like a loud speaker at the output of the short wave receiver, which is built in like a broadcast set. It has a self-contained power unit built on a compact chassis with a triple gang condenser giving single dial control. Two stages of radio frequency are employed, and a regeneration switch can be used for picking up weak signals. The plug-in coils permit a range of 16 to 520 meters.

SPARTON

Model 35

This is an automatic combination in cabinet of matched woods. It has the Lafoy automatic volume control in the new Sparton Super-some chassis, as well as the Gyro Speed Regulator, tone control and other improvements. It has 13 tubes, and lists at \$585.00.

Model 30

A brand-new Sparton combination. Has the Super-some superhet chassis Lafoy automatic volume control. The automatic record-changer handles both 10 and 12-inch records, and changes quietly in six seconds. The Gyro Speed Regulator is used, which insures 78 revolutions per minute without variation, guaranteeing exact reproduction. Employs 10 tubes, including four 235's. Uses last fall's Model 235 cabinet. List price, \$235.00.

Model 26

A Deluxe Sparton using the new Super-some chassis with superhet application. This is a Flemish hand rubbed cabinet. Lafoy automatic volume provided. List price, \$165.00.

Model 25

An open-face highboy, with Super-some chassis and Lafoy automatic volume control. The cabinet is an all-purpose design. A 10-tube set with four 235's. List price, \$136.00.

Model 15

A beautiful small console, using a seven-tube superhet chassis. Has solid wood carvings, with scroll work on front. Openface. List price, \$99.50. Also available in DC model for farm use, at same price.

Model 10

A new table model superhet, using the same chassis as Model 15, with three Multi Mu, and a Pentode. List price, \$69.50.

Model 9-9A

A small console, using t. r. f. circuit. Has five tubes, including two 235's. List price, \$62.50.

NEW MERCHANDISE

Model 5

This is a table model, using the same five-tube chassis as Model 9-9A. List price, \$45.00.

Model 40

An improved automobile set, with Remote Control, which allows the set to be placed out of sight without interfering with leg room. It has a convenient new control box which mounts on the steering column. Equipped with new Lafoy automatic volume control. List price, \$99.50, complete.

SPEED FOTO-LECTRIC TUBES

Type A

A small tubular 16 mm. bulb supplied with flexible braided leads, manufactured by the Cable Radio Tube Corporation, Brooklyn, N. Y. Has no base. For use with DeForest Phonofilm, Biophone, Tobis-Klangfilm, Kinoplay.

Type B-4

Tubular T8 bulb. Supplied with standard small four-prong base. For use with Duo-fone, Synchrophone, Kinetophone portable, Holmes portable, Ruby portable.

Type B

Tubular T8 bulb. Supplied with flexible braided leads, no base. For use with Weber Synchrofilm, Platter Phototone, Duo-fone, Sonofilm, Brel, Eastern Electric. Should be mounted in special cartridge.

Type C-1

Tubular T8. Supplied with standard small four-prong base. For use with DeVry portable, RCA Photophone, Melaphone, Vitadisc.

Type D-2

Tubular T12 bulb. Supplied with standard large four-prong base. For use with Pacent, Powers Cinephone, Motiograph, Tone-o-Graph, Royal Amplitone, Universal, Gries, Phototone Talkafilm, Pulverman Royal, Saf-ray, Bell portable, Douglas, Lincrophone, National.

STEWART-WARNER

Low Wave Converter

This new converter, introduced by the Stewart-Warner Corporation, Chicago, has been developed to meet the demands of DX interest, police work, and amateur transmission. The device adapts practically any AC set to low wave reception. It is only 18½ inches high and 11¼ inches wide, and lists at \$23.95, complete with tubes.

Apartment Model

A six-tube superheterodyne mantel type set, enclosed in an American walnut cabinet 18½ inches high, 14 inches wide and 11 inches deep. List price, \$52.95, complete with tube equipment.

Console DeLuxe

This new superheterodyne receiver is equipped with both variable-Mu and Pentode tubes, and includes tone con-



Stewart-Warner De Luxe

trol. The cabinet is of matched walnut with hand carvings. Height, 39½ inches. List price, complete with tubes, \$82.75.

Portable

In a walnut cabinet and table height, this "personal" receiver is equipped with noiseless wheels for easy moving. It is 29¼ inches high, 20¼ inches wide, and 14 inches deep, and can be plugged in anywhere. The circuit is superhet, with Variable-Mu and pentode tubes. List price, \$67.75, complete.

SYLVANIA

Auto Set Tubes

The special group of four tubes for use in automobile receivers has been designed and developed by Sylvania Products Company, Emporium, Pa.

They include a screen grid amplifier, SY-236, an amplifier and detector, SY-237, a power output tube, SW-171C, and an automobile pentode, SY-238, and are designed to overcome the handicap of high current drain experienced when types 224 and 227 are used in the automobile receiver. The small size of these tubes makes possible small and compact set design.

Type SY-235

Developed and originally announced as the Variable-Mu tube, this type is now known as the Super-control Tetrode. This is a screen grid ampner,

so constructed that at normal voltages the high amplification of the 224 tube is obtained, while at high control grid biases the low distortion characteristics of a low mu tube are automatically obtained. The use of the 235 will result in decreased modulation distortion, cross talk, hum modulation, and receiver noise, and in improved range of volume control.

Type SY-551

Also a variable-mu tetrode, with characteristics slightly different from SY-235. Receiver performance is comparable to that of SY-235.

Type SY-247

This five element output pentode contains three grids, a plate, and a filament or cathode. It differs from a tetrode in that an extra "suppressor" grid is inserted between the screen and the plate, connected to the center of the filament.

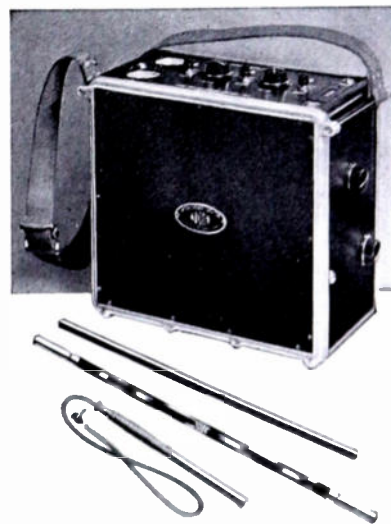
Type SY-233

A 2 volt power pentode for use in battery operated receivers.

TOBE

Model 230

This Interference Locator, designed by the Tobe Deutschmann Corporation, Canton, Mass., is housed in an aluminum frame cabinet 12½ inches high, 13½ inches wide and 7¼ inches deep, with bakelite panels. It is t. r. f. circuit, using six tubes: three 232, and three 230. Uses two No. 6 dry cells, three 45 volts B's, and two C's. Packs for external battery connection are provided. Includes carrying strap, filament and plate battery voltmeter.



Tobe Model 230

Resonance pole and audio coupling coil used for signal pick-up. Net price, \$365, complete with batteries and tubes.

NEW MERCHANDISE

TRIAD

Type T-235

This new tube, manufactured by the Triad Manufacturing Co., Inc., Pawtucket, R. I., has essentially the same characteristics as the 224 type tube, but with the addition of a plate



current grid voltage curve that is very nearly logarithmic. This plate current characteristic makes it adaptable for use in automatic volume control circuits by virtue of its low percentage of distortion at high grid bias. List price, \$2.20.

Type T-551

A screen grid Variable-Mu type, designed to cut out cross talk and distortion and reduce static to a minimum. The T-551 can replace the 224 in most present circuits. List price, \$2.20.

Type T-247

The new Triad pentode has a high amplification factor, combined with high power output, resulting in increased sensitivity over the type 245. List price, \$1.90.

UTAH

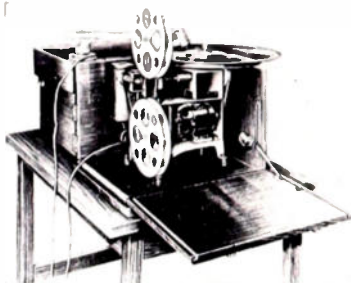
Remote Control

By the use of this new device, made by the Utah Radio Products Company, Chicago, the automobile receiver may be placed anywhere in the car. Complete control is under the driver's hands, mounted on the steering post. It consists of a control unit, flexible drive cable, multiple wire cable, and a junction box. The operating cable is attached to the receiver by pulley on the condenser shaft, providing 6 to 1 vernier. Has illuminated dial. The cadmium plated junction box protects connections. Control unit is $4\frac{1}{8}$ inches long, $2\frac{5}{8}$ inches wide, and 1 inch deep, finished in black enamel. Furnished with or without lock switch and key. If without, a toggle switch is furnished. Also available for home remote control use, fitted with rubber-footed legs. List price for auto use, \$9.00; for home use, complete with 14-foot cable, \$10.00. (Lock switch, 75c extra.)

VISIVOX

Model A

A product of the Sprague Specialties Company, Quincy, Mass., this new Visivox home talkie model is portable and inexpensive. It includes the phonograph synchronization apparatus, pick-up and projector. The user plugs



Visivox Model A

a wire into his radio set, another into an electric socket, and the apparatus is ready to operate. Where no radio is available, another small portable device, listing at \$50.00, is attached to this model. The latter instrument is known as Model B. List price of Model A, \$119.00.

Model C

This is a complete, self-contained machine, in a walnut cabinet, including projector, synchronical phonograph apparatus, amplifiers, and speaker. Both this model and Model A play all types of phonograph records, and can be used separately as phonograph. The instrument can also be used as a silent film projector. List price, \$189.00.

VULCAN

Visible Lightning Arrester

The casing of this new arrester, manufactured by the Cornish Wire Company, Inc., 30 Church Street, New York City, is made of clear glass, so that the mechanism is plainly visible. Thus the arrester may be inspected at any time, without an electrical test. It contains a special element, a resistor at low or normal operating voltage. At high voltages, the element becomes a positive conductor, and will break down under 330 volts.

WEBSTER

Model 15A Pick-up

Constructed in flat design, this electric phonograph pick-up is finished in golden bronze. A built-in volume control at the base of the instrument provides full regulation at the turn of knob. List price, \$11.00. (Slightly higher in West.) Made by Webster Electric Company, Racine, Wis.

Model C-74-50 Amplifier

A three-stage power amplifier employing two type 250 tubes in push-pull in the power stage. Particularly suitable for use with a close-speaking, double

button mike for public address systems. Also operates from a standard high impedance or a 200 ohm impedance phonograph pick-up as well as from a radio. No external choke required. Has a voltage regulating switch to control AC line voltage between 90-130 volts. List price, \$160.00, less tubes. (Slightly higher in West.)

WESTINGHOUSE

"Columette"

A compact table model 18 $\frac{1}{2}$ inches high, and less than a foot square is manufactured by the Westinghouse Electric and Mfg. Company, Mansfield, Ohio. The set is an eight-tube superhet using the exponential tube. Has tone control, local-distance switch, volume control and station selector, with illuminated dial. The cabinet is of natural woods, of a design similar to the "Columbiaire."

ZENITH

Radio Tuner

Among the interesting developments in manufacturing is the announcement that the Zenith Radio Corporation, Chicago, has secured exclusive rights to a new tuning device known as "Magnavision," which operates on the tuning dial. The new device employs a logging strip of six inches in length, but through the use of ground magnifying lens gives the effect of dial markings six times farther apart. Any microscopic movement of the indicator is clearly visible.

Zenette Midget

The lowest-priced Zenette is a t.r.f. circuit model, using both pentode and multi-mu tubes. It is housed in an attractive table model cabinet and lists at \$49.50, complete.

Zenette Model AH

Also a table model, with an eight-tube superhet chassis. The cabinet is of Gothic design. Automatic volume control is incorporated, maintaining any desired volume level throughout the tuning range. Tone shading is included. List price, \$79.50, complete.

Zenith Model 91

A 10-tube superhet model, employing pentode and multi-mu tubes, and housed in a medium-sized console. Includes automatic volume control, tone shading and antenna balancer. List price, \$155.00, complete.

Model 92

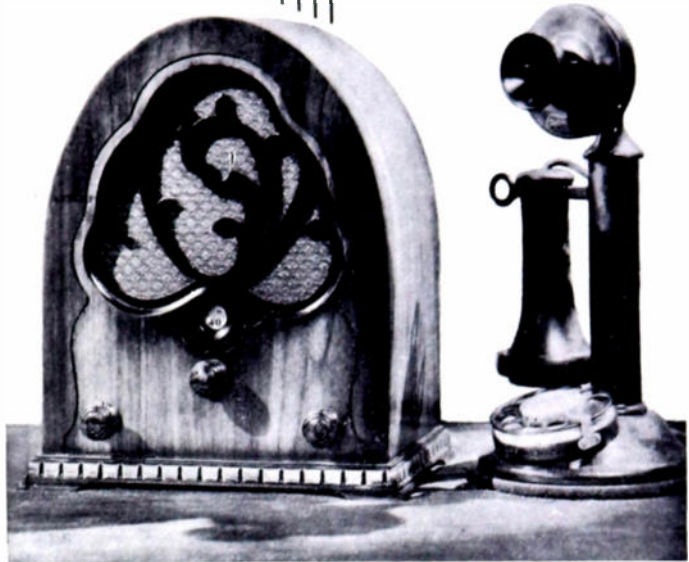
A highboy using the same chassis as the 91. In addition this model includes Zenith's own automatic tuning control. List price, \$195.00, complete.

Model 103

This model is a 14-tube superheterodyne set, with automatic tuning, automatic volume control, automatic voltage regulator, hypoid drive dial, traveling light and indicator, and tuning meter. List price, \$290.00, complete.

PETER PAN

"The Smallest Modern Radio"



PETER PAN is not a toy! It is a full-powered radio, so small in size that it can be compared to no other set. Built-in neutral control, brings in both high and low notes with faithful reproduction . . . mellow and true. It holds its sweet tone over the full musical range at full volume. The perfection of the new PENTODE has made it possible for the first time to incorporate all of the advantages of modern engineering in a cabinet so small that anyone can carry it easily. PETER PAN is truly a miracle of radio!



advantages of modern engineering in a cabinet so small that anyone can carry it easily. PETER PAN is truly a miracle of radio!

LIST

\$24⁹⁵

Complete with Tubes

**The Sensation of
the R.M.A. Show!**

NEW!

●
*Not as high
as your
telephone*

●
*Weights less
than 10 pounds*

●
*A sweet-toned,
modern radio*

●
Pentode Tube

FLINT RADIO CORPORATION, LTD.

1682 W. WASHINGTON BOULEVARD

LOS ANGELES, CALIFORNIA

CALIFORNIA NEWS

Thompson-Holmes Expand

Introduction of the Majestic line of refrigerators on the Pacific Coast has caused Thompson & Holmes, Ltd., of San Francisco and Oakland, to greatly expand distribution facilities—the second big expansion in a twelve-month period, according to Cal Sharrah, vice-president and general manager.

The San Francisco division of the company is now housed in a four-story structure at 171 Bluxome Street. Spur track facilities to the Southern Pacific, Western Pacific and Santa Fe bring shipments to the plant door. Truck deliveries to the city and suburban trade are possible at the same time, affording quick movement of all incoming and outgoing traffic.

J. W. Holmes, president of the company, is just home from a trip to Chicago where he witnessed production of the new four cubic foot refrigerator, the latest addition to the Majestic line.

The new line has brought a promotion for W. J. Aschenbrenner, who has been made general sales manager, directing the selling forces for both radio and refrigerator. "Asch," as he is better known among radio dealers, had previously served as sales manager for radio.

The Oakland and East Bay division of the company are under supervision of R. E. Crane, secretary of the company. Refrigeration sales are in charge of Leo P. White, while Oscar L. Notley heads the refrigeration service department.

Carlson Takes New Position

Coincident with the re-organization and expansion of the radio department of Waterhouse-Lester-Scovel Company, Ltd., 540 Howard Street, San Francisco, distributors for American Bosch, comes the announcement of the appointment of A. J. Carlson as the company's new Radio Sales Manager.

Carlson is well known to the trade in both Northern and Southern California. His experience in the retail field and his later affiliation of several years with the United Bosch Corporation as district factory representative has given him a thorough understanding of radio merchandising problems from wholesale and retail angles.

Waterhouse-Lester-Scovel have also appointed W. G. Cook radio engineer. Cook has been connected with the San Francisco branch of American Bosch for some time.

H. R. Curtiss Adds Appliances

The H. R. Curtis Company, 895 O'Farrell Street, San Francisco, who for many years have specialized in the distribution of radios and associated products, have added home electrical appliances to the regular lines. The most recent of these appliances is the Trayway Electric Washer, of which the company has California distribution.

This machine is a new San Francisco-made washer, named after its

method of attaching to the ordinary home wash tray. Distribution is now being made through regular trade channels, stock is available, and an extensive advertising campaign is being planned.

H. R. Curtiss, president of the company, recently left for an extended trip through the Panama Canal, reaching New York in time for the Sparton and Philco conventions, as well as the R. M. A. Show in Chicago, and the Servel Electric refrigerator factory at Evansville, Ind.

New Ingold Co. Treasurer

Ernest Ingold, Inc., Atwater Kent distributor in San Francisco, has announced the appointment of Elwood J. Schmitt as treasurer of the firm.

Schmitt is a University of California graduate, and since then has been associated with the Mitchum Tully Company, and American Trust Company, having been general manager of the latter's Nob Hill office. More recently, Schmitt has been connected with the American National Company, and was general manager of C. F. Childs & Company, stocks and bonds, of Portland.

Wholesale Firm Expands

Growing in one year from a single store to a large, two-store concern, the Wholesale Radio Supply Company, 269 Seventh Street, San Francisco, now covers territory from Fresno, Calif., as far north as Oregon.

Besides the regular radio supply lines, the company has added such items as radio lamps, electric clocks of all kinds, fans, devices and a general line of appliances. Several makes of midget sets are likewise handled. A new crew of electrical specialty salesmen, in addition to the regular sales crew, has also been added to the force.

Jackson Store Moves

W. E. and W. H. Jackson's Oakland store is now located at Twenty-sixth and Valdez Streets, which gives the firm six times as much floor space as used in the former location. In addition to increased floor space, the sales force has been enlarged. The new quarters are among the most luxurious display rooms in Oakland.

The company has recently added Leonard electric refrigerators, Transition Automobile sets, Ken-Rad tubes and Acrometer Tube Tester to the present line of Clarion radios. It has also been appointed distributor for Willard Storage Batteries.

The San Francisco store also has enlarged the sales force, with the addition of H. A. Rayner, who is handling Visionola Home Talkies and Clarions primarily; O. Stone in the refrigerator department, and Charles Meyer.

Export to Italy

Recently adding a distributor for Italy to their export trade, Trojan Factories,

Ltd., Los Angeles, now export to Central and South America in addition.

The company, headed by C. A. Burroughs, is one of the oldest on the Pacific Coast, having manufactured Trojan sets since 1923, when they made a five-tube battery model. The line now consists of a new five-tube \$49.50 model, a six-tube model at \$59.50, and an eight-tube listing at 69.50, in addition to a six and eight-tube console. All models use variable 51 tubes and PZ Pentodes.

Hemet Appoints Inspector

The Hemet, Calif., city council has passed the Radio ordinance, which establishes a radio inspector. It will be the duty of this official to discover and correct causes of radio interference. Chief of Police A. J. Berg has been appointed to the office.

Torrance Radio Moves

The Torrance Radio Company has moved its offices and sales rooms from Gramercy Ave., Torrance, Calif., to 1733 Cabrillo Ave. Irvin S. Sargeant, owner, has equipped a complete radio service and repair shop at the new location, and retains the dealership for Crosley radios.

Jones Retires

Seymour Jones, who has conducted a radio and musical store on West State Street, Redlands, Calif., for some time, has retired from business. Jones is moving to Los Angeles. Edward Bedford, who has been with Jones in charge of the service department, will continue his shop for the present.

Bishop Sells Out

The Bishop Music Company, Redding, Calif., formerly owned by Glenn J. Bishop, has been sold to Edward J. Woods. All of the stock except the pianos and refrigerators were transferred to Woods.

K & R Active

Kierulff & Ravenscroft, Inc., Mayflower electric refrigerator distributors in California, report that they have placed orders in the past ninety days for sixty carloads of Mayflowers.

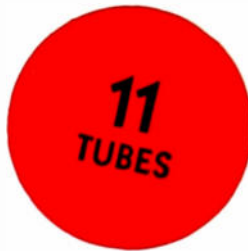
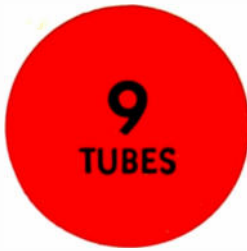
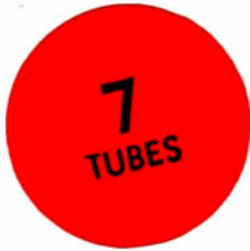
R. J. Lawrence, commercial manager of the Truper Manufacturing Company, Dayton, Ohio, makers of the Mayflower line, has recently been visiting Pacific Coast distributors from Vancouver to California, in company with W. J. Seroy, Pacific Coast sales manager.

Stewart Buys Shop

The Pacific Radio Shop, Montrose, Calif., has been sold to Don Stewart, who has been in business in the neighborhood for several years. Willard Hartman, who has been the owner for the past two years, is retiring from business because of ill health.

Opens Music Shop

Al Moeller, formerly with the Barks Music Company, Los Angeles, has opened a musical accessory and repair department in the Leader Drug Company, Manchester and Vermont Avenues. Moeller handles repair work on all types of musical instruments, and does piano tuning.



EVERY PHILCO NOW A

Superheterodyne

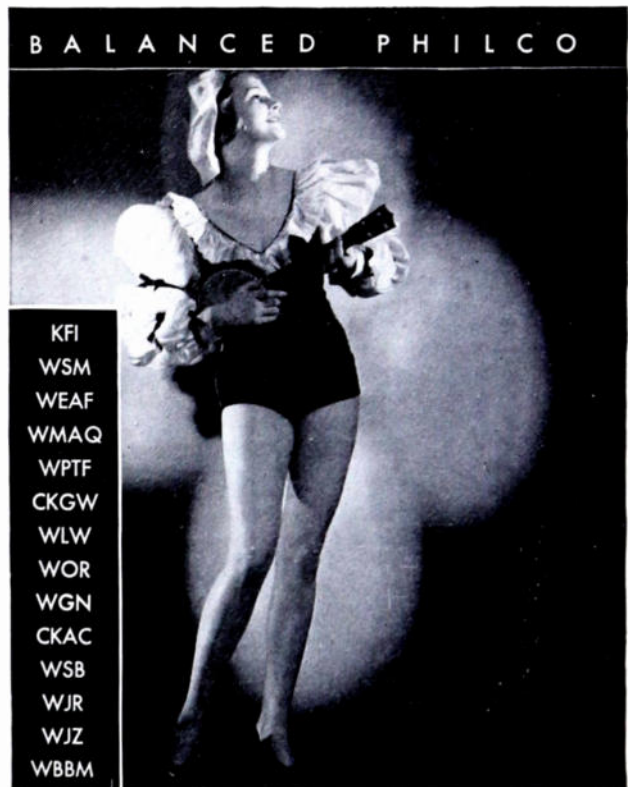
Quality—Values—Unparalleled! Amazing, Unbelievable Prices!

Greater power—greater distance—greater clarity and beauty of tone—greater range and selection of stations—greater performance from 7, 9, 11-tube Superheterodyne sets.

PHILCO adds the tremendous PLUS of Balanced-Unit Tone to Superheterodyne Selectivity and Screen Grid Power.

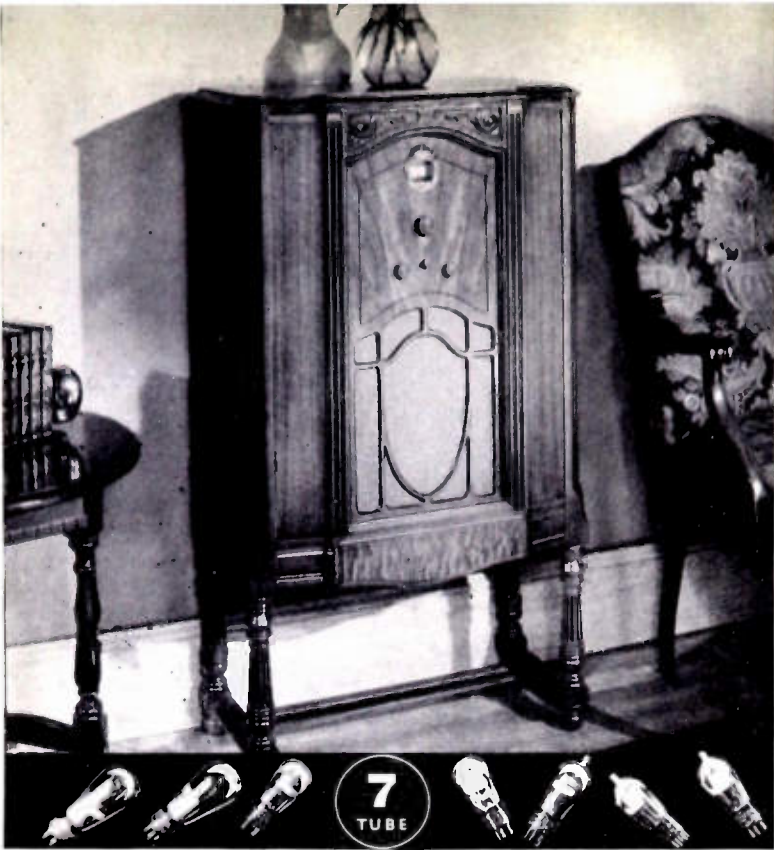


«In the two "station strips" between these pictures you see a startling new comparison of radio performance»
Just as the picture at the left represents the distorted tone, the blurred reception of an unbalanced radio—the station strip at the left shows the gaps, the cross-talk, the overlapping of stations found on an ordinary set»



Hundreds and hundreds of dealers by concentrating on Philco have more than doubled their business.

Turn to the next page and read the biggest money-making news in years from the world's largest makers of radio.



HIGHBOY MODEL 70
7-Tube Superheterodyne

\$6975 Complete with Tubes

A red-hot, fast-selling model of exquisite design in figured Black Walnut with Scroll-carved Arch and Pin Stripe Pilasters. Tone Control—Uses new Pentode Tube—No cross talk—Has Illuminated Station Recording Dial—Marvelous new Electro-Dynamic Speaker—Sold complete with 7 Philco Balanced Tubes (3 Screen Grid)—One of the greatest Philco values ever offered to the public.
A similar model Philco all-electric Radio-Phonograph complete with 7 tubes (3 Screen Grid) and using the new Pentode Power Tube is \$115



HIGHBOY MODEL 90
9-Tube Superheterodyne

\$11500 Complete with Tubes

An exquisite creation in American Black Walnut and figured Butt Walnut, with Arch of "V"-matched Oriental Wood. Pilasters in Pin Stripe Walnut and Quilted Maple Decoration. Hand-rubbed lacquer finish. Four-Point Tone Control—Two 245 Power Tubes, Push-Pull—Long Distance Switch—Illuminated Station Recording Dial—Oversize Electro-Dynamic Speaker, and above all else, Balanced Superheterodyne Selectivity—Sensitivity plus Screen Grid Power and pure, undistorted tone with absolute freedom from cross talk.
In a similar Lowboy, complete with 9 Philco Balanced Tubes, \$95

You must sell Balanced

To Meet the Present-Day

Study Each Model—the Value—the PRICE!



BABY GRAND MODEL 70 \$4995 Complete with Tubes
7-Tube Superheterodyne

Tremendous performance in minimum size. Sold complete with 7 Philco Balanced Tubes (3 Screen Grid). Uses the new Pentode Power Tube and a marvelous new Electro-Dynamic Speaker with 25 per cent greater efficiency. Illuminated Station Recording Dial—Tone Control—Selectivity—No cross talk—Genuine American Black Walnut Cabinet—Figured Walnut Instrument Panel—Arch "V"-matched Oriental wood—16 inches wide, 17 1/2 inches high.

EVERY Philco is now a Superheterodyne. Every Philco has Balanced Units. Every Philco is factory-equipped with Balanced Tubes. Every Philco is priced complete with tubes. Every cabinet is the last word in furniture design.

Your future as a radio dealer depends on whether you have a line—a complete line—each unit of such tremendous *value* that you can sell *up* and make the dollar profit you need.

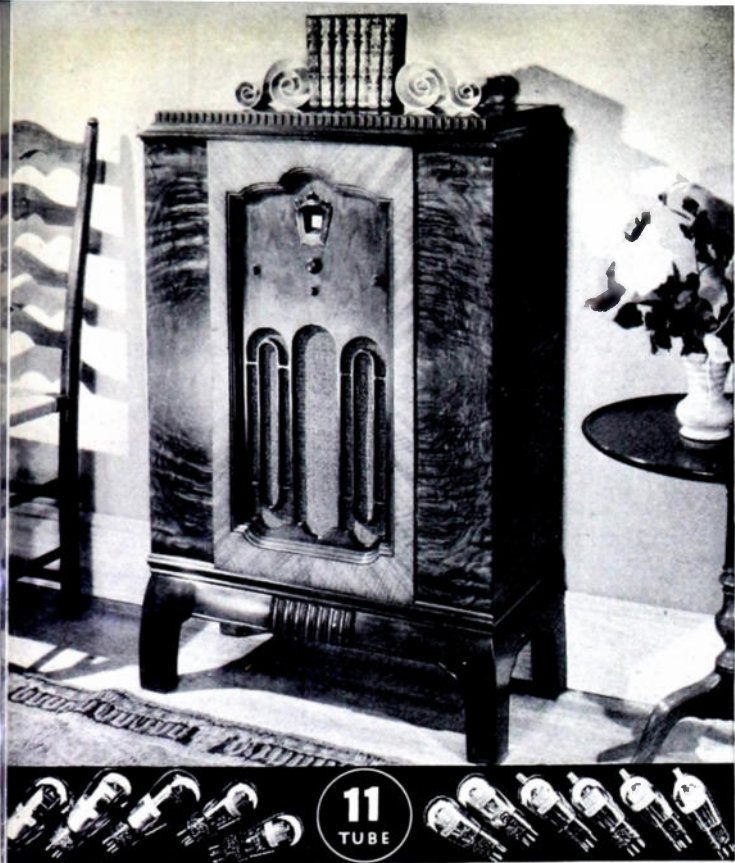
Philco's strength is not in having just one "hot" number.

Each and every Philco in each and every price and performance classification represents the greatest

PHILCO

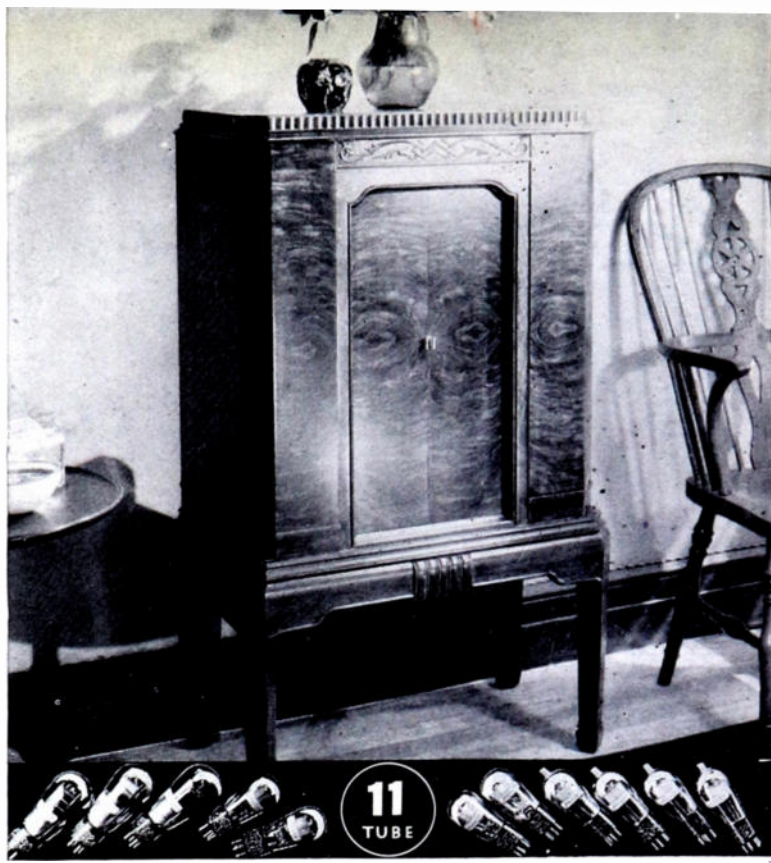
WORLD'S LARGEST RADIO MANUFACTURER

VALUE MEANS A BETTER RADIO FOR LESS MONEY—



LOWBOY MODEL 112 \$15500 Complete with Tubes
11-Tube Superheterodyne-Plus

A new standard in furniture beauty by Norman Bel Geddes, America's foremost designer. Exquisitely finished in contrasting hand-rubbed matched Butt Walnut and American Black Walnut. Instrument Panel in figured Black Walnut framed in "V"-matched Oriental wood. Superheterodyne Selectivity plus Tremendous Screen Grid Power—Four-Point Tone Control, Illuminated Station Recording Dial—Automatic Volume Control that counteracts the fading of distant stations and blasting of locals. Over-size Electro-Dynamic Speaker and Illuminated Station Recording Dial.



HIGHBOY MODEL 112 \$17500 Complete with Tubes
11-Tube Superheterodyne-Plus

A beautiful and graceful furniture masterpiece, also created by Norman Bel Geddes. The very finest of American Black Walnut, matched Butt Walnut with figured Instrument Panel. Half sliding doors. Hand-rubbed lacquer finish and exquisite grill of original tapestry design. Superheterodyne Selectivity plus Tremendous Screen Grid Power—Four-Point Tone Control, Illuminated Station Recording Dial—Automatic Volume Control that counteracts the fading of distant stations and blasting of locals. Oversize Electro-Dynamic Speaker and Illuminated Station Recording Dial. Also in a Radio-Phonograph with Automatic Record Changer and Automatic Volume Control, complete with 11 Philco Balanced Tubes, \$310

Superheterodyne

Crowded Broadcasting Conditions

Study Each Model—the Value—the PRICE!

value to the buying public that has ever been known.

Don't even think of selling any make of radio until **you** have seen and operated this amazing Philco line—have marveled at the performance and realized that Philco is the fastest selling, the "hottest," most complete, and by all odds the most profitable line that a real, aggressive, "eye-to-the-future" radio dealer could have.



BABY GRAND MODEL 90 \$6950 Complete with Tubes
9-Tube Superheterodyne

Greatest of all small radios, with real big-set performance. 9-tube—Four-point Tone Control—Two 245 Power Tubes, Push-Pull—New Electro-Dynamic Speaker, 25 per cent more efficient—Illuminated Station Recording Dial—Long Distance Switch. Beautifully designed in American Black Walnut—Instrument Panel matched Butt Walnut and Arch of "V"-matched Oriental Wood—Hand-rubbed lacquer finish. Cabinet only 18 inches high.

SUPERHETERODYNE

NOT A CHEAPER PRICE FOR LESS RADIO

Even more
stupendous

PHILCO

ADVERTISING
BROADCASTING
MERCHANDISING

to back
greatest value
line in
radio history

Philco, Philadelphia, Pa.

Please send me at once, free, the full and complete details of your complete new PHILCO Line and the facts on the PHILCO PROFIT-PLAN. No obligation, of course. I am (am not) a radio merchant.

Name _____

Firm Name _____

Address _____

City and State _____

Competition Hasn't a Chance AGAINST THESE POINTS OF PHILCO SUPERIORITY

A BRAND new, complete, priced-to-sell line. Tremendous value in each and every style and every pocket-book classification. Every set a BALANCED SUPERHETERODYNE that sweeps all obsolete designs and circuits into the discard! Everything a wide-awake radio retailer needs, including the most profitable "proposition" that will be offered to any radio dealer this season.

Values that will astonish the buying public and sweep aside all so-called competition. The utmost in quality and proven performance. Prices that will amaze even a hard-boiled radio merchant and startle the public into buying.

SUPERHETERODYNE CHASSIS from top to bottom of the Line—startling improvements—7 tubes; 9 tubes; 11 tubes—receivers that team with "eye value"—a new special tube—advanced chassis that will out-perform radios selling for twice the money—also Battery and D.C. sets.

Continuation of famous PHILCO FEATURES that MAKE SALES—in addition to the improvements already developed.

Steady production *without over-stocking*. Sets when and as you need them.

A new, gigantic advertising campaign which will run *continuously*—no cancellations—no unfulfilled promises—continual support for dealers. Don't fail to read this week's three-page Philco spread in *The Saturday Evening Post!* The most sensational radio announcement ever made to the public! By all means study the value at each and every price level.

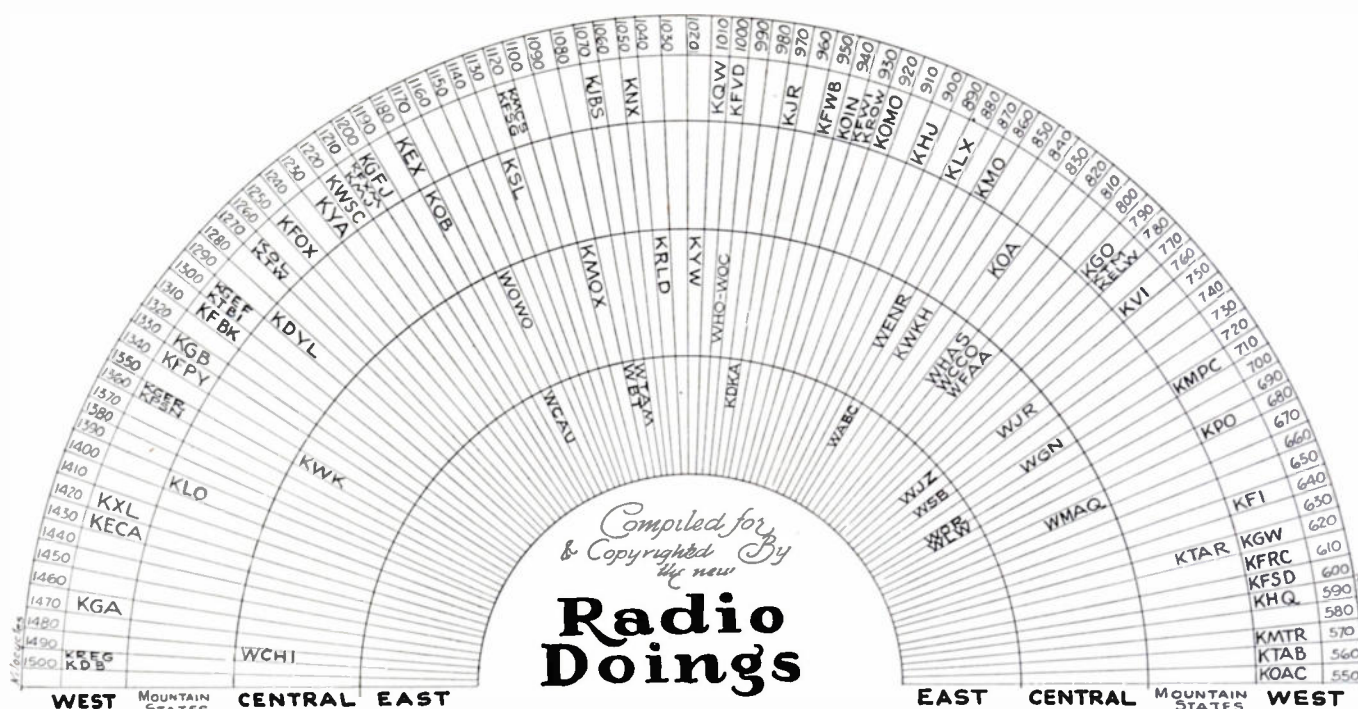
New and greater broadcasting—"Spectacles of the Air"—Stokowski—international events that "Crash the Front Page"—AND a new kind of PHILCO Hour—Popular, Thrilling, right from your OWN local station over YOUR OWN NAME!

And the most comprehensive Dealer Program of Sales Helps ever staged—selling plans, window displays, free posters, advertising—a wealth of material to round out the great Philco-Profit Plan for the Summer and Fall of 1931.

AN UNBIASED ESTIMATE

"Philco has seized First Place in sales and First Place in public demand because Philco Radios; prices; values; sound merchandising; steady, sane production; discounts and immense advertising; ENABLED THE DEALER TO MAKE MONEY and do business at a PROFIT . . . Make no mistake at a PROFIT eighteen months. As this is written, Philco dealers as a whole HAVE SOLD TWICE AS MANY PHILCOS for the first three months of 1931 as they were expected to sell—they are TWO HUNDRED PER CENT ABOVE QUOTA—and this year's quote is double that of 1930."

—Reproduced from *The Baltimore Sun*



The Most Popular Stations Heard by Western Listeners

Here's Your Station As It Appears On the Dial. By Locating One Station On Your Radio, You Can Easily Find the Others

WESTERN

- KDB—Santa Barbara, Calif SB 5214
- †KECA—Los Angeles WEstmore 0331
- KELW—Burbank, Calif ROchester 9857
- KEX—Portland, Ore ATwater 3111
- KFBK—Sacramento, Calif MAin 8700
- †KFI—Los Angeles WEstmore 0331
- KFOX—Long Beach, Calif. 672-81
- §KFPY—Spokane, Wash. MAin 1218
- §KFRC—San Francisco PROspect 0100
- †KFSD—San Diego, Calif FRanklin 6353
- KFSG—Los Angeles. EXposition 1141
- KFVD—Culver City, Calif EMpire 1171
- KFWB—Hollywood. HOLlywood 0315
- KFWI—San Francisco FRanklin 0200
- KFXM—San Bernardino, Calif. 4761
- KGA—Spokane, Wash. FRanklin 6151
- KCB—San Diego, Calif. FRanklin 6151-2-3
- KGDM—Stockton
- KGEF—Los Angeles WEstmore 8887
- KGFJ—Los Angeles WEstmore 7788
- †KGO—San Francisco. SUTter 1920
- †KGW—Portland, Ore ATwater 2121
- §KHJ—Los Angeles VAndike 7111
- †KHQ—Spokane, Wash. MAin 5383
- KJBS—San Francisco. ORDway 4148
- KJR—Seattle, Wash. SENeca 1515

†NBC Network
§CBS Network

- KLX—Oakland, Calif LAkeside 6000
- §KLZ—Denver, Colo
- KMCS—Inglewood Calif VAndike 7643
- KMJ—Fresno, Calif. 3-5221
- KMO—Tacoma, Wash MAin 4144
- KMPC—Beverly Hills, Calif. CR-3101
- KMTR—Hollywood, Calif. HO-3026
- KNX—Hollywood, Calif. HEMPstead 4101
- KOAC—Corvallis, Ore. Corvallis 526
- §KOIN—Portland, Ore. ATwater 4151
- †KOMO—Seattle, Wash. ELiot 5908
- §KOL—Seattle, Wash. MAin 2312
- †KPO—San Francisco KEarney 0704
- KQW—San Jose, Calif. COlombia 232
- KREC—Santa Ana, Calif. 4900
- KROW—Oakland, Calif. CLencourt 6774
- KTAB—San Francisco GARfield 4700
- KTBI—Los Angeles METropolitan 6701
- KTM—Los Angeles EXposition 1314
- §KVI—Tacoma, Wash BRoadway 4211
- KWG—Stockton
- KWSC—Pullman, Wash
- KXL—Portland, Ore ATwater 5124
- KYA—San Francisco PROspect 3456

MOUNTAIN

- §KDYL—Salt Lake City. WAsatch 7180
- KLO—Ogden, Utah. Bigelow 84
- †KOA—Denver, Colo YORk 4634-R
- KOB—State College, N M

- †KSL—Salt Lake City. WAsatch 3901
- †KTAR—Phoenix, Ariz. 36531

CENTRAL

- †KOMO—St. Louis, Mo. Central 8240
- KRLD—Dallas, Texas. 2-6811
- †KWK—St. Louis, Mo. DElmar 3210
- KWKH—Shreveport, La.
- †KYW—Chicago. WABash 4040
- §WCCO—Minneapolis, Minn. GENeva 9101
- WCHI—Chicago. STATE 2200
- †WENR—Chicago. FRanklin 5000
- †WFAA—Dallas, Texas 2-9216
- †WGN—Chicago. SUPerior 0100
- †WHAS—Louisville, Ky. LOUisville City 320
- †WHO—Des Moines, Ia.
- †WJR—Detroit, Mich. MADison 4440
- §WMAQ—Chicago. DEarborn 1111
- †WOC—Davenport, Ia.
- §WOWO—Ft Wayne, Ind Anthony 2136

EASTERN

- †KDKA—Pittsburgh, Pa. ATLantic 4854
- §WABC—New York City
- §WBT—Charlotte, N. C 3-7107
- §WCAU—Philadelphia, Pa.
- †WJZ—New York City
- †WLW—Cincinnati, O. Kirby 4800
- WOR—Newark, N. J.
- †WSB—Atlanta, Ga HEMlock 1045
- †WTAM—Cleveland, O. CHerry 0942

DEALERS: Mount this page and keep it in your demonstration room. You will find it a great help in locating any popular Western Station.

AMERICAN BOSCH RADIO

*No other line of radio
checks with it*

THE BEST IN RADIO

The features offered in American Bosch Radio this year are worth thinking about — worth knowing about — and worth writing-in about. Six models range in price from \$43.50 to \$139.50 including tubes — with engineering features that incorporate every worthwhile improvement in radio. And with a selling name that is a buying guide everywhere—American Bosch Radio

gives you, under one name, a profitable line of merchandise that will appeal to the broadest market in your territory.

Until you have had the whole story on American Bosch Radio for this year, you won't be able to really appreciate its full selling and profit-making possibilities. Write for this information to the nearest branch today.



UNITED AMERICAN
SPRINGFIELD, MASS. • Branches: NEW YORK

- ✓ PENTODE TUBES
- ✓ SUPER HETERODYNE MODELS
- ✓ FIVE TUBE MODELS
- ✓ EIGHT TUBE MODELS
- ✓ AMAZING SELECTIVITY
- ✓ VARIABLE MU TUBES
- ✓ TUNED RADIO FREQUENCY MODELS
- ✓ PRICED COMPLETE WITH TUBES
- ✓ PERSONAL RADIO MODEL
- ✓ SURPRISING SENSITIVITY
- ✓ SIX MODELS - RANGING IN PRICE FROM \$43⁵⁰ to \$139⁵⁰ - COMPLETE WITH TUBES

THE BEST IN RADIO

MODEL	5A	5B	5C	20J	20K	20L
CIRCUIT	Tuned Radio Frequency	Tuned Radio Frequency	Tuned Radio Frequency	Super-Heterodyne	Super-Heterodyne	Super-Heterodyne
NO. TUBES	5	5	5	8	8	8
TYPE TUBES	1 Pentode 247 3 Screen-Grid 224 1-280 Rectifier	1 Pentode 247 3 Screen-Grid 224 1-280 Rectifier	1 Pentode 247 2 Variable MU 551 1-224 Detector 1-280 Rectifier	2 Pentodes 247 3 Variable MU 551 2-227 1-290 Rectifier	2 Pentodes 247 3 Variable MU 551 2-227 1-280 Rectifier	2 Pentodes 247 3 Variable MU 551 2-227 1-280 Rectifier
CABINET						
Height	8 3/4"	32 1/4"	36 1/4"	38 1/4"	39"	44 1/4"
Width	14"	17 1/4"	21"	24"	24"	25 1/4"
Depth	6 27/32"	10 1/8"	12 1/8"	12 1/4"	14"	14 1/4"
PRICE COMPLETE with TUBES	\$44.50	\$54.50	\$71.50	\$89.50	\$99.50	\$142.50

American Bosch Radio is licensed under patents and applications of R. C. A. Western prices slightly higher.



BOSCH CORPORATION
 CHICAGO • DETROIT • SAN FRANCISCO

Consolidated Radio Moves

Consolidated Radio Manufacturing Company, formerly located at 1125 Wall Street, Los Angeles, has moved to larger and better equipped factory quarters at 1455 Venice Boulevard, Los Angeles.

This firm, which is one of the oldest Los Angeles manufacturers, for three years was known under the trade name "Mission Bell Manufacturing Company." It is headed by P. L. Fleming and H. G. Schmeier.

Due to their recent production of superheterodyne midgets and consols, short-wave and all-wave sets, new and larger quarters were necessary. Fleming stated. New generators, battery meter, and other short wave and superhet equipment has been installed.

Previous to the manufacture of midgets, this firm was well known as a custom built set manufacturer. At present a seven-tube midget superhet and a nine-tube console superhet are being produced, in addition to the short and all-wave models.

William A. Berg has been appointed manager of the radio department of the Ferguson Music Company, San Jose, Calif. Berg is well known, having been connected with the radio trade for seven years.



P. L. Fleming

Interference Ordinance Passes

An ordinance providing for funds for interference detection work has been passed by the Santa Barbara, Calif., city council. Although much debate had previously accompanied consideration of the ordinance, it was passed unanimously and with little comment.

The ordinance provides an annual fee of \$50.00 to be paid by local dealers. A petition asking favorable action signed by 18 out of the 20 dealers in the city, was presented to the council.

Takes New Quarters

Georgetown Music Company, Seattle, Wash., located at 5701 Duwamish Ave. for the past nine years, has moved to 988 Vale Street. The new store is located in the heart of the Georgetown trading district and is roomier than the old store, being 40 by 70 feet in size. Fred Antooncy is its proprietor.

F. J. Armstrong has been appointed sales promotion manager of the Zenith Radio Corporation, according to A. T. Haugh, general sales manager. Armstrong is well-known, having developed the first automatic wireless outfit for life boats during the war, and has been sales manager of a large farm lighting concern, and of an automotive company. He was recently with the Radio Division of the Club Aluminum Company, where he was general manager.

The Eastern, prominent department store, has opened a new branch store at Wilshire and LaBrea, Los Angeles. It is known as the Eastern Radio and Home Helps Store, carrying a complete line of electrical and gas appliances, headed by radios and electrical refrigerators. The Eastern has now forty branches extending throughout the Pacific Coast, according to Adolph Sieroty, general manager.

• Interference Tips •

1. Natural static is relatively unimportant in city installations except where distant reception is involved.

2. Man-made static or local interference is responsible for almost all noise complaints.

3. Disturbance usually originates in and radiates from the house wiring or its associated circuits.

4. Short or inside antennas are more adaptable to noise than to signal pick-up.

6. In an outside antenna installation, the greater part of any interference collected is picked up on the lead-in.

Knowing these facts, it is safe to assume the following:

1. A large antenna located away from noise-carrying circuits and agencies would be best for greater signal pick-up. Such an antenna would reduce the noise-signal ratio in favor of signal.

2. A lead-in which has no pick-up and which serves only to transmit signals from the collecting agency, or antenna proper, to the set, would be preferable because it would collect no interference en route.

3. A completely shielded receiver would be best for the reason that there is no residual pick-up. Any interference collected is in the air and not in some adjacent electrical circuit or metallic substance.

4. A good low resistance ground is essential.

KIMBALL PIANO

FRANCHISE

EMBRACES — The most salable line in the industry. The only



Kimball
Chippendale
Grand

financing plan under which the dealer secures his full margin of profit.

*Co-operative Sales Helps
offered by our two
West Coast Representatives:*

T. V. Anderson
519 Cooper Bldg.
Los Angeles,
and
250 Chronicle Bldg.
San Francisco
Rep. Southwest

F. W. Grosser
521 Knott St., Portland
Rep. for Oregon, Wash.,
Idaho and Northwest

W. W. KIMBALL COMPANY
Established 1857

306 S. Wabash Ave., Kimball Bldg.

Chicago

IN THE GREAT NORTHWEST

Oregon Philco Jobber

Philadelphia Storage Battery Company, manufacturers of Philco Radios, Tubes, etc., recently appointed as their distributors for Oregon and southern counties of Washington, the Philco Radio Distributors, Inc., 54 North Tenth St., Portland, Oregon.

The officials of this firm are R. W. Neighbor, President, and H. D. Hansen, Vice-President. Neighbor, while new to the radio business, is well known on the Pacific Coast, having been for several years general manager Pacific Coast division, E. C. Atkins & Company. H. D. Hansen has been connected with the Philadelphia Storage Battery Company for more than twelve years and has been in charge of their branch house at Portland for the last eight years. The Philco Radio Distributors, Inc., retain the location at Tenth and Davis Streets, where they have a beautiful, well lighted, fire-proof building and they confine their sales exclusively to Philco radios and tubes.

L. D. Hewitt and John J. Gerber, representatives making direct sales contact with the dealer agents in the territory, remain with the new organization.

Others in the personnel of the Philco Radio Distributors, Inc., remain the same as formerly. R. S. Morris is in charge of the store, with Fred Hoosly in charge of the service department and S. E. Huff in charge of the Transitone installations. Mrs. Margaret Schwender is in charge of credits and Miss Myra Sturtz looking after the billing, etc.

The Philadelphia Storage Battery Co. is represented in the Northwest by S. W. Phelps and H. P. Bode. Phelps is their general manager for the Northwest division, and Bode is his assistant.

Gilfillan Moves Office

The Seattle offices of Gilfillan Brothers, Inc., have been moved to the new location in the New Bayview Building, at 101 West John Street, Seattle. The telephone number, Garfield 6280, remains the same.

In the new quarters more space and better accommodations are provided, which were deemed necessary for enlarged business activities in the Northwest.

Wedel New Pilot Jobber

Affiliation of the Wedel Company, Inc., 520 Second Avenue, Seattle, with the Pilot Radio & Tube Corporation, Lawrence, Mass., has been announced by George Wedel, president of the Seattle firm.

The Wedel Company is now exclusive Pilot distributor in the Northwest for radios and accessories. Jack Totten, Pacific Coast Pilot representative, completed the arrangement for his company.

Backer Co. Moves

The James F. Backer Company, factory representative for DeForet and other lines, in Seattle, Wash., has moved its offices and warehouse to bigger and better quarters at 109 Bell Street. Two trained technicians have also been added to the staff to aid in the sale of radio and public address equipment in the Northwest.

New Gardner Jobber

Tru-Tone Products Company, 51 Security Bldg., Portland, Ore., has been recently appointed Northwest distributor for the products of Gardner Electric Mfg. Company, Emeryville, manufacturers of transformers, coils, etc.

To serve dealers and servicemen, the company has put in a stock of coils to be used only with the old core for replacement work, and a general line of complete transformers for midgets and consoles is also carried. Other items handled are Amplifiers, Ltd., Bean Sound Screens, and Macy Horns.

Cronin Leases Building

P. J. Cronin Company, distributors for Sparton radios, and Leonard refrigerators, Portland, Ore., has leased a large display and warehouse building at 88 North Eighth Street, Portland. The building has a frontage of 50 feet, and is 100 feet deep.

Open Portland House

Wedel Company, Inc., radio and electric jobbers, 520 Second Ave., Seattle, has opened a new branch at 443 Washington Street, Portland, Ore. The Oregon trade could not be handled adequately well by the sales force working that territory, and the new store was deemed necessary, it was stated.

The company handles a complete line

NEW WESTERN DEALERS

Dahlquist & Gieser Piano Store, 6116 Phinney Ave., Seattle, Wash., recently established, handles Story & Clark pianos. The two owners were formerly in business in Green Lake for two years.

Florence Radio and Electric Store is a new store located at 1526 East Florence Ave., Los Angeles.

R. C. Moe is now handling *RCA Victor* radios, refrigerators and accessories at 218 Sherman Ave., Couer D'Alene, Idaho. Moe has been active in the radio business for the last four years.

E. L. Mead has opened a radio service shop at 120 Lincoln Street, Roseville, Calif. He states that he is not handling radio sales but is doing service work exclusively.

M. H. Leaton has started in the musical and radio business at Concrete, Wash., handling in addition electrical appliances and washing machines. *Majestic* radios are handled.

John B. Caldwell & Company is now established at 116 North Jersey Street, St. John's Ore. Caldwell is a pioneer in Oregon, moving there from California in 1858.

of parts and accessories, radio sets, electrical appliances, transmitting apparatus, and all sorts of electrical supplies. The business is handled both by mail, salesmen and over-the-counter. Its mail order department services parts of South America, Alaska, the Philippines and Hawaii, even receiving inquiries from Russia.

King is Norge Jobber

Homer King, Inc., Tacoma, Wash., has been appointed distributor for the Norge electric refrigerator, and carries stocks in Tacoma and Seattle. Homer King, president, reports that they have already franchised a large number of dealers, and expect to do a very satisfactory business. King recently returned from the Crosley Radio Corporation conference in Cincinnati, and is enthusiastic over new Crosley models, and the Moto-Iron, newly developed electric ironer made by Crosley.

Piano Co. Buys Store

With the purchase of stock and good will of the Alvin Waite Piano Company, Seattle, the Cline Piano Exchange has become one of the largest piano distributing organizations on the Pacific Coast, according to E. W. Crook, general manager.

The Cline Piano Exchange, 1635 Third Ave., Seattle, has enlarged its rental department with the assimilation of the Waite stock, and has placed it under the supervision of Mrs. Alvin Waite, Crook stated.

The Carmel, Calif., branch of *Lial's Music Shop* has combined with the Monterey shop, with headquarters of the new shop at 490 Alvarado Street, according to Miss Margaret Lial, proprietor.

Tuggy & Hoare Radio Laboratory is the name of a new laboratory newly established at 3849 Lemon Street, Riverside, Calif. Both proprietors are experienced radio men, and have installed complete testing equipment and apparatus for diagnosing radio troubles.

Orton Brothers Music Stores, of Montana, have added another shop to the chain in conjunction with the Henry Alberda Hardware store, Three Forks, Mont. Music stocks handled include *Majestic* and *Victor* radios, phonographs, pianos, instruments and sheet music. Archie White is manager.

Weber's Music and Radio Store was recently opened in Van Nuys, Calif. The opening was formal, with a public address system, elaborate decorations and program. The store was recently purchased from *H. F. Beck*. The new owners are E. R. and W. F. Weber.

Charles B. House, music and radio dealer of Klamath Falls, Ore., has located his new store in Lakeview, Ore.

SELF - INTERFERENCE OF RADIO WAVES

The Cause of Mushing and Fading on Stations Within 200 Miles

By KENNETH ORMISTON

THE radio service man is the liaison officer between the manufacturer-jobber-dealer and the user of the radio receiver. The set owner's satisfaction with his purchase largely depends upon the understanding of its capabilities imparted to him by the service man.

The manufacturer's literature usually fails to inform the set owner concerning all of the various types of interference which he is bound to experience, and as a result the receiver itself and often the broadcast stations receive considerable blame and criticism for performance characteristics due entirely to the vagaries of nature and other external influences.

Reflects On Dealers

Thus the listener is too often left to learn about static, electrical interference, fading, heterodyne interference and self-interference by himself, and in the process he is apt to damn the set, its maker and the chap who sold it to him. In all of which there is a decided reflection upon the dealer organization which sold the set without instructing and informing the user regarding what to expect in the way of performance.

For example, the condition which exists at a certain definite distance from every broadcast station, where night reception is a mess of fading and distortion, while daytime reception is perfect, gives rise to considerable curiosity in the minds of the listener. He quite naturally blames either his receiver or the broadcast station. The service man should be able to explain this phenomena in a clear and logical manner, so that the listener is made to understand the influence which natural conditions have upon radio transmission and over which we have no control.

The cause of heterodyne whistles can be made equally clear, as well as the difference between natural static and electrical interference and the causes of the latter.

Self-Interference

It is the purpose of this article to explain the phenomena of self-interference, the results of which were described in the previous paragraph, in a manner which the service man could likewise employ in making it clear to the set owner. This type of interference is observed at distances ranging from 50 to 200 miles from a broadcast station. Reception during the daytime will be quite satisfac-

tory, but as soon as darkness falls, the signals fade and are distorted and "mushed" so badly that decent reception is impossible. Yet other stations, closer or more distant, or even of the same distance, will be received well.

For instance, take a broadcast station and a receiving set, let us say 80 miles apart. The transmitter emits two distinct types of waves, one which follows the surface of the earth and is called the "ground wave" and one which shoots upward and is called the "sky wave." The former is quickly absorbed; that is, the energy contained in it is rapidly decreased due to the necessity of passing through buildings, trees, over hills, etc. It dies out at distances varying from 50 to a few hundred miles. This is the wave which gives us local reception and practically all daytime reception at any distance.

Ether Waves Must Reflect

It is obvious that all long distance reception is dependent upon the sky wave and the turning back or reflection of this wave by some reflecting surface or medium. The ether waves of radio are similar to light, except of a lower frequency, and like light, cannot go around corners without reflection. Therefore, if we had only a ground waves, there would be no DX. But thanks to the kindness of nature, a surface which is assumed to be a mass of free ions cast off from the sun affords high conductivity to electromagnetic waves, and serves to reflect the waves which we shoot against it from the transmitting antenna, turning them back and thereby blanketing the earth's surface so that the station may be heard anywhere where the ever-present static level is sufficiently low and the receiver sufficiently sensitive.

Thus we have received radio at a point 12,500 miles distant from the transmitter, or exactly half-way round the world. In this case the emitted wave has been reflected back and forth between earth and Heaviside Layer until it is finally going in the opposite direction to that in which it started and an instant later will pass the transmitting antenna again on its second lap.

Shifting Layer Causes Fading

It is obvious that if the emitted wave was of constant strength and the reflecting surface (Heaviside Layer) of fixed position and smooth surface, there would be no fading in DX reception. This

corresponds to reflecting a light into your eyes by means of a mirror. As long as the mirror does not move, the reflected light will remain constant. But cause the mirror to shift around in position, and the amount of light which reaches the eye will vary. This happens with the Heaviside Layer. It is constantly shifting in height above the earth, and undulating in its surface like the surface of the sea when there is a ground swell.

Hence the radio wave is strongly focused on your receiving antenna one minute, but due to the Layer moving up or down and undulating, you are presently receiving a wave from another section of, and you notice fading. At times a DX station will fade out completely, because at the moment no wave is reflected in your direction due to the movement and surface irregularities of the Layer.

The best DX locality is naturally one in which the characteristics of the Heaviside Layer are consistently such that the greatest number of DX stations are strongly reflected with the least fading.

"Mushing" of Near Stations

This explains the fading of DX stations, but we are primarily discussing the fading and mushing of stations within 200 miles, which is entirely a different matter. A receiver located thus would receive both the ground and sky waves from the transmitter. It is obvious that the sky wave has travelled a greater distance, since it has gone up to the Heaviside Layer and back, and this Layer may be 150 miles high above the earth. Hence, the reflected sky wave will arrive at the receiver an instant later than the ground wave which has travelled in a straight line.

Though the speed of both waves is roughly 186,000 miles a second, the time interval between the two arrivals can be measured with scientific precision instruments, and the height of the Layer thus calculated. It is obvious that the chances of the two waves arriving exactly in phase is rather remote, and we would expect to find a condition where the ground wave is inducing a current in the receiving antenna in one direction while at the same moment the late arrival of an impulse from the sky endeavors to set up a current in the opposite direction, with the result that they simply neutralize each other, and the result is nil.

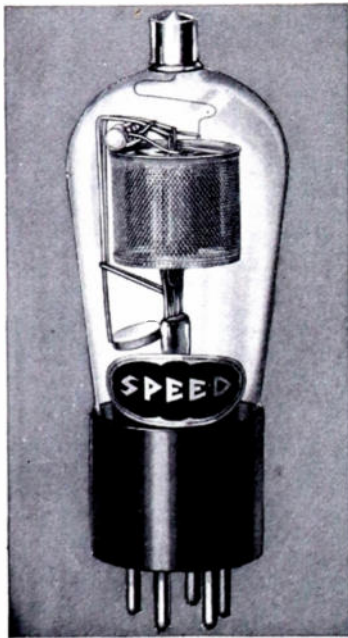
It follows that the critical distance

(Continued on Page 53)

NEW SPEED TUBES

FOR THE NEW RECEIVERS...

VARI-MU and PENTODE



SPEED TYPE 235

NEW!!

- 217—PENTODE
- 233—PENTODE (2 volt) D.C.
- 235—VARI-MU SCREEN GRID
- 551—VARI-MU SCREEN GRID
- 236—SCREEN GRID (6 volt) for D.C. or Auto Sets
- 237—DET.-AMP. (6 volt) for D.C. or Auto Sets
- 238—PENTODE (6 volt) for D.C. or Auto Sets



SPEED TYPE 551

NEW!!

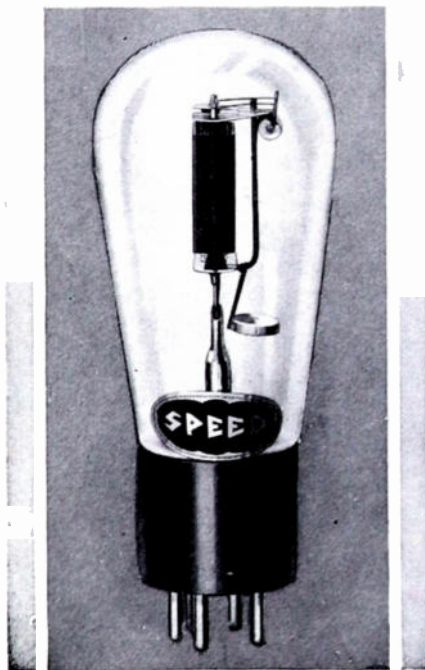
FOTO-ELECTRIC TUBES

*Caesium Gas Filled Type
(Red Sensitive)*

NUMEROUS TYPES

for

ALL STANDARD EQUIPMENT



SPEED TYPE 247

NEW!!

PRODUCTS

QUOTATIONS

SALES PLANS

ADJUSTMENT POLICY

*Write for Details or Get Them at the
Cable Booth at the
R.M.A. Trade Show*

R.M.A. TRADE SHOW

BOOTHS 72 - 73

BALL ROOM

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CABLE RADIO TUBE CORP.

230-242 NORTH 9th STREET
BROOKLYN, NEW YORK

HOTEL HEADQUARTERS

2118A - 2119A - 2120A

STEVENS HOTEL

CHICAGO

SPEED
CABLE RADIO TUBE CORPORATION

PEOPLE WHO DO THINGS

H. C. Schultz has been appointed general sales manager of Colin B. Kennedy Corporation, South Bend, Ind., according to an announcement by Colin B. Kennedy, president. Schultz has a national acquaintance in the radio field due to his merchandising and sales efforts for nationally known houses during the past 20 years. Old-timers will remember "Heine" Schultz and his connections with Columbia and Sonora.

J. S. Wells has been made president of the Gulbrausen Company, Chicago, at a special meeting of the board of directors. Prior to his connection with radio, Wells was actively engaged in the farm lighting industry.

William J. Avery, export manager of the Atwater Kent Manufacturing Company, Philadelphia, Pa., has sailed for England and the continent for a two months' business trip. He is expected to return about the last of June.

W. F. Baitinger, Northwest advertising manager for Sherman-Clay, has moved from Seattle to San Francisco, to become Pacific Coast advertising manager of the company. He succeeds J. N. Armfield.

R. W. Newhouse is the new manager of the Sherman-Clay radio department of the Oakland store.

J. Carrash, manager of the Sherman-Clay store in East Oakland, Calif., is now manager of the radio department of J. F. Hink and Son, Berkeley.

J. E. Regan, well-known in the San Francisco Bay district, is now associated with Ernest Ingold, Inc., as city salesman.

C. A. Olson, of Salt Lake City, has taken charge of the Sampson Music Company store in Nampa, Idaho. Olson and his family have moved to Nampa, where he has already begun his duties as local manager.

Rex C. Atwood, former supervisor of sales personnel for Stewart-Warner Corporation, Chicago, has recently become associated with the Transformer Corporation of America as assistant sales manager. Atwood has complete charge of factory representatives and is responsible for distribution of territory to Clarion distributors.

Jack Kearns, formerly sales manager of the Kirsey Chevrolet Company, Seattle, is now with Ware & Hosey, West Seattle Frigidaire and General Motors dealers.

Clarence L. Starkey greeted more than 300 people at the recent formal opening of his new radio and jewelry store, Arcata, Calif.

Leo Deatrick, former manager of the Glendale, Calif., branch of the Fitzgerald Music Company, who was transferred to the main Los Angeles store as general manager, has returned to Glendale to manage the local branch at 337 North Brand.

Oliver H. Brewster, for many years a member of the engineering staff of the CeCo Manufacturing Company, Providence, R. I., has been promoted to the position of Chief Engineer.

Frank Marshall, formerly with Dinwoodey Furniture Company, Salt Lake City, is now with the Kelvinator Department of the A.C.M.I. Department Store. Marshall and J. C. Ellsworth had charge of the radio and refrigeration department at Dinwoodey's. As yet no one has been appointed in their places at Utah's oldest furniture store.

Floyd Taylor is now located at Sherman, Clay & Company's Oakland Broadway store.

Harry Fox, of West Coast Company, Ltd., 160 Tenth Street, San Francisco, now represents the Colonial Radio Corporation.

O. H. Spindler, who for the past fourteen years has been engaged in the piano business in Seattle, has joined the staff of the Doner Piano Company, Seattle, it has been announced by C. E. Doner, president. The company recently moved to Third Avenue and Stewart, after its appointment as exclusive Seattle Knabe agent.

"Nine tenths of all Radio Interference Can be Stopped by Proper Installation"

George R. Walters,
Interference Engineer.

FOR seven years George R. Walters, as interference engineer for the Southern California Radio and Music Trades Association, has been investigating and experimenting with radio interference and devising ways and means to eliminate it.

In this book, entitled "Radio Interference," he has covered

every phase of interference, its various and many causes, and the proper ways and means of putting a stop to it.

Walters is thoroughly conversant with his subject and is as technical as a trained engineer should be. Yet his book is written in language that anyone can understand and illustrated with many charts, diagrams and photographs.

He covers every type of installation from a simple inside antenna to the most effective outside aerial. He discusses every kind and type of interference and how to eliminate or reduce it.

Chapter Headings: Field Strength, Noise Levels, Location Not Always Geographical, Receivers Shielded and Unshielded, Antennas, Pickup, Fundamental Wave Lengths of Antennas, Shielded Lead-ins, Rules for Shielded Lead-in Installation, How to Proceed, Apartment House Installations, Transposition Aerials, Country Installations, Power-Line Interference, X-Ray and Diathermy Interference, Chokes and Filters, Distant Reception and Station Interference, Where A Few Feet Count, Tracing Interference, and An Ideal Interference Ordinance for Municipalities.

WALLACE M. BYAM,
1220 Maple Avenue, Los Angeles, Calif.

Enclosed is 15c in stamps (or check). Please send me a copy of your book, "Radio Interference." (If more than one copy is wanted please specify how many.)

Name

Address

City

The Speaker--!

The Voice of All Radios



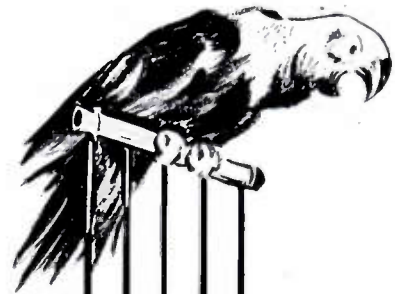
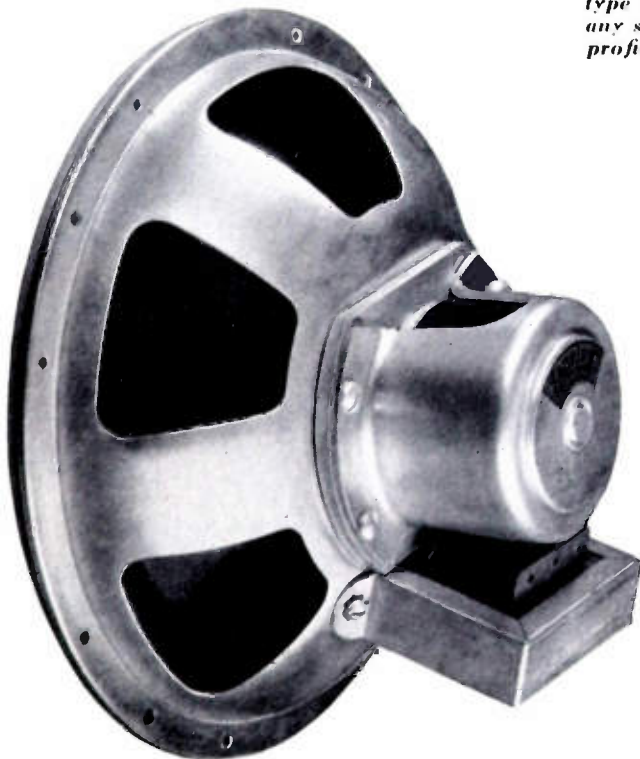
Simple enough . . . "The voice of any and all radios" . . .
The modern speaker is built to give the effect of the thousands
of dollars spent to deliver perfect tone.

The public, not knowing the technical side of a radio chassis,
will always buy one with the most natural tone!

LANSING . . . a pioneer in the electric-dynamic speaker
business has always enjoyed the reputation of creating natural
tone . . . The latest type speaker has proved to be a sensation
among acoustic experts. It is built neatly, sturdily, and power-
fully! Built to meet the requirements of any radio. Be sure the
radio you are demonstrating contains the internationally known
Lansing electro-dynamic!

KEY ACCOUNTS:

*When assembling your own
make radio, hear the latest
type Lansing. It will improve
any set and give you a longer
profit!*



LANSING MFG. CO.

6920 McKinley Ave.

Los Angeles

California

In Answer To Your Question . . .

So many questions are received regarding tube-testing, the relation between amplification factor, plate impedance and mutual conductance, and how the performance capabilities of a tube may be determined, that we are reviewing these matters in detail.

It is obvious that the valve action of a tube depends upon the fact that a voltage applied to the grid will result in a greater change in plate current than the same voltage change made in the plate circuit.

If this were not true, the tube would be useless as an amplifier. Since the grid is located between the filament and the plate, thus being closer to the source of electrons (filament or cathode), we would expect it to have a greater effect upon plate current than similar plate voltage changes. It is reasonable that the ratio between such changes would afford an indication of the amplification capabilities of the tube.

For example, if it is determined that a 5-volt change in grid potential gives three times as much plate current change as a 5-volt change in plate voltage, the amplification factor of the tube is 3.

Meaning of "Mu"

Amplification Factor is represented by the Greek letter "Mu," and when we talk about a "high-mu" tube we mean one in which the ratio described above is a high value. When we describe a tube as "variable-mu" it means that the amplification factor is not fixed, but varies with other circuit values, such as the grid voltage input.

In all but the new variable-mu tubes, the Mu is a constant value, determined by the mechanical construction of the tube. It has been found desirable, however, to design a tube in which the Mu will automatically vary with the input voltage, so that the amplification will be less with a high input voltage, and greater with a low input voltage. This is accomplished in the mechanical construction of the new variable and multi-mu tubes by special design of the control grid.

Often the mistake is made of assuming that the amplification factor is the ratio between plate and grid voltages. Instead of this, it is the ratio between changes in these voltages. It may be better expressed as follows:

$$\text{Mu} = \frac{\text{Plate voltage change to produce a given plate current change}}{\text{Grid voltage change to produce the same plate current change}}$$

Plate Resistance A Factor

Now it is obvious that the amplification factor alone is not an indication of the merit of the tube, since a certain change in plate current working in a circuit of high resistance will give a

greater POWER change than when working in a plate circuit of lower resistance. Therefore, it is seen that the plate resistance must be taken into account, and that our final factor which will enable us to accurately determine the merit of the tube must constitute some relation between both the Mu of the tube and its plate resistance.

In speaking of plate resistance, we do not mean the ordinary direct current resistance, determined by the application of Ohm's Law. Simply dividing the plate voltage by the plate current will give the DC resistance. But the value with which we are concerned is the IMPEDANCE, usually called plate resistance. Like the amplification factor, this value is a ratio between certain changes. It is the ratio between a change in plate voltage and the corresponding change in plate current. It is thus the AC resistance of the plate circuit.

For example, if changing the plate voltage from 135 to 180 volts changes the plate current from 6 to 7.5 milliamperes, the plate resistance is found by dividing the change in plate voltage (45 volts) by the change in plate current (1.5 mils.) and this is found to be 30,000 ohms. (The 1.5 mils. is, of course, converted into amperes by multiplying by 1,000, and becomes .0015 amperes).

It is necessary that the grid voltage be the same when both readings are taken. It will be noted that the plate resistance of a tube will vary with the plate voltage applied, hence readings must be taken at voltages near the normal operating values of the tube.

Most Important Factor

Now we come to the most important factor, and the one which may be considered as the real merit indicator. It takes into consideration both the Mu and plate resistance. This factor indicates how much plate current change is caused by a given grid voltage change.

It is the ratio between the Mu and the plate resistance, and is measured in micromhos. The mho is the unit of conductance. Since conductance is the opposite of resistance, the resistance unit "ohm" is spelled backwards and becomes "mho" to indicate conductance. And a micromho is one-millionth of the mho. Dividing plate current change by grid voltage change gives mutual conductance in mhos.

For instance, if a change in grid voltage of 1 volt causes a plate current

change of 15 mils. or .0015 amperes, the mutual conductance is .0015 mhos or 1500 micromhos.

In comparing two tubes of the same type, the one with the higher mutual conductance is the better tube.

Mutual conductance	Change in plate current	Mu
	Change in grid voltage	Plate resistance

It is a simple matter to arrange a tube tester for making mutual conductance measurements, but the quickest and most satisfactory method is to employ one of the new direct reading mutual conductance meters, where this vital value is indicated directly without the necessity of varying voltages, taking a series of readings and applying in the formula.

Increasing the percentage of modulation from 50 per cent to 100 per cent in effect increases the power of the station by four times as far as the listener is concerned. The carrier is thus used to the greatest efficiency in transmitting speech and music. A strong carrier creates interference at great distances by heterodyning other stations, and the Commission's engineering staff believes that a station's power should be reduced unless its carrier is being employed 100 per cent for the transmission of speech and music.

In high modulation the carrier hum naturally becomes less prominent, the service area is greatly increased and transmission is far more efficient. 5,000 watt station with 100 per cent modulation must have available 20,000 watts in the final output stage, since on the peaks of modulation this amount of power is required. Similarly, a 50,000 watt station puts out 200,000 watts momentarily when the 100 per cent peaks are reached, which is every few seconds.

To Hold Exam

Because of numerous complaints of overcharging and inefficiency of persons representing themselves to be experts at repairing radios, the Oregon Radio Trades Association has named a committee of experts to conduct examinations of radio service men.

Men who pass the examination are certified as experts. The examination committee is composed of A. F. Homboe, Jr., W. Alfonse, Roy Jones and H. A. Crass.

DOINGS IN THE INDUSTRY

Sylvania to Merge

Plans for a consolidation have been approved by the boards of directors of the Sylvania Products Company and the Nilco Lamp Works, both of Emporium, Pa., and the Hygrade Lamp Company, Salem, Mass.

Combined sales of these companies amounted to \$9,000,000 for the year 1930. The Emporium and Salem units each manufacture incandescent lamp bulbs and tubes.

This consolidation will be effected without resorting to additional public financing, Sylvania officials stated. No new management or financial interests are involved in the consolidation, and those officers who have been in charge of the separate businesses will continue. No change is contemplated in the manufacturing facilities or locations, it was announced.

Radios in Airplanes

Northwest Airways, Inc., operating between Northwest key cities, have just finished installation of Philco-Transitone automobile radios in each of their giant air-liners with great success, it is reported.

The loud-speaker is installed on the roof of the cabin and the control panel on the wall of the compartment partition. Good reception was reported to a height of two miles. Above this height, earphones may be used.

Radio in Bus

Southern Limited Bus Lines, operating between Chicago and Paducah, Ky., have provided entertainment for their passengers in the form of American Bosch Motor Car Radios, installed in the bus. The set is installed on the instrument panel in the driver's compartment, and the speakers are arranged in the ceiling of the car.

Sparton Jobbers Meet

Sparton's annual "day and night" educational session for 1931 began on June 1 with a complete roster of their distributors, at Jackson, Mich. What distributors have nicknamed the "three-shift system" was again in force with three meetings a day, beginning at 8:30 A. M. and ending at 10:30 P. M.

This schedule was continued until Thursday, each meeting being devoted to some particular phase of the distributors' business in connection with the new models.

The climax and conclusion of the annual convention was reached on Friday when nearly two thousand dealers from all sections of the country were present as guests.

During the morning and afternoon of the day, the new sets were presented; Sparton's advertising plans and new dealer cooperation were covered. The evening was devoted to entertainment. The talent for the Friday show included

a number of headliners imported direct from Broadway.

On Friday afternoon the large line of new models was presented to the assem-



They're off! The Los Angeles delegation to the Chicago R. M. A. Show, aboard the Santa Fe "Chief." This delegation shared honors with New Orleans and Boston for first arrival at the show.

bled dealers and enthusiastically received. Professor David Friday, noted economist and business authority, addressed them on the business outlook and adaptation of business to conditions.

The first annual all-Canadian dealer convention is to be held in Toronto on June 25-26.

Increase Production

Production of Majestic refrigerators by the Grigsby-Grunow Company, Chicago, has been increased to 1,000 daily, according to Don M. Compton, general manager.

"We have been manufacturing 750 refrigerators daily for some time," he said, "but now the number has been increased to 1,000 per day." Compton also stated that production of battery sets was going forward, and that the new motor radio was going into production immediately.

New Silver-Marshall Policy

As a result of several months' consideration and contact with radio dealers, Silver-Marshall, Inc., Chicago, is putting into effect a new direct factory policy.

"There were many reasons for this sharp change from the conventional plan of jobber distribution," stated McMurdo Silver, president, "but one stands out prominently as pointing to the absolute economic necessity of such a system—the fact that the smaller dealer must sell more receivers at a greater profit to stay in business.

"In eliminating 53 distributors Silver-Marshall is conserving 25 per cent plus the cost of travelling representatives, and is making it possible for the retailers to sell the finest pentode vari-mu superheterodynes at list prices well below competition, and yet make as much profit."

MOUNTAIN STATES

Jobber Manufacturers

Oakley & Sons, Boise, Idaho, distributors of Sparton and Clarion radios, Cunningham tubes, and Burgess batteries, are manufacturing two new lines of accessories for radio and automobile use.

One is a Contact Re-surfacer for grinding down the contact points on automobiles, magnetos, relays, and wherever such points are used. Several thousand of these have been placed throughout the country. The tool sells for \$3.60 net.

The other line is a stock container for the store carrying numerous small parts, and is sold to Electric Service Shops, Radio Service Stores, etc. Oakley claims the container saves at least 50 per cent of a stockman's time, and saves from 25 to 50 per cent in space.

New Pilot Jobber

Felt Radio Company, Salt Lake City, has taken over the distribution of the Pilot radio, manufactured by the Pilot Radio and Tube Corporation, Lawrence, Mass.

Victor Felt, president of the company, has in turn appointed J. C. Ripley as dealer for the short and long wave sets, who also handles equipment for radio "hams."

The Felt Company has also taken the distributorship for Norge refrigerators. As an attractive sales scheme, a contest is being held. Prizes amounting to \$450 are offered to the person guessing nearest to the amount of electricity a refrigerator on display in the store lobby uses in a certain length of time.

Radio Club Active

The Utah Amateur Radio Club, Salt Lake City, organized as the Utah Radio Club eight years ago by Ira Cary, present mechanical engineer at the New York G. E. offices, has recently taken a new lease on life, and is becoming exceedingly active.

An outgrowth of the Utah Radio Club, which gradually died out, the new club was organized three years ago, and in the past few weeks has had an exceptional membership growth. Meetings are held monthly. At the last meeting, June 4, a discussion of "The Keying of the Oscillatory Circuit" was taken up by Marvin Johnson. Lectures were accompanied by pictures, and an experiment with short waves was tried out on an amateur transmitter. Additional experiments are being planned. The membership now numbers 50.

PEOPLE WHO DO THINGS

H. C. Schultz has been appointed general sales manager of Colin B. Kennedy Corporation, South Bend, Ind., according to an announcement by Colin B. Kennedy, president. Schultz has a national acquaintance in the radio field due to his merchandising and sales efforts for nationally known houses during the past 20 years. Old-timers will remember "Heine" Schultz and his connections with Columbia and Sonora.

A. S. Wells has been made president of the Gulbransen Company, Chicago, at a special meeting of the board of directors. Prior to his connection with radio, Wells was actively engaged in the farm lighting industry.

William J. Avery, export manager of the Atwater Kent Manufacturing Company, Philadelphia, Pa., has sailed for England and the continent for a two months' business trip. He is expected to return about the last of June.

W. V. Baitinger, Northwest advertising manager for Sherman-Clay, has moved from Seattle to San Francisco, to become Pacific Coast advertising manager of the company. He succeeds J. N. Armfield.

R. W. Newhouse is the new manager of the Sherman-Clay radio department of the Oakland store.

J. Carrash, manager of the Sherman-Clay store in East Oakland, Calif., is now manager of the radio department of J. F. Hink and Son, Berkeley.

J. E. Regan, well-known in the San Francisco Bay district, is now associated with Ernest Ingold, Inc., as city salesman.

C. A. Olson, of Salt Lake City, has taken charge of the Sampson Music Company store in Nampa, Idaho. Olson and his family have moved to Nampa, where he has already begun his duties as local manager.

Rex C. Atwood, former supervisor of sales personnel for Stewart-Warner Corporation, Chicago, has recently become associated with the Transformer Corporation of America as assistant sales manager. Atwood has complete charge of factory representatives and is responsible for distribution of territory to Clarion distributors.

Jack Kearns, formerly sales manager of the Kirsey Chevrolet Company, Seattle, is now with Ware & Hosesey, West Seattle Frigidaire and General Motors dealers.

Clarence L. Starkey greeted more than 300 people at the recent formal opening of his new radio and jewelry store, Arcata, Calif.

Leo Deatrick, former manager of the Glendale, Calif., branch of the Fitzgerald Music Company, who was transferred to the main Los Angeles store as general manager, has returned to Glendale to manage the local branch at 337 North Brand.

Oliver H. Brewster, for many years a member of the engineering staff of the CeCo Manufacturing Company, Providence, R. I., has been promoted to the position of Chief Engineer.

Frank Marshall, formerly with Dinwoodey Furniture Company, Salt Lake City, is now with the Kelvinator Department of the A.C.M.I. Department Store. Marshall and J. C. Ellsworth had charge of the radio and refrigeration department at Dinwoodey's. As yet no one has been appointed in their places at Utah's oldest furniture store.

Floyd Taylor is now located at Sherman, Clay & Company's Oakland Broadway store.

Harry Fox, of West Coast Company, Ltd., 160 Tenth Street, San Francisco, now represents the Colonial Radio Corporation.

O. H. Spindler, who for the past fourteen years has been engaged in the piano business in Seattle, has joined the staff of the Doner Piano Company, Seattle, it has been announced by C. E. Doner, president. The company recently moved to Third Avenue and Stewart, after its appointment as exclusive Seattle Knabe agent.

"Nine tenths of all Radio Interference Can be Stopped by Proper Installation"

George R. Walters,
Interference Engineer.

FOR seven years George R. Walters, as interference engineer for the Southern California Radio and Music Trades Association, has been investigating and experimenting with radio interference and devising ways and means to eliminate it.

In this book, entitled "Radio Interference," he has covered

every phase of interference, its various and many causes, and the proper ways and means of putting a stop to it.

Walters is thoroughly conversant with his subject and is as technical as a trained engineer should be. Yet his book is written in language that anyone can understand and illustrated with many charts, diagrams and photographs.

He covers every type of installation from a simple inside antenna to the most effective outside aerial. He discusses every kind and type of interference and how to eliminate or reduce it.

Chapter Headings: Field Strength, Noise Levels, Location Not Always Geographical, Receivers Shielded and Unshielded, Antennas, Pickup, Fundamental Wave Lengths of Antennas, Shielded Lead-ins, Rules for Shielded Lead-in Installation, How to Proceed, Apartment House Installations, Transposition Aerials, Country Installations, Power-Line Interference, X-Ray and Diathermy Interference, Chokes and Filters, Distant Reception and Station Interference, Where A Few Feet Count, Tracing Interference, and An Ideal Interference Ordinance for Municipalities.

WALLACE M. BYAM,
1220 Maple Avenue, Los Angeles, Calif.

Enclosed is 45c in stamps (or check). Please send me a copy of your book, "Radio Interference." (If more than one copy is wanted please specify how many.)

Name

Address

City

The Speaker--!

The Voice of All Radios



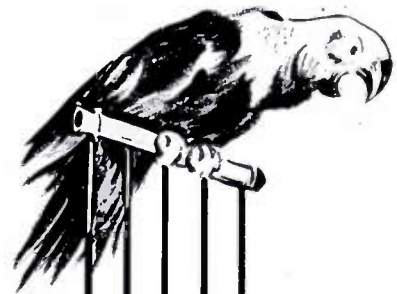
Simple enough . . . "The voice of any and all radios" . . .
The modern speaker is built to give the effect of the thousands
of dollars spent to deliver perfect tone.

The public, not knowing the technical side of a radio chassis,
will always buy one with the most natural tone!

LANSING . . . a pioneer in the electric-dynamic speaker
business has always enjoyed the reputation of creating natural
tone . . . The latest type speaker has proved to be a sensation
among acoustic experts. It is built neatly, sturdily, and power-
fully! Built to meet the requirements of any radio. Be sure the
radio you are demonstrating contains the internationally known
Lansing electro-dynamic!

KEY ACCOUNTS:

*When assembling your own
make radio, hear the latest
type Lansing. It will improve
any set and give you a longer
profit!*



LANSING MFG. CO.

6920 McKinley Ave.

Los Angeles

California

 THE LAST WORD IN AUTO RADIO



*The Small Compact, Sturdy Chassis.
Small type, low drain, automobile tubes used exclusively.*

7 Tube Superheterodyne.
Pentode and screen grid.
Low-battery consumption, automobile tubes used exclusively.
Special design Lansing Dynamic.
Operates on 6 foot aerial.
No capacity effects.
Fading reduced to minimum.
Jar and jolt proof.
Gets police radio.

SUPER-HETERODYNE—PENTODE
 • B I L K I E •
 Automobile Radio

All the latest developments of radio engineering have been incorporated in this automobile radio. Superheterodyne makes it extremely sensitive and selective. Automobile type tubes, two 237's, two 238 pentodes in push-pull and three 236 screen-grids draw very little on the batteries. B batteries last approximately one year. Built strong and sturdy, shock and jolt proof. Easily and quickly installed without defacement of car. Gets police radio broadcasts. The finest of automobile radio. Liberal dealer discounts. Write or wire.

\$64⁵⁰

COMPLETE WITH TUBES
AND BATTERIES.

Can be easily installed by anyone.
Chart gives complete directions.

"Little Eddie" Barnes, Salesmanager

Inquiries of Police Installations Solicited

Walter Bilkie Company

2042 VENICE BOULEVARD, LOS ANGELES

REpublic 9030

Northern Representative:

MR. J. S. PAYNE

301 Greenwood Bldg.

149 New Montgomery Street

San Francisco, Calif.



*The remote control is attached to the steering post.
Inconspicuous, accessible. No necessity to wear the dash.*

Dress Up Your Business!—

(Continued from Page 22)

pense has already been charged off by the time we start selling them electric appliances and will not be as big an item in future contacting. Still another consideration is that by keeping in contact with them through appliance sales we are the logical ones to sell them a radio set when they are once more in the market. Such appliances, therefore, bridge the time gap between one radio sale and the next one.

Direct Mail Used

"In connection with appliance sales we are using direct mail. We mail them a personal letter, dictated to them according to individual circumstances, in which we tell them a representative of the firm will call upon them and explain whatever appliance we feel they are in the market for.

"Then we follow up this letter with a personal call, supplemented by additional letters. We have found the form letter, which is apparent as such, of little value to us, hence our personal letters."

Up until the present time Prest & Dean salesmen have been working on a straight commission. However, the firm is planning to discontinue all floor-time and put every salesman on a 10 or 12 per cent commission.

Keep Salesmen In Field

"We have found that the salesmen were depending too much upon their floor time for their sales. The balance of the time they did not work enough and produced little in tangible results. By the new arrangement we hope to make them work harder and bring in more set sales. However, we are not expecting them to do cold soliciting. We will furnish them with leads that have developed on the sales floor and also give them other leads that we know are good prospects for radios or household appliances. In this way they will be out in the field making calls all of the time, and the extra commission should more than recompense an active salesman for the change in our plans."

Looking Ahead

(Continued from Page 10)

he heard himself being talked about, he quickly got out of harm's way. Chicago was forced to put its transmission on a frequency out of the regular broadcast band, and take other steps to insure secrecy.

Now, if the good citizens of Los Angeles, and also the crooks, are going to tune in to the police transmissions, eventually either other frequencies will be used, the messages will be coded, or the transmission will be scrambled like the old Avalon phone system. In any event, the public must not be allowed to become an audience to transmissions which have other and far more important purposes than to amuse the curious listener.

Rich Brothers Store has been established in Beaumont, Calif., by W. L. Rich and Kenneth Rich. The new firm carries a supply of wiring and appliances, and handles the Copeland electric refrigerator, and Atwater Kent radios.

SEATTLE,
WASH.

Wedel Company, Inc.

PORTLAND,
ORE.

The Pacific Coast's Leading

Radio Parts and Set Jobbers

Impartially Distribute

Every Nationally-Made Part For Building or Replacement

NO ASSORTMENT MORE COMPLETE

“We Ship Merchandise All Over The World”

We Specialize in

SHORT WAVE - AMPLIFICATION - ADDRESS - TELEVISION

Bids solicited for estimates large or small for anything radio and electrical.

FASTEST MAIL ORDER SERVICE ON EARTH!

Self-Interference

(Continued from Page 50)

from a station where this self-interference is at its worst is where the energy contained in the two waves is equal and they are almost constantly out of phase. However, this condition varies due to the shifting of the Layer previously mentioned, so that instead of the station's signals being a total loss, they fade in and out and are distorted badly.

At a distance closer to the station, the ground wave will predominate and reception will be satisfactory, while at greater distances than this critical distance, the sky wave will predominate and reception will again be clear.

Distance Not Only Factor

Listeners at the critical distance from a certain station will observe that other stations at practically the same distance may not suffer from self-interference, hence they are skeptical of the explanation given. They should be made to understand that the distance is not the only factor.

Two stations may be operating in the same block and one mush up at night at say 90 miles away, whereas the other is well received. This is due to the fact that they are operating on different frequencies and have different antenna designs. The ratio between the energy contained in the ground and sky waves will vary with antenna design, operating frequency, and several other factors.

A station employing an antenna consisting of only a vertical section will have an energy distribution wherein the sky wave is stronger than if a horizontal component was also used. Hence the critical distance will be closer to the station, since the sky wave will get back from its long flight and have sufficient energy therein to match the ground wave at a closer distance. Any change in the antenna which puts more energy into the ground wave and less into the sky wave will move the critical distance out further away from the station.

To illustrate this, service men will find that one metropolitan station will mush up and go decidedly bad at night at some town, say 75 or 90 miles away, whereas other of the stations in the same metropolitan area will be received satisfactorily.

Explain To Set Owner

It is difficult for the set owner to understand how this can be, but when it is explained that the distribution of transmitted energy, or ratio between the ground and sky waves depends upon certain physical factors in the station itself, and that distance is not the only factor involved, the reason will be seen. And so for every station there is this critical distance, where night reception is practically impossible, but it may not be the same for any two stations. Self-interference is not observed during the daytime for the reason that the sky is too weak to seriously interfere with the ground wave. It is attenuated rapidly by the condition of the atmosphere when sunlight is present. But as soon as darkness falls the energy which reaches the earth by reflection becomes the important factor in radio communication. Without it, we would have only local reception.

New ABC Jobber

The Intermountain Majestic Company, Denver, has recently been appointed distributor for the Altorfer Brothers Company, of Peoria, Ill., makers of ABC washers and ironers. Several radio firms in the Middle West and one in Texas have been appointed ABC distributors in the past few weeks.

New Staff Member

J. S. ("Jack") Miller, formerly associated with RADIO DOINGS in the Editorial and Advertising Departments, but recently a member of the sales organization of the H. R. Curtiss Co., has become a member of the Advertising Staff of WESTERN MUSIC & RADIO

TRADES JOURNAL and RADIO DOINGS.

Jack has a wide circle of friends among the radio industry and is most conversant with its needs and problems and we know his affiliation with The Journal and Doings will be a valuable asset to these publications.

Cline Adds Store

Continuing a coast-wide expansion program recently started, the Cline Piano Company of Seattle, has acquired the Wilkeson Piano Company of Oakland, Fresno and Santa Barbara, Calif. The company has also taken over part of the stock of the Kohler & Chase Company in Oakland.

\$ \$ \$ \$ \$ \$ \$ \$ \$

Down Go Costs

☛ In this price war, POLYMET PRODUCTS are helping radio's leaders to maintain:

- (1) A competitive position.
- (2) A good name.

☛ You dare sacrifice neither.

☛ Follow these leaders!

POLYMET

MANUFACTURING CORP.

*World's Largest Manufacturer
of Radio Essentials*

829 E. 134th St. New York City

PAPER, MICA
AND ELECTROLYTIC
CONDENSERS

•
TRANSFORMERS
AND CHOKES

•
RESISTORS

•
COIL WINDINGS

•
VOLUME CONTROLS

•
MAGNET WIRE

•
SOUND EQUIPMENT
AND COMPONENT
PARTS

Pacific Coast Representative

THE SPECTOR COMPANY
Rialto Bldg. San Francisco

JAMES J. BACKER CO.
109 Bell St. Seattle

LYRIC



Lyric Spotlight Dialing
—spots the station with
a traveling beam of light.

sets the pace in VALUE

Model S-8—\$99.50 complete with 8 tubes:
1-224 Modulator and Detector Tube
2-227 Oscillator Tubes
2-551 Variable Mu Tubes
2-247 Pentodes
1-280 Power

THE minute you see the new LYRICS you'll be won by their beauty of design. When you hear them, you'll find a real thrill from their glorious tone. Solid months of intensive laboratory work have brought forth a super-heterodyne that sets entirely new standards of clarity, hair-line tuning, selectivity and pure undistorted reception.

Here is a radio that meets every popular demand in performance; all models are Super-heterodyne with Pentode and Variable-Mu tubes. Tone control, four gang condenser and Lyric spot light tuning on all models except the smallest. Push pull amplification in model S-8 for the first time in Super-heterodyne circuit. Nothing better than the S-9 with automatic volume control.

Here is a radio in a complete range of models, popularly priced for everyone . . . a radio that welcomes comparison on any and every point of construction and performance.

Today's buying public demands an exceptional radio at a very reasonable price. Lyric 1932 models will set the pace in value and Lyric dealers will set the pace in sales.

Sell the line that sells itself.

Pacific Coast Distributors

THE ELECTRIC CORPORATION
Los Angeles, Calif. San Francisco, Calif.
Oakland, Calif. Portland, Oregon

COAST RADIO CO.
Seattle, Wash.



ALL MODELS SUPER-HETERODYNE
WITH PENTODE
AND VARIABLE-MU TUBES

... Full Tone ... Super-Sensitivity ... Perfect Selectivity
... 4 (four) Gang Condenser* ... Spotlight Tuning* ...
Tone Control* ... Freedom from Hum ... Vogue
Cabinet Designs ... Five Models 6-7-8-9 Tubes ... Most
Attractive Price Range.

*On all Models except S-6

\$49⁵⁰ TO \$139⁵⁰ COMPLETE WITH TUBES

LYRIC RADIO

All American Mohawk Corporation, North Tonawanda, N. Y.

What Would You Do in a Case Like This?

██████████ COMPANY
CHICAGO ILLINOIS

Gent's:-

This is an actual letter written by a disgruntled radio customer in rural California to a well-known radio factory in Chicago.

I wrote you asking you to give me the date that this radio was shipped out.

On the face ██████████ In the back -model ██████████

I received your answer. and it was that model ██████████ is one of yours latest models

NOW THE FACTS IN THE CASE IS THIS.

Last Feb. (1930) I had the local dealer set in a set (the above mentioned) I gave him \$25. down and in , in May I gave him \$25 more and was to pay him \$25. in Aug. \$25. in Nov. \$16.50 in Feb 1931 as final payment.

Before the Aug. payment came dew I notified the agent That I was unable to get but three stations and that they were almost unbearable or explsons In fact Mrs. ██████████ being nervous could not stand any of it. (Those three were in San Francisco about 50 miles I have about 30 stations on my list about 500 miles the fathers away) I never saw the agent again for a month or two then he came with a bill for the Aug. payment.

I told him that i was not going to pay aney more untell the set worked better ; and if it couldnot be made to work aney better, I wanted my mon back and he could take the machine. He told me that he would k eep the \$50. and take the machine. I said no but you test the set out and see if there is aney thing rong with it;He playyed it a little on one of those big stations; it came in very good (but a good ways from fine) That is all that he don about it then or sence. But I have a promas that he will test it out this comming week.

(I am on the highest hill in town and the nearest car line is a quarter of a mile away)

What gits my got; is, I walk every morning ½ mile to the P.o. and hear other sets ringing out clear and plane, and i on the sidewalk;

I start mine up when i get home just loud enough to hear it i n the house, and i am bombarded out of the room

As i rote in my last letter, I havent lost faith alltogether in the ██████████ set yet; for my nearest neighbor (30 ft.) away) has one (he has had it for two years) And i can set in my window and enjoy it I would like your opinion on this question; If he dose not improve this set should I give him the set and let him keep the \$50.

Or should i pay the balance dew and keep the set that would be no goodto me.

Very truly your's

████████████████████

Acrometer Plan Popular

Ken-Rad Corporation's announcement of the new Acrometer tube-selling plan at the R. M. A. Show, was heralded with great success, according to H. G. Blakeslee, Pacific Coast manager, who attended the Show.

Three large demonstration rooms were kept busy every day outlining to interested dealers and jobbers the new copy-righted tube merchandising plan, Blakeslee said. R. E. (Dick) Smiley, Ken-Rad sales manager, had a crew of twenty men engaged in presenting the new plan to R. M. A. delegates.

Set Radio Week Date

National Radio Week for 1931 has been definitely set as the week of September 21 to 27, which coincides with the dates of the Radio World's Fair in New York City. It will be recalled that last year 35 cities observed the event, 32 chain programs were dedicated to Radio, and more than 200 stations carried announcements celebrating Radio's tenth birthday.

At meetings at the R. M. A. Trade Show, between the Radio Wholesalers Association and the N. F. R. A., the discussion of plans for the Week will be made and announced later.

Radio Tax in Hawaii

A tax of a dollar on each owner of a radio has been proposed by several radio dealers in Honolulu, H. I., at a hearing before the senate judiciary committee. The dealers approved this manner of financing the control of radio under the public utilities commission. They suggested employment by the commission of a radio expert and estimated that there were 10,000 radios in the territory.

Broadcaster Speaks

The Mountain States Music and Radio Trades Association held their monthly meeting, Friday, June 5, at the Chamber of Commerce in Salt Lake City, Utah. Earl J. Glade, managing director for KSL broadcasting station, gave an excellent address on "Appreciation of Radio." He said a more optimistic outlook should be taken by dealers who should point out what wonderful programs are really on the air. The spirit of business depression, he said, would pass much sooner if no one admitted it was here.

He called attention to the service given by radio stations and asked for co-operation of all concerned in furthering radio. KSL is making a hard fight for a 50,000 watt station, and Glade has not given up hope that this city will yet get it.

A large turnout of members was present. G. M. McDonald, president of the association, presided. The association is functioning during the summer months and speakers will be chosen to pep up the members. New interest has been installed by the new administration, and the membership committee reported splendid results and the last meeting proved their work was well rewarded.

Hendricks Store Moves

Hendricks & Company, Graybar radio dealers and electricians, have moved to 7617 Woodland Park Ave., Seattle. The company has been in business for four years.

TROJAN • R A D I O S •

"The Best Yet in a Baby Midget"



*Five-Tube Set
Pentode-Variable-Mu*

LIST

\$49⁵⁰

SPECIAL

TO DEALERS DURING
THE SUMMER

\$18⁹⁵

The BEST SET for the Money on the Market!

This is not a plaything, but a real radio, using two Variable Mu, one 224, one Pentode and one 280 tube, fully shielded. Full size Dynamic Speaker. Will bring in distant stations equal to most seven and eight tube sets.

We also make a six-tube set listing at \$59.50 and an eight-tube listing at \$69.50. Also both of these models in consoles at \$79.50 and \$89.50.

Discounts That Are Right!

Trojan Factories, Ltd.

5862 So. Hoover St.

Los Angeles, Calif.

Music and Radio Headquarters at SAN FRANCISCO'S

(New Half Million Dollar Hostelry)



HOTEL ROOSEVELT

JONES at EDDY

Every Room with Bath and Shower

Single - - - - -	\$2.00 & \$2.50
Double - - - - -	\$3.00 & \$3.50

SUITES AND SPECIAL ACCOMMODATIONS
FOR FAMILIES

Convenient to Theatres and Shops
Radio Connections in Rooms
Spacious Lobby and Mezzanine

Garage Under Same Roof

Indorsed by the

NATIONAL AUTOMOBILE ASSOCIATION

Write for Illustrated Folder

Management of RENE A. VAYSSIE

LOS ANGELES



"THE VERY
CENTRE OF
EVERYTHING"

INTERNATIONALLY
FAMOUS

HOTEL

CORNER FIFTH &
SPRING STREETS

ALEXANDRIA

The Alexandria Hotel is an affiliated unit of
The Eppley Hotel Cos 20 Hotels in the Middle West
Louisville, Ky. and Pittsburgh, Pa. and the
Hamilton Chain of Hotels in California.

E. C. EPPLEY CHARLES B. HAMILTON
President Vice-President & Managing Director

CHICAGO OFFICE 520 N Michigan Ave.
Suite 422 Phone—Superior 4416

ATKINSON SERVICE

RATES
SINGLE WITH BATH
\$3 to \$8
DOUBLE WITH BATH
\$4 to \$10
ATTRACTIVE WEEKLY
MONTHLY AND
RESIDENTIAL RATES

WELCOME TO NEW YORK

The HOTEL GOVERNOR CLINTON

31^{ST.} ST. AND 7^{TH.} AVE.

opposite PENNA. R.R. STATION



A Preeminent Hotel of
1200 Rooms each hav-
ing Bath, Servidor, Cir-
culating Ice Water and
many other innovations.

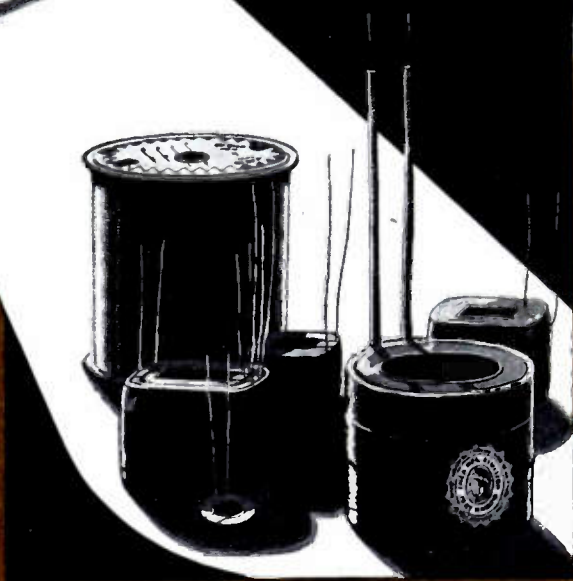
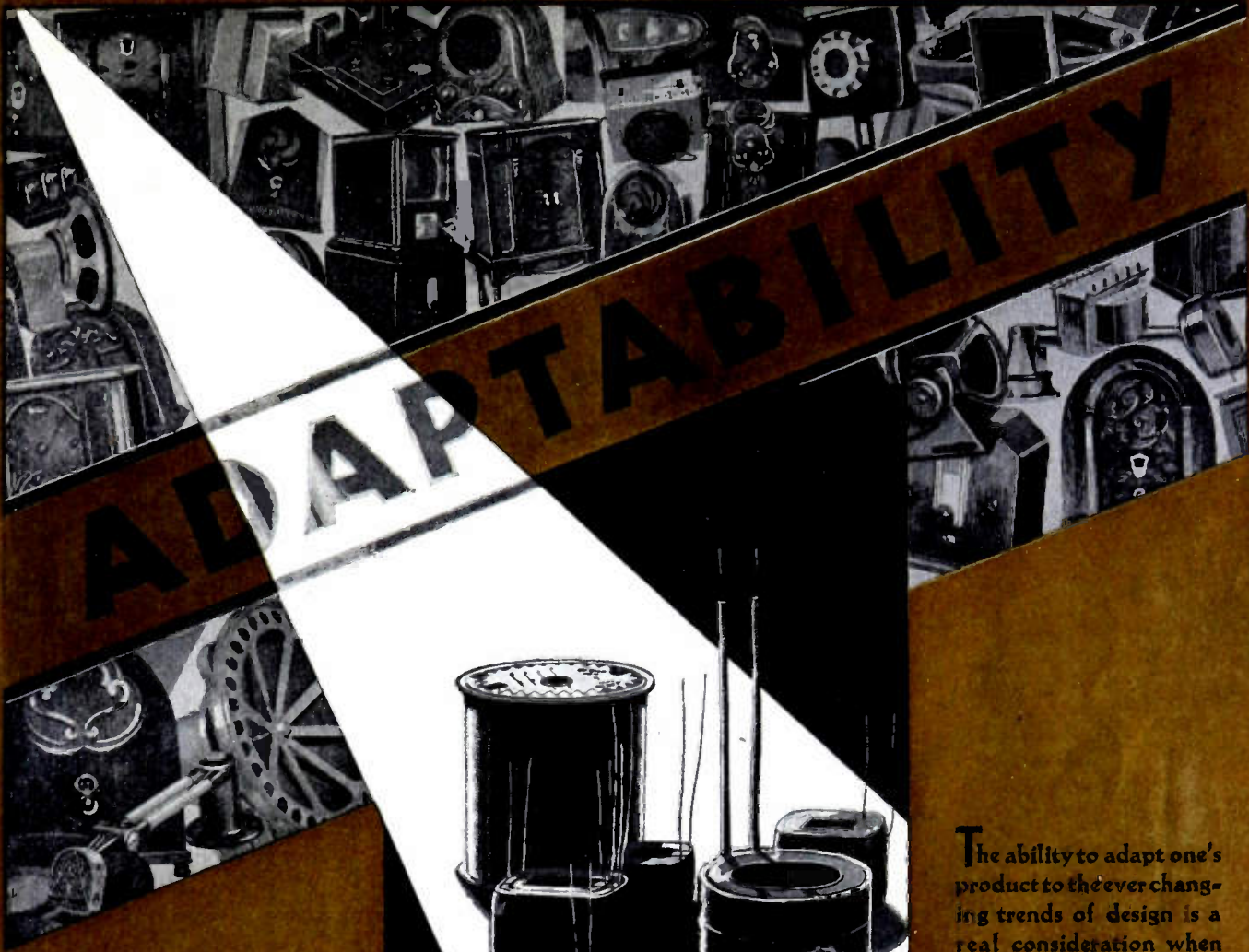
E. G. KILL, General Manager.

ROOM AND BATH \$3.00

The way to put over sales these apathetic days, is to arouse interest by some sort of promotional stimulant—and to puncture the prospect's resistance with sharp talking points. But you salesmen must know your talking points.

Handwritten notes:
The Governor Clinton
Room and Bath \$3.00

ADAPTABILITY



The ability to adapt one's product to the ever-changing trends of design is a real consideration when the manufacturer in the radio industry is selecting his source of supply for coils.

The Incas' ability to adapt themselves to the difficulties of the Peruvian terrain is only one instance of their indomitable racial character. To build such a terraced farm as illustrated required the laying of nearly 700 patches of stone and the handling of nearly 5,000 tons of soil for each acre reclaimed.



Inca's position is unique. With the latest equipment in the industry, with an experience that only pioneers can acquire, with research and engineering facilities second to none . . . Inca is leading, not merely following the progress of the radio industry . . . particularly wherever a coil is involved.

Each change in radio design finds Inca prepared. Each change finds Inca's customers secure from the uncertainty of unauthoritative or obsolete coil design.

Inca enameled wire makes well designed coils still better . . . because no coil can be better than the wire in its windings.

INCA MANUFACTURING DIVISION



Symbolic of the best in copper wire products.

Central Office and Factory:
Fort Wayne, Indiana.

Eastern Office: 233 Broadway,
New York, N. Y.

of NATIONAL ELECTRIC
PRODUCTS CORPORATION

1547 Venice Blvd., Los Angeles

The New Gilfillan Super-Heterodyne Will Help You Build Business At a Profit



MODEL 110 LOW BOY
8-Tube Super-Heterodyne

ENCASED in a strikingly artistic cabinet, the sensational new Gilfillan 8-tube Super-Heterodyne Radio puts the dealer in a position to attract new business and to do so at a real profit.

As might be expected of a Gilfillan product, it is outstanding in its performance. It is extremely selective — unusually sensitive. The set has wonderful tone. It is easy to tune, unusually smooth and quiet in operation. All these points are important and attractive to the layman.

And here's a further rich source of business—You can sell the new Model 110 Chassis (without cabinet) at an attractive figure. Thus you open up an entirely new market of buyers who have invested considerable money in fine cabinets, which they don't care to throw away. They can now bring their radio sets up to date—can enjoy the latest and best in radio entertainment at the lowest possible cost.

Write or wire us today for our proposition on this sensational new model. Then you can see for yourself what it offers you as a business-builder and profit-maker.

Gilfillan Bros. Inc.,
1815 Venice Blvd., Los Angeles

San Francisco Portland Seattle
1315 Howard St. A. S. Cobb 100 Elliott Ave. W
Care Rudie Wilhelm
Warehouse Co.
Eighth and Everett Sts.