

RADIO

REG.
U.S. PAT.
OFF.

THE NATIONAL TRADE MAGAZINE

DECEMBER, 1931

TRIAD

TONE PURITY

is a revelation in reception quality

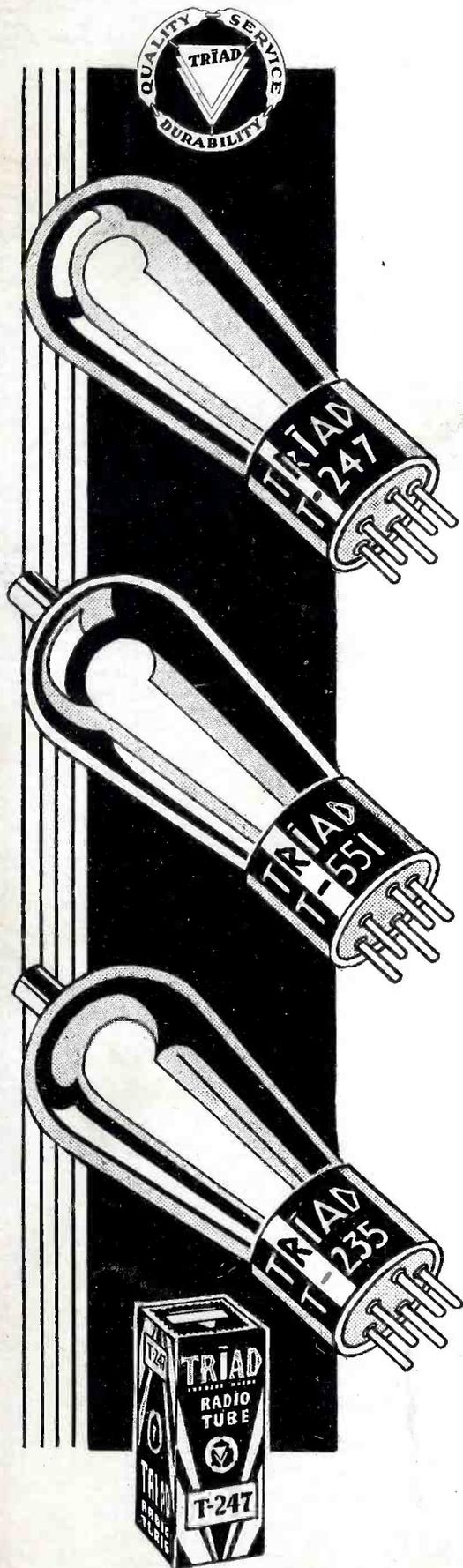
Triad tubes give true-tone, distortionless reception that introduces a new richness in tone values—and is the very nearest approach to sound quality at the source of the broadcast. We believe that these three tubes set aside all previous standards of reception and achieve a perfection never before attained.

Triad Tubes are quick heating and their rugged construction provides filament protection that is the best assurance of uniform quality and long life.

TYPE T-247, THE NEW *DEPENDABLE* PENTODE HAS AN EXTREMELY HIGH AMPLIFICATION FACTOR COMBINED WITH A VERY HIGH POWER OUTPUT, INCREASING SENSITIVITY WITH A GAIN IN VOLUME OVER THE 245 TYPE POWER TUBE.

Type T-551 eliminates cross talk and distortion and reduces static to a minimum. It can replace type 224 in most present circuits with decidedly beneficial results.

Type T-235 has characteristics of the 224 type, with additional feature of a plate current grid voltage curve that makes it adaptable for use in automatic control circuits by virtue of its low percentage of distortion at a very high grid bias.



Licensed under patents of Radio Corp. of America, General Electric Co. and Westinghouse Electric & Manufacturing Co.

TRIAD MANUFACTURING CO., Inc.

PAWTUCKET, RHODE ISLAND

PACIFIC COAST SALES OFFICES—R. J. Noel Co., 800 E. Gage St., Los Angeles, 704 Larkin St., San Francisco, 1518 1st Ave. South, Seattle, Wash.

An announcement of tremendous importance to the radio music industry

●
BRUNSWICK *announces*

that its laboratories have been concentrating for a long time on the development of new instrumentalities—instrumentalities that will be unique—that will interest the buying public—that will command and justify higher unit prices to the consumer—that will permit the dealer to sell “up” not “down”.

●
BRUNSWICK *anticipates*

the opportunity to publicly announce, within three or four months, the final perfection of these new instrumentalities, whose introduction will have far-reaching consequences in the trade.

●
BRUNSWICK *is confident*

that these new instrumentalities will materially broaden profit opportunities and promote higher standards of merchandising in the Radio Music Industry—and that their sale can be profitably harmonized with currently-known radio products.

●
BRUNSWICK *thanks*

its dealers for service and loyalty that transcends ordinary business ethics—and assures them that they will have the first opportunity to profit by the new instrumentalities developed in our laboratories.

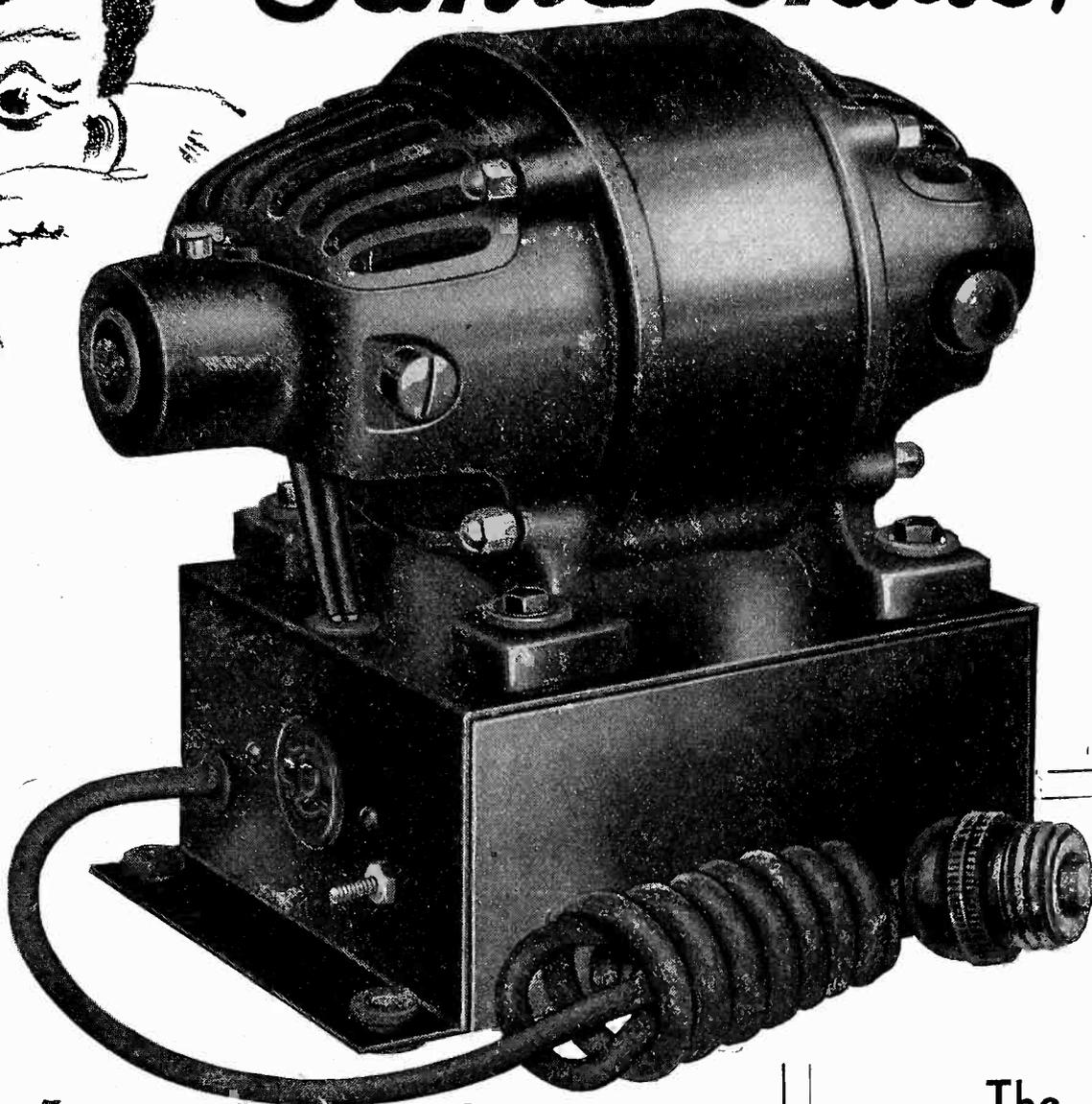
BRUNSWICK RADIO CORPORATION

DIVISION OF WARNER BROTHERS PICTURES, INC.

120 WEST 42nd STREET, NEW YORK, N. Y.



"There is a Santa Claus!"



Say Radio Dealers, Jobbers *and* Manufacturers

The Janette DC-to-AC Converter presents them with a vast new AC receiver market.

National advertising has created a desire for modern AC sets in the minds of more than half a million people living in homes wired for DC—Janette makes it possible to cash in on this vast market with AC equipment. The Janette Rotary Converter is a high grade product selling at a price low enough to make AC radios attractive to those who might otherwise have to content themselves with battery radios. Its operation and filtering are

perfect . . . there is scarcely a trace of ripple or interference in the receiving set. Changes 32, 115 or 230 volts D.C into 110 volts, 60 cycles, A.C.

A lot of old-fashioned battery sets are going to be discarded this Christmas—especially on farms. Are you going to be one of the many who profit both on the AC sets and Janette Converters for replacement? Send the coupon for full information.

The
JANETTE
Rotary
Converter

Type
CA-20-F
(110 Watts)

**Only
\$49.50**

List

\$2.00 Extra for 230 volts

JANETTE MFG. CO.

557 W. Monroe St., Chicago, Ill.

Singer Bldg., 149 Broadway, New York, N. Y.

Real Estate Trust Bldg., Philadelphia, Pa.

Harrison Sales Co., 314 Ninth Ave., N., Seattle, Wash.

Lombard Smith Co., 324 N. San Pedro Ave., Los Angeles, Calif.

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

Please send me full information and discount on your Type CA-20-F Rotary Converter for () 32 volts, () 115 volts, () 230 volts.

Name.....

Address.....

City and State.....

25c the Copy

ESTABLISHED
1 9 1 7

RADIO

REGISTERED
U. S. PAT. OFF.

\$2.00 the Year

Volume 13, Number 12

THE NATIONAL TRADE MAGAZINE
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NOW
THE NEW
CUSTOM-BUILT CROWN
WITH THE
SENSIBLE DIAL

The new "SENSIBLE" dial now used on the "Multi-Tone" CROWN is numbered from 0 to 100 and without the use of K.C. frequencies on the dial, stations can be located almost instantly. It's different and a new sales help. Here is quality merchandise that you can sell to your customers with absolute assurance of sustained satisfaction.



A genuinely good radio at an attractive price; a laboratory tested precision instrument. The "Multi-Tone" CROWN sets a new standard of radio value. Long life with a minimum of upkeep is assured by the use of only the best of nationally known materials, an improved circuit and sturdy chassis assembly. A five-tube receiver with pleasing tone, selectivity and coast to coast DX ability.

UNUSUALLY LARGE DISCOUNTS TO DEALERS
CUSTOM BUILT RADIO COMPANY
4267 So. Vermont Ave., Los Angeles, Cal.

Yes, there IS
a Santa Claus
..... thanks to
your patronage



●

WENGER - BRILL CO. thank you for your patronage throughout the year which is now drawing to a close. It has been a successful 1931 for us, all because of the faith which you have expressed in us, and in the merchandise which we offer for sale. Two short years ago we were unknown in the radio trade. Today we enjoy one of the largest jobbing businesses in Northern California. We strive to serve you . . . and to serve you well. Your problems are ours. We sell you only such merchandise as you can sell. Those of you who have not yet acquainted yourselves with our service are invited to ask that a representative call on you. And to you all we extend our sincere appreciation for what YOU have done to aid US in our growth. *Christmas Greetings to You . . . and Prosperity in 1932.*

WENGER

BRILL CO.

1020 OAK STREET

OAKLAND, CALIF.

Phones: GLencourt 1020 and 4227

Tell them you saw it in RADIO

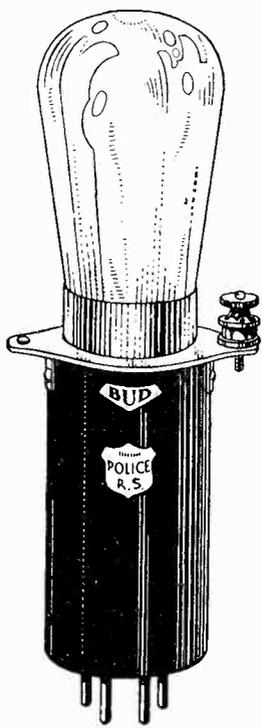
Every Dealer and Jobber Can Sell the New

BUD

POLICE THRILLER

WHAT A THRILL TO GET POLICE CALLS AND PERHAPS WITNESS A DARING ROBBERY OR PICK UP SOME OTHER EVENT WHICH NEVER APPEARS IN PRINT!

BUD POLICE THRILLER fills a long wanted need for a simple device that can easily be attached to the radio set without the necessity of changing any wiring in the set or incurring any expense other than the price paid for BUD POLICE THRILLER.

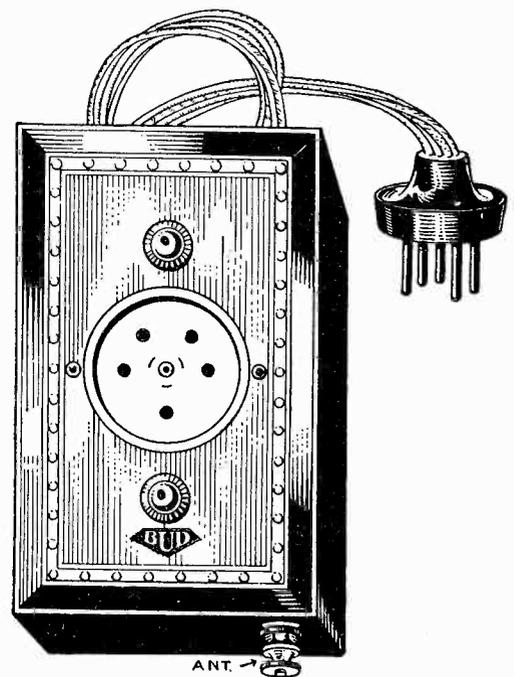


Price \$2.50

No. 2400 for sets using screen grid detector tubes. No. 2700 for sets using 227 or 327 detector tubes.

BUD POLICE THRILLERS are made in two types. One type is to be used where there is ample space for the adapter and tube to fit into the socket. This type is known as our Catalog No. 2400, which is for Screen Grid Detector, and No. 2700, which is for sets using No. 227 or 327 Tubes for Detectors. The other type is to be used where the cabinet of the radio set is so constructed that the No. 2400 or 2700 Police Thriller would not fit in because of insufficient space in cabinet. Because of this we have designed our No. 2401 and 2701, which has a plug attached to the Police Thriller. This plug is to be placed into Detector Tube Socket.

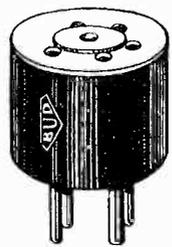
BUD POLICE THRILLER when connected to broadcast receiver changes the tuning from 80 to 200 meters on the broadcast receiver. This will enable you to bring in amateur broadcasts in addition to Police Calls.



Price \$3.50

detector tubes.
No. 2401 for sets using screen grid detector tubes. No. 2701 for sets using 227 or 327

Instruction for operation of BUD POLICE THRILLER in broadcast receiver is printed on each box in which BUD POLICE THRILLER is packed.



No. 123

Enables the Radio Set owner to modernize his Radio Set. All that is necessary is to remove the 245 or 345 Power Tubes from Radio Set, and insert in their place

BUD 45 to PENTODE ADAPTER. Then place Pentode Tube in Adapter. No wiring changes are necessary.

No. 123 BUD 45 to PENTODE ADAPTER \$1.00

BUD RADIO, Inc.

1923 East 55th St., Cleveland, Ohio.

Ship the following BUD RADIO items at once. I enclose 25% deposit and will pay balance on receipt of C.O.D. shipment:

Name.....
Address.....
City and State.....

Send this coupon at once for your sample stock!!

Ask for circulars describing the entire BUD Radio Line.

BUD RADIO, Inc.

1923 East 55th St.

Cleveland - - - Ohio

Tell them you saw it in RADIO

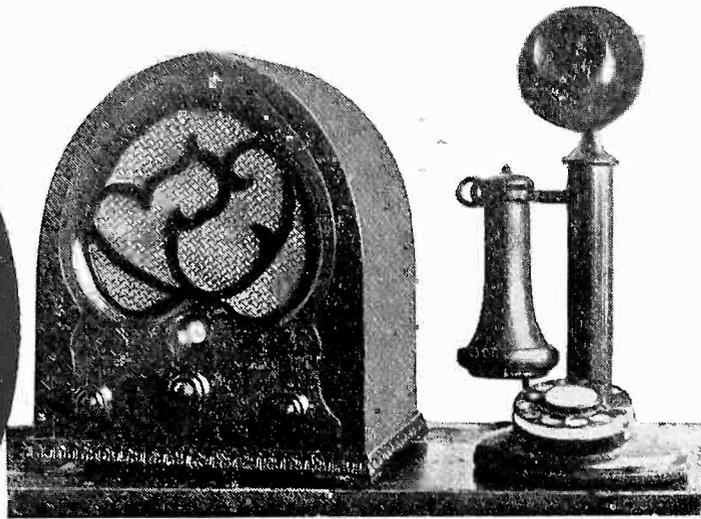
PARAMOUNT Radios SELL THEMSELVES

Sold
Direct to Dealers
at a Net Price of

\$13.95

WITH
ARCTURUS
TUBES

Cash With Order



PARAMOUNT
"KEWPIE"

Retail Price
\$29.95

Volume production makes this price possible. This radio is strictly quality from the cabinet to the tubes and is fully guaranteed for three months including tubes.

The Smallest Radio Made

Size 9³/₈" High, 7¹/₂" Wide (inside measurements)

1932 FEATURES - - - SELL ON SIGHT

1 Pentode Tubes

Equal to 2-245 plus 1-227. This radio, smallest in size, incorporates the new pentode tube.

2 Full Dynamic Speaker

Perfect tone quality.

3 Screen Grid Circuit

Using 2 screen grid tubes to their utmost efficiency.

4 Tone Control

The sales talking point of 1931. We use the new full range control.

5 Selectivity Plus Distance

We have reports of distance of 1500 miles.

6 Quality All Through

Steel chassis, cadmium plated, oversized power transformers (shielded), heavy service resistors, electrolytic, self-healing filter condenser. Cornell oversized bypass condenser and many features found only in high priced sets.

Fully Guaranteed for Three Months

We Also Manufacture the Following

11 tube superheterodyne chassis with 12-inch Utah dynamic speaker, and Arcturus tubes, \$31.50 net.

10 tube superheterodyne midget, \$69.50 list.

9 tube all-wave superheterodyne midget, \$79.50 list.

7 tube superheterodyne midget, \$49.95 list.

5 tube midget, full visioned dial, net \$16.95 with tubes or \$15.95 in quantities of 12.

PROFITS: Our discounts are large and allow you ample margin of profit to advertise.

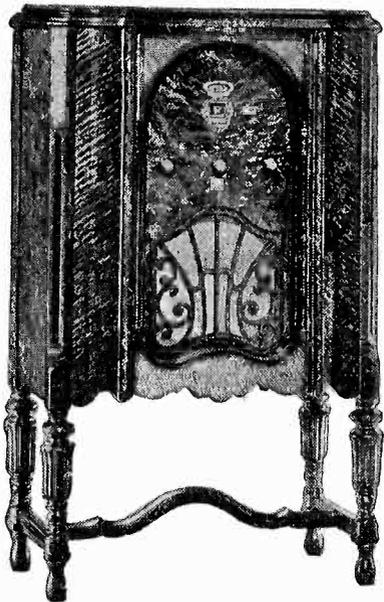
Member of
Los Angeles
Chamber of Commerce

LOS ANGELES RADIO MFG. CO.
3681 So. San Pedro Street
Los Angeles, Calif.

Manufacturers of
Quality Radios
Since 1925

Tell them you saw it in RADIO

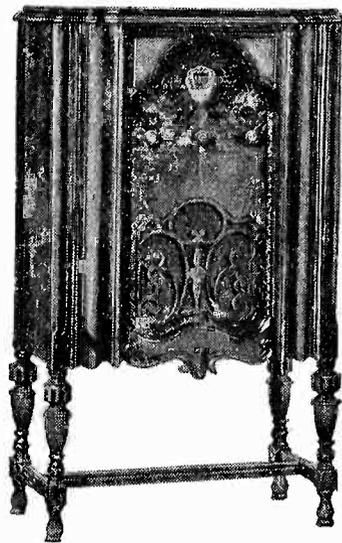
PERFORMANCE COUNTS!



Sentinel No. 118 Ten-Tube Superheterodyne Console, with Automatic Volume Control and Tuning Meter—The utmost in radio performance. Exclusive refinements in superheterodyne design as well as the most modern engineering developments. Tone control. Oversize electrodynamic speaker. Cabinet with matched burl walnut instrument panel, overlays of maple, and side pilasters of flaked oriental wood; measures 44½ in. high, 36 in. wide and 14½ in. deep.

LIST PRICE
99⁵⁰

Complete with Tubes



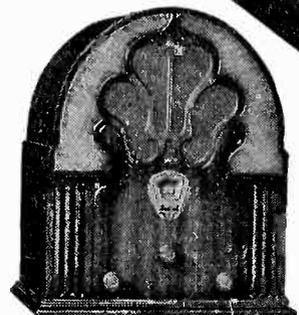
Sentinel No. 114 Nine-Tube Superheterodyne Console, with Automatic Volume Control—A superb combination of Sentinel performance and cabinet beauty. Tone control. Tapped-field electrodynamic speaker. Cabinet main panel of center-matched burl walnut with maple overlays, striped walnut sides; 41 in. high, 23 in. wide, 12½ in. deep. Complete with tubes

79⁵⁰



Sentinel No. 108B Seven-Tube Superheterodyne Lowboy—Full-toned performance in a medium sized cabinet of the most modern design. Measures 38 in. high and 21 in. wide. Tone control. Dynamic speaker. List price, complete with tubes

64⁵⁰



Sentinel No. 108B Seven-Tube Superheterodyne Table Model—Here is Sentinel 108B performance in an attractive table model made of striped walnut with maple overlays. Measures 17 in. high and 15 in. wide. Dynamic speaker, Tone control. List price, complete with tubes

52⁵⁰



Sentinel No. 116 Five-Tube Superheterodyne Table Model—The most recent development. Establishes new standards of performance and value in small sets. Tone control. Dynamic speaker. Walnut cabinet, 16 in. high and 13 in. wide.

39⁹⁵

Complete with Tubes

LICENSED BY R. C. A. AND ASSOCIATED COMPANIES

Sentinel performance is making substantial profits for distributors and dealers. Full discounts on all models. You can demonstrate and sell these models with absolute confidence. Furnished as complete sets, or chassis only. Wire or write for sample sets and for detailed information.

SENTINEL RADIO DIVISION

UNITED AIR CLEANER CORP.

9705 Cottage Grove Ave., Chicago, Ill.

Sentinel
SURPASSING RADIO PERFORMANCE

All Superheterodynes — The Very Latest in Radio Development. Equipped with Pentode and Variable - Mu Tubes.

STONE QUALITY-SELECTIVITY-SENSITIVITY-CONSTRUCTION

Patterson SUPER-HETERODYNE

RADIO'S GREATEST VALUE!



MODEL 200 Lowboy Console with Patterson 9-tube chassis and Magnavox 12-inch Dynamic Speaker. 36½ inches High, 23 inches Wide, 14 inches Deep

\$59⁵⁰
WITH TUBES

MODEL 210 . . . Same as above with Patterson 10-tube chassis

\$69⁵⁰ WITH TUBES



Compact Model with Patterson 8-tube Chassis and 8-inch Magnavox Dynamic Speaker — 16½ inches high—14½ inches wide—10 inches deep.

\$49⁵⁰
With Tubes

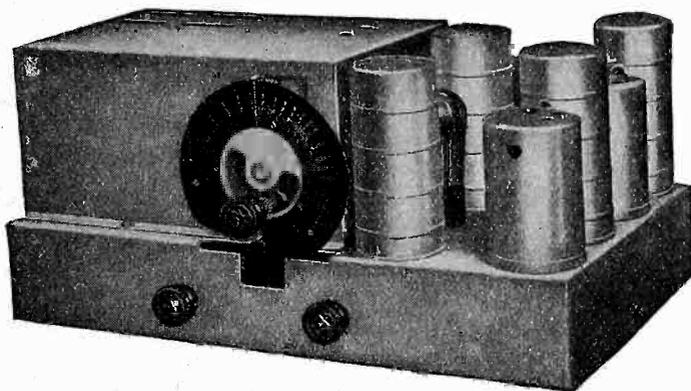


MODEL 500 Lowboy Console with Patterson 9-tube chassis and Magnavox 12-inch Dynamic Speaker. 43½ inches High, 25 inches Wide, 14 inches Deep

\$79⁵⁰
WITH TUBES

MODEL 510 . . . Same as above with Patterson 10-tube chassis

\$89⁵⁰ WITH TUBES



IMPORTANT

Do not confuse the PATTERSON with the innumerable so-called midgets now on the market. Patterson has been building quality radios since 1920. They are guaranteed equal in performance, quality of material and eye appeal to any radio selling for twice the Patterson list. Remember this, "there is no substitute for quality."

FEATURES

- AUTOMATIC VOLUME CONTROL**
(To Counteract Fading)
- PUSH-PULL PENTODE TUBES**
- VARIABLE HI-MU TUBES**
- FULL VISION DIAL**
(Calibrated in Kilocycles)
- SHADOW LINE TUNING**
- GRADUATED TONE CONTROL**
- TEN TUNED CIRCUITS**
- FOUR GANG CONDENSER**
- BAND PASS FILTER**
- COMPLETELY SHIELDED**
- MAGNAVOX DYNAMIC SPEAKER**
- FINE WALNUT CABINETS**

The New **PATTERSON SUPER-HETERODYNE** represents the last word in radio development . . . deliberately built to compete with the highest price receivers on the market.

Note the rugged chassis. It is Cadmium Plated, single unit design. Size 17 inches wide, 10½ inches deep and 8 inches high. A special full floating four-gang condenser is used. Single dial control, full vision. Totally shielded, insuring complete elimination of outside interference.

Write, Wire or Telephone for Information

PATTERSON RADIO COMPANY

1320 S. Los Angeles Street

Los Angeles

Manufacturers

Since 1920

Tell them you saw it in RADIO

SUPREME INSTRUMENTS CORPORATION,
424 Supreme Building,
Greenwood, Mississippi.

SUPREME DIAGNOMETER AAA1
SUPREME SET ANALYZER MODEL 90
SUPREME MODEL 60
SUPREME MODEL 40
SUPREME MODEL 70

Please send me full particulars on

Name.....
Address.....
City..... State.....
Jobber's Name.....
City..... State.....

B e a

C o u p o n C l i p p e r

THIS one can bring real dividends from better service.
Sign and mail it.

PREPARE yourself for the challenge of 1932—the call
for modern, perfect service—"Supreme" service. Let
this coupon bring complete details on Supreme 1932
Testing Equipment, including the instrument that has set
the whole service world agog. Complete . . . handy . . .
versatile . . . positive . . . almost beyond belief—

SUPREME DIAGNOMETER AAA1

5 Ultra-modern essential
testing instruments in **1**

Super DIAGNOMETER plus
Shielded OSCILLATOR plus
Advanced TUBE TESTER plus
OHM-MEGOHMMETER plus
CAPACITOR TESTER

Ask Your Jobber for
Demonstration

ALL leading jobbers can demonstrate the economy and
investment value of SUPREME TESTING IN-
STRUMENTS. If yours can't, indicate on coupon what
instrument interested in and name of jobber.



Smaller, lighter, handier
case. A combined test panel
and portable lab. Mounts
on the wall as easily as re-
moving the lid.

Dealers' Net Price
f.o.b. Greenwood,
Miss.

\$147.50

Yours for "SUPREME SERVICE" in 1932

Model 90 Supreme Set Analyzer		\$78.50
Model 60 Supreme Oscillator	Dealers' net price f.o.b. Greenwood, Miss.	\$30.00
Model 70 Supreme Oscillator		\$49.75
Model 40 Supreme Tube Checker		\$30.00

*Distributors in all principal cities
Foreign Division 130 West 42nd St., New York City
Cable address: Lopreh New York*

A Mighty 6 Tube Midget

MAGNIFICENT TONE AND APPEARANCE . . .
 COMPLETE WITH SIX CUNNINGHAM TUBES.
 PENTODES IN PUSH-PULL.
 FULLY LICENSED

Fully licensed under
 R. C. A., Hazeltine-Latour Patents

\$19⁷⁵ NET PRICE
 with 6
 Cunningham
 Tubes

Order Now for Xmas!
 Immediate Deliveries!

Sell these sets at your own list price. Wire for your initial shipment today. Get a sample set NOW. This is one of the best buys in the field. The values are exceptional.



A Console for \$26.50 Net

COMPLETE with six Cunningham Tubes. Push-Pull Pentodes. Licensed by R. C. A. Colonial cabinet as illustrated at right. \$26.50 net, with six Cunningham tubes.

• • •

GRANDFATHER'S CLOCK, shown at left: Same chassis as console. Finely made electric clock. Sold to you for \$33.50 net, with six Cunningham tubes. R. C. A. licensed.



Grandfather's Clock. 6 Tube
 Set. 2 Pentodes.

\$33.50 Net

With Tubes

6 Tube Console. Push - Pull
 Pentodes. Cunningham
 Tubes.

\$26.50 Net

Orders for the holiday season can be filled immediately. Telegraph your order NOW. Wire us your 50% deposit.

SENT C.O.D. IF 50% DEPOSIT ACCOMPANIES ORDER. IMMEDIATE DELIVERIES.

EMPIRE RADIO CO.

580 MARKET STREET

SAN FRANCISCO, CALIFORNIA

Tell them you saw it in RADIO

The Reason for S-M Dealers' Prosperity

Silver-Marshall dealers are selling more receivers in 1931 than they were in 1929. Because—

Silver-Marshall superheterodynes are the only nationally known receivers being sold direct to dealers.

Silver-Marshall has an exclusive ten dollar system to cover trade-ins and time-payments, so that they do not come out of the dealer's pocket.

Silver-Marshall models are lower priced than any other quality set—yet the dealer can name his own profit.

Silver-Marshall makes no effort to overstock its dealers.

Silver-Marshall superheterodynes are sold to all the largest accounts in the country, yet the smallest dealer has the same merchandise to sell at the same price.

Half a million dollars has been spent in the last five months to advertise Silver-Marshall radios.

Silver-Marshall dealers are protected.

Write NOW for full information on the complete line.

6415 West 65th Street, Chicago
Export: 41 Water Street, New York City

SILVER-

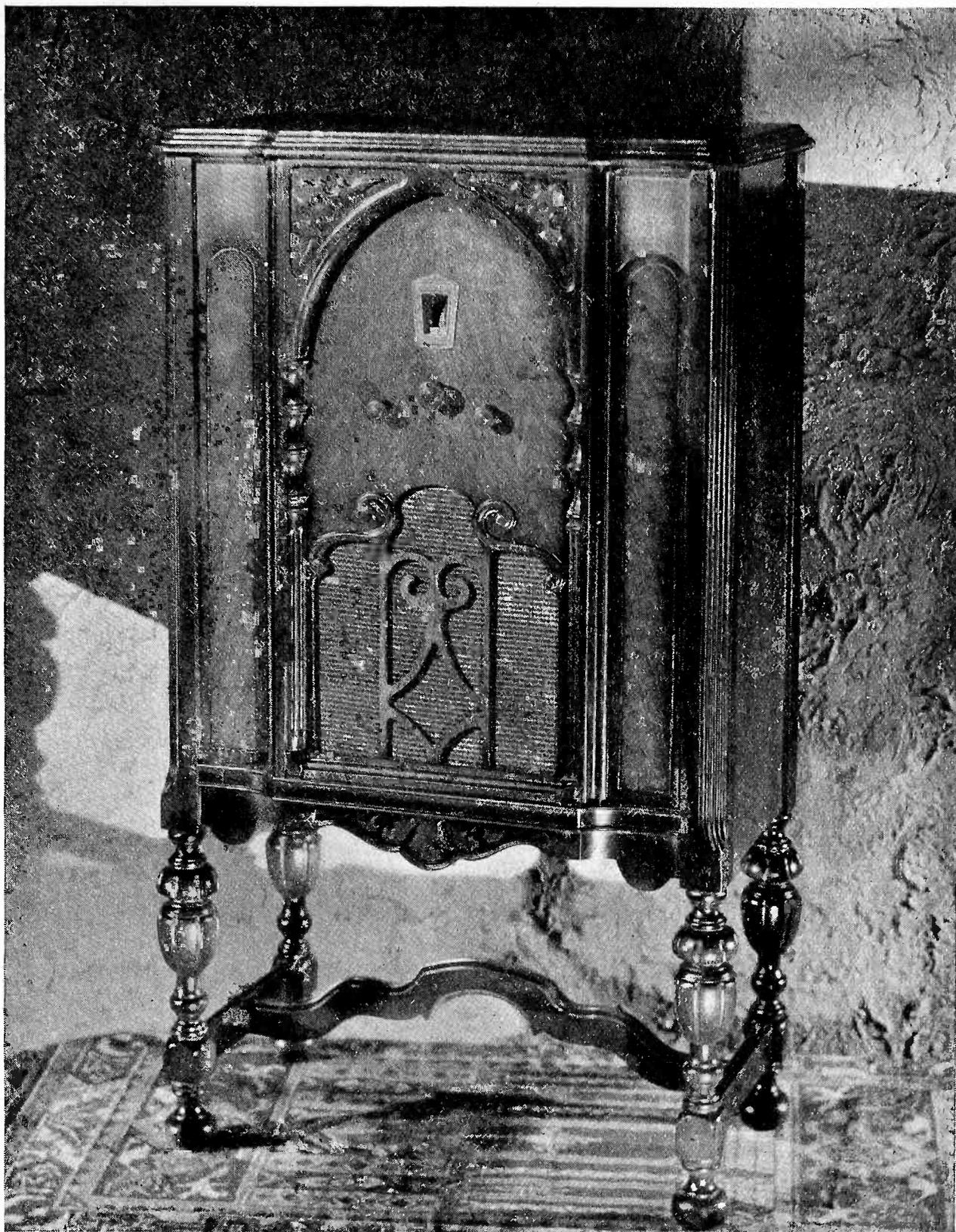
9

TUBES

\$69⁹⁵

COMPLETE

•
BECAUSE
IT IS SOLD
DIRECT
TO
DEALERS
•



9-TUBE CHASSIS that will not be outperformed (Model D-18).

2 PENTODE TUBES in push-pull.

3 VARIO-MU TUBES.

SUPERHETERODYNE circuit of the most modern type.

•
TONE CONTROL, completely variable.

SELECTIVITY is absolute 10 kilocycle.

SENSITIVITY is from 1 to 2 microvolts per meter.

10¹/₂" DYNAMIC SPEAKER of special design.

Eveready Raytheon 4-pillar tubes.

42" CARVED WALNUT CONSOLE cabinet.

MARSHALL

Canadian Division:
75 Sherbourne St., Toronto

Radiotorial Comment

By The Editor

MOST buyers of radio sets were first sold on the idea of radio itself and then sold on a specific instrument for receiving radio programs. The same plan has been used with marked success in the sale of other specialties, such as electric refrigerators. The buyer is usually half sold before he or she enters the store. The sales appeal of radio is as a provider of entertainment in the home.

All of this is "old stuff" to the progressive radio dealer. Yet it is being overlooked in the sale of short wave sets, which are still being sold as instruments and not as a means of entertainment for anyone except the long-distance fan. Yet it is capable of providing more real thrills than are found in any of the regular programs.

These thrills come from police radio stations which have been established in almost every city in the country. A bank has been held up. Long before the first extra is out, the news is flashed from the police radio station to be picked up by the police cars. The bandits are described, the direction of their flight is given, the number and make of their car. Then follow instructions for their capture. Anyone can listen in,—with a short wave set or attachment. All the sensational police news which "makes" the first page of the morning paper, murders, hold-ups, thefts, are on the air hours before they are in print. They are not in code but in policeman's English.

But how few dealers are cashing in on the opportunity to sell this kind of entertainment! It has a more universal interest than has music or sports. Sell the customer on the thrill of following the police station broadcasts. In other words, sell the news of crime in the making. It is not artistic, it is not esthetic, but it does appeal to primal human instincts. There is a ready market for any device whereby the receiver can be tuned to a wavelength where you can almost hear the report of the policeman's gun instead of the blah of the announcer's voice.

Already there are nearly a hundred police broadcasts on the air between 120 and 180 meters. More are being added every month. The most jaded radio listener will get a "kick" out of them.

"TAKE NOTICE," says John Milton, Esq., receiver for the Perryman Electric Co., Inc., "That pursuant to an order of the Court of Chancery, dated the 4th day of November, 1931, wherein The Engineering Co., Inc., a corporation, is complainant, the creditors of Perryman Electric Co., Inc., are to file their claims with the receivers within one month from date hereof or they may be excluded from the benefit of such dividends as may thereafter be made and declared by this court upon the proceeds of the effects of said corporation."

All of which means that another pioneer in the radio industry . . . a company which built and built well, has passed into the hands of receivers after many long years of successful and honorable service to the radio trade.

"RADIO" regrets the passing of this good old name in radio.

Perryman contributed much to the advancement of the art. But, evidently, the present unsettled conditions in the tube business and the prices at which these Aladdin lamps are being sold appears to have helped to put the seal of legal action on the papers which may mean the passing of the Perryman Company from the field of tube manufacturing. "RADIO" hopes that the genius of the Perryman folks will again appear when tubes for television will open up a new field of profits and thrills.

REGRETFULLY do we learn of the death of two of radio's most likable and respected characters. Tom Gray, one of the owners of Gray and Danielson Manufacturing Company, makers of Remler receivers, passed into the great beyond a few weeks ago, after an illness of but two days. He was one of the founders of the Remler Company, 'way back in the days before the war. He and Ernest Danielson built the first line of meritorious parts for amateur radio receivers as originally sold by Elmer T. Cunningham.

From the other end of the nation comes the report of the untimely death of Francis R. Ehle, president of the International Resistance Co., of Philadelphia, Pa. He was killed in the crash of a high-speed air liner at Central Airport in Camden, New Jersey. His death has shocked the entire industry.

Stromberg-Carlson Telektor System Is New Conception of Radio

TELEKTOR Systems, providing complete control of both radio and records, have been perfected by the Stromberg-Carlson Telephone Manufacturing Company of Rochester, N. Y.

By push buttons in a small control box, one may, from any part of the house,

Start or stop a radio receiver.

Start or stop a multi-record phonograph at the same time switching from radio to phonograph, or vice versa.

Tune silently and automatically to any of eight favorite stations.

Tune silently and visually (meter tuning) to other stations.

Adjust radio volume.

Adjust phonograph volume.

Switch any of four loud speakers on or off.

Switch off radio, loud speakers and phonograph all by one button.

Through an affiliated company, Stromberg-Carlson has had six years' experience in manufacturing remotely controlled sound systems for universities, churches and large estates.

The new Telektor Systems have been developed with simplified design to meet requirements of the average home and to give owners of that type of dwelling a radio system which compares in quality and operating efficiency to those designed for larger homes and institutions.

The new system may consist of radio and phonograph units in separate console cabinets or in combination cabinets; or one or both may be concealed from view. With the provision of complete remote control of an entire system, the radio receiver loses its claim to a place in the living room

and may be installed in any dry place in the attic, basement, garage or a convenient closet or cupboard.

Telektor control boxes are equipped with ten foot or thirty foot flexible cords. The portable type of control box is 10 inches by 3 $\frac{3}{4}$ inches by 2 $\frac{1}{2}$ inches in size, made of walnut, with

forming each operation of the system and an instruction label adjacent to each button clearly designating the use of that button, so that no other instructions are needed to operate the system. The pilot lamps not only tell when the system is in use but all lamps indicate by dimming when any one is operating a Telektor box.

The No. 28-A Stromberg-Carlson relay controlled electro dynamic speaker, housed in a walnut cabinet just large enough to provide ample baffle area, may be used with the system.

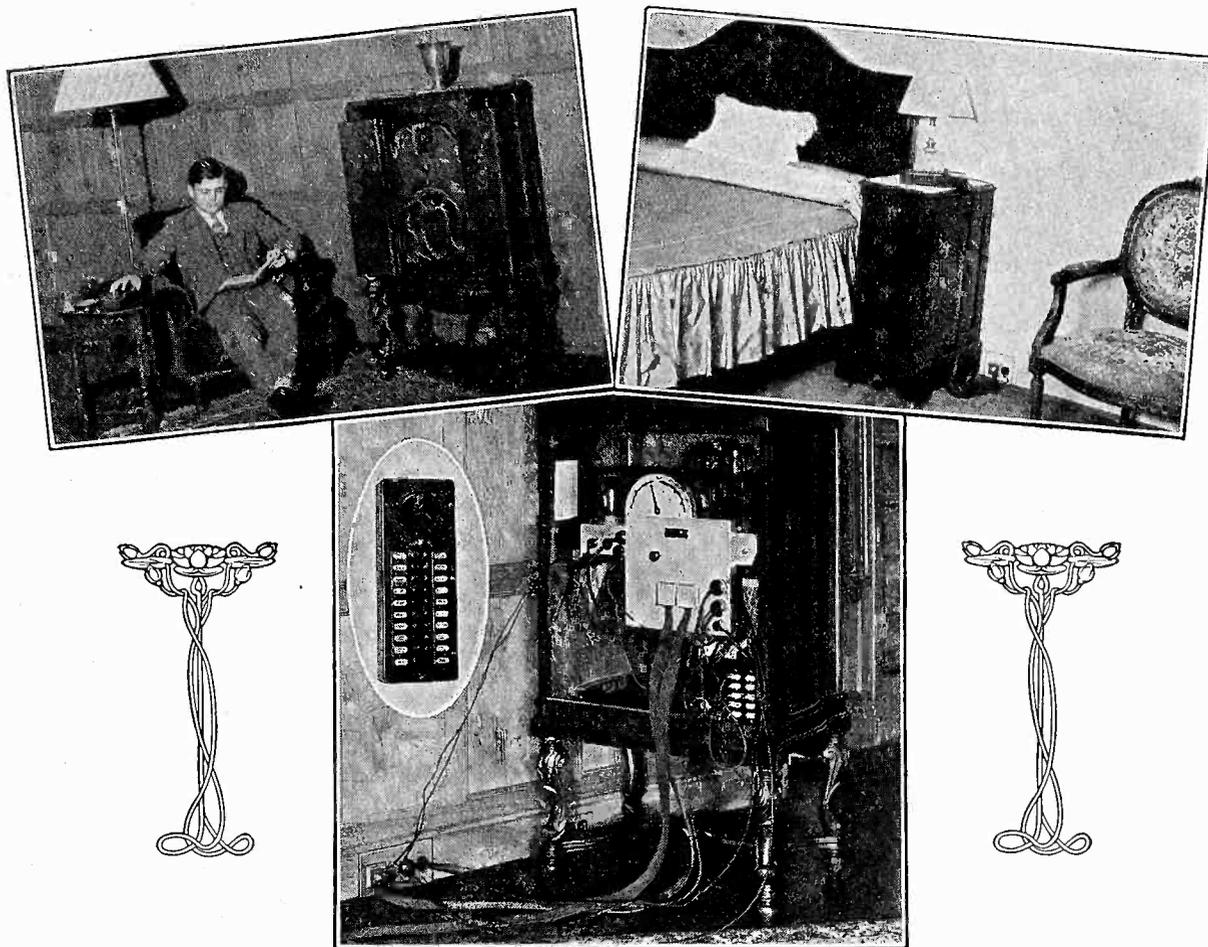
Loud speakers also may be built into room walls or ceilings, concealed behind grilles furnished by architects or decorators. They may likewise be mounted on the back of closet doors.

Telektor System employing a Stromberg-Carlson receiver No. 12, 22, 27 or the No. 14 Multi-Record Radio, when the No. 14 is equipped with phonograph relay, will operate sim-

ultaneously four dynamic speakers, sixty magnetic (cone) speakers, or two dynamic with 20 magnetic speakers. A power amplifier may be provided when more speakers are required.

The system may be installed in old houses as well as those under construction, and requires a minimum of conduit wiring. All Telektor circuits operate at approximately 25 volts A.C., classed by the Underwriters' Laboratories the same as door-bell wiring.

Even in the simplest system, consisting of one Telektor box adjacent to a receiver, the broadcast listener, tired of the continual change in fifteen-minute programs, finds a new zest in this new convenience of station selection.



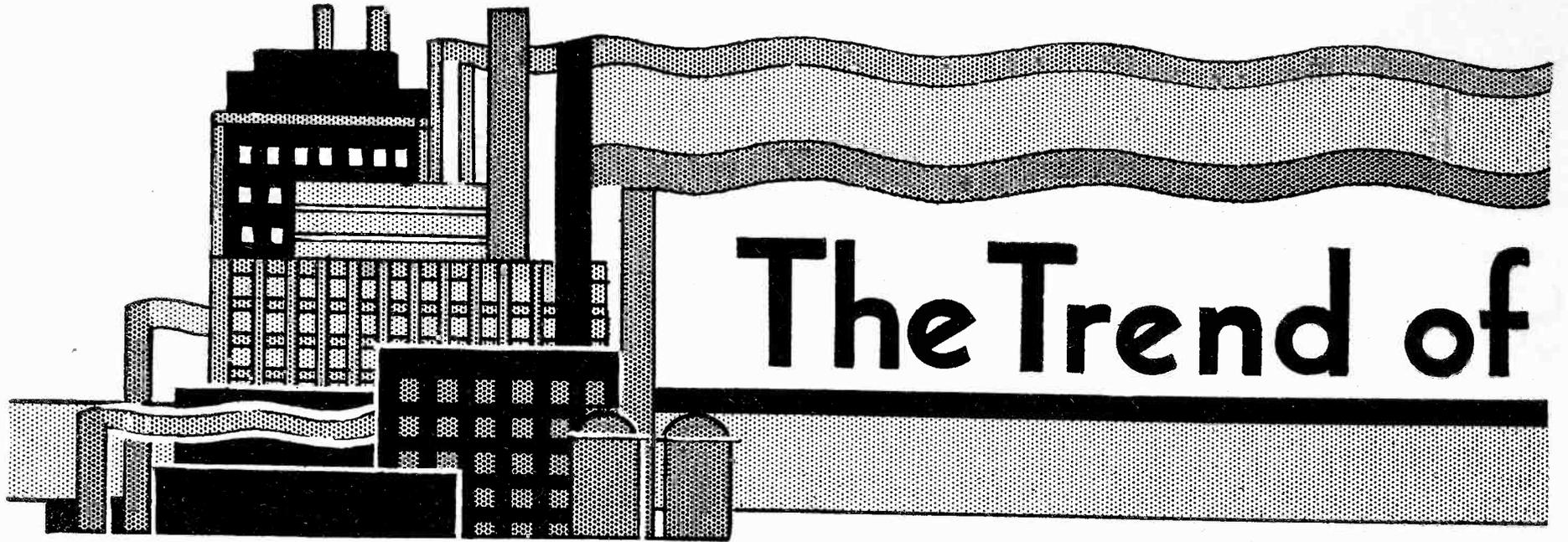
Views showing Stromberg-Carlson Telektor System installed in home. Upper left: No. 22 Stromberg-Carlson Receiver with Telektor motor unit attached showing listener shifting dial to favorite stations by means of push buttons on Telektor control box. Upper right: Telektor box conveniently placed on table beside bed. Lower: Rear view of No. 22 Receiver showing Telektor motor unit. Insert: Close-up view of push button Telektor box.

walnut finished formica top and weighs about a pound. They are handy and inconspicuous to hold on one's lap or place on the table during dinner, while playing bridge or reclining in an easy chair or reading in bed. The flexible cords are of flat ribbon type to facilitate laying under rugs when desired, or bending over the edge of a table.

Control boxes for mounting flush in walls, especially in such places as exposed porches, bathrooms, near kitchen sinks or swimming pools, can also be had.

A pilot lamp in each Telektor box lights to illuminate the push button labels and tuning meter in a darkened room. There is a push button for per-

Stromberg-Carlson Telephone Mfg. Co., 100 Carlson Road, Rochester, New York.



The Trend of

AMERICAN EXPORTER says 60,732 radio sets were exported in September, which was more than 2½ times the volume of a year ago. And for 9 months the volume is up 118%. Receiving tubes in September up 28%, and for the year, 31%. This is a new all-time record for exports.

Total gross income of \$73,638,019 and net income of \$3,957,489 for the Radio Corporation of America and its subsidiaries for the first nine months of the year 1931 were announced by David Sarnoff, President of the Corporation.

During the same period last year the gross income was \$85,150,256 and the net income \$870,753. The statement for the first nine months of the current year shows earnings of \$52,980 in excess of dividend requirements on the preferred stocks.

For the third quarter of the year 1931 the gross income of the Corporation and its subsidiaries was \$25,664,292 and the net income \$1,318,785. The statement shows that earnings for the third quarter of the year 1931 were \$17,685 in excess of dividend requirements of the preferred stocks.

Radio popularity is clearly indicated in the opening of a New York hotel with loud speakers in each room giving choice of six different programs, and volume control on each speaker. The control-room utilizes 500 vacuum tubes, and the complete installation required 2,000 loud speakers.

David Sarnoff, celebrating his 25 years in wireless at a luncheon said, "No one need fear that opportunities do not exist today. The next quarter century will see more happen and offer more opportunities than have the past twenty-five years. There is much to be done in the radio and television field."

President Hoover recently stated, "The determination that radio channels were public property and should be controlled by the Government; the determination that we should not have Government broadcasting supported by a tax upon the listener, but that we should give license to use of these channels under private enterprise where there would be no restraint upon programs, has secured for us far greater variety of programs and excellence of programs of service without cost to the listener."

A Hearst organization applying to the Federal Radio Commission to take over a New York broadcasting station indicates another entry into the National chain field, as the same interests already have a Milwaukee station, and full time lease on a Chicago station.

\$75,000,000 a year tax on the sale of radio sets at about 10%, and 10 to 25% on broadcasting revenue is estimated as available by the Congressman who proposes to introduce this bill at the next congress.

The Federal Radio Commission granted 50,000-watt power to nine broadcasting stations, and 25,000-watt power to six stations after deliberating on the higher power units for more than a year.

John L. Baird, arriving in America from England, where 8,000 television sets are in operation, said he expected his American outlet will soon be manufacturing sets at the rate of 20,000 a week, or 1,000,000 a year at a cost of approximately \$25 each.

Under the various headings of Patents, patent rights, trade-marks, contracts, and other items generally classed as "Good Will" in their 1930 Annual Reports, the following Companies reported:

Arcturus Radio Tube Co.....	\$ 319,286.08
General Electric Company.....	1.00
General Motors Corporation.....	51,949,114.66
Hygrade Lamp Company.....	1,003,074.31
Kellogg Switchboard.....	215,167.62
Ken Rad Tube and Lamp Corp.	1.00
Radio Corporation of America	3,462,462.72
Stewart-Warner Corporation....	1.00
Union Carbide and Carbon Co.	1.00
Westinghouse Electric & Mfg.	5.00

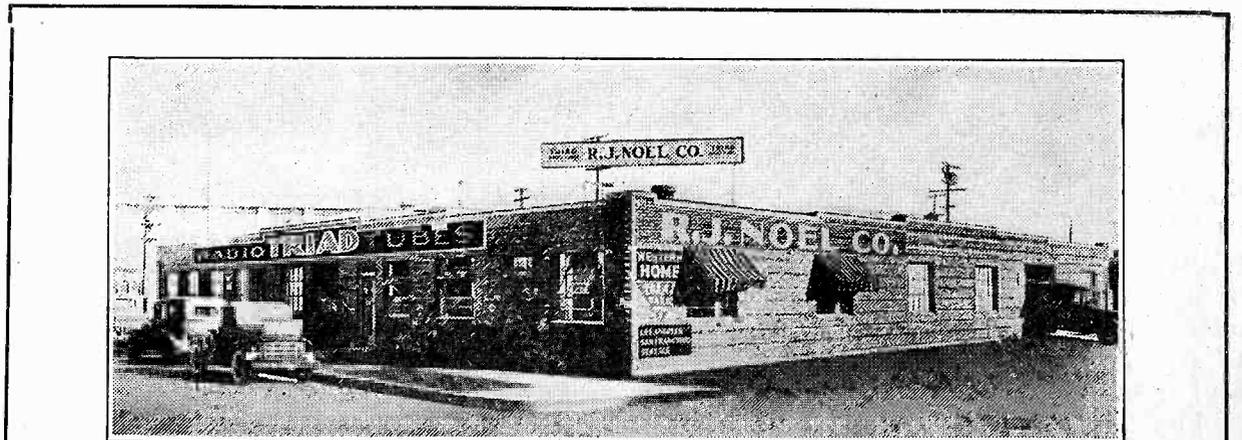
Captain William Sparks in a letter to stockholders stating he would not advise further payment of dividends at this time on Sparks Withington Company stock stated the company had on hand \$1,641,562 cash, and receivables of \$1,552,746 with current accounts payable of only \$250,000.

Stewart-Warner Corporation reports net loss of \$1,012,315 in nine months ending Sept. 30, 1931, compared with net profit of \$1,983,450 for same period in 1930.

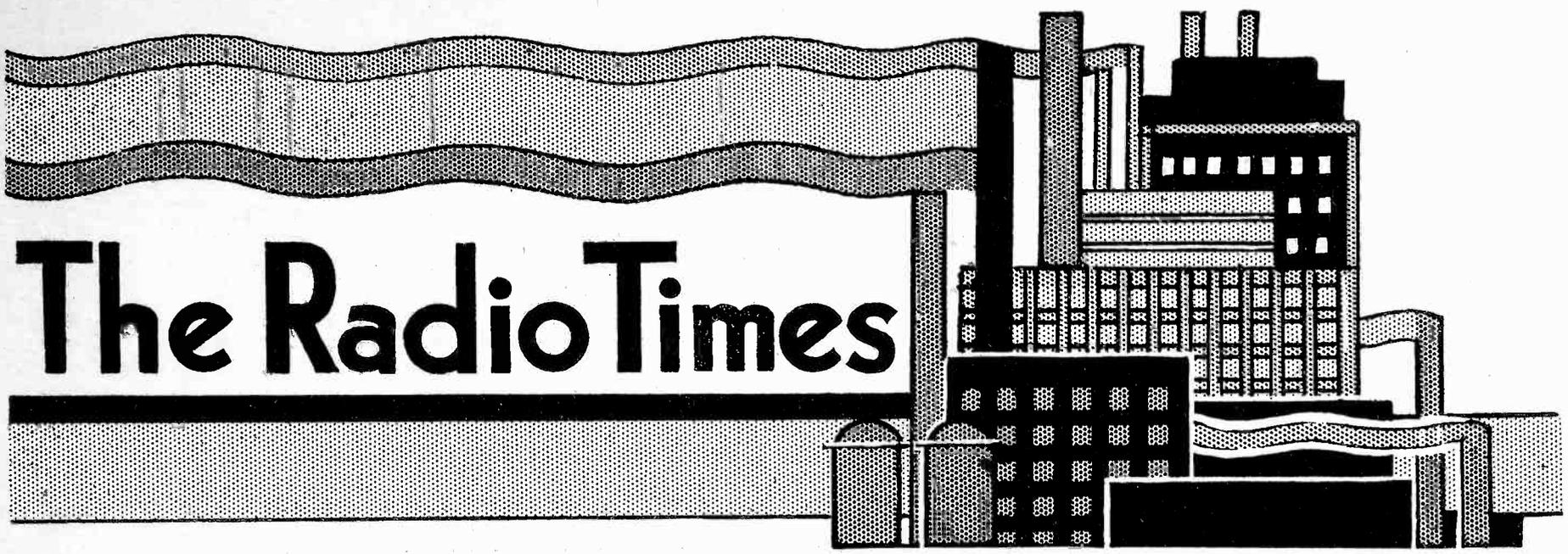
U. S. Radio and Television Corp. for six months ended July 31, 1931 report net profit of \$85,657 compared with \$715,931 for previous six months, ended Jan. 31, 1931.

Every radio merchant should send ten cents to the United States Government Printing Office at Washington, D. C., for a copy of "MERCHANDISING PROBLEMS OF RADIO RETAILERS IN 1930." This latest pamphlet from Washington should be studied by every retailer in radio. We are advised that a copy will be sent to anyone upon receipt of 10c by Uncle Sam's printing office.

The new Lynch Resistor Replacement Manual is a real short cut to trouble finding for the service man. Repairs to radio sets ordinarily can be made in one-tenth the time it otherwise would take. The book, pocket size, gives the value and code of each resistor, and its position in the circuit, of nearly every popular make of radio receiver. More than 200 circuits are listed. This useful book of 60 pages, brim-full of authoritative information, may be purchased direct from the Lynch Mfg. Co., Inc., 1775 Broadway, New York City, for \$1.00.



Triad Tube Sales on the Pacific Coast are so large that it became necessary for the R. J. Noel Co. to occupy larger quarters. Here is shown their new home at 800 East Gage Street in Los Angeles.



The Radio Times

RCA-Radiotron & Cunningham Sales Activities Unified

E. T. Cunningham, President of the RCA Radiotron Company, Inc., and G. K. Throckmorton, President of E. T. Cunningham, Inc., recently announced the unified direction of Radiotron and Cunningham sales activities, effective immediately. At the same time, Mr. Cunningham made known the following appointments:

G. C. Osborn, Vice-President in Charge of Sales.
Meade Brunet, Eastern Sales Manager, New York City.
H. C. Brown, District Mgr., Boston, Mass.
W. H. Clarke, District Mgr., Buffalo, N. Y.
W. H. Thompson, District Manager, New York City.
F. B. Wanselow, District Manager, Philadelphia, Pa.
M. F. Burns, Central Sales Manager, Chicago, Ill.
L. W. Teegarden, District Manager, Cleveland, O.
R. A. Graver, District Mgr., Atlanta, Ga.
E. L. Sutton, District Mgr., Chicago, Ill.
F. H. Larrabee, Western Sales Manager, Kansas City, Mo.
H. A. Edwards, District Manager, Minneapolis, Minn.
J. P. Jeter, District Mgr., Kansas City, Mo.
J. W. Cocks, District Mgr., Dallas, Tex.
F. A. Mulvany, District Mgr., San Francisco, Cal.
F. E. Harding, District Manager, Seattle, Wash.

In announcing these changes Mr. Cunningham said:

"During the past two years the sales divisions of E. T. Cunningham, Inc., and the RCA Radiotron Company, Inc. have been concentrating their efforts on the development of the radio tube renewal market. As a result, today hundreds of radio tube distributors and thousands of dealers are using aggressive methods for increasing their radio tube business.

"Although we can point with pride to the change in the attitude of distributors and dealers toward the volume and profit possibilities of the radio tube

market, we know that the surface of this market has only been scratched. Our experiences with test sales activities have indicated that the radio tube business of the country could be doubled by the proper application of proven sales methods. To speed up the development of this market is a problem to which we have given considerable study. The result was the recommendation, by the sales executives of RCA Radiotron Company, Inc., and E. T. Cunningham, Inc. that certain sales activity should be unified so that our combined forces would be working for the accomplishment of a common objective. It is our belief that the new sales organization will speed the application by dealers and distributors of the many fine sales development programs which we have to offer.

"The individuality of both the Radiotron and Cunningham brands will be maintained by two distinctive sales promotion programs. Distributors and dealers can look forward to the same fine degree of co-operation on sales promotion programs that they have received in the past."

Announcement of the election of J. C. Van Horn, of Philadelphia, as a Vice-President of R.C.A. Institutes, Inc., was made by D. O. Whelan, President of the Institutes, following a meeting of the Institutes' Board. The new Vice-President will be in charge of the four resident schools at New York, Chicago, Philadelphia and Boston.

Mr. Van Horn has a service in radio extending over a period of twenty-two years. His connection with instruction activities started in 1911, when the Philadelphia School of Wireless was formed. This school became a unit of the R.C.A. Institutes two years ago.

Mr. Van Horn served for four years as chairman of the Philadelphia Chapter of the Institute of Radio Engineers. He is a member of the American Institute of Electrical Engineers.

Removal of the general offices and plant equipment of the Utah Radio Products Company to Chicago from Salt Lake City, Utah, is being effected. The firm will continue operations without change of name, and will be housed in a three-story building with 85,000 feet of floor space.

J. W. Caswell, of Chicago, chairman of the board of directors of the company, has announced the firm will be combined with the present Chicago branch.

Restriction on Low-Price Sales. The radio manager of a large national chain store group of radio-music houses has issued instructions to his salesmen that not more than two sets with a retail value of \$49.00 or less shall be sold in one week by any one salesman in the store. If more than two such sets are sold within a week the salesman is discharged.

Nicholas Elected to RMA Directorate. E. A. Nicholas, Sales Manager of the RCA Victor Company of Camden, New Jersey, is a new director of the RMA Board. He succeeds E. E. Shumaker, president of the Camden organization, who is retiring and resigned from the RMA Board. At the November 19th meeting of the Association's Board of Directors, Mr. Nicholas was elected to fill the unexpired term of Mr. Shumaker ending June, 1933.

Radio Exports: The export trade of radio manufacturers continues to increase, over 50 per cent up during the current year, according to reports to Arthur Moss of New York, Chairman of the RMA Foreign Trade Committee. For further development of export trade, a meeting will be held soon of export representatives of all manufacturers to discuss export trade promotion problems and plans. The RMA Foreign Trade Committee, under Chairman Moss, includes: A. Bensel, Newark, N. J.; K. Nielson, Chicago; C. J. Linxweiler, Dayton, Ohio, and B. Gardner of Camden, N. J.

Philco's Television Report

Philco Writes This Letter To Its Dealers

Subject: TELEVISION

We know that you are intensely interested in Philco's activities in preparing for Television when ready for commercial release, and we feel sure that the following authorized statement released thru the Associated Press, which constitutes the entire statement that we are willing to make at this time, will be of great interest to you. We will be pleased to forward additional information from time to time as it is available.

Yours truly,

PHILADELPHIA STORAGE BATTERY COMPANY.

C. L. McWhorter: CS

PHILADELPHIA. (AP). — Philo T. Farnsworth is hard at work here at the Philco Radio plant endeavoring to take the bugs out of television, both reception and transmission.

The 24-year-old San Francisco engineer whose Cathode Ray tubes make radio pictures without the aid of moving mechanical parts, now is to be found in a factory penthouse where with a crew of engineers, he is cooperating with the Philco Company to make practical the accomplishments of laboratory experiments.

At the same time in this laboratory on the roof and off the beaten path of the curious, he continues to go further into his theory of wave propagation.

By application of this theory to everyday transmission, he hopes to be able to use comparatively narrow frequency bands for the handling of television signals. Adequate television requires channels ranging from 100 to 2,000 kilocycles wide under present practices. The greater the number of lines in a picture the wider the frequency range necessary.

Farnsworth's method would change the form of the signal as it leaves the transmitter so that in the air it would actually require a channel of only ten to thirty kilocycles. Then it would be put back into approximately its original form by proper equipment in the receiver.

An indication that he is approaching practicability comes through the fact that the signals in his laboratory apparatus are passed through special

audio transformers. If some wave-changing form were not possible, use of the audio transformers would so reduce detail in the picture that the results would be extremely poor.

In the two months or so since Farnsworth moved his laboratories to Philadelphia from San Francisco to the plant of the Philco Radio Company, under whose direction he is working, he has been enabled to continue the work where he left off on the Pacific Coast.

His first demonstration was a private showing of a transmitted movie film, attended by James M. Skinner, President of Philco, W. E. Holland, Chief Engineer, and others. He was able to get detail ranging from approximately 40 to 400 lines merely through an adjustment in the transmitter, which was connected to the receiver by wire. No adjustment was necessary at the receiver for this change, it keeping in exact step with the transmitter automatically. The greater the number of lines the more realistic was the result.

The picture reproduced could be made to vary in size from three inches to a foot or more square, depending upon the means of reproduction used. One of his newer developments is a projector that puts the picture on a screen, which may be an ordinary piece of cardboard.

Both types of reproducers use the cathode ray, a vacuum tube that does the work of the usual scanning disk, motor and neon lamp. In it a beam of electrons is made to move back and

forth at tremendous speed through a particular type of construction and suitable coils.

A similar tube at the transmitter scans either moving-picture film or living objects, the tube being a combination photo-electric cell and electro-scanner. The receiving tube is cone-shaped with a fluorescent screen on the large flat end for the picture, while the transmitter tubes resemble a fruit jar.

Both Mr. Skinner and Mr. Holland, in speaking of plans for the future, stressed the point that their television plans had not yet reached the stage where they could discuss the possibilities of manufacturing television receivers.

"Mr. Farnsworth, in moving his laboratory here, has as his goal ultimate development of practical television," they said. "How soon that will come depends on a great many things, some of which we hope to be able to accomplish through his work. We have made no plans as yet for factory production of receivers, our work being confined solely to the laboratory.

"However, it is difficult to forecast the future, and naturally we are making all possible preparations. We can say that our plans do provide for an experimental transmitter to be located at the factory, by which we can try out on a practical basis Mr. Farnsworth's narrow-band transmission and other developments."

A New Merchandising Idea Is Approved by the Leaders of the Industry

● The "Secondary Selling Season" gains momentum. Every dealer should get behind it! The idea is SOUND!

MILLIONS of dollars now lost to the radio industry will be brought into the legitimate channels of radio distribution with the inauguration of a secondary selling season!

Vigorous selling will be carried right on through the winter and into the spring under the plan, with more sales and greater profit for all.

The secondary selling season for radio begins after the holiday slump and will continue right on into the spring. When the idea has had a chance to prove itself in 1932, there is a real possibility that the secondary season may even surpass the so-called primary selling season in sales volume.

In the early days of radio there was a sound reason to concentrate on sales in the final quarter. But with high class broadcasting programs available all the year around, excellent receivers and high powered stations, the radio set is used and enjoyed, every day, all the year around.

To get the contrast, just think back to the days of battery operated sets and low powered stations with their mediocre programs!

Anyway, the radio industry got into a rut, mentally, until the slump got the brain power of the industry working again. Such leaders as B. J. Grigsby, president of Grigsby-Grunow Company, Comm. E. F. McDonald, president of Zenith, and Eugene R. Farny, president of All-American Mohawk, believe so thoroughly in the benefits of the secondary selling season that they do not contemplate a return of industry prosperity without its adoption.

This view is shared by such nationally known jobbers as Dave Goldman, New York City, president of the North American Radio Corp., and Henry C. Bonfig, Kansas City, vice-president and general manager, Sterling Radio Company.

It is also the view of R. Calvert Haws, nationally known merchandiser, who is president of the Shuman-Haws Advertising Company, Chicago. He states specifically that, "as long as the idea persists in the trade that radios can be sold only in volume in the final quarter of the year, the industry will never come into its own!"

St. Clair Carver, a member of the advertising firm of Henry, Hurst & McDonald, Chicago, approves the idea a hundred per cent. "Radios are used the year around," he remarks, "so radios will sell on a year around basis if the right kind of selling and merchandising effort is expended."

And so it is with scores of others with whom frank discussion have been carried on for months, seeking ways and means to get the radio business on an even keel and on the most profitable basis.

The campaign to carry the idea of the secondary selling season to the trade is definitely under way. February, March, April and May, 1932, won't find radio men sitting about bemoaning their lot. They'll be out on the firing line, whether they be dealers, jobbers or manufacturers—going after that part of the consumers' dollar which is rightfully theirs.

Chicago Radio-Electrical Show To Start Secondary Selling Season

National Publicity to Impress Public that Buying Season Is Still On

THE secondary selling season will be publicly launched for the benefit of the entire nation, the week of the Chicago Radio-Electrical Show, Jan. 18-24, 1932. Newspaper publicity, from coast - to - coast, and network

broadcasting will create immediate acceptance for the new selling season, just as the New York show does in the autumn.

It was purposely to insure the secondary selling season getting under way without lost motion that the Chicago show was postponed from October. The majority of manufacturers realized that without such a vehicle as a national trade and public show to generate country wide interest, it would be impossible to impress the idea forcefully upon the public.

Both for consumer and trade, the Chicago show is ideally timed—near the end of the holiday slump. Members of the trade will have the time to attend the exposition in January, and the public will have ended its holiday visiting.

Opinions as to the worth of the secondary buying season to the industry have been sought from prominent jobbers, manufacturers, advertising and merchandising experts. Their unqualified endorsements appearing below would indicate that acceptance of this new idea for greater profits will be industry wide.

The Secondary Selling Season Will Benefit Entire Industry Is Logical Outgrowth of Past Selling Practice

By B. J. Grigsby, Chicago
President, Grigsby-Grunow Company

I AM in accord with the idea of a secondary selling season for Radio, because it strikes the shackles from an industry-wide handicap, which keep manufacturers, dealer and jobber alike, from achieving the greatest results from their efforts.

"Such a plan as a secondary selling season is the logical outgrowth of past selling practice. With the unified support of all factors of the industry, it can be made the vehicle for benefitting the entire Trade. Radio has now become as important to the average family the year round as the daily paper; and consequently this is the right time to take advantage of that fact."

*By Dave Goldman, New York City
President, North American Radio Corp.*

THE secondary selling season plan needs to be adopted everywhere. It proposes continuous advertising and merchandising effort which means continuous, not spasmodic, results. Now that the radio set is used morning, noon and night the industry has a sales opportunity it lacked when radio selling was in its infancy. The buying public will respond to our efforts in the early months after the holidays, if the industry will use the same intelligence it displays in the last quarter of the year. I look for the Chicago show in January to lead the way to the period of greatest stability and profit the industry has yet enjoyed."

Curtailing Radio Promotion After Holidays Has Injured Radio Industry

*By Comm. E. F. McDonald, Chicago
President, Zenith Radio Corp.*

THE 10th Annual Chicago Radio-Electrical Show in January should be instrumental in correcting certain definite faults which now appear in the administration of the radio industry.

"An analysis of conditions will definitely show that the average manufacturer has been in the habit of curtailing advertising expenditure in February, March, April and May. Manufacturers of other products have quickly stepped into the breach, advertised their lines—such as refrigerators, electrical appliances, etc., and have taken the consumer dollar which the radio manufacturer might have had, if he had not discontinued his selling and advertising effort!

"The 10th Annual Chicago Radio-Electrical Show is a potent form of advertising and it should serve as an inspiration to all manufacturers to continue selling and advertising effort."

Farny Plans to Make Outstanding Sales Record in Secondary Selling Season of 1932

*By Eugene R. Farny, Chicago and
North Tonawanda, N. Y.
President, All-American Mohawk Corp.*

A DEFINITE effort will be made on our part to produce sales during the secondary selling season of radio.

"From our experience, when radio was in its infancy there was a definite selling season, lasting only during the months of September, October, November and December. Then at the first of each year, manufacturers, distributors and dealers figured that there was very little radio business left and failed to exert the effort necessary to produce sales. Consequently, the sale of radio

sets that could have been forced during the early months of the year were never made.

"But in our case, this situation is changed and tremendous effort will be put back of our selling plans in order to create the sales that should come in the secondary selling season of January, February, March and April of 1932.

"Tentative plans have been made in regard to what we shall do to produce these sales and we are determined to make this secondary selling season an outstanding quarter on our sales sheet.

Secondary Selling Season Will Eliminate Dumping and Gyp Selling

Industry Must Eliminate Self-Imposed Seasonal Restriction if It Is to Come Into Its Own

*By R. Calvert Haws, Chicago
President, Shuman-Haws Advertising Co.*

AS LONG as the idea persists in the trade that radios can be sold only in volume in the final quarter of the year, the industry will never come into its own!

"Such an idea is self imposed by the radio industry. With the quality of merchandise obtainable, and with the excellence of broadcasting programs available throughout the year, the continuance of this idea is a reflection upon the whole radio industry.

"A secondary selling season which might even become the primary season as far as volume is concerned, should begin right after the holidays. It means greater sales and greater profits for all, and will more than repay the effort and expense involved provided aggressive and intelligent advertising and merchandising ideas are adopted.

"The additional selling season will eliminate many of the evils now associated with the distribution of radios. Much of the present post-season dumping and "gyp" selling will disappear, thus insuring the flow of profits into the rightful hands of the legitimate dealers, jobbers and manufacturers."

We Do Not Recognize Seasonal Limitations in Selling Refrigerators

*By B. V. Dawson, Chicago
Sales Manager, Norge Chicago Corporation*

IT IS the selling idea, energetically pushed, and not the season, that makes every month a successful month!

"Although this is the last of October, we have just sold an order for 144 individual refrigerators. This is the larg-

est single, one-time-delivery sale in Chicago to date this year.

"We are learning to disregard the usual winter let-down in our field because we find that advertising, properly co-ordinated with our merchandising efforts, will produce sales at a season when the average layman, in the past, has considered refrigeration non-essential. Therefore, we no longer recognize seasonal limitations.

"The month of September, for instance, was one of our largest months, larger than August, and each succeeding month is becoming larger."

Secondary Selling Season Will Bring Millions Into Legitimate Channels of Distribution

*By Henry C. Bonfig, Kansas City
Vice-President and General Manager,
Sterling Radio Co.*

THE radio industry has grown to such importance in the life of the American people that there is no longer any good reason why selling in the fall quarter of the year should be stressed to the omission of vigorous selling after the holidays.

"With trade and public recognition of a secondary selling season, beginning after the holiday slump, and continuing into late spring, the industry will sell far more sets at standard prices than under present conditions of a self-imposed restriction of selling season.

"The fact is that if jobbers and dealers do not get behind the secondary season, and put as much steam into their selling efforts in February, March, April and May as they do in October, November and December, they are going to miss an opportunity of substantially adding to their income.

"A secondary selling season, vigorously prosecuted, will bring millions of dollars into legitimate channels of radio distribution. It will also eliminate "dumping" and "gyp" selling."

Radios Will Sell on Year Around Basis

*By St. Clair Carver, Chicago
Member of the firm, Henri, Hurst & McDonald
Advertising Agency*

THE breaking-down of seasonal sales curves can be accomplished by logical and aggressive advertising and merchandising.

"Much has been accomplished along this line in the electrical refrigeration field and winter sales are pressing close on summer sales. Where formerly it was assumed that the public would not buy 'out-of-season,' it has been found that the public will buy at practically any time if they are reminded that it is always 'buying-time.'"

How Philco Sold 20,000 Sets In Great Britain In 3 Months

By Carleton Dyer

THREE months ago the Philco Radio & Television Corporation of Great Britain Ltd. was formally registered in Great Britain for the purpose of selling two Philco models, specially designed to meet British broadcasting conditions.

Since then sales have passed the 20,000 mark. Considering the extraordinary conditions obtaining in England and the unexpected obstacles encountered, we feel that the results so far have been most substantial.

In the beginning, our plans were to operate along the same lines and to utilize the same methods of distribution that we do in America—but we reckoned without our hosts—the British manufacturers and wireless trade.

Before we had even organized the Philco company, our friends had released propaganda to the public and trade papers, warning of an American “invasion of dumped radio rubbish”.

Then they formed what virtually amounted to a restraint of trade agreement: whereby the British manufacturers would sell only to wholesalers who agreed not to handle foreign sets.

This edict was effected by some of the most important wholesalers and so we organized field force overnight and sold to the trade direct.

On September 18th came the great annual radio show at



**Mr. Carleton Dyer,
Philco's Great Britain Managing Director**

Reprinted from "The Broadcaster and Wireless Retailer," August 29, 1931

TO THE BRITISH RADIO INDUSTRY

The Hazeltine Corporation of Jersey City, New Jersey, U.S.A., hold the following British Patents, viz.

217971, 222894, 222895, 223181, 229625, 231820, 238256, 240114, 248311, 248389, 250162, 250969, 252315, 252691, 253146, 256644, 256649, 256967, 259613, 263804, 264304, 273639, 293462, 297723, 304309, 312354, 314070, 315399, and are prepared to license approved British manufacturers of radio receivers under these essential patents on favourable terms.

It is their intention to vigorously prosecute actions against infringers of these patents

Among the radio receivers made under above patents are:—
Philco, Majestic, Crosley, Lyric, Stromberg-Carlson, Gulbransen, Apex, and others.

The Hazeltine Corporation will assist in defending its licensees against unwarranted attack

Among the companies operating under similar Hazeltine patents in various other parts of the world are:—

UNITED STATES:—American Telephone and Telegraph Company; All American Mohawk Corporation; F.A.D. Andrea Inc.; Balkett Radio Corporation; Brunswick Radio Corporation; Crosley Radio Corporation; Gilfillan Brothers; Grebe Radio Corporation; Grigsby Grunow Company; Gulbransen Corporation; Collin B. Kennedy Corporation; Philadelphia Storage Battery Company; Stromberg-Carlson Telephone Manufacturing Co.; U.S. Radio and Television Company; Western Electric Company.
CANADA:—De Forest Crosley, Limited; Fada Radio, Limited; Philadelphia Storage Battery Company; Stromberg-Carlson Canada, Limited; Brunswick Radio.
AUSTRALIA:—Neutrodyne Proprietary Limited and sub-licensees.
SCANDINAVIA:—Aga Baltic.

FAITHFULL, OWEN & FRASER
St. Michael's Alley,
Cornhill, E.C.3.
Solicitors for Hazeltine Corporation.

Olympia. American manufacturers were excluded, but most of them leased stores across the road and went after business. At Olympia, gay were the exhibits, brave the propaganda.

One British manufacturer with a total peak capacity in the plant of slightly in excess of 1,500 sets per day, when Olympia closed found himself with 30,000 orders for immediate delivery and his factory wheels hadn't turned over! Now, five weeks later, he is still delivering sample orders, and the dealers are disgusted.

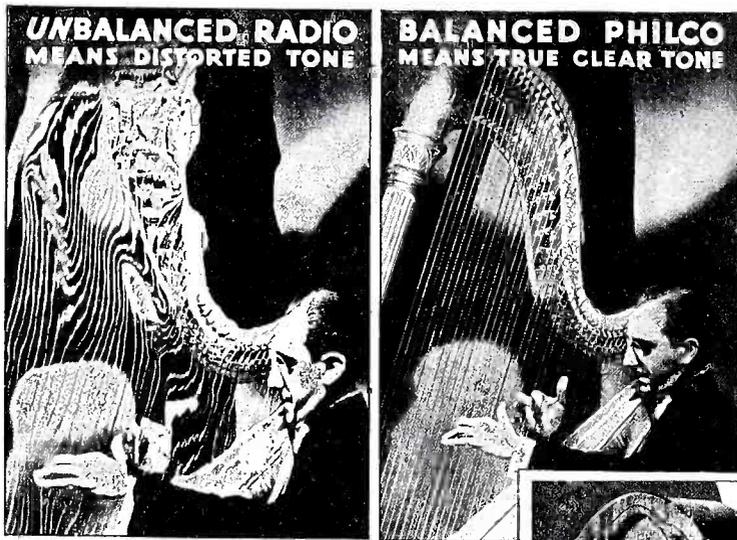
This case is true of the radio industry here. Almost without exception, British manufacturers mounted their stands with hand-made models and waited until the close of their show before ordering raw materials in serious quantity. It will be almost incomprehensible to some of you to believe that now, in the second week of November, the earliest delivery a British manufacturer will promise is from 3 to 5 weeks—right on the doorstep of Christmas.

Meantime, we have been plugging along, giving immediate delivery out of stock in any quantity.

There are some rather amusing sidelights. First, the wholesalers who agreed in September not to handle foreign sets, still sit empty-handed by the hearth. Second, the aggressive and highly commendable move to “Buy British because it's Better” is marred by the fact that one has yet to discover the *real* All-British set devoid of imported components—and further that these sets are definitely inferior to your American standard of what constitutes a good radio, and at that they are too high-priced.

Manufacturing here is handicapped by having too many manufacturers, each with small production, gained at any

To those who are buying a wireless set for 16 guineas



The picture above on the left illustrates the distorted tone to which many wireless owners listen night after night not knowing they are being robbed of the real snap and sparkle of the programme.

Pictured above on the right is the wonderfully true, clear, rich tone which Philco achieves by super-accurate balancing of all electrical units. This is an exclusive Philco feature ensuring full radio enjoyment.

or more..

WHY ENDURE HOWLS AND SQUEALS!

When the Philco "Five" is absolutely non-reactive — getting a station is as silent (and as simple) as setting the hands of your watch.

WHY HAVE YOUR PROGRAMMES SPOILT BY INTERFERENCE!

When Philco construction gives you a new degree of selectivity and absolutely prevents signal leakage from one wave band to another.

WHY HAVE ONLY THREE VALVES!

When Philco give you five? More power, more stations, wider choice of programmes.

WHY BOTHER WITH BATTERIES!

When the Philco "Five" is all electric.



'FIVE'

with all these improvements

costs only **16 GNS**

complete, no extras, royalties included

No extra charge for 200 to 100 with 25 cycles. Step-down transformer for 200 to 250 with 25 cycles, £1. 5. 0. extra.

Prices listed do not apply in the Irish Free State.

You owe it to yourself to hear a Balanced Unit Philco before buying any radio. Let us arrange a demonstration. Fill in the coupon to-day.

COUPON

Philco Radio & Television Corp. of Great Britain, Ltd., (Dept. DM-1710), 10 Smith Square, London, S.W.1.

Dear Sirs,
I should like to hear a Philco "Five." It is understood that I am under no obligation.

Name _____
Address _____



Also the "Lowboy" model in handsome walnut cabinet, same chassis specifications as the Philco "Five" but with oversize moving coil speaker. Price inclusive of royalties 22 gns.

THE PHILCO

Cut out these specifications and take them with you when you go to look at wireless sets. Compare them with those of any set costing up to double the price. Remember that each and all of these features are essential to perfect radio reception.

5 valves (3 screen grid, 2.5 watts Pentode valve, rectifier valve), moving coil speaker, single dial tuning, medium and long wave (200 to 550 and 1,000 to 2,000 metres), three tuned circuits, finger-tip volume control, mahogany cabinet with rich Adam Brown walnut

The Philco "Five" and "Lowboy" are specially designed with dual wave length control for receiving all European as well as home stations

finish, size 15" x 14" x 7½". Price includes valves, speaker and royalties.

DEALERS PLEASE NOTE

The Philco "Five" and the "Lowboy" are fully licensed in this country under Hazeltine British Patents and all Philco dealers are protected by an ironclad letter of indemnity, gladly furnished on request.

Immediate deliveries of both Philco models from stock. Adequate supplies of valves and replacement components also available. Complete service facilities.

A reproduction of full page PHILCO newspaper advertising as it appeared in the "Daily Mail". Note that they still call it "Wireless" in "Dear ole Lunnon" ... and a vacuum tube is a "valve".

cost. There are too many wholesalers and retailers. There is no such thing as exclusive territory or exclusive anything. Discount slipping and price cutting are rampant. We are determined, at the expense of this year's volume, if necessary, to cut out the price cutters and the wholesalers who feel that selling comprises back-door, sugar-plum inducements to buy. Fortunately, under the laws of England, our limited license permits us to prosecute any trader who cuts, slips or slides.

Our policy now is to develop distributors who can handle reasonably large size territories and assume some of the functions of a wholesaler. These distributors have salesmen who call on the retail trade. In addition, we have a staff of salesmen who cover the country.

With this set-up, we have been making fair progress, for the Philco models have attracted great interest. They represent values unmatched by any British manufacturer. It is because the British manufacturer does not see how it is possible to make and sell sets like the Philco model at such low prices that he believes we must be "dumping." The Philco 5-valve T. R. F. model with a dual wavelength change-over mechanism sells over here for 16 guineas or around \$64. The T. R. F. Lowboy is priced at 22 guineas or around \$90.

Discounts to dealers are 33.⅓ plus a sliding scale of rebates entirely depending upon volume of sales.

Our advertising, although featuring as it does in America, Philco Balanced Unit Radio with distorted and undistorted illustrations, places considerable emphasis on price, performance and IMMEDIATE DELIVERY.

There is no commercial broadcasting in England and so we are broadcasting a weekly programme over station 2RN Dublin and 6CK Cork which covers Ireland, Scotland and the northern part of England. The first Philco hour was broadcast on October 26th and brought an astounding response from listeners. From a little 1.5 KW station we had more letters than we ever had from a big chain hook-up in the States on a regular broadcast! Last night we ran our first broadcast of Radio Fécamp in Normandy, a new station of 7 KW, on the French coast, 40 miles from England, and over a thousand letters of congratulation poured in in today's mail!

Our problems in this market have been somewhat complicated by the fluctuation of the exchange, the impending tariff, and the character of the opposition on the part of British manufacturers. The British "Patent Pool" have attacked and issued writs against us and some of our dealers and against Majestic and Brunswick as well, for alleged infringement of their patents.

To make matters more interesting, trade papers and even the daily press have taken advantage of this situation to openly warn dealers that it might prove dangerous to stock and sell American sets.

Philco's Letter To The British Dealers Offers Protection

Philco replied to this with a letter of indemnification, shown above, and the Hazeltine Corporation has promptly supported all of us with a series of advertisements warning the British radio industry that they will prosecute actions against infringers of Hazeltine patents and protect Hazeltine licensees against unwarranted attack. Writs, it is expected, will be issued by Hazeltine against prominent manufacturers and wholesalers within the next fortnight.

One of our first moves was to organize service and inspection, and this has paid a handsome dividend in goodwill. Adequate stocks of spare parts and valves are now

The Wireless Sets this Corporation is selling in this market are full licensed under Hazeltine British patents, and we are advised that no other valid patents are infringed.

Consequently, in consideration of your purchasing radio sets from this Corporation, the Corporation hereby indemnifies you (subject to the conditions hereinafter set out) against any damage, costs or expenses for which you may be liable by reason of any radio sets, valves or component parts purchased by you from this Corporation constituting or involving any infringement of any Letters Patent or patent rights belonging to the Marconi Wireless Telegraph Co., Ltd., The Gramophone Co. Ltd., and the Standard Telephone & Cables Ltd., or any of those Companies.

This indemnity is subject to the conditions following, namely:—

That you will immediately communicate to this Corporation at its Registered Office full particulars of any claim at any time made against you to which this Letter of Indemnity applies, and that you will permit this Corporation to resist and to undertake and conduct the defense against any such claim, and for that purpose to use your name, and that you will give this Corporation every assistance in your power to enable them to resist, oppose, defend or otherwise deal with any such claim.

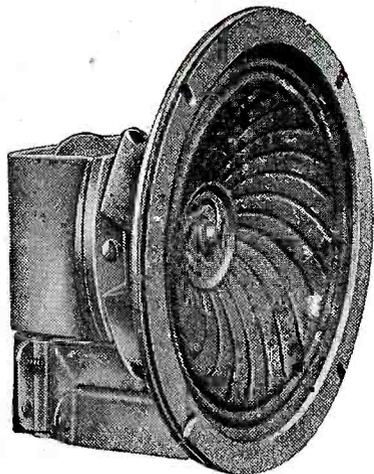
Yours faithfully,

By Order of and on Behalf of Philco Radio &
Television Corporation of Great Britain Ltd.,
Managing Director.

strategically located; emergency stocks of sets for rush orders are located at Manchester, Leeds, Glasgow and Dublin. Some large wholesalers have already sent their service managers to us for instruction, and our service engineers are equipped to close down fast on any service emergency.

Under all these circumstances, we feel that the sales to date have been reasonably good inasmuch as they almost total the combined sales of our good competitors. The curve of opposition is flattening out, and before the year ends we expect to show some real progress.

New Products From The Manufacturers



Magnavox No. 150 Speaker

The latest addition to the Magnavox family of speakers is the #150 Model. This has a cone diameter of 5½". The outside diameter of the cone housing is 6½" and the transformer, mounted on the rear of the housing, does not protrude beyond this diameter. The mounting holes in the housing are slotted so that the mounting hole circle may be anywhere from 5½" to 6½" in diameter for the hole centers. The terminal strip is arranged to be easily accessible from directly back of the speaker and is fitted with a proper cover to guard against electrical hazards. The terminal cover is essentially flush with the level of the field coil casing, thus giving the whole assembly a neat, compact appearance. The magnetic structure is of the U-type. While de-

signed primarily for use in four and five-tube sets it will reproduce the low notes in the very small cabinet or baffle in which this type set is usually housed.

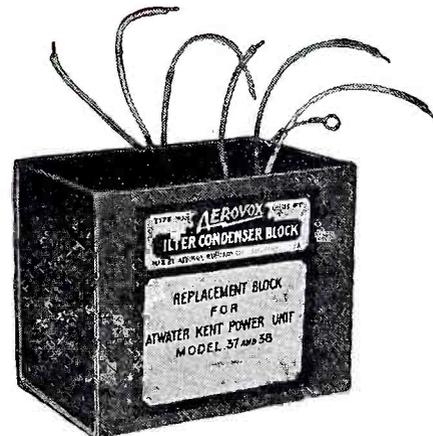
Aerovox Makes Majestic and Atwater Kent Replacement Condenser Blocks

Aerovox Wireless Corp., Brooklyn, New York, has recently announced that replacement units for the Majestic 9-P-6 and 7B-P-6; and Atwater Kent Models 37 and 38 power supply units are now available.

The replacement unit for the Majestic 9-P-6 power supply consists of three 2 mfd. sections of 400, 500 and 600 D.C. working voltages and one 1 mfd. section of 300 D.C. working voltage with a choke connected in series with the latter.

The replacement unit for the Majestic 7B-P-6 power supply consists of two 2 mfd. sections of 300 and 600 D.C. working voltages, and two 3 mfd. sections of 300 and 400 D.C. working voltages.

The condenser sections used in the construction of these blocks are non-inductively wound, thoroughly impregnated and dehydrated using the highest grade materials obtainable throughout. They are mounted in strongly built



metal casings, fully sealed with moisture-proof filling compound and provided with convenient soldering terminals on an insulating strip through the top of the unit as shown in the accompanying photo.

The replacement units for Atwater Kent Models 37 and 38 power supply units consist of two .5 mfd. sections, two 1 mfd. sections, two filter chokes and a speaker choke. The condenser sections and chokes are mounted in heavy metal containers filled with sealing compound and provided with colored wire leads.



Who Says Low Priced Midgets Will Not Make Money For You?

By D. R. DUMAS
General Sales Manager, Los Angeles Radio Co.



D. R. DUMAS

MIDGETS and pee wees are the leaders that get customers into the store for us and help sell higher priced merchandise to many of them. Of course we are not unmindful of the fact that small sets bring a fair profit and are what many patrons want. But, although we sell many of them, these little radios actually help to sell people higher priced sets.

Not long ago our retail store at 952 South Broadway, Los Angeles, ran a small display ad in one of the morning papers to call attention to the special sale of a \$29.95 midget for \$17.95.

This was the only copy carried in the press, though we had some leaflets printed and distributed and our window was artistically trimmed with streamers, etc., and in front

of the store the usual ballyhoo of a set was playing at all times.

Actual results in a five day period . . .

SOLD 10 eleven-tube super consoles.
4 ten-tube super midgets.
3 seven-tube super midgets.
16 \$29.95 midgets, 4 tubes.
19 \$17.95 midgets, 4 tubes.
1 automobile set.

This was early in November and naturally the sales could not be traced to a temporary holiday mood.

Perhaps by way of explanation we ought to say that the two 4-tube midgets use different circuits and there is a difference in the dial arrangement.

The Kewpie is the one we advertised at \$17.95. It has a different circuit from the Paramount pee wee; and in seven cases out of nine it is not difficult to sell the pee wee with, of course, a larger margin of profit.

Naturally the large number of sales from a single ad does not mean that we merely waited and let the sets sell themselves. The Paramount line comes as near to selling itself as any in today's market, but we had to keep on the job day and night.

The establishment is open every evening and we also do a retail and wholesale, tubes, parts, and battery business. The location is not an old-established one for this type of trade.

My own experience in selling radio has been to stock up with the products of one company. We have found it profitable to convert all sales energy to one line of sets, and the Paramount line has run all the way from the tiny pee wee up to the larger and more ornate 11-tube cabinet sets.



"Paramount" Pee Wee with a Retail Price of \$29.95

How A Retail Radio Dealer Can Effectively Advertise His Wares

By P. S. LUCAS

THE man who has a large business usually employs the services of a staff of advertising specialists either in the form of an agency or as a part of his own force, or both. In the business just a little too small to boast of an advertising manager someone else in the organization, usually the sales manager, makes a study of getting his products or services before the public, and sometimes does a pretty good job of it. But the type of organization for which this article is written; the enterpriser with a few thousand dollars, more or less, on his shelves and not much of anything in the bank; the man who, economists agree, gets the bulk of the retail trade throughout the country, can afford neither advertising specialists nor experienced sales manager. This business man may be paying the salaries of a couple of salesmen or service men, possibly a bookkeeper and/or a stenographer, while frequently he has to handle every phase of business himself. A great percentage of the readers of RADIO fall into this classification, and to them we are addressing this article on how to make the most of advertising.

The art of preparing an advertisement, making the layout, writing copy, choosing styles of type, illustration, etc., is a subject requiring more study than the radio dealer can usually afford to give it. It is a subject, also, upon which you can get a lot of help. If you buy space in a newspaper there is usually someone on the advertising staff of that paper who will help you prepare the copy. If you go in for direct mail you will undoubtedly find many suggested plans for letters and cards in the dealer helps that are sent out by the manufacturers of some of the goods you are selling. Make use of them; they are the children of some of the country's best advertising brains.

As for this business of spending money, and knowing at the end of the month which of your dollars have returned to the fold, with interest, and which have never found their way home, there is a lot that can be said. No matter how small a business is, it should count on doing some advertising, and that advertising should be handled efficiently and intelligently. A campaign should be planned; proper records should be kept. Advertising is too frequently haphazard; no serious

The "Business" of spending money for advertising is one of the retailer's important problems. Here is chronicled an extensive survey and its findings, together with many thoughts which will interest you.

thought is given anything relating to it except the bills. The result is that some businesses spend too much for advertising while others spend too little, and of the two evils the latter is the worst.

Suppose our little radio shop has a force of two; the owner, who buys, sells, signs the checks and keeps the books, and one service man who fixes the sets the boss persuades his customers to have repaired. Gross amount of sales from November 1, 1930 to November 1, 1931, we'll say, averaged \$750 a month. Twenty per cent of this was eaten up by the finance companies, rent, lights, telephone and other items of overhead. The other twenty per cent yielded the owner his own meager salary of \$150 per month. The service department, we'll say, paid in another \$200 monthly, out of which the service man received his salary of \$150, leaving \$50 with which to pay the portion of the overhead that was charged to the service department, and a little profit.

Now we may check back in one store of the above specifications and find many cancelled checks that have gone for advertising; fifteen dollars to this newspaper, ten to that, twenty for a thousand stamps, fifty for printing. It would not surprise us in the least to total up and find that this store had averaged \$75 a month for advertising. Nor would we lift our eyebrows if we learned that advertising bills hadn't averaged up to more than \$7.50 a month. There are innumerable radio dealers who are spending too much money and just as many who are not spending enough on advertising. The trouble is that very few of them make definite appropriations for the advertising budget, and when they don't they either don't know where to draw the line or

they are too cautious to spend what they should.

Usually the hardest thing to decide in making the budget is determining what percentage should be appropriated. In the radio business there are usually two scales of profit; the greater part of the merchandise sold yields a gross profit of 40%, while service work is all gross profit. Merchants usually do not figure labor in the overhead, but classify it under the same head as advertising until the other costs of doing business have been subtracted from the gross income. Those who handle their own paper are away ahead of the game, naturally, because the finance companies do not get their hooks on the six (???) to twenty per cent that it costs the dealer to operate without sufficient capital. Therefore the self-financed business can afford to appropriate a larger percentage to advertising than the firm that has to pay dearly for the use of someone else's money. Most retailers figure on spending from two to eight per cent on advertising. In order to determine the correct amount it is necessary to first sum up the other absolutely necessary operating costs, or what is known as the overhead.

Take again, for instance, the little two-man store described above. This dealer's overhead might include the following items:

Rent.....	\$40.00
Lights.....	10.00
Telephone.....	15.00
Financing.....	50.00
Window cleaning.....	5.00
	<hr/>
	\$120.00

Perhaps you wonder how he gets by on certain items, but remember these are just round figures to make our problem easy. It costs him \$120 a month, rock bottom, to do an average gross business of \$750. (We are not counting the service department, yet.) Say the dealer's personal needs are exactly \$150 per month. (These are hard times, you know.) He has to extract \$270 a month from his business or pack up his tent. In bad months he hasn't been getting his \$270, but in good months, like the little squirrel we were supposed to have been taught to emulate when in kindergarten, he must have saved everything over that figure. Now, acting on the assumption that next year will be as good and as bad as last year, Mr. Dealer will

figure up that \$270 is just 36% of \$750. 36% of his gross business was required to operate his store; 20% for salary and 16% for overhead. No advertising has been counted in. Knowing that he can safely count on a gross profit of 40% he finds that he has 4% of \$750 to spend each month on advertising. This leaves him no reserve, and should indicate to him that something ought to be done about it. If he is a gambler he'll shoot the works (the 4%) in the hopes that he can raise the ante a bit on gross sales. Certainly 4% is the *most* he can appropriate for advertising, and if he is the cautious type it might be less. Thirty dollars a month sort of cramps the style of the advertising enthusiast, but if carefully placed, ought to make itself felt in a little business like this. Too many of us use less.

As for the service department. Total monthly earnings average \$200. To eliminate scalp massaging we'll say this dealer doesn't charge any of his small overhead to the repair shop. That leaves the salary of the service man; \$150 a month. Not counting the free service calls, the service man averages a little less than four paid calls daily, a total of 90 calls a month. On these paid calls his average labor charges, or earnings, are \$1.75, and he sells an average of \$1.25 worth of tubes and parts per call. To reduce the two figures to a common denominator, figuratively speaking, let us use the gross profits instead of gross sales. Labor—\$1.75 per call; sales—40% of \$1.25, or \$.50 per call. Gross profits per call—\$2.25. Per month—\$202.50; or to stick to the round figures we started with; \$200.

Now this \$200 gross profit represents the earnings of two sources, each figured differently. The discount from labor (salary not deducted as yet) is 100%; that on sales, 40%. Labor brought in a total of a little less than \$157.50 for the month while sales brought in something like \$112.50. When mixing these two items in order to determine what the budget should be it is usually best to figure gross profit instead of gross sales. Therefore the cost of earning the \$200, i.e. \$150 for salary, should be deducted from the sum, leaving a net profit of \$50. It should also be remembered that this service man is capable of doing about twice as much work as is now heaped upon his able shoulders, and that all additional work would be gravy for the boss. Therefore this department is capable of earning up to \$250 *net* profit, at its best, without further operating cost. It behooves the merchant, then, to make his advertising appropriation for the service department much higher than that for the sales department. It cannot exceed the \$50 earned each month of last year, however; at least

until several months have passed with fine records. \$50 is 25% of the gross profits. Knowing that there is much more business to be had it is a temptation to throw the whole 25% back into the pot, although it would probably be wiser to use about 15% of it and sink \$20 in the bank for a reserve fund. Not an awful lot of advertising can be had for thirty dollars, but every little bit *ought* to count.

Now if those who have lost interest in this treatise due to the humble figures used will double them, and keep the overhead, with the exception of financing costs, and the salaries where they are (and probably these figures will strike nearer home), the advertising budget will not look quite as discouraging. Say the gross earnings from the sales department are \$1,500 per month; financing costs are \$50 higher, bringing the total overhead plus the boss' salary up to \$320. The winnings become \$280 instead of \$30. Some jump! Split that and you'd have 9.3% of the gross sales for your advertising budget plus the same amount, or \$140 a month for a reserve fund. Then probably the boss would give himself a raise, and be damned with the advertising budget!

Whatever book you will pick up will go from here into such a subject as choice of mediums, buying space and printing, contracts, bids, or preparing copy. We are going to jump over all that for this article and plunge right into the much neglected subject of checking ads. If we ever get around to it we might come back again with some downright practical, designed for the radio dealer and service man, ideas on the subjects mentioned, but for the present we believe that more important than writing a good ad is finding out whether it had its effect on the reader; that more valuable than knowing the circulation of a newspaper is the knowledge of its pulling power. It's a simple little thing, this business of checking ads, but it requires constant interest, vigilance, and a good system of keeping track of what you learn.

It is rather difficult for the retailer to get a complete view of his advertising campaign at work. While the mail-order house can key its ads and use coupons, so that each inquiry tells where the advertisement was seen, and while the general advertiser can launch two similar but different campaigns in two similar but different towns and compare results, the retailer that confines his business to one town and counts on his advertising to bring the customer into the store in person has only one recourse, and that is to pop the question to the customer. Sometimes this is easy to do; sometimes it is awkward. Mostly it is awkward. By way of experiment some retail dealers

run an ad in one medium offering a free log book or football graph, or some other trinket that doesn't cost them much. Anyone asking for the advertised article can be credited to the particular medium used at that time. This is a good way of checking two or more kinds of copy in the same medium, or of comparing the pulling power of different mediums. It is not money laid at the feet of the Goddess Experiment, either, because it never hurts to get a customer into the store for a gift.

Continuous advertising throws the careful ad checker off balance, also, because an ad in February might leave an impression in the mind of one customer that creates a sale in August, if there are any such things in that weary month. Sales, of special offers, featured first in one paper, then another, and a third time by direct mail, are also good methods of testing mediums.

On the other hand, where it is admittedly bad psychology to take the customer's mind off the merchandise you wish to sell him when he enters the store, there is no reason at all why the dealer can't get an almost perfect check on the results of his service advertising. Practically all service calls are given over the phone. The dealer, or whoever answers the phone, asks innumerable questions about the kind of set, symptoms of trouble and what not. It's not the least embarrassing or dangerous to an imminent sale to ask one more question, such as: "Where did you see our ad, Mrs. Brown?" And if one medium pulls on service it would seem plausible that the same medium would pull equally well for new radio sets and tubes.

Most dealers have a card index system, with a card for each customer. It would be an equally good idea to have a separate and similar system for each prospective customer whose name has appeared on a mailing list. Some record wants to be kept, because direct mail, like all types of advertising, is not given a fair deal until several follow-ups have been made. The card system makes the mailing easier, and gives the dealer something to go on while the customer is still on the phone. On this card should be entered the name of the medium and the number of the ad that landed the customer.

There are several types of record cards or sheets that can be used to keep track of the effectiveness of certain ads and mediums. A notebook will do as well as any. A separate page may be used for every ad run or sent out, or a few lines may suffice. About all the information needed is the name of the medium, the number of the ad (according to a scrap book into which a copy of each is pasted), the space used, the cost, and the date. Then the number of

(Continued on page 31)

There is a Noteworthy Transformation in Retail Radio Advertising

● ●

By V. A. SEARLES

Advertising Manager, The Sparks-Withington Company,
Jackson, Michigan



MR. V. A. SEARLES
Sparton's Director of Advertising

THE most casual observer of retail radio advertising during the past three months cannot fail to have recognized a noteworthy transformation. I use the term "noteworthy" advisedly, because I believe that this trend reflects a definite and wholesome change in the way smart merchandisers are handling the advertising job. The change is not so much one of physical appearance. Radio advertisements are still pretty much the same with respect to the essential elements. The metamorphosis is rather one that concerns the "tone of voice" in which the sales message is presented.

Turn the pages of your favorite newspaper. You will find a few of the old-time, flamboyant radio advertisements, but they will be the exception rather than the rule. Far-sighted retailers have sensed the changed mental attitude that the times have imposed upon radio buyers, and they have been wise in attuning their printed salesmanship to this new state of mind.

Personally, I am delighted to see the passing of the bally-hoo and the pyrotechnics from radio advertising. The fact that today's most effective radio advertisements are keyed to the value theme, indicates that retailers are thinking straight and constructively. They recognize that buyers have made up their minds to get their money's worth—and when people learn to appreciate values and to look for them, the advertiser who persists in addressing them in the language of the snake-oil vendor is courting swift disaster.

More than one dealer has told me recently that his customers are showing increased interest in those radio features that mean dependableness and lastingly satisfactory performance. They are insisting upon basic quality—upon dollar for dollar *value*. They are no longer impressed by merely superficial advantages.

These signs all point in one direction . . . towards a growing value consciousness on the part of the radio public. They mean that the purchase of a radio

has become a serious business demanding due deliberation. Obviously, you cannot hope to create a favorable impression on minds ruled by this thought, if you employ extravagant language in your advertising copy. A prospect who is thinking along the lines mentioned, cannot fail to be repelled by exaggerated claims and high-pressure rhetoric. He is very much in earnest in his search for "more value per dollar invested," and the successful retailer will do well to inject into his advertising the note of sincerity which alone can win the confidence of the value-seeker.

Information gleaned from many sources tends to support the gratifying conclusion that today's retail radio advertising is producing better results than when less care was exercised in determining the precise "tone of voice" of our printed sales messages. Intelligent buyers are responding to a type of advertising that appeals soberly and sincerely to their natural desire to get more for their radio dollar.



● ● ● ● ●

New Jewell Tube Seller for Small Stores

A SMALLER and lower-priced Tube-Seller for the small store has been developed by the Jewell Electrical Instrument Company, 1650 Walnut Street, Chicago, Ill.

The Pattern 533 Tube-Seller measures tube value on a three-color scale similar to that used on the larger Jewell Tube-Sellers. Indications are direct in terms easily understood by the customer—*Satisfactory*, *Doubtful*, and *Unsatisfactory*. No reference to

tables and no calculations are necessary.

A short-checker with indicating lights, line voltage indicating meter and adjustment, and separate test sockets for each type of tube, are some of the features.

Provision is made for testing—without adapters—all standard tubes, including pentodes and variable-mus in A. C. and two and six volt D. C. types.

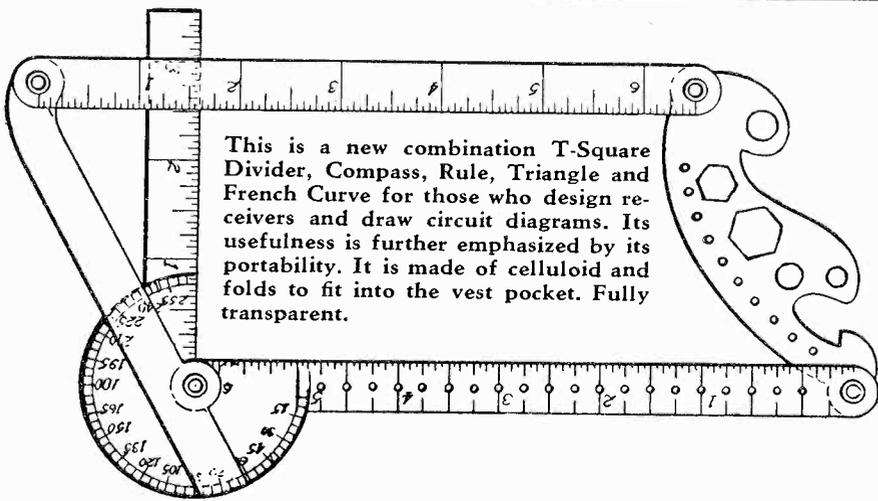
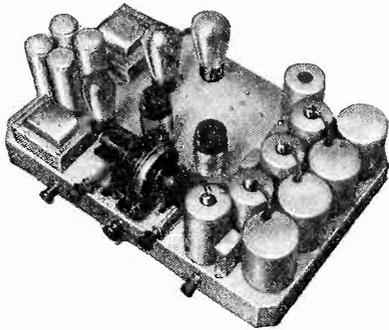
Guide to New Radio Products

Here are presented the newest products of nationally known manufacturers. This Buyers' Guide will help you in your selection of new things to sell. Radio and allied merchandise will be displayed in these columns each month. Copy for November issue should reach the publisher by November 1st. Write for rates.

HAMMARLUND

Tour the world with the "Comet," the new 15 to 550 meter Super-Heterodyne built by Hammarlund. Exclusive features, rare quality. Chassis only, or complete with console, speaker and tubes.

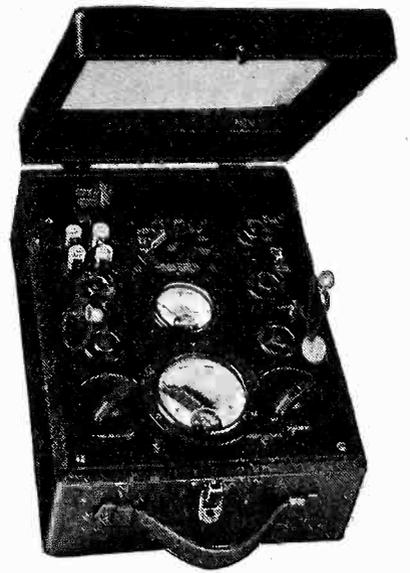
HAMMARLUND-ROBERTS, INC.
424 - 438 W. 33rd St.
New York, N. Y.



This is a new combination T-Square Divider, Compass, Rule, Triangle and French Curve for those who design receivers and draw circuit diagrams. Its usefulness is further emphasized by its portability. It is made of celluloid and folds to fit into the vest pocket. Fully transparent.

All-Purpose Instrument for Engineers and Service Men

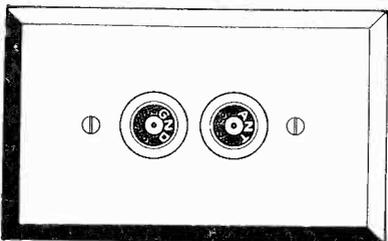
This new drawing instrument can be secured from East-Bay Radio Service Co., 735 Ramona Ave., Berkeley, California.



A Portable Tube-Seller has just been announced by the Jewell Electrical Instrument Company of 1650 Walnut Street, Chicago, Illinois. This instrument enables any salesman or serviceman to make a convincing test of tubes in the customer's home.

Tube value is indicated directly on an attractive three-color instrument dial in terms the customer can understand: *Satisfactory*, *Doubtful*, and *Unsatisfactory*. A short-check circuit with four indicating lights is provided to test tubes for internal shorts. The line voltage indicating meter and adjustment assure accurate tests despite the variations in voltage found in customers' homes.

The Pattern 540 is housed in a leatherette carrying case with a heavy strap handle. By removing the cover it may be easily converted for counter testing when not in use outside the store.



YAXLEY Convenience Outlets

One of the new Yaxley wall plugs is illustrated to the left. This is but one of the many new Yaxley devices which are found in the new Yaxley catalog. A copy of the complete catalog showing the entire Yaxley line can be secured by writing to Yaxley Mfg. Co., Chicago, Illinois.

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MIKE STANDS, DESK TYPE	\$ 4.95
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A twist of the wrist—and instantly the "PRONGETTE" cleans dirty tube prongs. Reverse the steel reamer and instantly you clean those hard to get at places in tube sockets . . . cleaning exactly where cleaning is needed. Every dealer . . . every service man . . . every engineer needs this new tube and socket cleaning tool. Insulated handle. Case-hardened steel reamers. Fits in your vest pocket. Carry it with you always. Sent postpaid anywhere upon receipt of \$1.50. Agents wanted.

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Engineers for
Radio Set Manufacturers

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Chief Engineer

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Dealer's Service Department of RADIO

SECTION II

DECEMBER, 1931

Editor's Note:--

"RADIO" presents the first of a series of articles of factory-prepared service information for dealers and their service men. In these pages you will find the vital information needed to *properly* service, and *profitably* service, the various makes of standard receivers. Tear out these pages. File them in a loose leaf binder. A suitable binder can be furnished you at cost, 50c, postpaid.

J. J. Lynch, Service Manager of Sparks-Withington, has prepared these questions and answers for the benefit of dealers and service men so that sets already sold would be enjoyed with greater enthusiasm and satisfaction by the users. Your sales force and your service men should have the following information at their finger tips

Q. 1. Describe briefly and concisely the operation of a Super-heterodyne Receiver.

A. 1. In a super-heterodyne, the frequency of a local oscillator is governed by means of one of the tuning condensers in the tuning bank so that it is always at a given difference from the incoming frequency. These oscillations together with the incoming signal are impressed on the plate of a rectifying device called the first detector which extracts so-called "sum" and "difference" frequencies. The "difference" frequency is equal to the constant difference mentioned above (in the case of SPARTON, 172.5 kilocycles), and this is passed on to the intermediate frequency amplifier. Since the intermediate frequency amplifier always handles the same frequency, its tuning is fixed.

The advantages of a super-heterodyne are high gain and high selectivity without a multiplicity of tuning units.

Q. 2. Why was the name Super-sonne given to the circuit in Models 25, 26, 30, etc.?

A. 2. The name Super-sonne has been given to the Models 25, 26, and 30, to tie them in, in logical sequence, with the Equasonne circuit; the first part "Super" signifying that the super-heterodyne circuit is used, and the last part "Sonne" designating the use of well balanced and perfectly matched bandpass circuits such as were used in the Equasonne.

Q. 3. What is the frequency generated by the oscillator circuit of SPARTON Super-heterodyne and Super-sonne models? Why?

A. 3. The frequency generated by the oscillator in the super-heterodyne and Super-sonne models is 172.5 kilocycles plus the frequency to which the set is tuned. The reason for the constant difference regardless of tuning is so that the same intermediate frequency will be passed on to the intermediate frequency amplifier in every case.

Q. 4. Why is the intermediate frequency amplifier tuned to amplify at 172.5 kilocycles instead of 175 kilocycles?

A. 4. The intermediate frequency amplifier is tuned to 172.5 kilocycles instead of 175 kilocycles for two reasons. First, since the so-called image or image frequency of any broadcasting station falls at a point on the dial equal to its true position minus twice the intermediate frequency, if 175 kilocycles is used, the image then falls 350 kilocycles low-

er or on top of another channel. However, with the use of 172.5, the image falls 345 kilocycles lower or midway between two other channels. Should this interfere, a peculiarity of tuning allows an image frequency to be tuned out completely with only a very slight readjustment of the dial.

Second, when the intermediate frequency signals are passed into the second or audio detector, all of the possible harmonics are developed. The use of 172.5 kilocycles proportions these harmonics so that those which fall in the broadcast band cause the least amount of interference with good programs.

Q. 5. Why should the intermediate frequency amplifier be perfectly aligned?

A. 5. To give good selectivity, good gain, and to be sure that the advantages accruing from the use of a 172.5 kilocycle intermediate frequency amplifier instead of 175 are maintained.

Q. 6. What would cause a Super-heterodyne receiver to be perfectly aligned at 1400 on the kilocycle scale and still be 30 points off at 700?

A. 6. The calibration of a super-heterodyne receiver is dependent on the tracking of the oscillator condenser only. Therefore, any misreading on the dial can be attributed to a mis-alignment of the oscillator tuning condenser.

Q. 7. Why is it necessary to align the intermediate frequency adjustable condensers on the Models 10 and 15 with the shields on the coils?

A. 7. Because the shields when in place have an effect on the coupling between primary and secondary of the transformer and also an effect on the inductance of each section.

Q. 8. What will be the result if the Models 10 and 15 are aligned with the coil shields removed?

A. 8. If the receiver is aligned with the coil shields removed, it will be misaligned when the coil shields are put into position.

Q. 9. After the Receiver has been perfectly aligned with the shields in place, what causes the set to show an increase of volume when the shields are removed?

A. 9. When a coil shield is removed, the coupling between the primary and the secondary of the uncovered coil is increased

beyond the point where perfect bandpass action takes place. This increase in coupling raises the gain of the stage. However, the increased coupling also causes considerably broader tuning with a noticeable tendency for double peaks on some stations. No receiver should be operated with the shields removed.

Q. 10. What equipment is necessary for adjusting intermediate frequency adjustable condensers?

A. 10. A modulated oscillator which you know to be exactly at 172.5 kilocycles, output meter, and a bakelite screw driver. Also in the case of the Models 10 and 15 a coil shield with holes in the top over the adjusting screws of the transformer should be available.

Q. 11. In case of emergency, no equipment available, how would you go about adjusting the intermediate frequency adjustable condensers?

A. 11. Use a set which you know to be in good order. Tune it very accurately to some broadcasting station and then lead some of the intermediate frequency energy from this set over to the first detector grid on the set which is to be aligned. No ground should be used on either set, and no aerial on the one requiring alignment. This intermediate frequency energy can be picked up from the good set either by simply placing a wire close to the second detector tube or by actually wrapping a wire around the plate prong of the second detector tube. In this latter case, a .0005 condenser should be used in series with the line to the other set. The intermediate frequency signal from the good set will be exactly 172.5 kilocycles.

Q. 12. What procedure is followed in adjusting the pre-selector condensers in the Models 10, 15, 25, chassis, respectively?

A. 12. First make sure that the set is properly calibrated or in other words that the stations come in where they should on the dial. This is determined by the adjustment of the oscillator equalizing condenser only. Next, adjust the three remaining equalizers on the high frequency end of the dial, making sure that the equalizer for the input of the first detector is set to the peak which is found with the greatest amount of capacity.

(Continued on page 30)

Tell them you saw it in RADIO

TOBE Filterette

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OIL BURNER INTERFERENCE OVERCOME BY NEW TYPE FILTERETTE

Detachable Mounting Brackets Make For Ease of Filterette Installation

THE interference created by domestic oil burners has, at this time of year, a considerable bearing on radio receiving conditions in many communities. This is particularly true this season, as reports indicate that the sales of domestic oil burners are greater than ever before.

With the increasing sale of domestic oil burners there has come an increasing demand for a compact and generally adaptable Filterette to be used in overcoming the interference created by the burner. In response to this demand the Tobe Type OB-110 Filterette has been developed.

In the design of this Filterette, consideration has been given the various features which make for effectiveness, ease of installation, and compliance with standard electrical wiring codes. The Filterette, shown in Figure 1, is contained in a metal cutout box 7" x 6 $\frac{3}{8}$ " x 3 $\frac{3}{8}$ ". The small size of this Filterette makes it easily adaptable to use in the limited space available for adding a Filterette to most oil burners.

As a further aid to the installation of this Filterette, detachable mounting brackets are provided. These brackets may be attached to the Filterette so that it may be mounted on a vertical pipe standard, as shown in Figure 2; they may be attached to the Filterette in such a manner that it may be mounted on a horizontal pipe standard, or they may be removed and the Filterette mounted against a flat surface. The mounting clamps are adjustable to fit pipes of from $\frac{3}{4}$ " to 1 $\frac{1}{2}$ " diameter.

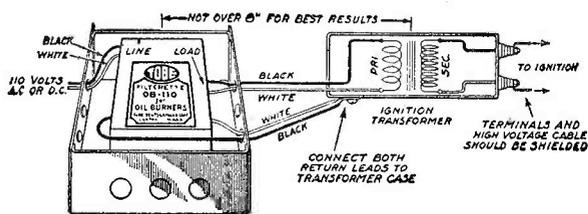


Fig. 3

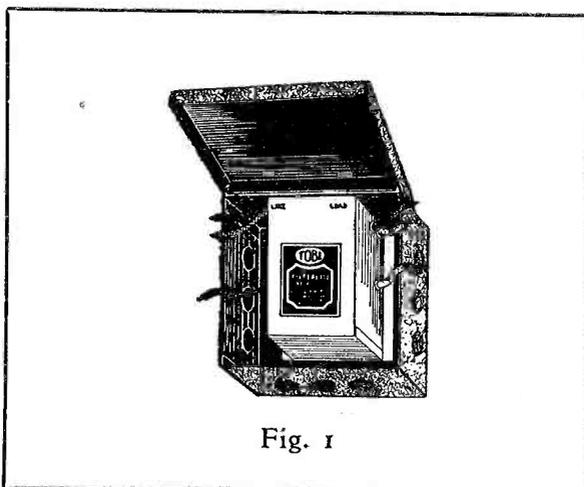


Fig. 1

As will be seen from Figure 1, Filterette OB-110 is designed to be mounted so that the cover of the cutout box lifts up. With the Filterette installed in this manner, ample connection space and knockouts are available so that BX or conduit may be brought into the box through either side or through the bottom, thus allowing any desired system of cross connection. Ample space is provided in the Filterette for making all necessary splices or for connecting branch circuits, if such a connection proves desirable. The flexible leads of the Filterette are of ample length for ease of connection, and are color coded so that correct circuit continuity may easily be maintained. This is an important feature when the Filterette is used with certain types of burner.

The location of Filterette OB-110 in the electrical circuit of an oil burner is shown in Figure 3. As will be seen from this diagram, the Filterette is designed to be connected in series with the primary leads of the high-tension transformer supplying the electric ignition system of the oil burner. To be effective, the Filterette must be located not more than 8" from the ignition transformer, and

all connecting leads must be carried in conduit or BX. Note: The open wiring indicated in Figure 3 is used to show the electrical circuits and must not be considered satisfactory for actual Filterette installation.

As shown in Figure 3, two flexible leads are provided in the Filterette for making a short return connection between the Filterette and the metal housing of the ignition transformer. These leads must be kept as short as possible and should not be considered as ground wires because, in many cases, increased interference will result if they are connected to a water pipe or other ground.

When correctly installed, this Filterette may be depended upon to prevent the feedback of ignition interference into the building wiring or the wiring of the temperature control system of the burner. It, of course, cannot affect interference which may be radiated from the high-tension wiring of the burner. In order to overcome this interference it will be necessary to provide shielding for the high-tension circuit. This shielding must enclose the transformer terminals and the high-tension cable, and must be bonded to the transformer case and burner frame if it is to be effective.

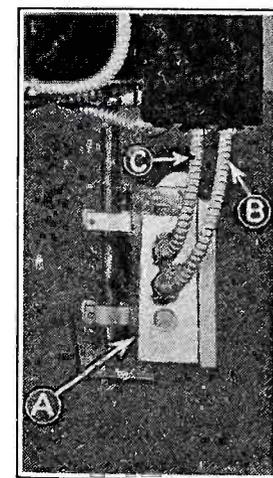


Fig. 2

Tobe Filterette No. OB-110 is designed to operate at 110 volts A. C. or D. C., and has a continuous current rating of four amperes. The list price of this Filterette is \$15. For burners operated at 220 volts, Tobe Filterette No. 221 listing at \$20.00, is recommended.

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NEW DEVELOPMENT IN UNCASSED CONDENSERS

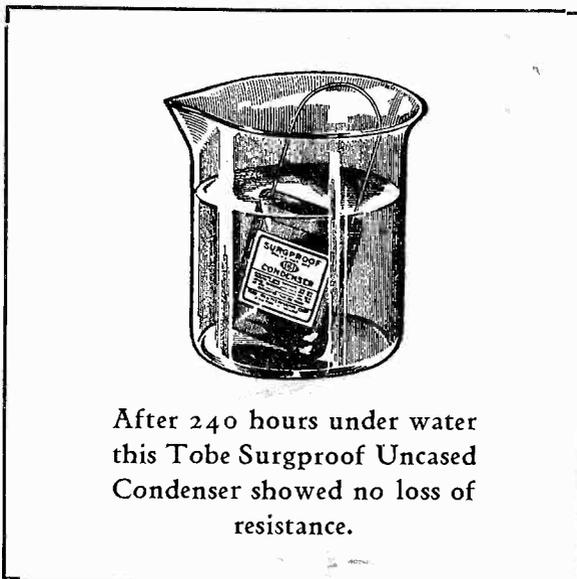
Double End Seal Renders Tobe Surgproof Impervious To Moisture

One of the greatest difficulties in the construction of the uncased condensers used in the construction of radio power units and in by-pass circuits of radio receivers has been the sealing of the condensers against moisture. Although modern condenser production methods make possible the manufacture of condensers having an initially high resistance and high break-down voltage, the sealing of the condensers in a manner which would combine low cost, compactness, ruggedness and attractive appearance has presented a hitherto unsolved problem.

Although it is possible to use metal containers and various types of sealing compound to prevent the entrance of moisture to the di-electric material of the condenser winding, the cost of the metal housing is non-productive expense, as also is the cost of sealing compound if a sufficient quantity of this compound is used to provide the desired result. Moreover the use of the metal housing and the necessary quantity of sealing compound makes for a bulky condenser which is difficult to incorporate in either a radio power unit or a receiver chassis. Various manufacturers have, therefore, marketed so-called Uncased Condensers which were essentially condenser windings impregnated in the usual way and dipped in a compound which supposedly sealed them against moisture.

Condensers of this type had numerous disadvantages. In the first place, the compound in which they were dipped was brittle and would not stand the rough handling to which condensers are bound to be subjected in radio repair shops. In fact, condensers of this type were likely to be damaged in shipment unless packed with great care. Moreover, the coating of compound did not have sufficient strength to provide firm support for the connecting leads. Consequently, these leads often pulled out while the condenser was being installed. These, however, are minor disadvantages compared with the fact that the method of dipping Uncased Condensers leaves numerous air bubbles in the compound, and that moisture reaching the condenser through these air bubbles lowers the resistance of the condenser and definitely shortens its life.

Realizing that moisture which decreases condenser resistance is a major factor governing the life of Uncased Condensers, the research engineers of the Tobe Deutschmann Corporation Condenser Division applied themselves to the problem of developing a condenser which would be satisfactory for general repair work, and which would



not be subject to the disadvantages of condensers already on the market. The new Tobe Surgproof Condenser is the result of their efforts. This condenser is constructed of the finest obtainable foil and paper, thoroughly dried and impregnated with moisture-resisting waxes. Sufficient insulation is provided to allow an ample safety factor so that this condenser is truly Surgproof in that the momentary application of voltages many times the rated operating voltage will not cause the condenser to break down.

In the design of this condenser, attention is given to the space requirements of radio receiver power units. The condenser is proportioned to fit filter blocks to be repaired, and is also compact enough to be installed in the limited space available in a receiver chassis. The compound in which the Tobe Surgproof Condenser is dipped is extremely rough rather than brittle, so that these condensers will stand shipment and rough handling without cracking or breakage of the compound in which they are dipped.

Experience has shown that the weak spot on an Uncased Condenser is the line along the corner or edge of the condenser at the top or bottom and either side. In ordinary dipping processes a very light covering of wax is left along these edges, so that it is a simple matter to break the moisture seal at

A four-page bulletin containing detailed information on the elimination of oil burner interference and containing photographs and wiring diagrams of the installation of Filterette No. OB-110 in domestic oil burner circuits will be sent free of charge to any reader of this magazine. Write for your copy today.

this point. In the Tobe Surgproof Condenser, ample thickness of sealing compound is provided along these edges and this is reinforced by the patented double-end seal.

This seal serves a number of purposes in addition to the reinforcement of the edges just described. Probably its most important function is to provide a positive seal against moisture. The compound used in this double-end seal has a very fine grain, and is so applied that there is no possibility of air bubbles or pin-holes through which moisture might enter. The effectiveness of the seal is indicated by the results of tests to which this condenser has been subjected. After being immersed in water for 120 hours this condenser showed no sign of lowered resistance due to absorbed moisture. And after a further 120 hours' exposure to the elements—dew, rain and midday sun—there was still no indication of lowered resistance.

The end seal is strong enough to withstand rough handling and is applied in sufficient quantity to provide a firm anchor for the condenser leads. This compound adheres to the solid conductors used for connecting leads and thus eliminates any possibility that moisture would creep along the condenser lead and thus reach the winding. The leads are brought out of the condenser in a loop (another patented feature) which may be cut to provide any desired difference in length of leads.

In addition to the improved electrical and mechanical characteristics of the condenser, the new Tobe Surgproof Condenser embodies several features which make for ease of handling and saleability. Colored compounds are used to signify the operating voltage of the various condensers. This makes it possible for the user of condensers to select at a glance a condenser of the correct operating voltage. The colored body waxes and the bright red of the double-end seal improve the appearance of the condenser and conform to the present trend to the use of colors for increasing consumer acceptance. As a further aid to saleability, the condensers are provided with a transparent, protecting wrapping which protects the condenser against scratches or other marring likely to be caused by rough handling or contact of condensers in shipment or storage.

These Condensers are plainly labeled, the capacity, working voltage, factory test voltage, and resistance per microfarad being clearly shown on the label. In addition to the electrical, mechanical and sales advantages of the new Tobe Surgproof condenser, it is guaranteed for 1 year's service.

TOBE DEUTSCHMANN CORPORATION

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Sparton Questions and Answers (continued)

Then tune the set to 900 kilocycles; with a bakelite wrench move the stator plates slightly in and out to determine whether any improvement in gain is noticed. A slight bend in these plates may be necessary to keep the gain up. This bending should be on the long end of the stator plate. Check also at 600 kilocycles and go through the same procedure, except that here the bend should be on the short end of the stator plate. Be careful not to bend the plates enough to cause shorts.

Q. 13. What procedure is followed to compensate for incorrect dial settings on SPARTON Super-heterodyne and Super-sonne models?

A. 13. Since the dial setting is determined by the oscillator trimming condenser only and is unaffected by the trimming of any of the pre-selector condensers, it is only necessary to adjust the oscillator trimmer and if necessary bend the oscillator stator plates to correct the dial setting.

Q. 14. What length of aerial, generally, will not require adjustment of the antenna equalizing condenser in the Models 10, 15, 25, 26, 30, 35?

A. 14. 50 to 75 feet.

Q. 15. What is the purpose of a bucking coil on the Models 10 and 15 dynamic speakers?

A. 15. The bucking coil is used to decouple the moving coil from the field coil of the dynamic speaker so that the alternating current flux in the field which is due to its use as a filter choke can not be impressed on the voice coil and cause hum.

Q. 16. What is the action of any Automatic Volume Control, such as used in SPARTON Super-sonne models, when subjected to an extreme signal impulse, such as a "burst" of static? Why?

A. 16. An extreme burst of static will momentarily interrupt the program. This is because of the high sensitivity of the automatic volume control to increases in the amount of energy supplied to the second detector tube.

Q. 17. Why are the SPARTON Super-heterodyne and Super-sonne receivers free from image frequency response that is found in the usual Super-heterodyne circuit?

A. 17. Because: (1) Sparton sets use four tuned units (a three unit pre-selector even in their smallest sets); (2) they use a special circuit in the bandpass pre-selector to minimize image frequency; (3) the intermediate frequency is chosen so that any residual image is easily tuned out.

Q. 18. What is the function of the gyro speed regulator?

A. 18. The function of the gyro speed regulator is to maintain the speed of a phonograph record being reproduced, at the same speed as it was recorded.

Q. 19. Explain the operation of the record indicator on the Model 30.

A. 19. This device consists of a switch operated by two rollers. As the pick-up unit is placed at the start of a record, the mechanism that operates this switch describes a semi-circle, swings out, then rests on the record.

When a 12" record is on the turn-table, the rollers rest at a horizontal position. In this position, the switch contact is closed, which causes current to be supplied to a solenoid wound on a hollow iron core in which there is an iron plunger.

This plunger is drawn into the core and actuates a cam which allows the pick-up unit to swing in only a portion of its maximum distance. The distance is calculated so that the pick-up unit is placed at the start of a 12" record.

When a 10" record is on the turn-table, either by itself or on top of a 12" record, the rollers set at an angle, preventing the switch from closing and energizing the electro-mag-

net. Hence, the pickup unit swings through its normal arc of travel.

Q. 20. What could cause the film and sound to be out of synchronization in the Visionola? Give three reasons.

A. 20. (a) Improperly spliced film; (2) pick-up unit improperly placed on record; (c) green film.

Q. 21. What oil is used to lubricate the Visionola mechanism? Why? How often should it be oiled?

A. 21. A mixture of 50% medium motor oil and 50% sperm oil. This mixture must be used on account of the abnormal temperature in the cabinet during operation. Sperm oil prolongs the life of the motor oil under these conditions. The mechanism should be oiled at the following intervals:

(a) When operated continually for display purposes, etc., it should be oiled each morning before proceeding with the demonstration.

(b) When operated at various intervals, it should be oiled at least once a week.

(c) When operated in the home by individuals, (not to exceed four hours a day), it should be oiled about every 90 days.

Q. 22. What trouble is caused by the use of green film in the Visionola? Describe two methods of correcting green film trouble.

A. 22. Film that has not been properly processed at the laboratories is said to be green. Whether film is green or not can be determined by pinching the film between the thumb and the index finger and when green, the emulsion or dull side of the film will stick to either the thumb or the finger. Green film in passing over the aperture plate, has a tendency to "load up," causing the lower loop to shorten and the upper to become proportionately longer.

Usually when the lower loop shortens and the longer loop lengthens it is due to a deposit of emulsion on the aperture track causing friction. This deposit on the aperture plate should be removed with a match stem, or the thumb nail, and should never be touched with a knife or other instrument such as a screw driver. Green film may be remedied by either one of two methods:

(a) Dry the film by removing the cover from the humidifier and exposing to warm, dry air.

(b) If conditions are such that time cannot be used for the above method, the film margin can be waxed with an ordinary wax candle, either on a rewind machine, or on the projector itself.

Q. 23. With the Visionola set up for normal operation, which side of the film faces the aperture?

A. 23. When the machine is set up for normal operation, the emulsion or dull side of the film should be toward the aperture plate.

Q. 24. How would you clean the aperture and gate mechanism?

A. 24. When there is a deposit of dust, wax, or other extraneous matter in the aperture opening, it will give a ragged edge to the picture on the screen. The aperture opening is best cleaned by using a moistened match or tooth-pick, revolving it while passing around the four sides of the opening.

Q. 25. What procedure is followed if the picture is indistinct and off the screen?

A. 25. If the picture is not distinct, it can be remedied by focusing the lens, for which an adjusting screw is provided. If the picture is off the screen, it can be adjusted by moving the mirror from one side to another until the image is centered on the screen.

If the picture is not full size and seems to be broken off either above or below, it can be adjusted by moving the aperture plate adjusting lever either up or down as the case demands. If this does not correct the trouble make adjustment by moving the mirror forward or back. Should mirror fail to stay placed, slightly bend the mirror support

brackets inward, making them bind on the side of slide.

Q. 26. Give a brief account of the procedure followed in locating and eliminating interference after the installation of an automobile radio.

A. 26. Assuming that the receiver is installed and all ignition suppressors and ignition condensers are in place, first remove the aerial from the aerial binding post on the receiver. If interference ceases, this indicates that the antenna installation is at fault, and should be checked to see if it is grounded. If the antenna installation was not personally supervised it should not be taken for granted that everything is O. K. in the way of separation from grounds. All wires to the dome lights should be at least three inches away from any part of the aerial, and the aerial itself should be at least three inches away from any part of the body of the automobile. If, however, the interference still exists, with the aerial removed, this indicates that noise is not due to antenna installation. Ascertain that the speaker lead is grounded to the receiver and that the receiver has a good positive ground to the car frame. Try by-passing with a .2 mfd. condenser to ground electric devices on the instrument panel, such as an electric clock, electric gasoline gauge, etc.

It is often found very advantageous to reverse the leads to the primary side of the high tension coil. Another source of trouble which should be handled with care, is the low tension breaker points. These should be clean and free from pits, and should be spaced according to the manufacturer's specifications.

Sometimes shielding the high tension lead and grounding it on the lower end to the engine head is very effective. However, this can only be determined by experimenting.

The main thing in removing engine interference from an automobile receiver is to bear in mind that we do not eliminate interference, we merely change the frequency of the interference to a frequency outside the broadcast range of the receiver.

Q. 27. What would happen if the automatic volume control tube draws plate current without any carrier wave in the antenna?

A. 27. If the automatic volume control tube draws plate current without any carrier wave in the antenna circuit it will apply full bias to the tubes which it affects normally.

Q. 28. What is the physical difference between the type 424 and type 435 tubes?

A. 28. The physical difference between the type 424 and type 435 tubes lies in the fact that the control grid of the type 435 tube is spaced wider in the center than it is at either end, whereas the control grid in the type 424 tube is spaced the same distance between each turn.

Q. 29. Give four advantages obtained by the use of the controlled-mu, type 435, tube.

A. 29. (a) Elimination of cross talk; (b) better tone quality at low volume; (c) permits operation of an Automatic Volume Control; (d) elimination of station hum.

Q. 30. Briefly describe the SPARTON type 447 Pentode tube, also explain the advantages gained in using this tube.

A. 30. The type 447 Pentode tube contains the usual filament grid and plate found in the conventional tube, but in addition, makes use of two other grids. One of these grids is comparable to the screen grid in the screen grid tube, and the other grid is the suppressor grid, which is accountable for the effects obtained with this type power amplifier tube.

A standard five prong base is employed and the elements are connected to the prongs in the following manner:

(Continued on page 33)

Hot off the press!

**RADIO and TELEVISION
DATA DIGEST and
ANALYSIS**



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This condensed Radio and Television Digest contains all details as to What's New in Radio and Television for the season 1931-1932. Every radio dealer, wholesaler, manufacturer, mechanic, service man and radio fan will want one or more copies.

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(Continued from page 24)

phone calls or visits to the store may be checked off like votes at an amateur election, or written in squares marked off for each day. Lots of elaborate systems have been devised, but all you want to know is, how many answers did you get as compared to other ads in the same or other mediums? By being on the alert for this information you can get a lot of it. And at the end of a year or two you will begin to profit greatly by your experience. Without this check you will go on making the same mistakes (providing you make any) year after year, never the wiser.



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A convenient and useful chart of Condenser Replacement Blocks for factory receivers is being issued by United Radio Supplies Co., 1062 Howard St., San Francisco, Cal. From this chart you will find the size and style of replacement blocks to use and the list price at which they are to be sold to your customers. Dealers and servicemen can secure a copy of this chart by writing United Radio Supplies Co. for it. No charge is made.

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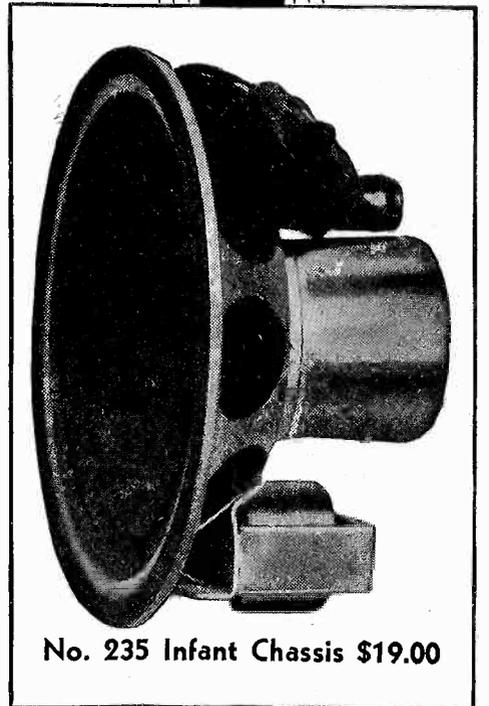
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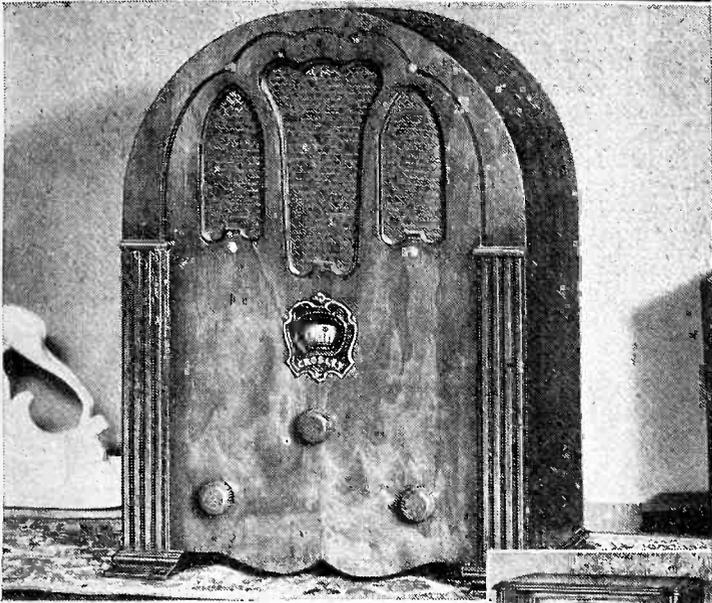


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CROSLEY SUPERHETERODYNE RADIO RECEIVERS are the Greatest of ALL Radio Values

Pentode Output..Variable Mu Full Size Dynamic Speaker SUPERHETERODYNE

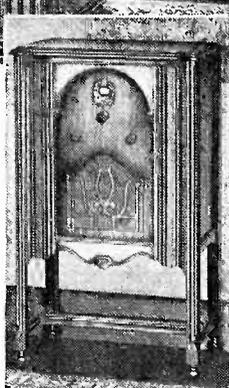
The Crosley **LITLFELLA** \$36³⁶
Complete with Tubes



The Crosley LITLFELLA (above) is an entirely new and utterly different 5-tube Pentode output, variable Mu Superheterodyne using a full size Crosley full floating moving coil dynamic speaker. Sensationally low priced for such super-performance. The attractive cabinet of beautiful veneers is only 17 inches high.

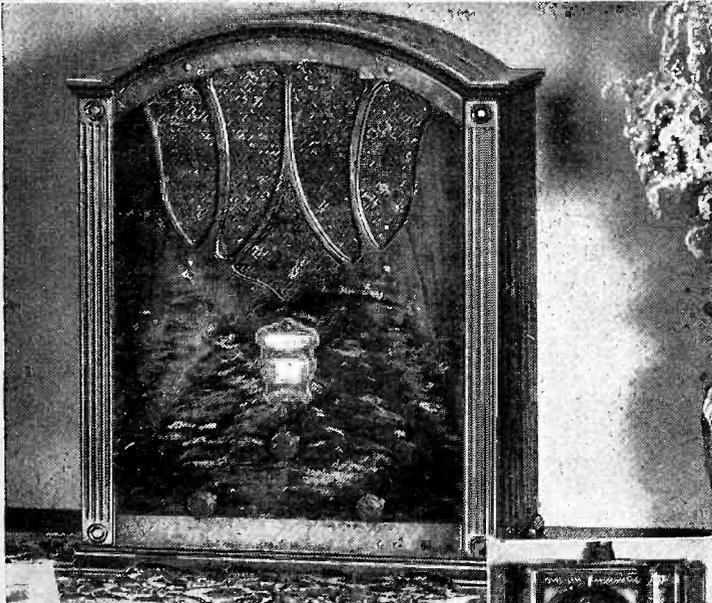
The Crosley LITLBOY

An exquisite lowboy console (right) housing the same chassis and dynamic speaker as The LITLFELLA. Front panel is of American black walnut. Posts and stretchers are walnut finish. Sides and top are 5-ply walnut veneer. \$48⁵⁰
Complete with Tubes



New 10 Tube Push-Pull Pentode Output Variable Mu..Dynamic Speaker WITH METER TUNING Automatic Volume Control SUPERHETERODYNE

The Crosley **TENSTRIKE** \$69⁵⁰
Complete with 10 Tubes



A compact table model receiver (above) incorporating the new Crosley 10-tube push-pull Pentode output, variable Mu Superheterodyne chassis with meter tuning, automatic volume control and auditorium size Crosley full floating moving coil dynamic speaker. The magnificent all wood cabinet is 20½ inches high.

The Crosley Happy Hour

A magnificent 44-inch six-legged console (right) incorporating the same chassis and features as The TENSTRIKE and an auditorium size full dynamic speaker. \$99⁵⁰
Complete With 10 Tubes



No matter what comparisons you may make, you'll not find as great a value for the dollar in a radio receiver as you'll find in these new Crosley models. From the Crosley LITLFELLA, a SUPERHETERODYNE using Pentode and variable Mu tubes and incorporating a full size full floating moving coil dynamic speaker, to the Crosley HAPPY HOUR, a 10-tube push-pull Pentode output, variable Mu SUPERHETERODYNE embodying meter tuning, automatic volume control, and using an auditorium type full floating moving coil dynamic speaker, there is a CROSLEY to meet every demand for radio reception and to satisfy every purse. Every Crosley receiver shown is a SUPERHETERODYNE—every one under \$100!

8 Tube Push-Pull Pentode Output Variable Mu..Dynamic Speaker SUPERHETERODYNE

The Crosley **PLAYBOY** \$49⁷⁵
Complete with 8 Tubes



An exquisitely designed all wood table or mantel model (above) 17 inches high, 17½ inches wide, 10¼ inches deep. Front panel is of imported Oriental wood finished in two-tone effect. The solid side panels and arch top are of high-lighted walnut finish. Incorporates the new Crosley 8-tube push-pull Pentode output, variable Mu Superheterodyne chassis and latest Crosley full floating moving coil dynamic speaker. Embodies all the new Crosley features. Never before such superlative radio performance at so low a price.

The Crosley ANNOUNCER

One of the most beautiful door console models (right). Stands 42 inches high. Incorporates the new Crosley 8-tube push-pull Pentode, variable Mu Superheterodyne chassis plus the new type Crosley auditorium size full floating moving coil dynamic speaker. \$85⁰⁰
Complete With 8 Tubes

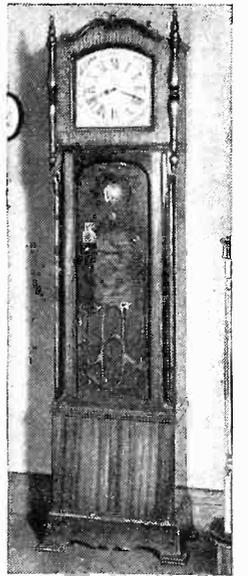
The Crosley CHEERIO

A magnificent cabinet of rare beauty, full 40 inches high, housing the new Crosley 8-tube push-pull Pentode, variable Mu Superheterodyne chassis and newest Crosley full floating moving coil dynamic speaker. All new Crosley features are incorporated. \$65⁰⁰
Complete With 8 Tubes



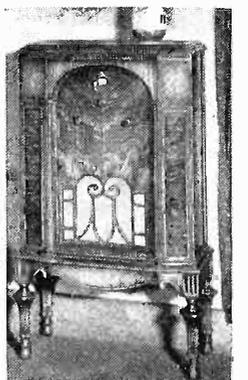
The Crosley MERRY MAKER

Another 40-inch console of unusually attractive design and sound construction housing the new Crosley 8-tube push-pull Pentode, variable Mu Superheterodyne chassis plus the new type Crosley auditorium size full floating moving coil dynamic speaker. \$75⁰⁰
Complete With 8 Tubes



The Crosley PLAYTIME

Here it is! A dream come true! A grandfather type A. C. electric hall clock incorporating the new Crosley 8-tube push-pull Pentode, variable Mu Superheterodyne radioreceiver and Crosley auditorium size, full floating moving coil dynamic speaker. The same A. C. house current connection operates both clock and \$95⁰⁰ radio.
Complete With 8 Tubes



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