

June, 1931

RADIO

REG.
U. S. PAT.
OFF.

THE NATIONAL TRADE MAGAZINE

Not just a New Idea But a Proven, Successful, Merchandising System

Silver-Marshall executives, assisted by the best economists in the United States, spent seven months building a 1932 policy to meet present business conditions. They devised it—tested it with 300 dealers in seven states—and proved it successful.

● NO DISTRIBUTORS ●

Fifty-three distributors in every section of the country have been dropped, as the plan has no place for the waste methods of the old manufacturer-to-jobber-to-dealer policy.

● DIRECT FROM THE FACTORY ●

Hereafter Superheterodynes by Silver-Marshall will be handled directly from the factory to the dealer. The distributor's "third profit" has been entirely eliminated as well as the excessive costs of traveling representatives.

● MORE DEALER PROFIT ●

The whole system has been devised on a plan that eliminates every old-fashioned waste and gives the dealer an unequalled plus-profit proposition.

● "SELLING" PRICES ●

S-M Superheterodynes are priced so as to make them literally walk right out of your store.

● PENTODE VARIO-MU SUPERHETS ●

Every dealer is familiar with Silver-Marshall's engineering record—first with important developments *eleven times* in the last eight years. The new Superheterodynes uphold that tradition. They have every sales feature of the year including cabinets second to none.

● EVERYTHING THAT S-M MAKES ●

In addition to the regular line every dealer has available the same profitable set-up on the Silver-Marshall "parts" line—superheterodyne chassis, all-wave supers, short-wave sets, converters, auto-sets, speakers, amplifiers, test equipment, replacement parts, and one hundred and forty other parts and sets.



FREE MERCHANDISING BOOK

There is so much to the plan that it cannot be told except in the form of a book. The book is big—not only in size but because it offers the biggest opportunity to dealers since radio's beginning. It is yours for the asking. No strings. No obligation. Sign the coupon and mail it today. Be the first in your community to judge the merits of this system.

Superheterodyne
by **SILVER-MARSHALL**

Take this Book
FREE!

SILVER-MARSHALL, Inc.
4441 W. 65th Street, Chicago, U. S. A.
Send me my copy of the Merchandising Book with complete information on the S-M System.

Name _____

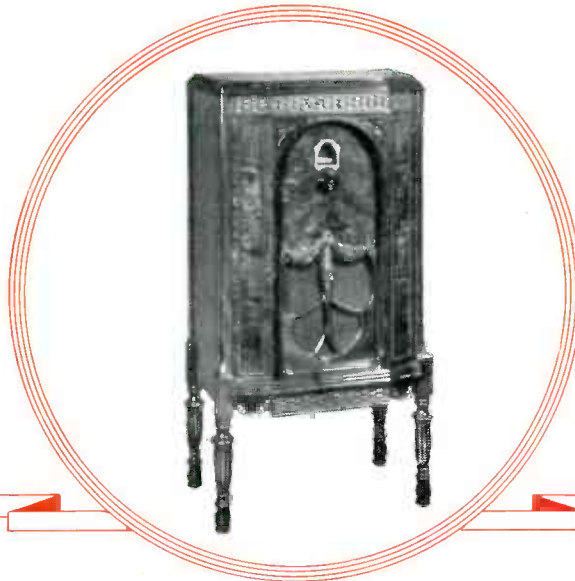
Address _____

A MODEL FOR EVERY CUSTOMER

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

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

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



MODEL 17—Lowboy walnut console of distinctive design. Superheterodyne, 9 tubes. Color tone control, Brunswick Uni-Selector, automatic volume control, dynatron oscillator, turret type tuning condenser, 12" super-dynamic speaker, two pentode tubes in output stage and power detector. Dimensions 41½" high, 21¾" wide, and 13½" deep. List price, complete with Brunswick tubes . . . \$149.50

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

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

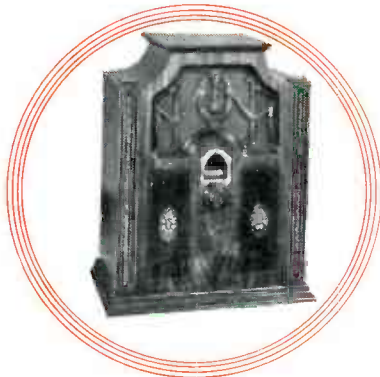
instruments off your floors and into the homes of satisfied customers . . . at a profit!

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

MODEL 12—A sensationally new idea in radio cabinetry. Miniature high-boy console. Recessed panel of rare crotched walnut veneer, giving beautiful two-tone effect. Hand-carved grille. Superheterodyne 7 tubes. Color tone control, Brunswick Uni-Selector, full range volume control, dynatron oscillator, turret type tuning condenser, 9" dynamic speaker and power detector. Dimensions 43" x 17½" x 10¾". List price, complete with Brunswick tubes . . . \$99.50

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

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



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

MODEL 24—Graceful six-egged highboy cabinet with arched French doors, in matched ribbon walnut and high-lighted matched burled walnut, hand carved and fluted legs. Superheterodyne 9 tubes. Color tone control, Brunswick Uni-Selector, automatic volume control, dynatron oscillator, turret type tuning condenser, 12" super-dynamic speaker, two pentode tubes in output stage, power detector. Dimensions 45½" x 22¼" x 16¾". List price, complete with Brunswick tubes . . . \$169.50

MODEL 33—Lowboy combination Radio-with-Panatropé, finished in American walnut. Cabinet lid with balanced stay arm. Panels of matched ribbon walnut, turned and fluted legs. Superheterodyne 7 tubes. Color tone control, Brunswick Uni-Selector, full range volume control, dynatron oscillator, turret type tuning condenser, 12" dynamic speaker and power detector. 39¾" x 19¾" x 14¾". List price, complete with Brunswick tubes . . . \$169.50

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

BRUNSWICK RADIO

Here's
your chance

SELL

Synchronous Sound!

Big Profits Await

Wide-Awake Radio Dealers

churches

• schools •

lodges • clubs

• • hotels • •

• • •

SOUND MOVIE EQUIPMENT

There are hundreds of prospects in your town for talking picture equipment. Few of the general classifications are listed above. Here is a real opportunity for you to roll up your sleeves and dig up business that will mean big profits, and a knockout for old man "Summer Slump."

Get on the job now and be one of the first to cash in on the marvelous possibilities of this offer. Pacent Standard size sound movie equipment less projector is

PRICED AS LOW AS \$795.00

COMPLETE 16 MM. TALKIE EQUIPMENT

(Professional Type)

Here is a real live-wire line that you cannot afford to overlook. 16 mm. sound movies are becoming more and more popular for commercial, advertising, industrial and home use.

The Pacent 16 mm. talking system is a complete, professional unit contained in two cases and is easily portable. It includes high quality projector equipped with electrically operated rewind, synchronized turntable, high power amplifier, and dynamic loud speaker and sound screen. Everything needed to run a sound show.

\$595⁰⁰

For audiences up to 150 people

Complete Pacent 16 mm.
Talking Picture Systems

\$695⁰⁰

For audiences up to 300 people

VISIT OUR PRIVATE DISPLAY IN THE PALMER
HOUSE IN CHICAGO DURING RADIO WEEK

PACENT

For the first time in the history of talking motion pictures you, as a radio dealer, can share in the big, quick profits realized in the sale of sound movie reproducing equipment, and thus be headquarters for sound amplifying and reproducing equipment, complete in scope from a simple phonograph pickup to a De Luxe talking picture system.

The Pacent Reproducer Corporation offers you this opportunity to merchandise synchronous sound equipment similar to that which they have installed in almost 2,500 theatres through the world. Get into this rich field.

Thousands of lodges, churches, schools, clubs, hotels and halls, many of them in your own town, are interested in purchasing standard talking motion picture equipment. Here is your chance to share in the profits realized in selling this equipment to them.

Take advantage of this opportunity immediately by filling out and mailing the coupon below so that we can send you complete information on the line, and confidential data relative to special discounts, and contract arrangements.

**IT PAYS TO SELL
SYNCHRONOUS
SOUND EQUIPMENT!**

PACENT REPRODUCER
CORPORATION

91 SEVENTH AVENUE
NEW YORK CITY
NEW YORK
U. S. A.

CLIP THIS COUPON AND MAIL

Pacent Reproducer Corp.,
91 Seventh Ave.,
New York, N. Y.

NOW!

Gentlemen:

Please forward information concerning Pacent Reproducer line; also confidential data on discounts, and contract arrangements.

Name of dealer: _____

Address: _____

Name of Individual: _____

NOW There Are
THOUSANDS
of
"LIVE" A.C. Radio Prospects



TYPE
CA-20-F
110-Watt Capacity

The Janette ROTARY CONVERTER

Only \$49.50 List

Tell them you saw it in RADIO

In D.C. Districts!

The Low Price and Perfect Performance of the Janette Rotary Converter creates thousands of New "Live" Prospects for A. C. Radios

Thousands of people living in D. C. Districts and the many farmers in your locality with D. C. Lighting Plants are now "live" prospects for you.

TODAY you can sell them A. C. radios at a price they can afford to pay. The record low price of the Janette Converter overcomes the price objection bugaboo you have had to fight. The man of modest means is a prospect for you as well as your more well-to-do clientele.

NOW, too, with the Janette Converter, you can guarantee perfect performance of the radio you sell—this converter does not permit a trace of ripple, hum or interference. It is built to the same high standard as all Janette products and is *Fully Guaranteed*.

The price for a 110-watt converter is only \$49.50—and this price includes filter, cord, plug and A. C. receptacle. Send in the coupon today for full information and liberal dealer discounts.

JANETTE MFG. CO.

557 W. Monroe St., Chicago, Illinois

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

Real Estate Trust Bldg., Philadelphia, Penn.

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

JANETTE MANUFACTURING 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

Tell them you saw it in RADIO

Established
1 9 1 7

RADIO

REGISTERED
U. S. Pat. Off.

THE NATIONAL TRADE MAGAZINE

VOLUME 13 ||||| NUMBER 6

CONTENTS FOR JUNE, 1931

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Calling the reader's attention to certain things that are happening in the radio industry, or that are liable to happen in the near future. Facts about the Stenode Radiostat crystal controlled receiver; opinions about the status of television; tube replacement policies; side lines; other items that are destined to effect the radio merchandising industry during the coming season, and that will be discussed at the Radio Trade Show and Convention.

Trade Show Cannot Fail of Success.....	24
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Introducing Messrs. Morris Metcalf, Herbert H. Frost and Bond Geddes, who are largely responsible for the success of the Fifth Annual Trade Show and Seventh Annual Convention of the Radio Manufacturers Association.

THE RADIO TRADE SHOW—Starting with Page 25	
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The booth by booth directory of the exhibits being shown at Chicago, prepared especially for those who are not fortunate enough to attend the show this year.

P. S. LUCAS, Editor

General Office—Pacific Building, San Francisco

BRANCH OFFICES

New York 415 Lexington Avenue
Chicago 211 West Wacker Drive
Boston 86 St. Botolph Street
Los Angeles 580 Crane Boulevard

H. W. DICKOW, Business Manager

SUBSCRIPTION RATES: \$2.00 per year in the United States;
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Entered as second-class matter at the Post Office at San Francisco, California, under the Act of March 3, 1879.

AS OLD AS RADIO AS NEW AS TELEVISION

No other single organization offers as complete and diversified line of radio products as the DeForest Radio Company.

Today the DeForest name is to be found on—

- Receiving Tubes
- Transmitting Tubes
- Special Purpose Tubes
- Transmitters
- Carrier-Current Equipment
- Speech Amplifiers
- Centralized Receiving Systems
- Short-Wave Receivers
- Facsimile Apparatus
- Television Equipment from Home to Studio

DeForest does not rest on its laurels. Having contributed the

- Audion or practical radio tube
- Regenerative principle
- Oscillating tube circuit
- Audio amplifier
- Practical radio telephone
- Practical radio telegraph
- Broadcasting of entertainment
- Outstanding features of 1931 tubes

—the very foundations of our present radio industry, the DeForest organization looks ahead rather than behind in serving you.

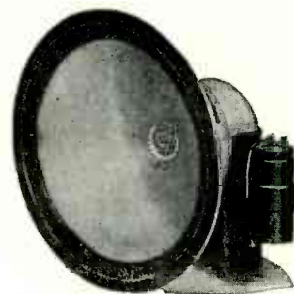
See our unique DeForest exhibit, during R.M.A. Trade Show, by visiting Booths 92, 93, 96 and 97, facing main entrance, Hotel Stevens. Or if you prefer, write for our Silver Anniversary Souvenir.

DE FOREST
RADIO
CO
PASSAIC
NEW JERSEY

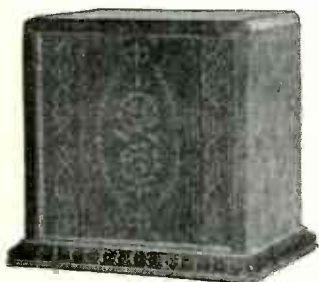
WRIGHT-DE COSTER REPRODUCERS *Are Exceptionally Efficient With Short Wave Receivers*

The letter reproduced here is typical of those we are receiving from operators of short wave receivers all over the country.

If you want to bring in the far distant stations with volume and clarity, we know the Model 217 Jr. will be a constant item of enjoyment.



Model 217 Jr. Chassis



Model 217-F Speaker
with Model 217-Jr.
Chassis

Wright-DeCoster, Inc.
St. Paul, Minnesota.

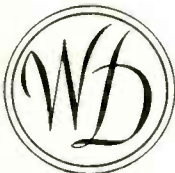
Gentlemen:

Since last writing, I have tried my Wright-De-Coster Speaker on a short wave receiver. It sure has plenty of volume and clarity on weak signals without crowding the set. I do not believe that the same results could be accomplished with any other receiver unless a more powerful amplifier was used.

Very truly yours,

ALEX SERNA,
Dearborn, Michigan.

The Speaker



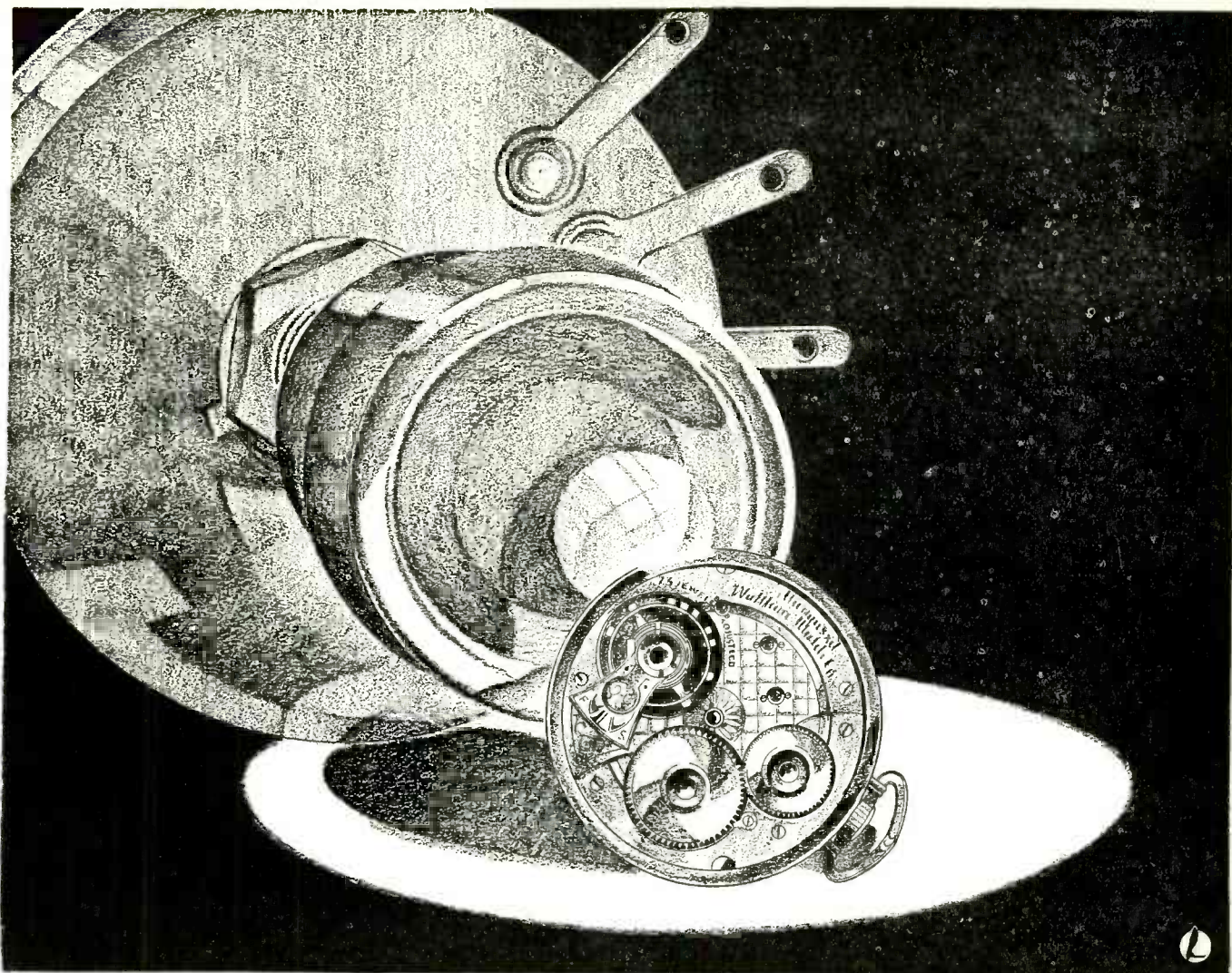
of the Year

Write for complete information
and address of nearest sales office.

WRIGHT-DE COSTER, INC.

2217 UNIVERSITY AVE., ST. PAUL, MINNESOTA

Export Dept.: M. Simons & Son Co., 25 Warren St., New York, N. Y.
Cable Address: Simontrice, New York



21 JEWEL DEPENDABILITY

Accuracy in construction makes for accuracy in performance. The watch-like precision so characteristic of the CENTRALAB Volume Control is reflected in its smooth, noiseless, ACCURATE performance.

Just as satisfactory service in a watch is the result of the perfection of its many parts . . . radio performance is no less dependent upon the accuracy of its component units.

That more than twenty million radio receivers have been CENTRALAB equipped is a splendid testimonial to the watch-like precision with which it is built.

SEND THIS COUPON NOW

Central Radio Laboratories
940 Keefe Ave., Milwaukee, Wis.
Enclosed please find 25c for which send me
2nd edition of your new Volume Control
Guide.

Name.....

Address.....

City..... State.....
Radio

Centralab

CENTRAL RADIO  LABORATORIES
914 Keefe Ave. Milwaukee, Wis.

Tell them you saw it in RADIO

A NEW STANDARD OF VALUE



MODEL 88

One of the new models by Jackson-Bell. An 8-tube screen-grid superheterodyne using Multi-Mu and Pentode tubes at the exceptional low list price of \$59.50 complete.

ANNOUNCING

**A COMPLETE NEW LINE OF SENSATIONAL
MIDGETS AT DOMINATING PRICES**

Now you can get modern reception in a line of Midgets—a screen-grid, superheterodyne circuit perfected by JACKSON-BELL to take full advantage of the properties of

MULTI-MU AND PENTODE TUBES

and priced to give you a range of popular prices at your full discount. • These are the outstanding Midgets of the day—they represent a tremendous step forward—providing you, at the price of “leaders,” with marvelous hot weather demonstrators—just the thing to add life to your business when you need it. • Get in touch with your nearest JACKSON-BELL distributor right now.

Wire or Write Us Direct.

JACKSON-BELL CO.
LOS ANGELES

Jackson Bell

A NATIONALLY
DISTRIBUTED LINE

Licensed Under R. C. A. and Hazeltine Patents.

IN CHICAGO DURING R. M. A. SHOW

The new JACKSON-BELL line will be on exhibition in Chicago at the showrooms of the Illinois Jackson-Bell Co., PURE OIL BLDG., 35 E. Wacker Drive, during the R. M. A. show. Factory principals can be contacted at SUITE 1202 Congress Hotel.

The unquestioned factory replacement policy is an outstanding virtue in the profitable CeCo franchise."

Ed. Levy, Mgr., Atlas Stores, Chicago.

"Here's further proof of CeCo's growing leadership. In two years CeCo Tube sales by Atlas Stores Corp. have jumped from 10th to 1st place. The 70 retail outlets of the 'World's Largest Radio Dealers' concentrate on one line of tubes — CeCo — for three basic reasons: — unequaled quality ... consumer preference ... more profitable discounts. CeCo's franchise means more profit in 1931."

Ernest Bauer
**PRESIDENT,
 CECo MANUFACTURING CO., INC.
 PROVIDENCE, R. I.**

No. 1 of a series of unsolicited CeCo window displays



Atlas Store, 532 S. State St., Chicago, features this striking three window display. Note the prominence of the "Better or You Don't Pay" streamers. A real business-getting idea.

CECO

RADIO TUBES

Licensed under Patents of Radio Corp. of America

They're Better or You Don't Pay!

Tell them you saw it in RADIO

● Center, top—
 R. J. NOEL, General Sales Mgr.
 Left—
 G. N. NOEL, San Francisco Mgr.
 Right—
 C. F. CARLSON, Los Angeles Mgr.
 Lower left—
 R. B. PATTERSON, Sales Engineer, L. A.
 Lower, center—
 D. L. JENKINS, Northwest Div. Mgr.



The R. J. Noel
 Organization
 Represents—

TRIAD
 CONCOURSE
 ERIE
 SAMPSON INDUSTRIES
 GRAY PRODUCTS

Factory Representation By

R. J. NOEL CO.

Is Your Assurance of Effective Coverage in the Pacific Coast Territory

EXECUTIVE OFFICES:

1441 West Jefferson Boulevard
 LOS ANGELES, CALIF.

TRIAD

HONOR-BUILT



RADIO TUBES



Licensed by RCA

TRIAD radio tubes are found as standard equipment in most of the midget receivers. Such popularity must be attributed to TRIAD superior quality.

3 NEW TRIAD TUBES

Continuing the quality and superiority of the TRIAD Line



TYPE T-235
 Heater Voltage 2.5 Volts
 Heater Current 1.75 Amperes
 Plate Voltage 250.0 Volts
 Screen Voltage 90.0 Volts
 Control Grid Voltage —3.0 Volts
 Plate Current 7.0 Milliamperes
 Screen Current Not more than 1/3 plate current
 Plate Resistance 300,000 Ohms
 Mutual Conductance 1000 Micromhos
 Mutual Conductance at —45 Volt bias 15 Micromhos

TYPE T-551
 Heater Voltage 2.5 Volts
 Heater Current 1.75 Amperes
 Plate Voltage 250.0 Volts
 Screen Voltage 90.0 Volts
 Control Grid Voltage —3.0 Volts
 Plate Current 6.5 Milliamperes



TYPE T-551 Continued
 Screen Current Not more than 1/3 plate current
 Plate Resistance 330,000 Ohms
 Mutual Conductance 1050 Micromhos
 Mutual Conductance at —50 volts grid bias 1 Micromho

TYPE T-247 PENTODE
 Filament Voltage 2.5 Volts
 Filament Current 1.5 Amperes
 Plate Voltage 250.0 Volts
 Plate Current 32.5 Milliamperes
 Space Charge Grid Voltage 250 Volts
 Space Charge Grid Current 7 Milliamperes
 Control Grid Voltage —16.5 Volts
 Amplification Factor 95
 Plate Impedance 38,000 Ohms
 Mutual Conductance 2500 Micromhos
 Power Output 2.5 Watts



TRIAD 235 tube has essentially the same characteristics as the 224 type tube but with the additional feature of a plate current grid voltage curve that is very nearly logarithmic. This plate current characteristic makes it very adaptable for use in automatic volume control circuits by virtue of its low percentage of distortion at very high grid bias.

List Price T-235 — 2.20

The TRIAD T-551 is a screen grid variable-mu tube of many refinements. Designed to cut out cross-talk and distortion and reduce static to a minimum, the T-551 can replace the type 224 in most present circuits with decidedly beneficial results.

List Price T-551 — 2.20

The new TRIAD pentode has an extremely high amplification factor combined with a very high power output which results in increasing the maximum sensitivity of a set with an additional gain in volume over the 245 type power tube.

List Price T-247 — 1.90

Triad Manufacturing Co., Inc. Pawtucket, R. I.

West Coast Distributors
R. J. NOEL COMPANY

SEATTLE
 1518 First Ave., South

LOS ANGELES
 1441 W. Jefferson Boulevard

SAN FRANCISCO
 704 Larkin Street

Tell them you saw it in RADIO

STEEL ANTENNA MASTS

A Sideline That Builds Summer Profits

Your Prospects Are Numerous...Everywhere

\$1.50
PER PAIR

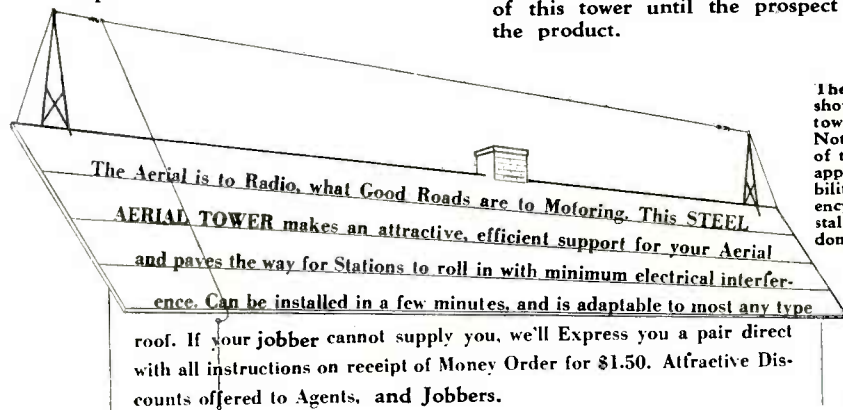
Better Antenna Installations Bring Better Business to You

You can say what you want about side lines but the best side line for any radio merchant is ANTENNA INSTALLATIONS.

Every housetop needs an UP-TO-DATE aerial. Every aerial needs modern SUPPORT. There is no substitute for STEEL... especially when you can buy a PAIR of steel antenna towers for one dollar and fifty cents. These towers are five and a half feet tall and can be easily secured to any roof or house-top.

Send your service man on a trip through your city and let him show these miniature towers to every radio owner. You realize a PROFIT on the sale of the towers PLUS another profit from the installation. Every time you sell a radio set sell a pair of these towers. Their small cost makes them ready sellers. Everybody wants them when they see them. But you can't convince prospects of the merit of this tower until the prospect SEES the product.

The illustration shows a pair of our towers installed. Note the neatness of the job... the appearance of stability and permanency. So easy to install that it can be done in short time.



5 1/2 Feet HIGH
16 Base
Two Towers and two Insulators
are packed in a neat carton.
Can be shipped anywhere.

ORDER A PAIR AT ONCE

SEND THE COUPON AND YOUR CHECK TODAY

Get started . . . NOW. \$1.50 brings you a pair of towers and two insulators. Or, better yet, put in a stock of a dozen pairs. The

total cost is only \$15.00 per dozen or \$12.50 for a carton containing 10 pairs. Shipments made same day your order reaches us.

JOBBERS

Your dealers are buying these towers from us. Why don't YOU stock up right away and get your share of the profits? Wire or write for jobber proposition.

A. LeBourg
602 South 11th St.,
Gadsden, Alabama.

Ship _____ pairs of antenna towers for which I enclose \$ _____ in payment. (Note—C. O. D. shipments accepted if 50% accompanies order).

NAME _____
ADDRESS _____
CITY AND STATE _____

AGENTS

Sales Agents please write for territory. Here is an article that SELLS. Get the facts — immediately.

Tell them you saw it in RADIO

BE SURE THAT IT DOES!



Supreme Oscillator Model 70, Less Tube and Batteries, Dealers Net Price, F.O.B. Greenwood, Miss. **\$49.75**

Supreme Output-Ohmmeter, Dealers Net Price, F.O.B. Greenwood, Miss. **\$30.00**

Handsome carrying case of hardwood for combined Oscillator, Output-Ohmmeter, and Accessories. Dealers Net Price, F.O.B. Greenwood, Miss. **\$5.00**

Tubes and Batteries will be supplied at current dealers net prices.

Does the Oscillator you intend to buy offer All These Advantages?

Model 70 Exclusive Features

1. The only Oscillator covering all superheterodyne frequencies between 90 and 550 kilocycles, as well as all broadcast frequencies between 550 and 1500 kilocycles.
2. The only Oscillator calibrated for every frequency between 90 and 1500 KC.
3. The only perfectly shielded Oscillator with adaptability for external 110-volt D.C. or A.C. (of any frequency) power supply, as well as for use with its self-contained batteries.
4. The only commercial Oscillator which may be operated with or without modulation for the beat-note adjustments recommended by some radio manufacturers.
5. The only popular priced Oscillator provided with a vernier-movement tuning dial for fine adjustments.
6. The only commercial Oscillator built into a cast aluminum housing, with an aluminum panel covered with bakelite, so that the complete Oscillator can be removed from the carrying case when desired.
7. Completely controlled output.
8. Absolutely no readable leakage on the most sensitive receivers even when operated at full volume.
9. The only popular priced commercial Oscillator accompanied with an attenuated output meter, combined with an accurately calibrated high-range ohmmeter.

MODEL 70 DOES

SUPREME
Testing Instruments
"SUPREME BY COMPARISON"

BURY past mistakes with the past season. In selecting your equipment for new season's opportunities **BE SURE!** Look at the panels to the right—to the left. Check, *Double-Check* the answer to the question, "Does the instrument you intend to buy offer these advantages?" And let the obvious superiority and foresighted engineering design of Supreme Instruments lead you to an investment that is producing daily dividends for knowing servicemen throughout the radio world. The "Money-back" Guarantee below will uphold your own good judgment and the Supreme tradition, "Supreme by Comparison."

Yesterday an oscillator was convenient but not essential—today you cannot do a complete job of servicing without one. You will be glad you waited for the Supreme 70—the Oscillator, Output-Ohmmeter, new as the new season, setting an unequalled standard in service ranges. The Oscillator you need for modern service.

MODEL 90 PIONEER OF PENTODE ANALYSES

FIRST to provide all PENTODE TESTS AND ANALYSES, Model 90 enters the new season unchallenged for versatility to every radio service development. The instrument adopted and recommended by the engineers of RCA Institutes, who say "The best mechanical equipment ever designed. Permit us to congratulate you on the superior design and construction." Could more absolute assurance be desired than this recommendation from the world's foremost engineering institution and the money-back guarantee below?

SERIES N-4 DIAGNOMETER NOW READY

THE famous Supreme Model 400-B Diagonometer needs no introduction to the service world. The new Pentode Series N-4 is now ready for shipment. Write today for information.

Satisfaction or Your Money Back

You must be satisfied! Return any Supreme Instrument within ten days that does not fully qualify, "Supreme by Comparison" and get your money back.

Does the Analyzer you intend to buy offer all these advantages in PENTODE ANALYSES?

In addition to all regular analytical tests, the Model 90 provides—

1. Power pentode analyses without special pentode adapters which have exposed high potential terminals.
2. Measurements of power pentode space charge grid potentials.
3. Measurements of power pentode space charge grid currents.
4. Measurements of power pentode plate currents.
5. Measurements of power pentode plate potentials.
6. Measurements of power pentode control grid potentials.
7. Measurements of power pentode filament potentials.
8. Screen grid analyses without radio circuit oscillation.
9. Six (6) ranges for A.C. potential measurements up to 900 volts with "1,000-ohms-per-volt" meter sensitivity.

MODEL 90 DOES



Dealers Net Price, F.O.B. Greenwood, Miss. **\$78.50**

25
INSTRUMENTS
IN
1

SUPREME INSTRUMENTS CORP.

408 Supreme Bldg., Greenwood, Miss.

Distributors in all Principal Cities. Service Depots in New York, Philadelphia, Chicago, Kansas City, Seattle, San Francisco, Tacoma
Foreign Division: 130 West 42nd St., New York City
Cable Address: LOPREH, New York

Tell them you saw it in RADIO

There is No Business Depression

For Dealers Handling the PARAMOUNT Line

Sold Direct to
Dealers at a net
price of **\$17.95**
Complete with
ARCTURUS TUBES



This is positively the fastest selling set we have ever manufactured. IT SELLS ON SIGHT. Dealers everywhere report they sell them faster than we can supply them. The tone quality is excellent. Get in on the PARAMOUNT LINE immediately.

The Smallest Radio Made

Size 9 $\frac{3}{8}$ " High, 7 $\frac{1}{2}$ " 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 tone control.

5 Selectivity Plus Distance

We have reports of distance of 1500 miles.

6 Illuminated Dial

Easy to see.

7 Quality all Through

Indestructible steel chassis, cadmium plated, oversized power transformers (shielded), heavy service Durham resistors, electrolytic, self-healing filter condenser, 16 mfd., no hum, Cornell oversized bypass condenser and many features found only in high priced sets.

COMING—AN AUTOMOBILE RADIO

LOS ANGELES RADIO MFG., CO.

3683 So. San Pedro Street
Los Angeles, Calif.

Members of
Los Angeles
Chamber of Commerce

Manufacturers of
Quality Radios
Since 1925

Complete Coverage of the Short Wave Field

6 new short-wave models

For television
and short-waves

*Another
Converter*

An All-Wave Receiver

A Special Amateur Model

Radical Design Departures

Amazing Performance

Complete Details Released June 15th

LOOK
FOR
THIS
SYMBOL



It Signifies
the Ultra in
Satisfactory Long
Distance Reception

Jobbers:

This is a Short Wave Year. The Sargent Line gives complete coverage of the Short Wave field, is sold through regular trade channels and is handled by better class jobbers. It is a high quality line marketed under a well-known trade name which in itself is your guarantee of good design and outstanding performance. Communicate with us at once.

Representatives:

Some territory is still open. If you are in position to do justice to a first class Short Wave line communicate with us.

CABLE ADDRESS: "RADIOSTRUX"
RADIO CONSTRUCTORS COMPANY
3714 SAN PABLO AVE.
OAKLAND, CALIF.

I am interested in your Short Wave Models, particularly the—
..... Converters
..... All-Wave Receivers
..... Special Amateur Receivers

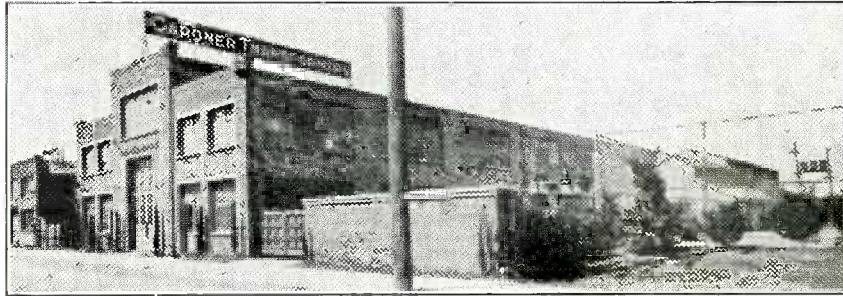
Please send me complete details.

(Note Our New Address) NAME.....
ADDRESS.....
CITY AND STATE.....

DEPENDABLE TRANSFORMERS

GARDNER ELECTRIC MFG. CO.

Emeryville, California



Types of Transformers We Manufacture POWER PACK TRANSFORMERS

Terminal board plainly marked for set builders or for replacement purposes.

Cat. No. 1612—800V ct 125 MA—5V-2A, 2½ V ct-3A, 2½ V-12A	List price \$10.00
Cat. No. 1588—800V ct 100 MA—5V-2A, 2½ V ct-3A, 2½ V-12A	List price \$ 9.00
Cat. No. 1552—750V ct 80 MA—5V ct-2A, 2½ V ct-2A, 2½ V ct-7A	List price \$ 7.00
Cat. No. 5020—1200V ct 150MA—2-2½ V-7A, 2-7½ V-3½ A	List price \$15.00
Cat. No. 8660—3000V ct 300MA—2-2½ V-7A, 2-7½ V-3½ A	List price \$22.00
Cat. No. 5086—1400V ct 200MA—2-2½ V-7A, 2-7½ V-3½ A	List price \$17.50

AUDIO

Cat. No. A-1—1st stage	List price \$3.00
Cat. No. A-2—1st stage, high grade	List price \$4.00
Cat. No. A-3—Push Pull	List price \$5.00
Cat. No. A-4—Push Pull, pie wound balanced coils. Extra high grade	List price \$7.50

INPUT

Cat. No. 2710—Microphone one or two button to grid or line	List price \$ 5.00
Cat. No. 2447—Microphone one or two button to grid or line. Extra high grade	List price \$ 8.00
Cat. No. 3547—Microphone and Phonograph to grid	List price \$10.00
Cat. No. 227—Tube to line	List price \$10.00
Cat. No. 320—Line to line	List price \$10.00
Cat. No. P13—Photo-Electric Cell	List price \$10.00
Second grade of the above four	List price \$ 6.00

OUTPUT

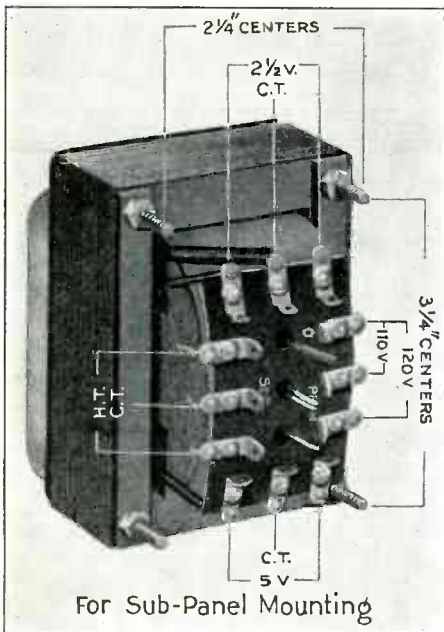
Cat. No. 2514—Regular Tubes to Voice Coil	List price \$ 5.00
Cat. No. 2516—Two or four .50 Tubes to 1-2-3-4 Speakers	List price \$10.00
SPECIAL—Specify DC, MA and ohms impedance.	

FILAMENT

Cat. No. 2721—2½ V-10A ct.	List price \$5.00
Cat. No. 2722—2-2½ V-5A ct.	List price \$6.00
Any type made to your specifications at reasonable prices.	

AUTO

Cat. No. 75—75VA, 220 to 110 volts	\$5.00
Cat. No. 150—150VA, 220 to 110 volts	\$7.50



COILS AND CHOKES

We manufacture coils and chokes for all purposes. Let us figure on your requirements. Our automatic winding machines are of our own design and second to none for quality work and compactness.

MANUFACTURERS OF RADIO SETS AND PUBLIC ADDRESS SYSTEMS

We make to your order special transformers, coils and chokes of any size or requirements. Send us your specifications.

BROADCAST STATIONS

All types of transformers, chokes and coils designed and built to meet your specifications.

AMATEURS

Gardner Transmitting Power and Filament Transformers, and the big dependable Gardner Chokes are made in stock sizes or will be designed for your particular needs. Prices are right. Send specifications for estimate.



SERVICE MEN

A complete line of standard and special transformers, coils and chokes in stock. Send us the burned-out transformers, chokes or coils for all modern and obsolete radio sets and Gardner will replace or rewind at a real saving. Transformers and coils for all makes of radio sets wound on our automatic winding machines. Special impregnation and baking processes insure best quality and reliable operation from Gardner merchandise.

INTERFERENCE ELIMINATOR—Our combination line control and isolation transformer is better and cheaper than filters.

TRANSFORMER STOCKS AT

SAN FRANCISCO—Frazar Co. Ltd., 7 Front Street

PORTLAND—Tru-Tone Products Co., 51 Security Bldg.

LOS ANGELES—C. E. Flynn, 312 South Palm Drive

Concourse, "Of Course"

DRY ELECTROLYTIC CONDENSERS

~ Say the Makers
of Better Sets



Advantages of Concourse Dry High Voltage Electrolytic Condensers

IN using Concourse Dry Electrolytic Condensers, you will find them more advantageous than the wax paper condensers, as they cost considerably less per microfarad and occupy much less space.

High capacity filtering and bi-passing can be had at small cost in comparison with paper condensers.

Concourse Electrolytic Condensers can also be assembled in square containers similar to the paper wax impregnated types.

The advantages of using Concourse Dry Electrolytic Condensers instead of the liquid or aqueous types, are that they can be mounted in any position and are self-healing:

ALSO

Concourse condensers are rated at a considerably higher voltage, in fact even as much as 100 volts more:

ALSO

In such conditions where there would be a great deal of vibration, such as in motor cars for instance, a dry electrolytic condenser used in a radio set, would not be affected at all, whereas the liquid condenser would be impaired very much:

ALSO

Concourse electrolytic condensers, after being thoroughly tested by many prominent Engineers have been found far more satisfactory for long life performance and voltage ratings than any other types of condensers now on the market.

MORE and more manufacturers are coming to CONCOURSE to solve the problem of FOOL-PROOF filtering. And within the short space of a season this dependable dry electrolytic condenser has become the manufacturer's choice in many of the well known sets. In the face of the stiffest competition the industry has ever known it remained for CONCOURSE to perfect a condenser that more nearly meets the requirements of the manufacturer than even the most critical engineer would ask for.

NO set is better than its filter circuit. Concourse-equipped receivers **STAY SOLD**. Their reliability and their ability to withstand brutal overloads has met with the acclaim of the ever-growing manufacturing clientele. You, too, can give your dealers a better receiver if it is CONCOURSE equipped.

FOR REPLACEMENTS

CONCOURSE filter condensers are the choice of the dealer and service man who depend on customer-SATISFACTION. Condenser troubles go out when CONCOURSE goes in.

If your dealer cannot supply you, please write or communicate with our local representative

Concourse Electric Co.

387-411 Wales Ave.

New York City

WEST COAST DISTRIBUTORS

R. J. NOEL COMPANY

SEATTLE

LOS ANGELES

1518 First Ave., South

1441 W. Jefferson Blvd.

SAN FRANCISCO

704 Larkin Street

Tell them you saw it in RADIO

LIST OF EXHIBITORS, FIFTH R. M. A. TRADE SHOW

**Exhibition Hall and Grand Ball Room
Stevens Hotel, Chicago, Ill., June 8-12, 1931**

Name of Exhibitor	Booth No.	Demonstration Room	Name of Exhibitor	Booth No.	Demonstration Room
The Acme Elec. & Mfg Co.	11		The Magnavox Co.	83	515A-17A
The Acme Wire Co.	B10		Micamold Radio Corp.	111	656-57
Adler Mfg. Co.	B41		Micarta Fabricators, Inc.	B79	
Aerovox Wireless Corp.	94		The Muter Company	48	1205A-1206A
All-American Mohawk Corp.	79-80-81-82	2000-01-01A	National Carbon Co., Inc.	B13-14-15-16	1800-01-01A
Allen-Hough Carryola Co.	19	632-33	National Company, Inc.	17	516
American Emblem Company	B77	521A-523A	National Credit Office	16	
American Radiostat Corp.	B48	2418-19-20	National Union Radio Corp.	115-116	618A-19A-20A
F. A. D. Andrea, Inc.	103-104-105-106	604-5-6-7	Operadio Mfg. Co.	B34	553
Arcturus Radio Tube Co.	B45-46	2323A	Perryman Electric Company	9	619-20
Atwater Kent Mfg. Co.	B23-24-25-26	700-1-1A	Philadelphia Stor. Battery Co.	1-2-3-4-5-6-7-8	1900-01-01A
Audiola Radio Company	129	601-02-03-09-10	Philmore Mfg. Co.	44	
Belden Manufacturing Co.	88-89	1819	Pierce Airo, Inc.	107	530A
Birnbach Radio Company	B71	1539-1540	Pilot Radio & Tube Corp.	B33	542A-544A
Bond Electric Corporation	47	705A-706A	Polymet Mfg. Co.	84-85	
The Brunswick Radio Corp.	B59-60-61-62-63	2404-05-06	Racon Electric Co., Inc	60	550A
The Bud Radio Company	130	533A-534A	Radio Coil & Wire Co.	29	535A-36A
Burgess Battery Company	69-70	2204-05-06	Radio Condenser Co.	B56	548A
Cable Radio Tube Corp.	B72-73	2118A-19A-20A	Radio Master Corporation	B11	1700-01-01A
The Capehart Corporation	65-66-67	504-05-07-09	The Radio Products Co.	B57	
Carter Radio Co.			RCA Radiotron Co., Inc.	B29-30-31	1405A-06A
Div. of Utah Radio Prod Co.	B35-36		RCA Victor Co., Inc.	54-55-56-57-58	502A-04A-05A-07A-09A
Caswell-Runyan Co.			Readrite Meter Works	B55	502
Ceco Mfg. Co., Inc.	100-101-102	2200-01-01A-02	Revere Radio Corp.	10	621-22
Central Radio Laboratories	36	1807-08-09	M. H. Rhodes, Inc.	B58	801-802
Champion Radio Works, Inc.,	34-35		The Rola Company	B1A	539A
Clago Radio Co.	99	609A-610A	Samson Electric Company	B3A	1200-01-01A
Colonial Radio Corp.	B53-54	556A-57A	Scovill Manufacturing Co.	61-62	
Continental-Diam. Fibre Co.	59	551A	Shortwave & Television Corp.	B76	1005A
Cornish Wire Co., Inc.	68		Silver Marshall, Inc.	B81	533-34-36
Credit-Clear. Hse. Adj. Corp.	15		The Sparks-Withington Co.	B17-18-19-29-21-22	512-13
Crosley Radio Corporation	30-31-32-33	2300-01-01A	Sprague Specialties Company	45-46	1206
Crowe Name Plate & Mfg. Co.	108		Starr Piano Company	B66	1018A-19A-20A
E. T. Cunningham, Inc.	63-64	2419A	Steinite Manufacturing Co.	B65	545A-546A
DeForest Radio Co.	92-93-96-97		The Sterling Mfg. Co.	24	
DeJur-Amsco Corp.	B69		Stewart-Warner Corporation	95	
Tobe Deutschmann Corp.	B32	560A	Story & Clark Radio Corp.	22-23	2400-01-01A-02-02A
Dongan Electric Mfg. Co.	B67		Stromberg-Carlson Tel. Mfg. Co.	B4-5-6-7-8	1404-05-06-07
Eaton Coil Co.	25		Sylvania Products Co.	B1-2-3	1600-01-01A
The H. H. Eby Mfg. Co.	B47		Talkiola Corp.	B59A	1202A-03A
Echophone Radio Mfg. Co., Ltd.	52	556-557	Transformer Corp. of America	76-77-78	704-05-06-07
Edison Wood Products, Inc.	B76A		Triad Manufacturing Co.	90	1519A-20A
Electrad, Inc.	71		Tung-Sol Condensers, Inc.	74	2305A-06A
Electromatic Record Changer Cp.	B63A	560	United Air Cleaner Corp.	91	512A
Elkon, Inc.	13		United American Bosch Corp.	B37-38-39-40	2105-06
Essenbee Radio Devices Co.	12	2207A-2208A	United States Radio & Television Corp.	72-73	604A-05A-06A-07A-804-05-06
Essex Wire Co.	B78	622A-623A	U. S. Dept. of Commerce	93A	
John E. Fast & Co.	B70		Utah Radio Products Co.	B35-36	600-01A-02A
Federal Wood Prod. Corp.	38-39	1218A-19A	The Webster Company	21	533A
French Battery Company	27		Webster Electric Company	B42	513A
Jesse French & Sons Piano Co.	117	739A-740A	Wells-Gardner Div. of Gulbransen Company	B43	
Herbert H. Frost, Inc.	37		Weston Electrical Inst. Corp.	B68	718A-19A
The Frost-Minton Corp.	75	1605A-1606A	Wright-DeCoster, Inc.	114	460-61-63
Galvin Mfg. Co.	29A		Yaxley Manufacturing Co.	18	
General Cable Corporation	86-87	1222-23	TRADE PAPERS		
General Dry Batteries, Inc.	B75		Name of Exhibitor	Booth No.	Demonstration Room
General Electric Co.	B49-50-51-52	900-01-01A	Radio	120	
The General Industries Co.	26	519A-520A	Radio Digest	128	
General Motors Radio Corp.	40-41-42-43	1400-01-01A	Radio Engineering	121	
General Radio Company	B12		Radio Industries	125	539
Gilby Wire Company	98		Radio Music Merchant	123	529
Gulbransen Company	B44	1000-01-01A-02A	Radio News	127	
Hammarlund Mfg. Co., Inc.	B9		Radio Record	118	532
The Hickok Elec. Inst. Co.	14	1518A	Radio Retailing	119	561A
Howard Radio Company	112-113	905-906	Radio Retailer & Jobber	126	
Hoyt Electrical Inst. Works	20		Talking Mach. & Radio Journal	124	528A
Hygrade Lamp Company	B27-28	1804A-05A-06A	Talking Mach. & Radio Weekly	122	537
Insuline Corp. of America	53	524A-26A			
Jefferson Electric Company	B80				
Jensen Radio Mfg. Co.	49	537A			
Jewell Elec. Instrument Co.	B74				
Howard B. Jones	28				
Colin B. Kennedy Corp.	109-110	2104A-05A-06A			
The Ken-Rad Corporation	50-51	500-01-01A			
Kester Solder Company	864				

NOTE—"B" designates location in Grand Ball Room

RADIOTORIAL COMMENT

◀◀◀ FLASH ▶▶▶

IT IS being persistently rumored that Philo T. Farnsworth, inventor and patent holder of the cathode ray television system and originator of narrow band television, has closed negotiations with Philco for the manufacture of his inventions on a royalty basis, and that Philco will have the Farnsworth type receivers ready for the market later in the year. The rumor also persists that the Columbia Broadcasting System will commence showing television movies and talkies when the Philco receivers are ready for distribution.

While television equipment is only a sideshow at this year's R.M.A. Trade Show, the prediction is here confidently made that it will be the chief attraction next year at Chicago or wherever the show is held. Likewise, whereas it is now a sideline for a few radio dealers, next year, and thereafter, it will be the big seller in radio. For at last television is ready to step from the laboratory, not as a scientific toy, but as a practical means of providing entertainment in the home.

These predictions are based upon first-hand knowledge of what is being done with cathode ray scanning in the laboratory. Farnsworth in San Francisco and Zworykin in Pittsburgh, among others, have developed tubes which give much better results than are obtainable in the scanning disc and which do not possess its mechanical disadvantages.

The cathode ray tube is silent in action, is capable of giving much greater detail in the picture, and can readily be synchronized with the transmitter. The actual cost of manufacturing one of these tubes is less than one dollar, which is considerably under the cost of a small electric motor, a scanning disc, and a neon lamp, whose places it takes. It allows the use of a compact receiver cabinet of small size, has no moving mechanical parts, and its operation requires no mechanical adjustments.

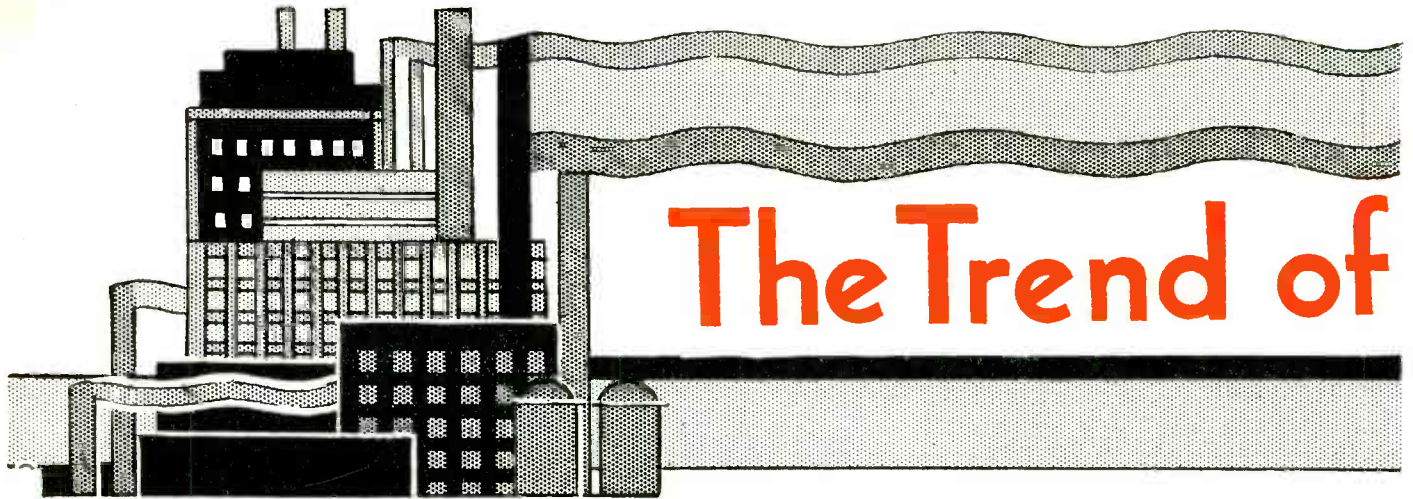
The scanning disc seems to bear much the same relation to television as did the crystal detector to radio. The results that they give, while of great experimental interest, are hardly suitable for the entertainment of a critical audience. So just as the vacuum tube has displaced the crystal detector, it is believed that the cathode ray tube will displace the disc.

These comparisons are made for the information of the radio dealer so that he may avoid overstocking of television equipment with which his customers may be dissatisfied when the better equipment comes on the market. Any equipment which employs the scanning disc or its mechanical equivalent should be sold with the strict understanding on the part of the buyer that cathode ray receivers will soon be on the market and that the present disc receiver is only an interesting plaything. Thus the dealer can avoid creating dissatisfied buyers.

That the Farnsworth laboratory instrument, for example, is producing a brilliant 400-line picture one foot square with signals transmitted over a ten-kilocycle channel, is an indication of the performance to be expected from the commercial product. The receiver is maintained in exact synchronism with the transmitter by means of non-interfering signals transmitted over the same channel as are the picture signals.

While it is thoroughly practical with the Farnsworth system to broadcast pictures on any of the ninety-six channels which have been allocated for the broadcasting of speech and music, it is probable that the initial broadcasts will be in the 100 to 150-meter band. Much study is also being given by others to the 5-meter band as a television channel where ample space is available for systems which do not employ narrow band transmission.

The task of converting this experimental art into commercial practice is in the hands of experienced radio manufacturers. The buying public is eager for radio movies. So radio is ready to stage a remarkable comeback with television leading the procession out of the depths of financial depression.



Cooperative Advertising Campaign Is Innovation

WITH the introduction of a handy tube carrier, in which the radio set owner can carry his tubes to a radio store to have them tested without charge, the National Union Radio Tube Corporation, its jobbers and their dealers in Washington, D. C. and Baltimore, Md., have inaugurated the plan of banding together and offering their free tube testing service in full page newspaper advertisements. In these ads the manufacturer describes the carrier in the center of the page, the wholesalers further promote the idea in another section, and the various dealers buy card space around the edges. The samples sent to this office are very impressive, and clearly indicate the value of "tying in" with cooperative advertising of this type.

National Union reports that this cardboard container idea has made an outstanding advance in the direction of persuading the public that radio tubes are as easily removed, handled and replaced as ordinary electric light bulbs.



Sarnoff Statement of Interest

WHEN a man gets as near the top of an industry as David Sarnoff is in the radio world, his views concerning the future of his chosen field of activity can well be masticated and digested by everyone in the business. At the annual meeting of the RCA stockholders last month Mr. Sarnoff made several statements which mingle optimism with a note of warning. He agrees with an article which appeared in the May issue of RADIO in which an attempt was made to prove that the replacement market for radio receiving sets, due to extensive manufacturing operations of previous years, now represents a large part of the present market, although it has been severely affected by the general economic depression. He also reiterates the United States Census Bureau's report that only one-half the families in

the country own radio receivers. The second set market, Mr. Sarnoff believes, is beginning to develop, and the smaller radio is filling a distinct place there. Indeed, it is the opinion of this leader that the low-priced set is acting as a stimulant in the industry.

Any discussion of future opportunities in the radio field must naturally include television, Mr. Sarnoff says, but he warns against introducing this new art before it is capable of rendering real service. "While the public was willing, and even eager, to experiment with radio in the early stages of broadcast development it seems to us that it will desire a comparatively more advanced television receiver than the early crystal radios. There was no precedent for the taking of sound and music out of space but the public has been educated by the motion picture industry to expect picture transmission of a high quality, and it is doubtful whether interest can be long sustained by inferior television images."

This is sound advice, and while those who are already broadcasting television programs and selling television receivers will say that Mr. Sarnoff so expresses himself because the RCA has been left high and dry in the patent situation for once, it is well worth thinking about. Leaving Mr. Sarnoff and the RCA for a moment it might be said that the scanning disc system of television has many noted critics who cannot see much future for it, and who hold that the cathode ray system is not only already developed to a point far beyond the former but will not be limited in the ultimate perfection of the art by mechanical restrictions. Philo T. Farnsworth of San Francisco and Dr. Zworykin of the Westinghouse Company have both developed the cathode ray system to a high stage. Farnsworth has gone further, and can transmit a 400-line picture on a 10 kc band. (Those now broadcasting send a 48-line picture on a 48 kc band.)

These two inventors agree with Mr. Sarnoff in the inadvisability of "jumping the gun." Even though the advocates of the scanning disc are getting the pole

and a good long lead, the champions of the cathode ray are content to wait until they can give service. That time may be here any month now, and it is to be hoped that the introduction of inferior television will not seriously affect the welcome held in store for television of a more advanced sort. As Mr. Sarnoff puts it: "Television promises another great industrial development, but to assure this, we cannot disappoint the public and defeat the possibilities of a future great service by hasty and premature action at the present time."



"Complete With Tubes" Policy Held Essential

IN a message from J. Newcomb Blackman, chairman of the tube committee of the Radio Wholesaler's Association, Mr. Blackman states that factory leadership and trade cooperation are both required to initiate, establish and maintain the policy of equipping, advertising and pricing radio sets only "Complete with tubes."

He points out the fact that practically everyone concerned now agrees that this policy is the safest and fairest, both to the trade and the buying public; that it is less confusing than the old policy of advertising some radio receivers at a price with tubes and others at a price without. It seems a silly thing to advertise a radio set without tubes; just as silly, Mr. Blackman asserts, as advertising an automobile without tires. It has no advantage for manufacturer, wholesaler, dealer or buyer, except in those cases where the "less tube" price attracts the unwary victim into the store on a false pretense, and certainly no one will come out in the open and uphold that practice.

Mr. Blackman is right in the statement that cooperation is needed. Manufacturers must agree to it and dealers must agree to it. If an individual in either class steps out of bounds everyone else in the business must try to reason with him, for he is hurting his competitors and himself.



The Radio Times

One Solution To Replacement Evil

THE Cable Radio Tube Corporation, manufacturers of Speed tubes, made a survey of the past twelve months' replacements, which disclosed the facts that the number of tubes returned to them amounted to 5.87 per cent of their sales for the same period. The salvage of perfect tubes in the returns reduced the net percentage to 4.12 per cent. In addition thereto, there were a number of tubes of very old manufacture which should not have been subject to replacement. It was felt that with the greater ruggedness and quality of their present product, and greater care exercised in selecting and testing the goods, the replacements should not exceed three per cent.

With these figures to go on, the company resolved to institute a *no replacement* policy, offering in its place an additional six per cent of the net purchases, deducted from each invoice to cover possible defective goods. This is at least a definite basis to work upon and should result in greater caution on the part of the dealer in making replacements. It may be that this course will correct an evil which has cost the industry a great deal of money.



Stenode Will Cause Stir at Show

IT is beginning to be apparent that the talk about the new Stenode receiver, which immigrated over to this country from England last year, is not merely a bag full of hot air as skeptics have been insisting. Those who are fortunate enough to attend the Trade Show at Chicago will get their money's worth if they take in the demonstration of this receiver, as it is now an established fact that the Stenode will not only perform as its backers have been claiming it will perform but that it can be manufactured at a cost that will put it right into the competitive price class.

As for performance, it is claimed that the Stenode is just ten times more selec-

tive than the average highly selective superheterodyne. This phenomenal selectivity allows the reception of a station on each of the ten kilocycle bands with, as those who have twisted its dial have it, blank spaces in between. They say it is so sharp that the great percentage of static and electrical interference is eliminated, and it stands to reason if there are blank spaces in between signals there can be no heterodyning of carriers.

The quality of the receiver is said to be superior to that attained by any other type of receiver, which definitely contradicts the theory that selectivity greater than that of the so-called ten kilocycle variety destroys the reproduction of the higher frequencies. The new variable mu and pentode tubes are found to serve their purposes in the Stenode very satisfactorily, and will undoubtedly be included in the first models to be manufactured.

It is reported that a half a dozen or more prominent manufacturers are already to spring the Stenode as soon as the time to release it is ripe. This will probably be immediately after the show. While a drastic development of this type always catches many in the industry napping, it is bound to be a boon to the radio business by stirring up new enthusiasm in that part of the public that has not heretofore been sold on radio, and by convincing those whose receivers are beginning to grow obsolete that now is the time to supplant them with what will be the ultimate. (The editor knows better than to use the word "ultimate" when dealing with radio, but it looks good.)

A brief description of the Stenode Radiostat might be of interest, even in editorial columns such as these. It follows the superheterodyne principle, with a single pre-selector stage, one stage of tuned radio frequency amplification, a first detector, or mixer, an oscillator, a quartz crystal and bridge circuit preceding the intermediate frequency amplifier, a second detector, followed by a detector output and correction circuit, then the audio frequency amplifier. While

this sounds like a complicated and expensive proposition compared to a mere "four stages of T. R. F." a look at the circuit diagram shows that the construction of the receiver can be made as inexpensive as any other good superheterodyne.



Silver-Marshall Goes Direct To Dealers

McMURDO SILVER, president, and Howard W. Sams, general sales manager of Silver-Marshall, Inc., recently issued the following joint statement to the trade:

"As a result of months of serious consideration and contact with radio dealers all over the country, Silver-Marshall on June 1st put into effect a new direct factory policy.

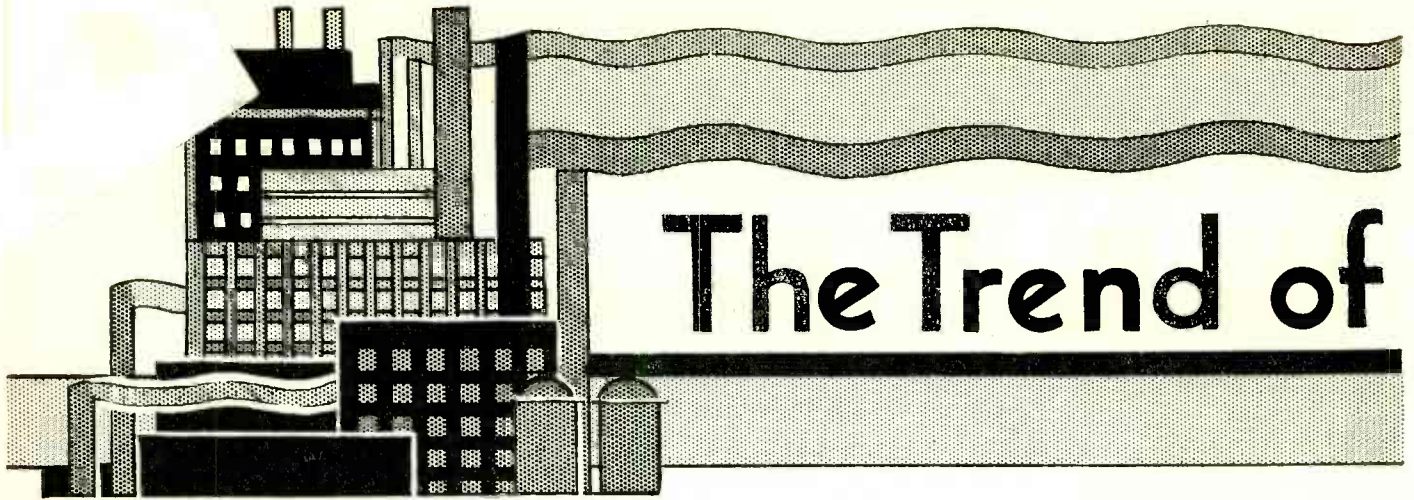
"There were many reasons for this sharp change from the conventional plan of jobber distribution, but one stands out prominently as pointing to the absolute economic necessity of such a system—the fact that the smaller dealer must sell more receivers at a greater profit to stay in business.

"These retailers represent the backbone of the industry and their gradual elimination is taking place due to manufacturers adhering to the old 1929 'prosperity' policies in spite of present business conditions.

"In eliminating fifty-three distributors Silver-Marshall is conserving 25 per cent plus the cost of traveling representatives and is making it possible for the retailers to sell the finest pentode vario-mu superheterodynes at list prices well below competition, and yet make as much profit as though he sold a higher priced receiver.

"In other words the dealer is given an ultra-modern line of superheterodynes that represent tremendous values in the present low market and yet carry an "expensive set" profit for him."

This may be a solution to a problem that is worrying the whole industry right now. It would not be surprising if other manufacturers would follow suit in the near future.



The Trend of

Out-Moded Models Responsible For Bad Times

In a statement recently made by Paul Klugh, of Zenith, one idea stands out among other good ones as explaining one evil worse than the ascendancy of the midget. "Zenith," declares Mr. Klugh, is taking the lead among the large manufacturers this year by guaranteeing no changes of models from June until January. This will do much to stabilize the market. We would like to guarantee no changes for a full fiscal year but do not feel that we can until we find out how other manufacturers view the problem. Definitely this policy will tend to lessen dumping, price cutting and the chance of dealers being stuck with out-moded moles."

If we can see back through the reign of terror the advent of the midgets brought upon us, to the big dumping season of last fall, we can remember how distressing it was to see a receiver that was a current model one day being dumped the next to make room for a new model. The same situation is with us today, although it is either not quite as bad as it was last fall or we have become toughened to it.

Back in 1916 the ingenious Dodge brothers brought out a four cylinder automobile bearing their name. They announced that one of the most important features about it was to be that practically no changes would be made in it as time progressed, therefore that the first models would not become obsolete. They stuck to this plan for more than four years, the only noticeable change in the car being the addition of two more strips of celluloid in the rear window. During those years the Dodge was more popular than it has ever been since.

This is the opposite extreme, but seems to indicate that if an automobile can be merchandised without the new model ballyhoo a radio receiver could too. Most radio dealers know that a new, "startlingly revolutionary" model usually comprises no drastic changes. It is usually brought out merely as a means

of attracting renewed attention to the line, and of inspiring renewed enthusiasm on the part of the sales organizations responsible for moving it. Every time it happens hundreds of dealers are left holding the sack and instead of buying the new model the public grabs up the bargains it is necessary for these dealers to unload. If the manufacturers could spend the thought and money necessary to bring out frequent new models on planning just as frequent new promotional campaigns the new models might not be necessary. It is sincerely hoped that other leading manufacturers will follow the example of Zenith and stick to one model until some development comes along that really does make it obsolete.

New Radio Field Developing

ANNOUNCEMENT that some of the aviation transport companies are now equipping their planes with radio receivers for the convenience of their passengers and as a means of combating any possibility of monotony in air travel gives rise to the thought that the thousands of owners of private airplanes ought also to be good prospects for radio receiving sets. There can certainly be no price resistance in this field, for it stands to reason that anyone who can afford to purchase an airplane for his own entertainment can easily afford the best in radio receivers. Installation may or may not offer a serious problem, depending upon the size and type of ship involved. Equipping an open plane is practically out of the question, unless headsets were planned, in which case it could be done very satisfactorily. Loudspeakers should be feasible in cabin type jobs.

One of the most common objections to private flying is that the monotonous droning of the motor gets tiresome. Radio would alleviate that. Any good automobile radio set should be adaptable to use in a plane, with a little ingenuity on the part of the dealer or his service

man. Philco reports that the Northwest Airways, Inc., operating between key cities of the Northwest, have just installed Philco-Transitone automobile radio receivers in each of their air-liners with great success.

Export Figures Interesting

ACCORDING to a report received from J. W. deHaas, export manager of F. A. D. Andrea, Inc., manufacturers of FADA radio receivers, shipments from the FADA factory to foreign countries from January 1 to May 1, 1931 showed an increase of nearly 100 per cent over the same period of 1930. During the past few months distributors were appointed in Switzerland, France, Belgium, Egypt, Palestine, South Africa, Bermuda, Malta and the Virgin Islands, bringing the total export field for this company to 34 different countries. A very marked indication of increased activity in nearly every foreign country is reported, and good American radio receivers seem to be in great demand.

According to the United States Government statistics this country shipped a total of some \$12,000,000 worth of radio receivers to foreign countries during 1930 against approximately \$10,000,000 in 1929. While there was a drop of 33 1-3 per cent in the domestic radio business in 1930 as compared to 1929 export sales showed an increase of 22½ per cent. Exports of December 1930 were actually 100 per cent ahead of December 1929. These figures should be tempting to those American manufacturers who have not been pushing their export trade.

Freed Back In Radio

ARTHUR FREED, one of radio's pioneers and a radio manufacturer whose name was once the pass-word in the industry, announces that the Freed brothers have founded the Freed Television and Radio Corporation with a factory in Long Island, N. Y. It will



The Radio Times

be remembered by readers of "RADIO" that the first boom in A. C. receivers was started by Freed, who was soundly criticised for his "lack of judgment," at the time, in announcing a factory-built line of A. C. receivers.

The Freed's see great things ahead for Television. Their first product will probably be a television kit for the home-builder and for the experimenter. Freed's nation-wide survey discloses that thousands of people are "rarin' to go on television" and that this fall season will see a brisk demand for the radio vision equipment. Within the next month the Freed equipment will be ready for the market. And in addition to the manufacture of television equipment Freed will bring out a simple D. C. receiver for use in large cities. There will also be an AC super-heterodyne receiver of a new type.

□ ● □

Merger for Hygrade, Sylvania Planned

IT is announced by the Boards of Directors that two of the most powerful of independent tube companies are prepared to merge, taking with them a third manufacturer, maker of incandescent light bulbs. The Hygrade Lamp Company, tube and light bulb manufacturer of many years standing, and the Sylvania Products Company, well-known in the vacuum tube industry, have planned to combine their forces, along with those of the Nilco Lamp Works, Inc. According to present plans Sylvania and Nilco will continue to operate in Emporium, Pennsylvania while Hygrade will maintain its Salem, Massachusetts plant. No changes in personnel are contemplated.

The combined sales of these companies amounted to approximately \$9,000,000 for the year 1930 and it is expected that the combination of resources will enable them to do a better promotion job than ever before. No additional public financing will be resorted to, nor will there be a change in management. It is very possible that this merger is a forerunner of

a series of mergers in the radio industry, which, if not carried too far, may result in the long hoped for stabilization of an industry that is overrun with manufacturers who, even with their backs to the wall, will not lay down their hand grenades and persuaders and admit they're licked. In a business which requires as much promotion as this radio industry it is easy to see how the combined resources of two or more successful firms will make it possible to do a better all round job of exploiting their products.

□ ● □

Pacent Offers Reproducer Line To Radio Dealers

ONE of the most attractive allied lines for the radio dealer, and one which has heretofore been denied the latter, is synchronous and non-synchronous talking motion picture equipment. According to a recent announcement from Louis Gerard Pacent, president of the corporation which bears his name, radio dealers are now permitted to act as representatives in the sale of this apparatus.

"Radio dealers, undeniably, have built up a prestige in their communities as headquarters for home entertainment and sound amplifying and reproducing apparatus," says Mr. Pacent, "and it is only fitting that all sound apparatus should be merchandised through this source."

He goes on to say that the increasing interest in sound movies in the non-theatrical field has opened up a far greater market than the appointed representatives who have been handling the equipment in the past can cover, and that the company has decided that the wide awake radio dealer is the logical outlet for this market. There are thousands of lodges, churches, schools, auditoriums, camps and other institutions who are in the market for this equipment and who are willing to pay a reasonable amount for reliable installations, and Mr. Pacent points out that prices in this field are now well within reach of practically all of them.

Radio Dealer Outlets Appeal To Other Manufacturers

"RADIO dealers are notorious for their inability to merchandise," says the learned one in almost every conversation in which the subject of radio merchandising is brought up. And the reasons usually given prove without the least vestige of a doubt that those familiar assertions are right. For example, it is claimed that radio has been so popular since its introduction to the public that the average buyer has usually walked into a store with his hand full of greenbacks which he planked down on the counter with instructions as to where the radio set should be sent. Radio salesmen are not salesmen, in the true sense of the word; they are "order takers." They have never had to be aggressive, therefore they do not know how to go after the business that has ceased coming to them. That and much more.

Well, maybe so. It's a rather peculiar phenomenon, however, that manufacturers of some of the most incongruous lines of merchandise have recently been soliciting radio dealers as a class in the hope that they could induce them to carry their lines of merchandise along with their present stocks of radio receivers and accessories. Judging by some of the publicity that has found its way into this office these manufacturers do not hold the same opinion of the average radio dealer's ability as an aggressive merchandiser that is held by many of the manufacturers, wholesalers and bench warmers in this, their own, industry. Manufacturers of refrigerators, washers, outboard motors, vacuum cleaners, ornamental art products, sporting goods, toys, and what have you, are hot and heavy after the radio dealer to take on their products as sidelines, evidently because they have decided that the radio dealer packs a wicked wallop. Perhaps they are shortsighted. Or can it possibly be that the learned critics who are on the inside are farsighted, and find their immediate surroundings clothed in a haze as they admire the distant view?

Trade Show Cannot Fail of Success



With 130 members of the Radio Manufacturers Association exhibiting their new products at the Fifth Annual R. M. A. Trade Show this month; with a carefully planned program designed to entertain and instruct the twenty-five thousand radio dealers fortunate enough to attend; with this number of radio dealers, wholesalers and manufacturers gathering together to discuss each other's problems and exchange ideas for their solution, the trade show of 1931 *cannot fail* to act as a stimulus to the activity of the radio industry. Radio dealers will be going home from the show and convention primed to make the 1931-1932 season the best they ever enjoyed. For those who are not able to attend, RADIO will endeavor to make a complete report of the showings and the information that is passed out, both in this and the July issues.

RADIO has confidence that the Trade Show and Convention this year will make its mark on the radio industry. The very fact that last year's show brought down a hail of abuse on the idea of national trade shows in general leads us to believe that this year's show will be a success. The management has never before had such a clear picture of just what the trade wants and *needs* in a gathering of this kind, and we have every reason to believe that it will stick to its guns in defending its chosen slogan: "Business without ballyhoo." This year the radio manufacturers firmly realize that they, their representatives and deal-

ers must get down to work and iron out a lot of difficulties that have been acting as a drag on radio merchandising. The dealers, who have been more responsible for the failure of previous conventions than they realize, have taken a more serious viewpoint of the situation this year and will endeavor to see that the money they spend on this show will give rise to

will not only be new models; there will be new designs. Some of the changes will be so drastic and so revolutionary that the merchandising possibilities will be tremendous. It may be too soon to expect these coming improvements in radio development to become effective, but with the knowledge of what is ahead of him the radio dealer will be in a far better position to bring in the business than if he were under the impression that the industry was back-tracking. It has been back-tracking for the past few months; there is no use denying it. Instead of producing better merchandise the trend has been toward cheaper sets and more meager profits. If RADIO might be allowed one prophecy it would be that larger unit sales will constitute a greater part of next year's business.

If the public is to be expected to buy larger and more expensive radio sets it will be necessary to offer them something superior in every way than they can now buy at any price. And it must be expensive to produce; else it will be imitated and sold at the famous death-dealing price of \$49.50.

It's coming. It may be an advance announcement of television. It may be the Stenode. It may be the combination radio and home talkie. But it's coming. Those who are at the show will go home prepared to put the radio business over the top without waiting for the end of this heralded business depression.



MAJOR HERBERT H. FROST

has been President of the Radio Manufacturers Association for three terms. He is one of its founders and was its first President. He has served as a member of the Board of Directors continuously since 1924. He is at present Chairman of the Show Committee of the R. M. A. and is President of the Frost-Minton Corporation, New York.

entries in the debit side of the cash book.

We are sure that this show and convention will be effective in bolstering up the confidence and enthusiasm of the dealer, and in allowing him to get an eye-ful and an ear-ful of what the manufacturers are doing, because we know that those in charge of making it successful are fully capable of doing so. The plans that have been laid have been formulated with the idea in mind of giving the radio dealer his money's worth, and sending him home equipped to enter into his biggest year.

Everything seems to point to the fact that the radio industry is now enjoying that proverbial darkness that precedes the dawn. All of us will know more about this at the conclusion of the trade show than we do at the beginning, for there is no doubt that announcements will be made at this event that will alter the character of this industry a bit. There



MORRIS METCALF

Vice President and Treasurer of the United American Bosch Corporation of Springfield, Mass., is President of the Radio Manufacturers Association.



BOND GEDDES

Executive Vice President of the Radio Manufacturers Association, has direct responsibility for the success of the Seventh Annual Convention and the Fifth Annual Trade Show.

RADIO TRADE SHOW

NEW PRODUCTS SECTION

Our Annual Directory of the Season's Newest Radio Models. Additional information will be published in the July Trade Show Report Issue of "RADIO" in your hands on July 20.

High Lights of the Exhibits

Those who have been retailing radio receivers for the last couple or more years will recognize the name in back of practically every booth as that of an old friend. There are very few new exhibitors at the show this year, and the old-timers seem to be going strong. More manufacturers are showing midget receivers than was expected a few months ago, but the consoles seem to be as well represented as ever. The small, low priced console is popular as a "go-between," filling out the line with three distinct classes: midget, midget-console and large console. Very few manufacturers are limiting themselves to a single one of these classes; only a few more confine themselves to two. Interesting exhibits are built around the new tube lines, due mainly to the large number of types being manufactured this year.

RADIO TRADE SHOW

**ARCTURUS RADIO TUBE COMPANY
NEWARK, N. J.**

ARCTURUS BLUE RADIO TUBES

TYPES



127	180
124	181
551	099
126	101A
145	012A
PZ	122
150	071A



ARCTURUS SHOWS NEW VARIABLE-MU AND PENTODE TUBES

*Arcturus Booths 45 and 46,
Grand Ball Room, Stevens Hotel*

● Because of the unprecedented interest in the new Variable-Mu and Pentode Tubes and in view of Arcturus' work in pioneering and introducing these tubes, the booth of the Arcturus Radio Tube Company, Newark, N. J., is one of the outstanding exhibits at the RMA Show

● Architecturally designed, the modernistic Arcturus Booth employs a unique scheme of lighting effects that lends motion and color to the entire display

● Besides the prominent display of the two new tubes, the complete line of Arcturus Blue Tubes, including rectifiers, r.f., a.f. and power types, will also be exhibited. These will include tubes that are built on the exclusive 'unitary structure' principle and the 'screen grid tube' which, in laboratory tests, showed 52% less hum than existing types.

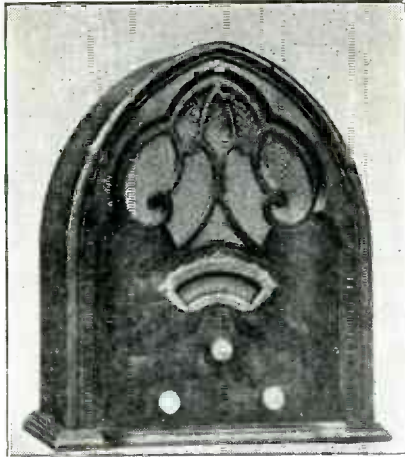
● Another focal point of attention in this interesting exhibit will be an array of tubes depicting the pioneering achievements of Arcturus. These various tubes and developments were the major a.c. contributions to the industry that made possible the rapid perfection of the modern a.c. receiver. Among these are the following contributions:

- the first standard a.c. tube
- the first cathode heater a.c. tube
- the first quick-acting a.c. tube
- the first a.c. screen-grid tube
- among the first that developed the Variable-Mu Tube
- the first pentode tube

● Complete technical bulletins on the Type 551 Variable-Mu and the Type PZ Pentode are available upon request at the Arcturus Booths, 45 and 46 Grand Ballroom.

RADIO TRADE SHOW

Audiola Radio Company
ANNOUNCES A COMPLETE NEW LINE

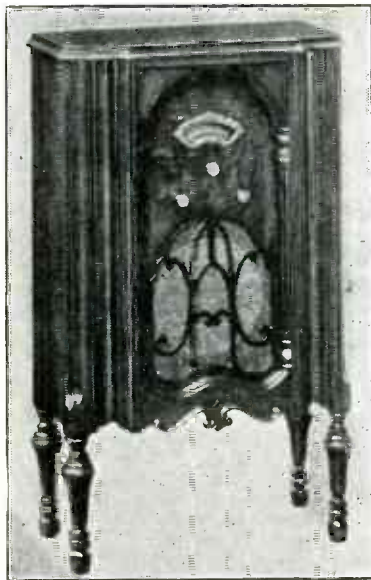


The JUNIOR LINE

No. 10 Junior Cabinet is Walnut veneer with figured Butt Walnut panel.

Model 610 Six-Tube Junior Receiver, employing both Variable-Mu and Pentode tubes, tone control, full vision dial, dynamic speaker. List price \$48.00, less tubes.

Model 810, Eight-Tube Junior Superheterodyne Receiver employing both Variable-Mu and Pentode tubes, tone control, full vision dial, dynamic speaker. List price \$57.00, less tubes.



(Licensed
by
R.C.A.)

AUDIOLA

*"Known
for its
Tone"*

No. 14 Series

No. 14 Console is a large, beautifully proportioned Console with Butt Walnut pane and figured overlay. Size 42½ in. high by 24½ in. wide.

Model 814, Eight-Tube Full Size Superheterodyne Receiver employing both Variable-Mu and Pentode tubes with large 12 in. dynamic speaker, tone control, full vision dial. List price \$76.50, less tubes.

Bulletin No. 531 will be sent on request

**Audiola Radio
Company**

430 South Green St., Chicago, Ills.

No. 12 Console is a beautiful Lowboy with figured Butt Walnut panel and figured overlays, size 39½ in. high by 23½ in. wide.

Model 612 Six-Tube Full Size Receiver employing both Variable-Mu and Pentode tubes, tone control, full vision dial, dynamic speaker. List price \$60.00, less tubes.

Model 812, Eight-Tube Superheterodyne Receiver, employing both Variable-Mu and Pentode tubes, tone control, full vision dial, dynamic speaker. List price \$69.50, less tubes.



No. 12
Series

RADIO TRADE SHOW

EXHIBIT OF
Allen-Hough Carryola Co. MILWAUKEE WISCONSIN



Midget Coin-Operated Phonograph by Allen Hough \$195⁰⁰

DEVELOPMENT, by the Allen-Hough Carryola Company, Milwaukee, Wis., of a small size, coin-operated automatic phonograph made to retail, fully equipped, for \$195, now affords jobbers and dealers an opportunity for volume profits in the automatic field.

Dealers are already gearing up their organizations to intensively cultivate this profitable, scarcely scratched market. Jobber and dealer executives are enthusiastic in their praise of this new unit because in its merchandising possibilities they see a parallel of the volume sales and profits which followed the introduction of midget radio set. According to officials of the Allen-Hough Carryola Co., widespread acceptance of this sensational new Midget coin phonograph is anticipated because of the substantial profit it affords at a \$195 list price.

"When we produced our first Carryola Cabaret early in January," said Don T. Allen in describing the development of the Midget automatic, "we decorated it with a retail tag of \$295 and upset traditions in automatic manufacturing and marketing circles.

"The Carryola Midget, retailing at \$195, fully equipped and ready to play, is the electrifying result of our prolonged experimental work. For fidelity of reproduction and tonal fullness, this little fellow will compare favorably with units selling for \$800 to \$1000 or more. That's why we call it 'The Little Automatic with the Big Tone,' and this quality, plus its low price, is why it sells so readily wherever demonstrated."

According to Mr. Allen, the new Carryola Midget is substantially the same as its older brother, the Carryola Cabaret. The junior member of the Allen-Hough automatic family is encased in a Fabrikoid-covered cabinet which is scuff-proof, stain-proof and so durable generally that it can be subjected to the roughest usage without showing signs of wear. The Carryola Midget is so compact in size that it can readily be placed on counter or table, within easy arm's reach of nickel-spending customers. Specifications are: 21 1/4" wide x 19 3/4" high x 15 1/2" wide!

A Samson reproducing amplifier consisting of two stages of push-pull amplification, coupled with a 7-inch Utah full-dynamic speaker, are but two of

the many console-type features that mark this compact's quality construction.

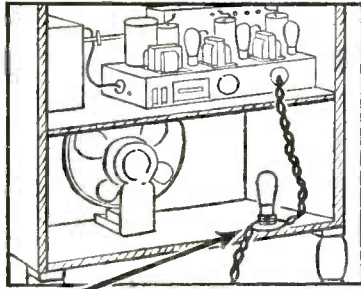
The record-changing mechanism is the same simple, trouble-free device which was first introduced to radio manufacturers in March, 1930, and later adopted as standard equipment by three nationally famous producers of radio-phonograph combinations. It plays and changes ten 10" records automatically.

The visible operating mechanism is attractively finished in gleaming, tarnish-proof Butler silver, the same type of finish found on the more recent radio and phonograph mechanisms. Visible operation of the record-changing units is reflected by a mirror in the back and through a glass window in the front, which surmounts the loud-speaker grill. The record-changing compartment is locked to protect records and mechanism against tampering. A theft-proof lock on the coin receptacle in the rear of the unit discourages prying fingers that might have "taking ways!"

Each Carryola Midget is equipped with a multiple coin slot which permits the insertion of from one to six nickels simultaneously. As a result, this device may be profitably operated in restaurants, drug stores, billiard parlors, soft drink parlors, road-houses, indoor and outdoor golf courses, public waiting rooms, schools, hotels, clubs, etc.

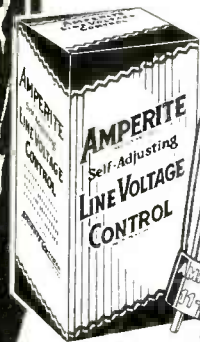
RADIO TRADE SHOW

Amperite Corporation, 561 Broadway, New York, N. Y.



Mount the socket at any convenient place inside the cabinet. Insert the proper AMPERITE Line Voltage Control tube and the receiver is ready for operation. When making the above connections, first disconnect the house line plug.

Easy
to Install **AMPERITE**
In Any Electric Radio



AMPERITE *Self-Adjusting* **LINE VOLTAGE CONTROL**

Why an Electric Radio set needs

Amperite Line Voltage Control

The quality and performance of an electric set depends upon the uniformity of the line voltage supplied to it. Line voltages in most communities vary as much as 30%. For example, a power line which is rated at 110-115 volts may often drop to 100 volts or less when there is a heavy drain on the line, or it may rush up to as high as 135 volts when the drain is relieved. This means that a radio set which is designed to operate best at approximately 110 or 115 volts is actually subjected to voltages which vary between 95 and 135 volts. No set can operate uniformly well under these fluctuating conditions. For proper performance an A.C. set should be kept within a 10 to 12 volt operating range.

High line voltage causes tube burnouts, tone distortion and blasting, power pack breakdowns, tube noises and lack of sensitivity. Low line voltage causes fading, loss of volume, lack of sensitivity and generally poor reception.

Amperite is entirely different from fixed line resistors or plug in line voltage devices which reduce the voltage only but do not regulate it.

Amperite automatically maintains the proper voltage on a set irrespective of line voltages between 100-140 volts, thereby supplying the best conditions for radio set operation. Insures pure tone—more even volume—long tube life. Amperite is exclusively endorsed and approved by leading radio set manufacturers.

Manufactured and guaranteed by the world's largest manufacturer of automatic voltage controls—exclusively.

RADIO TRADE SHOW

CLARION RADIO



Clarion Pentode Super-Heterodyne *with Multi-Mu Tubes and* Automatic Volume Control

Model 80 Seven-Tube Super-Heterodyne Mantel-Type Receiver

Cabinet: High-lighted two-tone effect, in walnut. Rigid construction, contributing to the high acoustical properties of the set. Beautifully decorated. Height 19 inches; depth 10½ inches; width 16 inches.

Chassis: The famous Clarion seven-tube Super-Heterodyne Circuit, with three Variable-Mu Tubes and one Pentode Super-Power Amplifier. Static Reducer. Full-Vision Dial, with light-beam station selector. Extreme sensitivity and selectivity throughout the entire broadcast band.

Complete, ready to play, \$67.50

Model 81 Seven-Tube Super-Heterodyne Console Receiver

Cabinet: High-lighted two-tone effect in rich walnut. Rigid, acoustically-correct construction. Attractively decorated and carved. Height 35 inches; depth 3 inches; width 22 inches.

Chassis: The famous Clarion seven-tube Super-Heterodyne Circuit, with three Variable-Mu tubes and one Pentode Super-Power Amplifier. Static Reducer. Full-Vision Dial, with light-beam station selector. Extreme sensitivity and selectivity throughout the entire broadcast band.

Complete, ready to play, \$84.50

Model 90 Eight-Tube Super-Heterodyne Mantel-Type Receiver

Cabinet: Two-tone high-lighted walnut; constructed according to the most advanced acoustical principles. Height 19 inches; depth 11¼ inches; width 17 inches.

Chassis: Famous Clarion eight-tube Super-Heterodyne Circuit, with three Variable-Mu tubes and one Pentode Super-Power Amplifier. Static Reducer. Automatic Volume Control. Full-Vision Dial with light-beam station selector. Extreme selectivity and sensitivity throughout the entire broadcast band.

Complete, ready to play, \$79.50

Model 91 Eight-Tube Super-Heterodyne Console Receiver

Cabinet: Two-tone high-lighted walnut. Best acoustical construction; a masterpiece of the cabinet-maker's art. Height 38 inches; depth 13 inches; width 22 inches.

Chassis: Famous Clarion eight-tube Super-Heterodyne Circuit with three Variable-Mu tubes and one Pentode Super-Power Amplifier. Static Reducer. Automatic Volume Control; Full-Vision Dial with light-beam station selector. Extreme selectivity throughout the entire broadcast band.

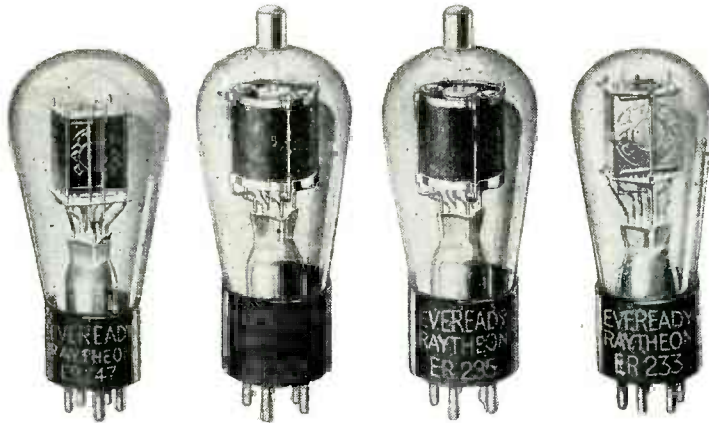
Complete, ready to play, \$99.50

Transformer Corporation of America

Ogden and Keeler Aves.
CHICAGO, ILLINOIS

RADIO TRADE SHOW

EXHIBIT OF EVEREADY-RAYTHEON



Seven New Tubes in Eveready-Raytheon Line

THE seven new tubes shown include the new A.C. Pentode No. ER-247, two new Variable-Mu tubes ER-325 and ER-551 and the four new tubes for automobile sets and D.C. current current sets—ER-233, ER-236, ER-237 and ER-238. All of these tubes will be the four-pillar construction type, which is an important feature in the support of the heavy elements of the tube as well as in the spacing of the elements so as to allow a maximum of clearance between electrodes.

CHIEF among the other products exhibited is the Eveready air-cell "A" battery, which has contributed greatly to the solution of the problem of supplying satisfactory radio reception on farms and in rural districts. Until recently the farmer has been denied the pleasures of an efficiently operated set without the expense and inconvenience of recharging a storage battery. Realizing the significance of the air-cell battery, nine radio set manufacturers now are producing 2-volt air-cell sets in order to take advantage of the recently opened farm district market, estimated at 6,000,000 families, of which only 2,000,000 now have radios.

Of the new Eveready tubes the ER-233 Power Pentode is for use in the output stage of battery operated receivers especially designed for its use. This tube has considerably greater power output and sensitivity than three-electrode power tubes of the 231 type.

The ER-235 Variable-Mu tube is for use as an amplifier in receivers especially designed for its use. When properly utilized it will effectively control large input signals

with minimum modulation distortion and cross-talk.

The ER-551, another Variable-Mu tube (slightly different characteristics) is intended for use as an amplifier in receivers especially designed for its use. When properly utilized it will effectively control large input signals with minimum modulation distortion and cross-talk.

The ER-236 Screen Grid Amplifier tube is for use in automobile and 110 Volt D.C. receivers especially designed for its use.

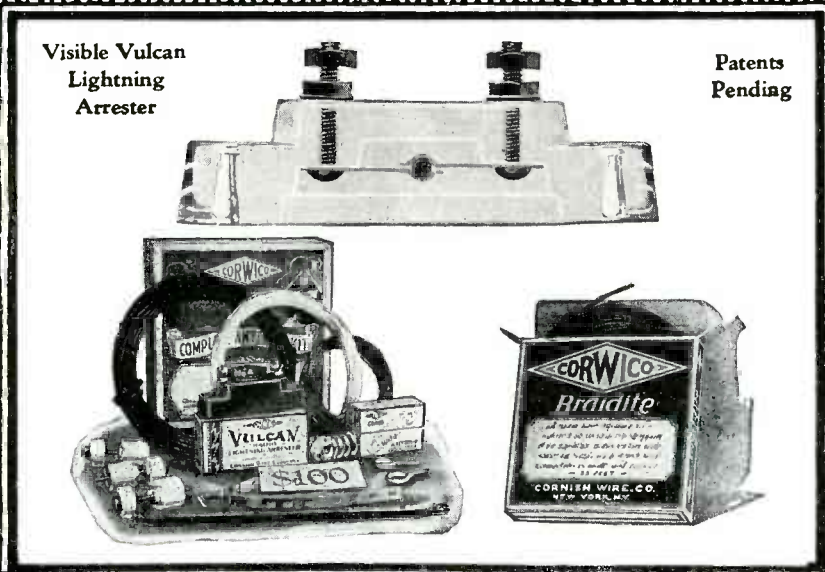
The ER-237 Detector and Amplifier tube is intended for use in automobile and 110 Volt D.C. receivers especially designed for its use.

The ER-238 Power Pentode is intended to be used in the output stage of automobile and 110 Volt D.C. receivers especially designed for its use.

The ER-247 Power Pentode is for use in the output stage of A.C. receivers especially designed for its use. This tube has considerably greater power output and sensitivity than three-electrode power tubes of the 245 type.

RADIO TRADE SHOW

CORNISH WIRE CO., Inc., 30 CHURCH STREET
NEW YORK CITY



RADIO WIRES

"BEST FROM THE GROUND UP"

For the Dealer and Jobber Trade
We Manufacture
A Complete Line of Radio Wires and
Antenna Accessories

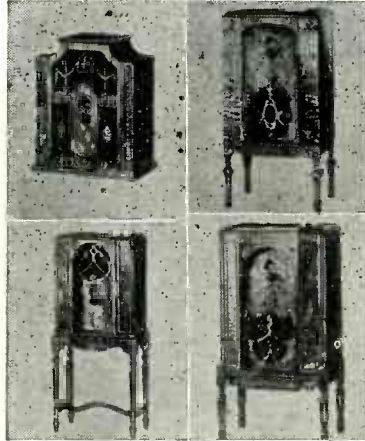
[NEW—OUR VISIBLE VULCAN LIGHTNING ARRESTER]
A NEW ITEM FOR THE NEW SEASON

FOR THE MANUFACTURER
Our Engineers Have Designed
PARALAC

The moisture-proof hook-up wire with the slide back feature,
the hook-up wire with a high constant insulation resistance.

RADIO TRADE SHOW

EXHIBIT OF BRUNSWICK RADIO CORPORATION



Upper: Brunswick Model 11, \$79.50
with tubes
Lower: Brunswick Model 12, \$99.50
with tubes

Upper: Brunswick Model 16, \$119.50
with tubes
Lower: Brunswick Model 17, \$149.50
with tubes

BRUNSWICK SPECIFICATIONS

Model 11

A table model or midget type receiver. Walnut cabinet. Superheterodyne chassis employs three Brunswick type 24 screen grid tubes, two Brunswick type 51 variable-mu tubes, one Brunswick type 47 pentode tube and one Brunswick type 80 full-wave rectifier tube. New sensational color tone control, Brunswick Uni-Selector full range volume control, dynatron oscillator, turret type tuning condenser, 9-inch dynamic speaker and power detector. List price, complete with Brunswick tubes.....\$79.50

Model 17

Lowboy console, Superheterodyne chassis employing three Brunswick type 24 screen grid tubes, one Brunswick type 27 automatic volume control tube, two Brunswick type 51 variable-mu tubes, two Brunswick type 47 pentode tubes and one type 80 full-wave rectifier tube. Additional features are new sensational color tone control, Brunswick Uni-selector, automatic volume control, dynatron oscillator, turret type tuning condenser, DeLuxe 12" dynamic speaker, two pentode tubes in output stage and power detector. List price, complete with Brunswick tubes.....\$149.50

Model 12

A sensationally new idea in radio cabinetry. Miniature highboy console. Superheterodyne chassis. Same specifications as No. 11. Same tubes. List price, complete with Brunswick tubes.....\$99.50

Model 42

The Automatic Panatrope - with Radio. Hand-carved cabinet of butt walnut. Plays 20 ten-inch records without attention. Also plays twelve-inch records manually. List price, complete with Brunswick tubes and complement of 20 records.....\$265.00

Model 16

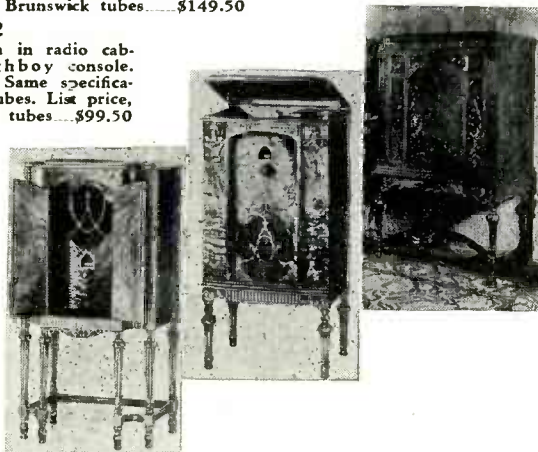
Lowboy type console. Same chassis and tube specifications as Model 12 but with 12" dynamic speaker. List price, complete with Brunswick tubes.....\$119.50

Model 24

Highboy with arched French doors. Superheterodyne chassis. Same as Model 17. List price, complete with Brunswick tubes.....\$169.50

Model 33

Lowboy combination Radio-with-Panatrope. Superheterodyne chassis, same as Model 24. List price, complete with Brunswick tubes.....\$169.50

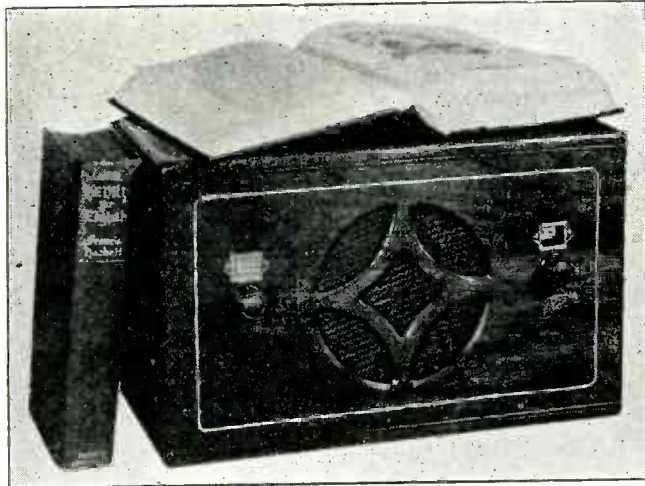


Left to Right:
Models
24, 33, 42

RADIO TRADE SHOW

United American Bosch Corp.

SPRINGFIELD, MASSACHUSETTS, U. S. A.



AMERICAN BOSCH RADIO MODEL 5A "The Personal Radio"

Here is the smartest little radio you have ever seen—The American Bosch Personal Radio. Although no higher than an ordinary novel standing on end, and occupying no more space than that same book laid down open, this receiver provides a quality of radio reception not often obtainable from radio sets many times its size. Not an essential necessary to quality radio has been sacrificed. The power pentode employed with the three screen grid tubes and the rectifier type 80 tube insures a brilliancy of tone which is quite surprising. The cabinet is of solid mahogany, beautifully finished. The enterprising radio dealer will realize at once how the public will react to the sales appeal of this diminutive receiver, which will find so many convenient resting places in sun parlor, boudoir, library, den or kitchen. The truly "personal" receiver.

List Price Complete With Tubes, \$43.50

Slightly Higher in Far West

See complete American Bosch Radio line at R. M. A. Show
or write factory for details

RADIO TRADE SHOW

Belden Manufacturing Co. 4647 W. Van Buren
CHICAGO, ILL.



The Complete Belden Line

Contains Every Essential Wire Accessory for Good
Radio Reception

The Belden Manufacturing Company has achieved unquestionable perfection in the manufacturing of radio accessories through more than 15 years' experience in their production.

The Belden Line is a complete line of aerial kits, lightning arresters, aerial wire, and

lead-in equipment built to give superior performance. It is nationally advertised and sold only through recognized jobbers and dealers.

Belden accessories in distinctive cartons are recognized and preferred by amateurs and servicemen everywhere.

The Belden Line provides kits containing all essentials for installation of every type of aerial —covers complete price range, listing from 90c to \$3.50.

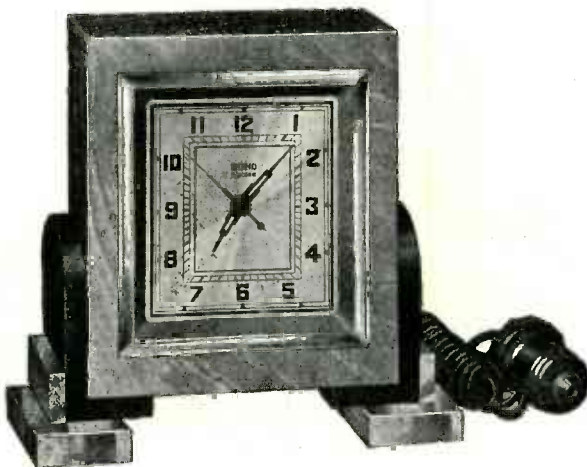
Sell the new Belden "Lightning Buster." A Bakelite arrester with \$100 guarantee that lists at 25c.

Belden Shielded Lead-in Wire solves the problem of local interference. In 250-ft. spools for dealer use and in 50-ft. cartons for convenient resale.

See the 1931 Belden Radio Line in Booths 88 and 89
at the R. M. A. Show

RADIO TRADE SHOW

BOND ELECTRIC CORPORATION
NEW JERSEY CITY, NEW JERSEY



Bond Electric Clocks

IN introducing Bond Electric Clocks we have endeavored to create a series of designs which obviously represent distinguished quality—carrying with them a feeling of modernity, yet maintaining a dignity and grace which will make Bond Electric Clocks desirable and acceptable in every home.

The first practical requisite, of course, is that each Bond Electric Clock be an accurate time piece FOR YEARS TO COME. Only after eight months of exhaustive tests did we decide upon the synchronous motor used in our clocks. It was chosen because it stood the test of accuracy—long life—rugged dependability.

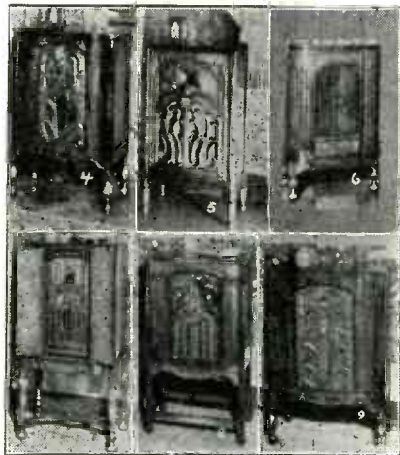
While each design embodied in the Bond Line is a work of art, all are popularly priced for articles of such quality.

•
*See the Complete Line at
Booth 47*

•
BOND ELECTRIC CORPORATION
JERSEY CITY, N. J.
CHICAGO, ILL. SAN FRANCISCO, CAL.

RADIO TRADE SHOW

EXHIBIT OF
CROSLEY RADIO CORP.



New Crosley Line Is Announced

SUPER BUDDY BOY
\$65.00, complete with tubes; \$67.50 in the West.
New Crosley 7-tube Superheterodyne Pentode circuit.
One five element Pentode output tube '47; 2, '35; 3, '24; 1, '80.
Dynamic speaker.
Continuous static and variable tone controls.

CROSLEY SONGSTER
\$79.50, complete with tubes. \$85.50 in the West.
New Crosley Superheterodyne Pentode circuit.
Seven tubes (six screen grid).
One five element Pentode output tube, '47; 2, '35; 3, '24; 1, '80.
Pliodynatron oscillator circuit.
Full-floating moving coil dynamic speaker.
Continuous static and variable tone controls.

CROSLEY SUPER ADMINISTRATOR
\$109.50, complete with tubes. \$114.50 in the West.
Superheterodyne pliodynatron chassis.
Four screen grid tubes, '24; 1, '27; 2, '45; 1, '80.
Full-floating moving coil dynamic speaker.
Static and tone control.
Local-distance switch.
Phonograph pick-up connection.

CROSLEY ORACLE—5 TUBES
\$99.50, complete with tubes, clock, etc. \$103.50 in the West.
One Pentode output tube, '47; 2, '35; 1, '24; 1, '80.
Dynamic speaker.
Sangamo electric clock.

CROSLEY SHOW BOY—5 TUBES
\$49.50, complete with tubes. \$51.50 in the West.
One Pentode output tube, '47; 2, '35; 1, '24; 1, '80.
Dynamic speaker.

CROSLEY TROUBADOUR
\$199.50, complete with tubes. \$210 in West; Radio-phonograph combination; Noiseless, self-starting, electric phonograph motor; New superheterodyne pliodynatron chassis; Ten tubes: 2 Pentode '47 tubes in push-pull; 2 exponential or variable Mu tubes, 2-'24, 3-'27, 1-'80; Automatic volume control; Continuous static and tone control; Local-distance switch; Auditorium dynamic speaker.

THE CROSLEY MINSTREL
New superheterodyne pliodynatron chassis; \$129.50, complete with tubes; \$137.50 in West; 10 tubes; 2 Pentode '47 tubes in push-pull; 2 exponential or variable Mu tubes; 2 screen grid tubes '24, 3-'27, 1-'80; Automatic volume control; Local-distance switch; Auditorium dynamic speaker.

CROSLEY SONNETER
\$59.50, complete with tubes; \$63.50 in West; 5-tube T. R. F. chassis; 1 Pentode output '47; 2 exponential or variable Mu tubes '35, 1-'24, 1-'80; Full-floating dynamic speaker.

CROSLEY MUSICALE
\$94.50, complete with tubes. \$98.50 in West; New Crosley Superheterodyne Pentode Circuit; 7 tubes (6 screen grid); 1 five element pentode output tube '47; 2 exponential or variable Mu tubes '35, 3-'24, 1-'80; Pliodynatron oscillator circuit; Full-floating moving coil dynamic speaker; Continuous static and variable tone controls.

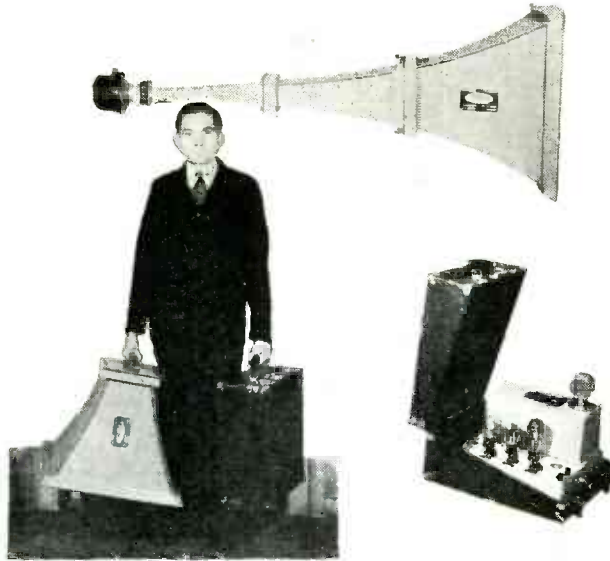


RADIO TRADE SHOW

AMPLION PRODUCTS CORPORATION

40 WEST 21ST ST.

NEW YORK, N. Y.



PORTOVOX

New

Amplion Portable Address Set

In the PORTOVOX the Amplion Products Corporation offers a "MANUFACTURED" Group Address set in contra distinction to an "ASSEMBLED" set. Every instrument and part of the PORTOVOX has been designed to match electrically and complement acoustically, every other part, resulting in a great saving of parts, high efficiency, compactability and good quality. It consists of an AMPLION TRANSVERSE CURRENT MICROPHONE, amplifier and Giant Dynamic Loud Speaker. This specially designed Amplifier occupies a space 14" x 14" x 7".

(1) It supplies the microphone current, thus eliminating batteries; (2) matches the impedance of the microphone, thus eliminating an extra microphone transformer; (3) supplies the field current for the speaker, thus eliminating an exciter, and (4) matches the impedance of the voice coil, thus eliminating an extra matching transformer.

The loud speaker horn is 4½ ft. long when in use but collapses into the bell for convenience in carrying. The speaker unit is of the most efficient type known. Its high efficiency is the equivalent of an extra stage of amplification. This set will serve 1,000 to 3,000 people with great satisfaction.

RADIO TRADE SHOW

CABLE RADIO TUBE CORP.

230 - 240 NO. NINTH ST.

BROOKLYN, N. Y.



SPEED
"QUALIFIED"
RADIO TUBES



R. C. A.
Licensed

AND THE LATEST ADDITION TO A BIG FAMILY—

FOTO-LECTRIC TUBES

"LYLE ENGINEERED"

NEW!

PRODUCTS QUOTATIONS
ASSESSMENT POLICY . . SALES PLANS

The Cable plants are in production on all receiving types:

247	AC Pentode—Output	171-A	Power Amplifier—Output
235	AC Screen Grid Vari-Mu Amplifier	171-AC	Special Power Amplifier—Output
551	AC Screen Grid Vari-Mu Amplifier		For General Purpose (All bases)
233	Low Wattage Pentode—Output	200-A	DC Power Detector
236	Auto. Screen Grid Amplifier	201-A	DC General Purpose
237	Auto. General Purpose	210	Power Amplifier
238	Auto. Pentode—Output	222	DC Screen Grid Amplifier
		224	AC Screen Grid Amplifier-Detector
*S84	Special AC Amplifier-Detector	226	AC Amplifier
*S82B	Special AC Amplifier—Output	227	AC Amplifier-Detector
*S83	Special AC Amplifier—Output	230	Low Wattage General Purpose
WD11	DC General Purpose	231	Low Wattage Amplifier—Output
WD12	DC General Purpose	232	Low Wattage Screen Grid Amplifier
112-A	DC General Purpose	245	AC Amplifier—Output
120	DC Power Amplifier—Output	250	AC Amplifier—Output
140	DC Hy Mu General Purpose	280	AC Full Wave Rectifier
*For	Sparton Sets	281	AC Half Wave Rectifier

Perfected FOTO-LECTRIC tubes in production include these types:

(A) No base, tubular 16 mm bulb, with flexible braided leads; (B) No base, tubular T8 bulb, with flexible braided leads; (B4) Tubular T8 bulb, with base; (C1) Tubular T8 bulb with base; (C2) Tubular T8 bulb, with base; (D2) Tubular T12 bulb, with large prong base; (E3) Globular G18½ bulb, with special base, having flexible braided leads. All standard gas-filled types; red sensitive; caesium on caesium-oxide, silver-oxide base; greatest sensitivity is from 7000 to 8000 angstroms.

Get literature and full details of the new Speed proposition from your jobber.
Send us his name along with yours if he can't supply you

AT THE R. M. A. TRADE SHOW

Booths 72, 73
Ball Room

STEVENS HOTEL
CHICAGO, ILL.

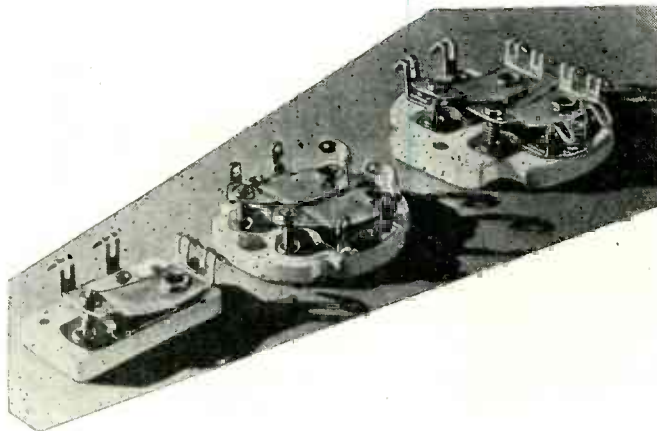
Rooms 2118A-19A-20A
Headquarters

RADIO TRADE SHOW

THE HAMMARLUND MFG. CO.

424 - 438 WEST 33RD ST.

NEW YORK CITY, N. Y.



The Hammarlund Intermediate Tuning Condenser

New Intermediate Tuning Condenser by Hammarlund

The Hammarlund Manufacturing Co., New York, have developed an exceptionally efficient type of condensers for tuning the intermediate frequency transformers used in superheterodyne receivers.

As every radio engineer and experienced experimenter knows, accurate and stable balancing of intermediate transformers is probably the most important consideration in superheterodyne construction.

Condensers for that purpose, therefore, must be especially designed for easy adjustment, constant capacity and power factor under all conditions of temperature, humidity and vibration.

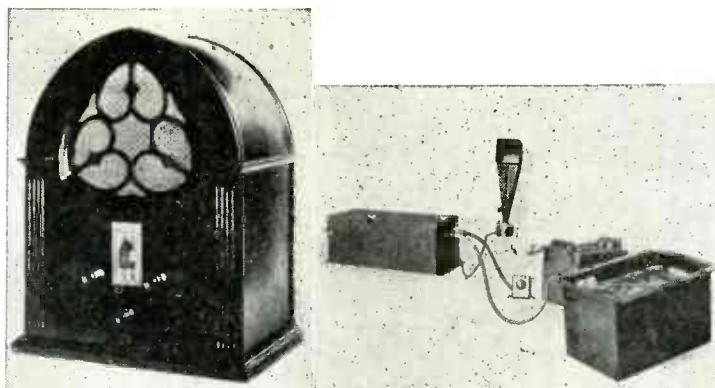
More than two million of this type condenser are now in use, so its features have been fully proved.

Among its outstanding characteristics are the following: A specially conditioned Isolantite base that will not absorb moisture. Selected mica of unusually high quality. A practically straight-line capacity curve, affording minute adjustment. Cut thread adjusting screws, with tapered self-aligning heads. Solder-dipped heat dissipating terminals. All material and processes strictly controlled. Each condenser is individually inspected for capacity, power and 300V. A.C. breakdown.

Three capacity ranges are now available: 10 to 10 mmf.; 10 to 140 mmf.; 140 to 220 mmf., in single and dual models for 2" and 2½" shields.

RADIO TRADE SHOW

DELCO RADIO CORPORATION
DAYTON, OHIO



Delco Police Receivers

Two new radio receivers, designed especially for police work, have just been announced by the Delco Radio Corporation, Dayton, O. One, of the automotive type, is featured by use of the Pentode tube, and is said to be the first automotive radio to employ this new type of tube, which provides four times as much power as the average output tube.

The other set is a police station receiver, for which a large demand has been stimulated as a result of establishment of police broadcasting systems not only for city departments but for state police. These sets are used in police stations and sheriff's offices. The Delco set is built specifically for this work and can be locked on one wave length for a station receiving from only one station, or may take in the entire broadcast range of police stations if it is desired to receive state police calls as well or calls from stations in adjacent cities.

Easy accessibility for servicing and simplicity of installation are features of the new automotive receiver, which has been built especially strong for constant 24-hour operation in police cars.

So that the message being broadcast may be heard under all traffic conditions, the speaker has been especially designed to give a reasonable high-pitched tone, easily heard above the lower pitched rumble of the car and traffic. It is small and readily attached along the top side paneling above the driver's seat. Head phones may be used, and a separate control terminal is supplied, if this is desired. This mounts on the left post and the speaker may be disconnected by a simple switch, placing the head phones in operation.

The new Delco police receiver comprises three tuned r. f. circuits using three type '24 screen grid tubes, a tuned power detector stage using one type '12-A tube and a transformer coupled Pentode output tube. All of the tubes are spring mounted. The r. f. stages are capacity coupled, employing a high impedance primary resulting in a high degree of sensitivity. Each r. f. stage is individually tuned by means of separate tuning condensers which are peaked at the police transmitting station wave length and locked securely in place by means of a locking nut operating on a split clamping sleeve. The condensers are easily adjusted through a port in the top of the box by means of a special tool.

The chassis is mounted on a universal mounting bracket permanently fastened in the desired location by six bolts. The chassis is held securely in place on the mounting bracket by two spring clips. This mounting arrangement, although holding the chassis securely in place, allows quick replacement in case chassis repair is necessary. The chassis cover is held in place by four wing nuts allowing quick removal for checking of the tubes. The wing nuts are so designed that they are a part of the cover at all times and cannot be lost. The chassis is of steel, cadmium plated, and finished in a baked black wrinkle.

For this receiver a copper screen wire aerial has been found to be the most effective, though the receiver will operate on a capacity antenna and give a reasonable signal strength. Three heavy duty 45 volt "B" batteries and 2 "C" batteries of 7½ volts each are used.

No solder connections or spliced wires are used in the entire installation, preventing any faulty connections or mistakes in wiring. The station set is housed in a neat-appearing cabinet of the cathedral type, finished in butt walnut. It is 19" high, 16" wide and 10½" deep. Its compact design makes it well fitted either for shelf or desk installation. Tone control is provided, giving the sharp, clear tones if desired so that they may be heard over the tones of ordinary conversation that may be going on in the office.

If installed near a teletype machine or other electrical equipment productive of electrical interference, as is likely in police station work, an antenna coupler is provided, which eliminates practically all of this.

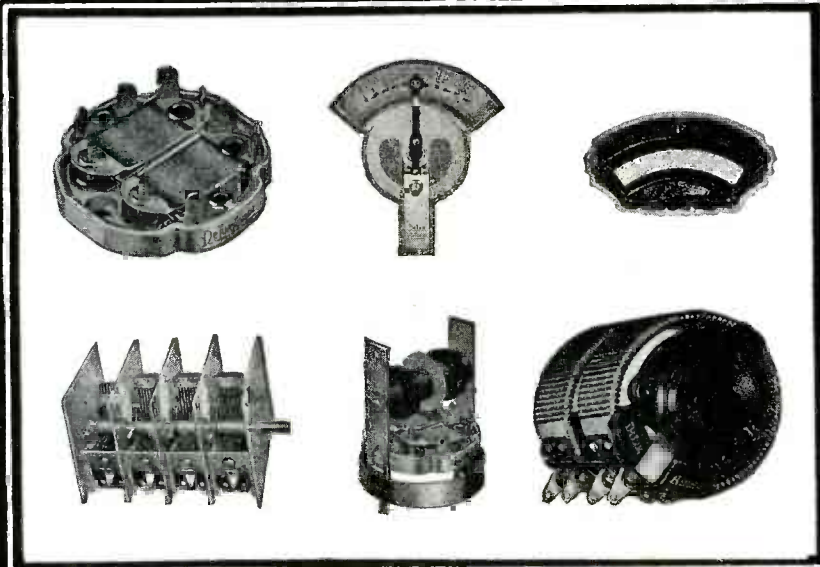
The receiver can either be tuned or locked on any particular station between 1500 and 2600 kilocycles. In order to do this, the station selector knob is removed, providing access to a screw which is used for locking the receiver on any desired frequency.

The station type receiver uses three tuned r. f. circuits with three type '24 screen grid tubes, a power detector stage with one type '24 screen grid tube, an audio output stage using one type '45 power tube and a type '80 full wave rectifying tube, making a total of six tubes.

RADIO TRADE SHOW

DeJUR-AMSCO CORP

95 Morton Street,
New York



DeJUR-AMSCO

Fine Products for Ten Years

MANUFACTURER OF RELIABLE RADIO PARTS

VARIABLE CONDENSERS

TRANSISTORS
(High Gain I-F Transformers)

RHEOSTATS

POTENTIOMETERS

POWER RHEOSTATS
(For Heavy Duty Work)

ESCUTCHEONS

DIALS

VARITORS
(Small Semi-Fixed Condensers)

PILOT LIGHTS

BINDING POSTS

CONNECTION STRIPS

Write for Literature Describing the

**COMPLETE LINE OF DE JUR-AMSCO
RADIO PARTS AND ACCESSORIES**

RADIO TRADE SHOW

CLAROSTAT MFG. CO. INC.

285 NORTH SIXTH ST.

BROOKLYN, N. Y.



SERVICE PARTS and ACCESSORIES

for the Conscientious Service Man and Dealer

VOLUME CONTROLS—Wire Wound or Graphite Element, Tapered to suit particular circuit. With or without 110-volt switch. Sturdy, Quiet, Long-Lived Units which you can sell honestly without danger of a come-back.

FREE—Volume Control Replacement Guide. The handiest sheet ever gotten out for Service Men, Dealers, Sound Engineers and Experimenters—Twenty fundamental Volume Control circuits explained. Write for it—no obligation, of course.

REGULATION VOLTAGE—Sets which do not have Clarostat Ballasts built into the circuit need protection from fluctuating line voltage. Plug in a Clarostat Automatic Line Voltage Regulator—Real protection for your customer and a profit to yourself.

TONE CONTROL—Just the thing to sell on a service call. Add Tone Control to any radio, improves tonal range and reduces background noises. Made in Portable Type with cord and adapters and also in Panel Mounting Type for those who prefer a more permanent and professional appearance.

CLAROSTAT

Other Products

Line Ballasts
Soldering Iron Controls
Speed Controls
Rheostats, 20, 80, 250 Watts
Flexible Resistors

Flat Wire Resistors
Hum Dinger, Center Tap
Standard Universal Clarostat
Spring Clips
Ground Clamps

Window Lead-Ins

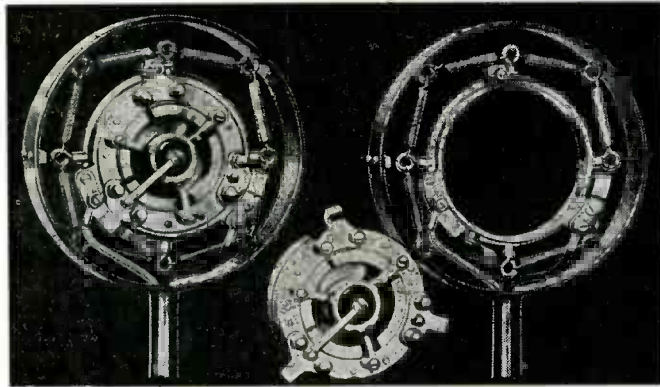
RADIO TRADE SHOW

ELLIS ELECTRICAL LABORATORY

337 WEST MADISON ST.

S. C.
S. N. SHURE, Pres.

CHICAGO, ILLINOIS



U. S. Patent 1,805,362 and others Pending

Ellis Microphones and Accessories

The Ellis Demountable Microphone illustrated above is only one example of the skill and outstanding design that has gone into making Ellis Microphones internationally known for high quality performance.

The Demountable model is easily and quickly removable from the supporting fixtures without in any way disturbing the mounting springs or the wire connections—the ultimate in microphone convenience and safety.

In addition to our well known Models 10N, 20N, 29N, and 30N, and our stands, cables and other accessories, we now offer a high quality Two-Button Hand Microphone (Model 12N) for home-recording, industrial and home talking picture machines, etc., at \$25.00 list.

Other new lines in our line include the Model 72N Ellis Matched Microphone Transformer; and a new special desk stand for our small Model 10N Microphone (Model 60A stand) at \$3.50 list.

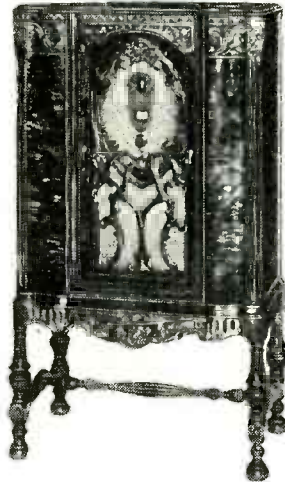
•
Write for our new catalog sheets giving complete descriptive information on our entire line

RADIO TRADE SHOW

LONG ISLAND CITY

F. A. D. ANDREA, INC.

NEW YORK



Model 48

FADA Radio

The New Fada line of receivers incorporates many desirable features. Pentode tubes, Super-Heterodyne, Automatic Volume Control, Automatic Flashograph, Tone Silencer, and Tone Filter are some of the features incorporated in one or the other of the various models.

MODEL 48 is a ten-tube receiver of De Luxe Model type, with List Price of \$147.50.

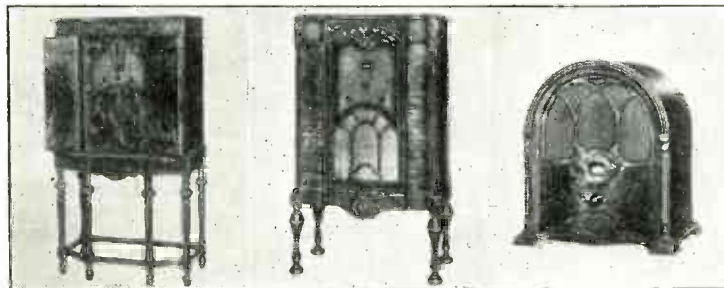
MODEL 49 is a ten-tube receiver also of the De Luxe design Super-Heterodyne, with List Price of \$175.00.

MODEL 45 is an eight-tube Super-Heterodyne model with push-pull Pentodes. List price of \$112.50.

MODEL 51 is the table model with seven tubes, and is a Super-Heterodyne receiver with Power Pentode tube. List Price of \$69.50.

All models of Fada receivers are 100% shielded, and represent a high type of cabinet design, with selectivity and sensitivity as two features of design and construction

At the Chicago Show the Fada Line of Receivers can be seen at Booths 103, 104, 105 and 106. Demonstration rooms at Hotel Stevens Rooms 604, 605, 606 and 607



Model 49

Model 45

Model 51

RADIO TRADE SHOW

EXHIBIT OF
GOLD SEAL ELECTRICAL CO., INC.
 127 South 15th St. Newark, New Jersey

**NEW
 GOLD
 SEAL
 1931**



**CROYDON
 1931**

Trade Show
 Headquarters
**CONGRESS
 HOTEL**

1931 Gold Seal Line

THE new 1931 Gold Seal line of radio tubes, including the new 235 and new 247, has received the endorsement of many leading engineers. You will find Gold Seal Radio Tubes and Croydon Radio Tubes entirely satisfactory. Every tube twice tested before shipment assures you exceptional quality.

GOLD SEAL ELECTRICAL COMPANY, Inc.
H. J. CASEY

*Gold Seal Electrical Company is in a position to supply
 "Private Brand" Tubes correctly priced*

CROYDON RADIO TUBES

The Only American Made Tube Passed by Croydon Test

PRICE LIST

Type		Price	Type	Price	
CX 201 A	Detector Amplifier	\$1.10	CX 232	2 Volt Screen Grid	\$2.30
CX 199	" "	2.50	CY 227	A C Detector	1.25
CV 199	" "	2.75	CX 280	Full Wave Rectifier	1.40
CX 120	Amplifier	3.00	CX 281	Half Wave Rectifier	5.00
CX 112 A	"	1.50	CX 250	Power Amplifier	6.00
CX 171 A	"	1.40	CX 210	" "	7.00
CX 200 A	Detector	4.00	CX 222DC	Four Element Tube	4.50
CX 226	A C Amplifier	1.25	CY 224	Four Element A C Tube	2.00
CX 230	2 Volt General Purpose	1.60	CX 245	Power Amplifier	1.40
CX 231	2 Volt Output	1.60	235	Variable Mu	2.20
			247	Pentode	1.90

RADIO TRADE SHOW

Echophone Radio Mfg. Co., Ltd.



The ECHOPHONE PLANT is a busy place. New models are under way.

ECHOPHONE was the original mantel set, the first model of which was introduced on the Pacific Coast two years ago. At the present time there are two models being manufactured—one an eight-tube Superheterodyne and one a six-tube TRF circuit. The Echophone Company will introduce a new and complete line at the R.M.A. Show at the Stevens Hotel, Chicago, week of June 8th. To those who do not attend the Show, we will be pleased to send illustrated literature of the new models, which will incorporate Superheterodyne and TRF circuits, including full console model, upon receipt of request.

ECHOPHONE has led in establishing the price of \$69.50 for Superheterodyne, having introduced the first model in January of this year, and the TRF price of \$59.50, which has prevailed for the past two years.

New models will be popularly priced and we stand ready, by actual comparative demonstration, to prove our claims of superiority.

Factory:

Echophone Radio Mfg. Co., Ltd.

WAUKEGAN, ILL.

ECHOPHONE RADIO CO. OF CANADA, LTD., TORONTO, CANADA
ECHOPHONE CO. EXPORT, 44 WHITEHALL ST., NEW YORK, N. Y.

RADIO TRADE SHOW

GRAYBAR ELECTRIC CO.



Graybar Presents a \$37.50 Midget

The new Graybarette answers the demand for a quality radio at a low price.

It has a new, dynamic speaker—a marvel of realistic tone reproduction. The circuit is of the tuned radio frequency type. The cabinet is especially attractive and dignified in appearance. And price—\$37.50, complete with tubes.



*Look
for the shield
of quality*

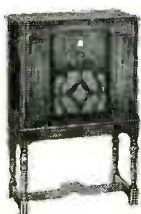
But the Graybarette is only one member of the Graybar radio family. Graybar radios are now available in six different models, with prices ranging from \$37.50 to \$285. And—most important—behind every Graybar radio stands Graybar's 62-year reputation for quality.



\$69.50—Super-Heterodyne Midget (complete with tubes)



\$112.50—Tuned Radio Frequency Model (less tubes)



\$142.50—Super-Heterodyne Model (less tubes)



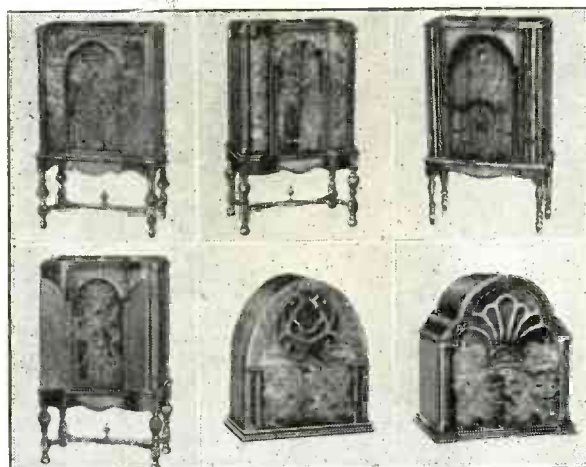
\$179.50—Tone Control Model (less tubes)



\$285.00—Complete Recording Model (less tubes)

RADIO TRADE SHOW

U. S. APEX and GLORITONE



*U. S. Radio & Television Corp.
Announces
New Apex and Gloritone*

Three new U. S. Apex models and two GLORITONE models, all with pentode tubes, and ranging from 5 to 10 tubes, are shown by United States Radio & Television Corporation at the Trade Show.

The two GLORITONE models, shown above, 26-P and 26-B, list for \$49.95 and \$59.95, respectively. Tubes are included in this price. Triple screen grid chassis and electro-dynamic speaker in both models.

The three U. S. Apex models are 8-A, 8-B and 10-B. 8-A and 8-B have eight-tube superheterodyne chassis, with multi-mu and pentode tubes. Electro-dynamic speaker. List prices, with tubes: 8-A, \$67.50; 8-B, \$79.95.

U. S. APEX MODEL 10-B uses 10 tubes in a superheterodyne circuit. Automatic volume control. Two pentodes in push-pull. Full range multi-mu tubes. Meter tuning and oversize electro-dynamic speaker. List price, \$99.50, complete with tubes.

RADIO TRADE SHOW

EXHIBIT OF
Hickok Electrical Instrument Co.



Hickok Radio Tube Tester, No. AC-47

Radio Tube Tester

Catalogue No. AC-47

*Tests All Type Tubes
Including the
New Audio Pentode*

This Tube Tester is designed to give Radio Dealers, Jobbers and Service Men a device which will test tubes in a more complete and efficient manner than the ordinary tester which reads emission only. It indicates directly on meters both DYNAMIC MUTUAL CONDUCTANCE AND PLATE CURRENT. To make its use as simple as possible it is designed to operate from light socket power and its indications are independent of Line Voltage Fluctuations.

Write for Bulletin 27 containing complete description.

List Price \$125.00
Dealer's Net Price 75.00

Hickok Electrical Instrument Co.
10514 DUPONT AVE.
CLEVELAND, OHIO

RADIO TRADE SHOW

NEW PRODUCT OF
GENERAL ELECTRIC COMPANY



Pentode Midget by General Electric

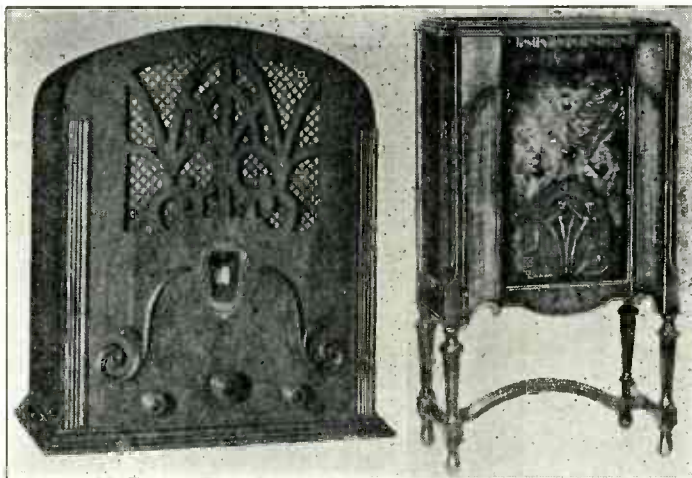
"A mite in size but mighty in performance," says General Electric, makers of the new set which will augment the line of General Electric Radios.

Incorporating the Pentode tube, which gives high output, this little radio will prove popular with those who desire an inexpensive set for any purpose.

Standing 15¼ inches high the cabinet is of brown Walnut finish, following the cathedral style. The dynamic speaker is concealed behind an attractive screen grille cloth. Ranged below the neat escutcheon are three control knobs for on and off, for tuning, and for volume control. The chassis, including the power supply system, is one complete unit and is carefully shielded. This set employs the tuned radio frequency principle and has two tuned circuits.

RADIO TRADE SHOW

EXHIBIT OF
STEINITE RADIO CO., Fort Wayne, Indiana



Two New Steinite Models for the Jobbing Trade

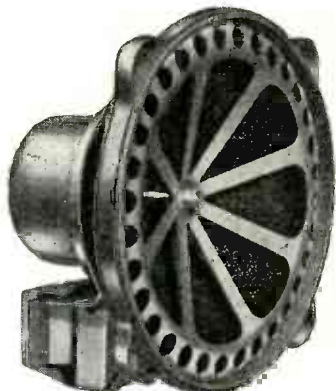
ANNOUNCEMENT was recently made by Mr. Oscar Getz, president of the Steinite Radio Company of Fort Wayne, Indiana, of two new models of radio sets for the STEINITE jobbing trade. One model is the new STEINITE MARVEL Midget, a five-tube tuned radio frequency receiver, priced at \$49.50, complete with tubes.

The feature of this new set is the STEINITE impedance coupled screen grid detector circuit. This new feature audio system affords absolute tone fidelity without the sacrifice of distance-getting ability or power. This model, known as the No. 423, employs five tubes and is housed in a very attractive Walnut Veneered cabinet. It has a price appeal that makes it of universal acceptance and it has become a very popular number in the STEINITE line.

The second receiver announced for immediate release to STEINITE jobbers is the new STEINITE MONARCH, eight-tube Superheterodyne receiver, which is priced at \$89.50, complete with tubes. It is housed in a full-sized 40-inch Console cabinet of excellent design and finish, containing a 12½-inch super power, dynamic speaker and is the result of a persistent demand for a large-sized Console Superheterodyne set. This receiver is equipped with tone control, local distance switch, and offers triple screen grid and push-pull amplification. It is sensational in its selectivity and provides unusual distance-getting ability. The large, full-sized, dynamic speaker provides a faithfulness of reproduction, which may be shaded into various tones by the use of the STEINITE tone control. All STEINITE receivers are licensed by R.C.A. and associated companies.

RADIO TRADE SHOW

Magnavox Company Ltd.



Models

"140"—6¾" cone
"142"—8¾" cone
"143"—10¾" cone

The MAGNAVOX Symphonic Series

THE ACHIEVEMENTS OF **Magnavox**

A distinct asset in the selling of any radio is the new Magnavox Symphonic "140" *Dynamic Speaker*. *Magnavox* is the originator and creator of the finest in sound reproduction. The first loud speaker . . . the first *Dynamic* speaker . . . *Dynamic* sound reproduction . . . all belong to *Magnavox*.

The new Twentieth Anniversary *Magnavox* "140" series establishes a still more brilliant standard of performance and still greater customer satisfaction. *Magnavox Dynamic* . . . the speaker preferred by the masses in 1911. *Magnavox Dynamic* . . . the speaker preferred by the masses in 1931. The *ultimate* in *Dynamic* speaker development and design.



Magnavox Company Ltd.

Executive and Sales Offices

155 EAST OHIO STREET, CHICAGO, ILL.

General Offices: Chicago, Ill.
Subsidiaries

The Magnavox Company
Electro Formation, Inc.

Factories: Fort Wayne, Ind.
Subsidiaries

Magnavox (Australia) Ltd.
Magnavox (Great Britain) Ltd.

NEW RADIO PRODUCTS

JANETTE MANUFACTURING COMPANY
556-58 WEST MONROE STREET, CHICAGO, ILL.



THE year 1930-31 has seen some remarkable changes in the JANETTE line of D.C.-to-A.C. Rotary Converters. Old models have been redesigned—new models have been added. Today the line stands complete with 10 different sizes, ranging in output from 110 to 2500 watts.

Every unit in the JANETTE line is a steel-frame unit with double-wound armature and laminated steel pole pieces. By "double-wound armature" is meant an armature with independent primary (D.C.) and secondary (A.C.) circuits, each circuit insulated from the other. The purpose of independent circuits is, of course, to cut down the amount of radio interference caused by the commutator. The filter with which these converters are provided then takes out the balance of this interference so that the most sensitive receiver may be operated without a trace of ripple or hum.

The new low-priced models called Types CA-20-F and CA-18-F are delivering 110 and 150 watts respectively, have been added to the JANETTE line. (See illustration above.) These units are constructed in the same manner as the larger and more expensive JANETTE Converters—double-wound

armature, steel frame, laminated steel pole pieces and dynamic balance. They are provided with cord and plug for the D.C. connection and a receptacle for the A.C. connection to the radio. Standard D.C. voltages are 32, 110/115 and 220/230. A.C. delivery is 110 volts, 60 cycles.

*PRICES AND CAPACITIES

†CAPACITY	TYPE	LIST PRICES		
		32 V.	110/115 V.	220/230 V.
110 Watts	CA-20-F	\$ 49.50	\$ 49.50	\$ 51.50
150 "	CA-18-F	58.00	58.00	60.00
300 "	C -13-F	80.00	80.00	82.00
500 "			100.00	102.00
400 "	CB-11-F	120.00		

*Prices subject to change without notice.

†Information on larger sizes may be obtained from the manufacturers.

RADIO TRADE SHOW

Jewell Electrical Instrument Company



Impressive Test Equipment Boost Radio Tube Sales

Accurate tube testing equipment that also combines attractive display value is offered the radio dealer in two new Tube-Sellers, announced at the R. M. A. Show.

Dealers all over the country have found that phenomenal increases in tube sales can be secured by installing tube testing equipment which builds customer confidence.

The Pattern 535 Tube-Seller has a black panel 30 inches high by 28 inches wide, on which are mounted an 8½-inch meter for indicating tube test readings, a smaller meter to show when the line voltage adjustment is properly set, pre-heater and short check sockets and short indicating lights, and a separate test socket for each type of tube.

JEWELLELECTRICAL INSTRUMENT COMPANY

1642-I Walnut Street, Chicago, Illinois

*Visit Booth B-74 at the Stevens Hotel to see the complete line
of Jewell Tube-Sellers and the new Jewell
Pattern 444 Set Analyzer*

RADIO TRADE SHOW

Supreme Instruments Corporation
GREENWOOD, MISSISSIPPI



PENTODE ANALYSES is only one feature of the one "wonder meter" of the Supreme Set Analyzer Model 90.



Supreme Oscillator Model 70 sets a new standard in Oscillator-Ohmmeter design.

SUPREME BY COMPARISON

THE Supreme Model 70 Oscillator is the newest addition to a distinguished family.

Having established its leadership over two years ago with the famous Diagnometer, the Supreme Instruments Corporation has consistently maintained and strengthened its enviable position in the service equipment field with each new product.

It is on this basis that we invite your inspection of ---

SUPREME
Testing Instruments
"SUPREME BY COMPARISON"

and comparison with anything the market offers ---

—CONFIDENT OF YOUR JUDGMENT
AND OUR PRODUCT

Model 500-B Diagnometer \$139.50, 90 Set Analyzer \$78.50, 19 Tube Checker (counter model) \$26.95, Portable Model \$29.95, 70 Oscillator \$49.75. Output-Ohmmeter \$30.00. Carrying Case for Oscillator, Output-Ohmmeter and accessories \$5.00 (tube and batteries will be supplied at current dealers net prices).

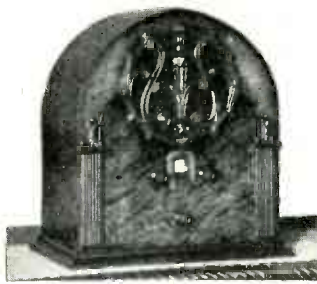
All prices net cash F.O.B. Greenwood, Mississippi

RADIO TRADE SHOW

LYRIC RADIO & MOHAWK REFRIGERATORS



Model S-8 Lyric Superheterodyne. 8-tube Console. Pentode and Multi-Mu Tubes. \$99.50 with Tubes.



Model S-7 Lyric Superheterodyne. 7-tube Midget. Pentode and Multi-Mu Tubes. \$69.50 with Tubes.

Lyric Radio Manufacturers Exhibit Both Lyric Radio and Mohawk Electric Refrigerators at R. M. A. Show

In booths 79, 80, 81 and 82 at the R. M. A. Exhibition Hall, located in the Stevens Hotel and on the twentieth floor in rooms 2000, 2001, 2001-A, 2002 and 2002-A, will be shown the very latest 1932 models of the LYRIC ALL SUPERHETERODYNE line and also the new line of Electric Refrigerators recently introduced by the All-American Mohawk Corporation, known as the MOHAWK REFRIGERATOR with the DUOZONE UNIT.

IN THE LYRIC ALL SUPERHETERODYNE LINE, five models will be shown in the most beautiful cabinets ever displayed. This line of five models will consist of one small model known as the S-6, or a six-tube SUPERHETERODYNE in a small cabinet, listing at \$49.50 complete with tubes. The next model in line will be a seven-tube SUPERHETERODYNE, known as the S-7, somewhat larger than the Model S-6, in a very striking cabinet, listing at \$69.50 complete with tubes. The S-8 is a Console Model of eight tubes and of Sheraton design, priced at \$99.50 complete with tubes. Model S-9 is a SUPERHETERODYNE MODEL of Heppelwhite design of nine tubes, practically the exact duplicate in cabinet construction with the S-8 with the exception of the doors, these doors being a very unusual design of desk-top type doors.

The MOHAWK REFRIGERATOR display will consist of six models, five models of the standard line and one model in color. Models 5, 10 and 15 may be secured in delicate tints to match the desired color scheme of the home. The standard line of MOHAWK REFRIGERATORS are models 5, 10, 15, 20 and 25. Models 5, 10 and 15 are porcelain interior with heat-treated blown DUCO on the exterior, and as stated above, may be secured in either delicate tints or the standard color white. Model 5 is a five-foot box, Model 10 is a six and a half foot box, Model 15 is a nine and a half foot box. The two DE LUXE MODELS, Nos. 20 and 25, are both porcelain interior and exterior, two-door models with all refinements of the DE LUXE LINE. Model 20 is a seven cubic foot box and Model 25 is an eight and a half foot box. All models of the MOHAWK LINE employ the famous DUOZONE UNIT with the two zones of cold for the preservation of food and the freezing of ice cubes and desserts.

Both lines, LYRIC SUPERHETERODYNE and MOHAWK ELECTRIC REFRIGERATORS are as modern and as up-to-the-minute products as to be displayed at the R. M. A. Show, and the ALL-AMERICAN MOHAWK CORPORATION personnel invites each and every one attending the R. M. A. Show to see and hear the LYRIC MODELS and to inspect the MOHAWK ELECTRIC REFRIGERATOR MODELS.

RADIO TRADE SHOW

OPERADIO MANUFACTURING CO.
St. Charles, Illinois



Fig. 1

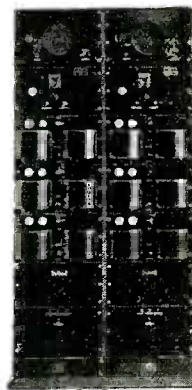


Fig. 3



Fig. 4



Fig. 2



Fig. 5

SOUND EQUIPMENT and ACCESSORIES

Figure 1: The Model 408-DT Amplifier is designed primarily for Sound-On-Film reproduction. It is completely A.C. operated. It does not have to be operated in conjunction with a PEC Amplifier but takes its input energy direct from the photo electric cell. It furnishes the necessary voltage for the PE cell as well as the filament for the exciter lamp. There are no batteries whatsoever required in the operation of this amplifier. It is 19" wide x 21" high x 8" deep.

Figure 2: Operadio Single Microphone Amplifier Model T-830. This is a single stage, battery operated, portable microphone amplifier completely self-contained in a steel box. There are provisions for reading and adjusting the button current of the microphone. There is also a volume control which regulates the output volume of the amplifier to any desired degree. It is designed primarily for portable use and to supply sufficient output from the microphone to be used on long lines to the main amplifier.

Figure 3: Operadio P.A. Amplifier Type 2RaM6B. This is a typical layout of a rack and panel amplifier especially designed for public address work. It comprises two complete radio program channels. In addition it has provision for three auxiliary inputs such as an automatic phonograph input and two microphone inputs. Each channel has an output of 45 watts.

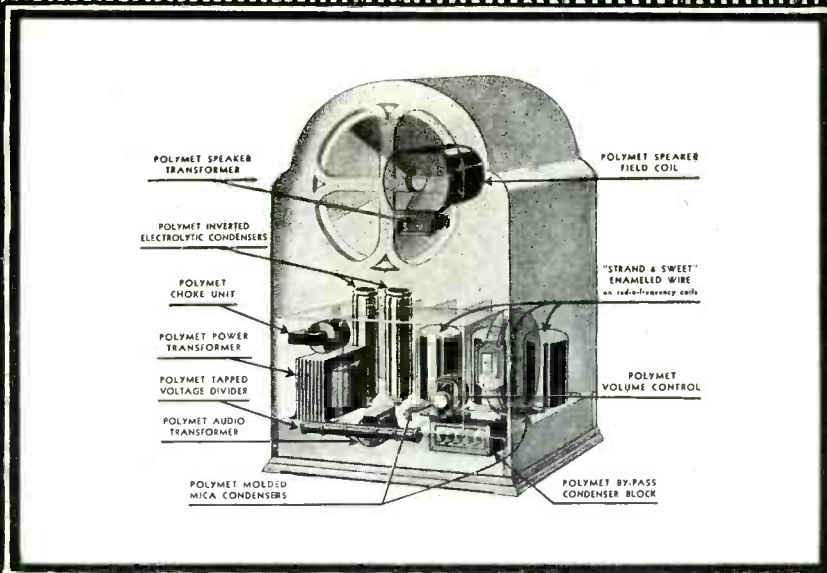
Figure 4: Operadio Amplifier Combination Unit Model No. 14: This unit is a complete amplifying unit in itself. It is capable of reproducing either phonograph records, by means of an electric phonograph pick up; or the human voice by the use of a carbon type microphone. It is housed in a steel cabinet making it weather-proof as well as water-proof. The power amplifier is a three stage amplifier using type 245 tubes in the output. This amplifier also furnishes the necessary button current for the microphone. It contains an electric phonograph turn table and motor, an electric phonograph pick up, and a suitable control panel for selecting between microphone and phonograph.

Figure 5: Voltage Regulator Model VR-10: This voltage regulator makes it possible to maintain 110 volts, 50-60 cycle A.C. at all times even though the main power supply may vary from 95 to 125 volts. The control switch is of a special patented design so that it automatically cuts off the power before the switch is rotated, so as to prevent arcing between the contact points. It is made in three sizes; 500 watt, 1,000 watt and 1500 watt capacity.

For complete information write to Department R-6 for bulletins describing the above equipment.

RADIO TRADE SHOW

POLYMET MANUFACTURING CORP.
NEW YORK CITY



TYPICAL MIDGET RECEIVER

*Showing the wide variety of parts
furnished to radio manufacturers*

BY

POLYMET MANUFACTURING CORP.

POLYMET PRODUCTS FOR RADIO USE INCLUDE:

Electrolytic Condensers	Volume Controls
Paper Filter Condensers	Rheostats and Potentiometers
Paper By-Pass Condensers	Phone Plugs
Oil-filled High-Voltage Condensers	Power and Audio Transformers
Molded Mica Condensers	Choke Units
Tapped Voltage Dividers	Coil Windings
Tubular, Flat and Flexible Resistors	Enameled Magnet Wire

POLYMET PRODUCTS FOR SOUND SYSTEMS INCLUDE:

Main Amplifiers with controls for complete A. C. operation
Head Amplifiers
"Safety Margin" Condensers, Resistors, Transformers, Chokes

These parts, to POLYMET design, are furnished both for the jobbing trade and manufacturers. Similar parts are also fabricated in quantity to manufacturers' own specifications.

RADIO TRADE SHOW

NATIONAL UNION RADIO CORPORATION OF N. Y.
400 MADISON AVENUE, NEW YORK CITY



The New National Union Tubes AUTOMOBILE TUBES

TYPE NY 64—A screen-grid tube employing an indirectly heated cathode and a filament designed for operation at 6.3 volts. It is recommended for use as a R.F. amplifier or detector in automobile radio and in D. C. district radio sets.

TYPE NY 65—A remote cut-off screen-grid tube especially designed for operation as a R. F. or I. F. amplifier in automobile and D. C. districts radio receivers. An indirectly heated cathode having a filament for operation at 6.3 volts is employed. Its particular merit is its ability to amplify without introducing disagreeable cross-talk or distortion.

TYPE NY 67—A three-element general purpose tube having an indirectly heated cathode and a filament for operation at 6.3 volts. It may be used as a R. F. amplifier, detector, or first stage audio amplifier in automobile and D.C. district radio receivers.

TYPE NY 68—A power output pentode tube having an indirectly heated cathode and a filament for operation at 6.3 volts. It is recommended for use in the last audio amplifier stage of a radio receiver. The field of usefulness of this tube is in automobile and D.C. district radio receivers.

2-VOLT BATTERY TUBES

TYPE NX 230—A low power consumption general purpose tube for use in radio sets powered from dry cells. It may be used as a R. F. amplifier, detector or first stage audio amplifier.

TYPE NX 231—A low power consumption output tube for use in radio sets powered from dry cells. It is recommended for use only in the last audio amplifier stage of such radio receivers.

TYPE NX 232—A low power consumption screen-grid tube designed for operation as a R. F. amplifier or detector in radio sets powered from dry cells.

TYPE NY 233—A low power consumption pentode output tube for use in radio sets powered from dry cells. It is recommended for use only in the last audio amplifier stage of such radio receivers.

ADDITIONS TO A. C. LINE

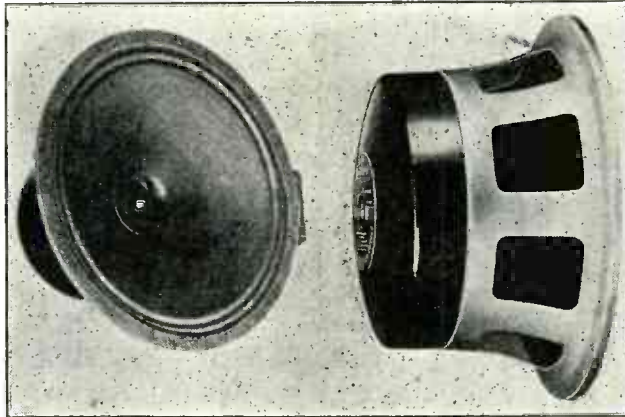
TYPE NY 235—A remote cut-off screen-grid tube especially designed for operation as a R. F. or I. F. amplifier. Its particular merit is its ability to amplify without introducing disagreeable cross-talk or distortion. This tube will be used by set-designers in many of their forthcoming models. It, however, should not be used to replace type 224 tubes in sets originally designed for the 224.

TYPE NY 247—A power output pentode tube capable of delivering 2½ watts of power to a loud speaker when only a comparatively small signal is applied to the input of the tube. This tube performs the same function as does a type 245. It, however, is more sensitive than the 245, and it will find a use in radio receivers which are designed for maximum sensitivity and power output with the minimum number of tubes.

For further full detailed descriptions and characteristics, write Dept. R,
National Union Radio Corp. of N. Y., 400 Madison Ave., New York City

RADIO TRADE SHOW

JENSEN RADIO MANUFACTURING CO.
6601 SOUTH LARAMIE AVE., CHICAGO, ILL.



Model J-1 Jensen Concert Jr.
Electro Dynamic Speaker

Model PM-1 Jensen Permanent
Electro-Magnetic Speaker

New Jensen Permanent Magnet Speaker

*New Electro Dynamic Speaker Also to be Shown
For First Time at R. M. A. Show*

A permanent magnet speaker, to be known as the Jensen Model PM-1, and the first of a new series of electro-dynamic speakers, designated as the Jensen Model J-1, are to be shown and demonstrated for the first time during the R. M. A. Trade Show by the Jensen Radio Manufacturing Company, Chicago, Ill.

The permanent magnet speaker, which, according to Peter L. Jensen, president of the company, is electro-dynamic in its tone quality and has the ability to handle great volume, is the result of eighteen months research and development work on the part of the company's engineers.

The design of the magnet is such that the entire speaker assembly is exceedingly compact, requiring little more space than an electro-dynamic speaker of equal size. Its weight also is considerably less than that of speakers of this type which have been offered to the manufacturers and trade up to the present time. The cone and moving coil structure follows that employed in the new Jensen electro-dynamic speakers and is therefore exceedingly sensitive. The TYM-FLEX one-piece molded cone, also of exclusive Jensen design and material, is used with the new Jensen PM-1 Speaker.

According to Mr. Jensen, the executives of the company look for a large sale for this type of speakers in connection with battery operated receivers.

In reference to this sales possibility he said: "There are literally hundreds of thousands of people in the country who do not have electric current in their home but who would like to have a radio receiver. These people have been reluctant to purchase receivers with the magnetic type of speaker due to their inferiority so far as reproduction is concerned when compared with the electro-dynamic reproducer equipped sets.

"With the development of a permanent magnet speaker, which is truly electro-dynamic in its tone quality and which we are now in position to supply, I look for a decided impetus in the sale of battery-operated sets.

"We know from the interest already manifested

by many of the leading receiver manufacturers in our new PM-1 Speaker that they all realize the tremendous potential sales possibilities of battery-operated sets, provided their tone quality is comparable with what buyers demand today in radio sets."

The new speaker, according to Mr. Jensen, is also ideally suited for hotel and apartment room installations operated off of central tuning and amplifier systems and for use in connection with motor car radio sets.

The life of the magnetic structure is said to be indefinite. There is no field coil employed, thus entirely eliminating the need of a separate current supply to energize the magnetic field.

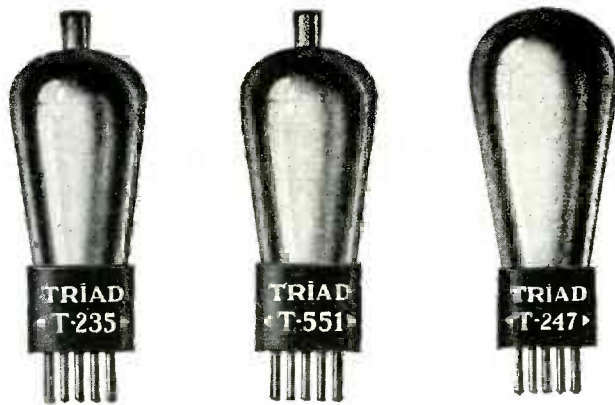
The new Jensen J-1 electro-dynamic speaker has a cone diameter of six inches overall and has been designed to meet the latest requirements of the smallest midget and mantel type sets. Its performance, however, from the standpoints of tone quality, sensitivity and ability to handle volume is comparable with speakers of considerably larger cone size. In appearance and design this new speaker is an innovation. All connections are completely enclosed.

The new Jensen speakers are available with transformer equipment for use with any of the regular amplifier tubes or with the new pentodes.

In addition to these two speakers Jensen will also offer other new electro-dynamic speakers with seven, nine and twelve-inch cone structures.

RADIO TRADE SHOW

TRIAD MANUFACTURING CO., INC.
PAWTUCKET, R. I., U. S. A.



Announcing— 3 New TRIAD RADIO TUBES

TRIAD TYPE T-247, PENTODE—
An extremely high amplification factor combined with a very high power output, which results in increasing the maximum sensitivity of a set with an additional gain in volume.

TRIAD TYPE T-551, VARIABLE MU—A screen-grid tube of many refinements. Designed to eliminate cross-talk and distortion—also reducing static to a minimum. The T-551 is interchangeable in most existing circuits with decidedly beneficial results.

TRIAD TYPE 235 VARIABLE MU

The T-235 has essentially the same characteristics as the 224 Type Tube, but with the additional feature of a plate current grid voltage curve that is very nearly logarithmic. This plate current characteristic makes it very adaptable for use in automatic control circuits by virtue of its low percentage of distortion at very high grid bias.

RADIO TRADE SHOW

HOYT ELECTRICAL INSTRUMENT WORKS
 BOSTON BURTON-ROGERS COMPANY—Sale Dept. MASS.



ACCURATE TEST EQUIPMENT AND METERS For the **SERVICE MAN** at Reasonable Prices

TUBE CHECKERS

Counter type (pictured above) gives ready visibility to the customer. Inspires confidence in the method of test and the reliability of the dealer. **Accurate, easy and fast** to use. At a reasonable price. Also three other portable models.

	Dealer's Net
Model 3 (Deadline) Price	\$27.60
Model 2 (with voltage scale)	22.80
Model 1	19.60

ANALYZER—gives all necessary readings when servicing a receiver.

**Accurate meters
 Compact Bakelite Case**
 Dealer's Net **\$58.50**

TEST OSCILLATOR

The Senior Test Oscillator covers the broadcast band and all the intermediate frequencies used in modern superheterodynes.

**Shielded
 Accurately calibrated
 Strong, clear, steady controlled signal**

Output meter included.
 Portable case.
 Dealer's Net **\$62.50**

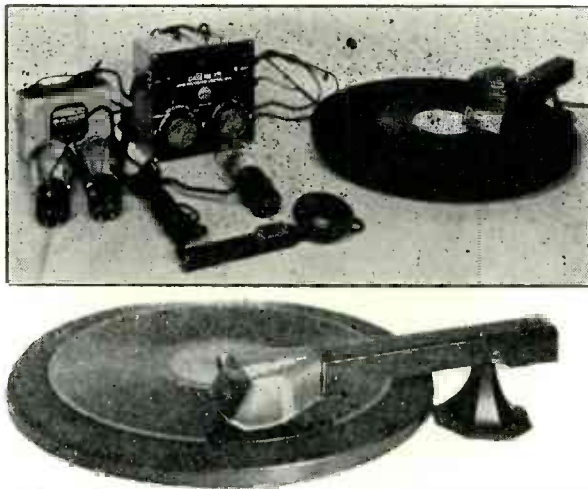
The Junior Oscillator covers all frequencies.

Battery operated.
 With Output Indicator
 Dealer's Net Price **\$32.50**

TEST METERS—Accurate millimeters voltmeters, Portable and Panel mounting type at reasonable prices.

RADIO TRADE SHOW

PACENT ELECTRIC COMPANY, INC.
91 SEVENTH AVENUE NEW YORK, N. Y.



Complete Line of Phonovoxes

A Brand New Idea in Home Recording, and a New Line of Low Priced Amplifiers will be Featured by Pacent in Chicago

PACENT'S display in Chicago this year will be on the sixth floor of the Palmer House Hotel, Wabash and State Streets. Here will be shown a complete line of Phonovoxes, including the No. 120 with 12" tone arm, and the No. 160 with 16" tone arm. Both are of the Hi-Output type, providing volume almost 25% greater than ordinary pickups.

The No. 171 Recordovox and Control Box also will be displayed. This unit is a combination instrument for both making and reproducing records at home through the radio. Once installed the instrument remains permanently connected, and the changeover from radio to recording or from radio to phonograph is accomplished by adjusting a single switch.

A complete line of Amplifiers employing special coupling will be on display, including a 245 type, a 250 type, a special 250 push-pull output stage and a three-stage 250 type amplifier.

Prices

No. 120 Phonovox with 12" tone arm, including volume control and adapters	\$ 12.50
No. 160 Phonovox with 16" tone arm, including volume control and adapters	16.00
No. 171 Recordovox and Control Box complete	27.50
No. 230 Two-stage Power Amplifier with 245 output	65.00
No. 231 Two-stage Power Amplifier with 250 output	95.00
No. 323 Single stage push-pull amplifier employing two 250 tubes	110.00
No. 3350-M three-stage amplifier with 250 push-pull output	180.00

NEW RADIO PRODUCTS

STEWART-WARNER CORPORATION
1826 DIVERSEY PKWY., CHICAGO, ILL.



STEWART-WARNER APARTMENT MODEL
STEWART-WARNER No. 1 CONSOLE

THE COMPLETE LINE



Apartment Model—6-tube Super-Heterodyne, Variable Mu and Pentode Tubes, Tone Control, Electro Dynamic Reproducer, Television Terminals. Walnut Cabinet of beautiful design and finish. Height 19", width 14", depth 11". Complete with tubes, \$52.95.

No. 1 Console—Super-heterodyne Circuit, Variable Mu and Pentode Tubes, Tone Control, Electro Dynamic Reproducer, Television Terminals. Beautiful Cabinet of selectd walnut. Height 39". Complete with tubes, only \$65.75.

Low-Wave Converter—An individual unit which adapts practically any A.C. set to low-wave reception (down to about 20 meters). Brings in stations all over the world; amateur broadcasts; police signals, etc. Complete with tubes and cabinet, only \$23.95.

No. 2 Console—Same as No. 1 Console, but with built-in Low-Wave Converter. Height 39". Complete with tubes, only \$87.75.

No. 3 Console—Super-Heterodyne Circuit. Variable Mu and Pentode Tubes. Electro Dynamic Reproducer. Tone Control. Tele-

vision Terminals. Walnut Cabinet. Height 39". Complete with tubes, only \$71.75.

No. 4 Console—Same as No. 3 Console, but with built-in Low-Wave Converter. Complete with tubes, only \$93.75.

No. 1 Portable—New, novel, convenient. Can be wheeled, plugged in, anywhere. Super-Heterodyne Circuit. Variable Mu and Pentode Tubes. Tone Control. Electro Dynamic Reproducer. Walnut Cabinet. Height 29". Complete with tubes, only \$67.75.

No. 2 Portable—Same as No. 1 Portable, but with Television Terminals and built-in Low-Wave Converter. Height 29". Complete with tubes, \$90.75.

Console De Luxe No. 1—Super-Heterodyne Set. Variable Mu and Pentode Tubes. Tone Control. Electro Dynamic Reproducer. Cabinet in beautifully matched Walnut, embellished with hand carving. Height 41½". Complete with tubes, \$82.75.

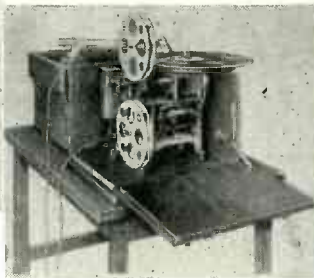
Console De Luxe No. 2—Same as Console De Luxe No. 1, but with Television Terminals and built-in Short-Wave Converter. Complete with tubes, only \$104.75.

RADIO TRADE SHOW

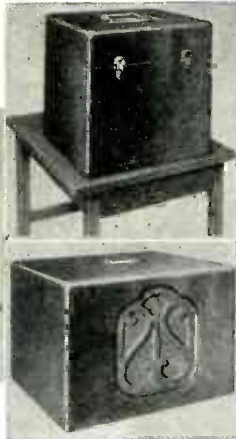
Sprague Visivox Home Talkies



Model C



Model A (open)



Model B

Sprague Specialties Co. Announces Talking Moving Pictures for the Home at Popular Prices

THE field of home movies has long been well established—and has been emphasized by the interest displayed in talking moving pictures for the home, which have been a reality for several years.

Much new interest has been created by the announcement by the Sprague Specialties Company of Quincy, Massachusetts, of the VISIVOX, a Home Talking Moving Picture Machine, priced far below any other item previously announced. This field has not only been complicated by high prices in the past, but also by the inavailability of the 16 mm. talking moving picture films and records for either purchase or rental. There are now, however, numerous of such films and records available with regular production established, and the subjects range from a wide variety of educational pictures to all sorts of comedies, dramas and feature films.

There are two Sprague models, one portable and one in cabinet form. The portable type Visivox "A" lists at \$119. This model includes the phonograph synchronization apparatus, pick-up and projector. The user plugs a wire into his radio set, another into an electric socket, and the apparatus is ready to operate. Where no radio set is available, another small portable device, listing at \$50, is attached to this model, thus providing the audio and loud speaker. This latter instrument is known as model "B."

"Visivox C" is a complete machine in a walnut cabinet, including projector, synchronical phonograph apparatus, amplifiers and loud speaker. This lists at \$189.

The Sprague Visivox is very simple in its mechanical operation and the synchronization is entirely automatic. Both types of machines play all sizes of phonograph records, including the 16-in. theatre

Statement by A. B. Ayers, General Sales Manager, Sprague Specialties Co.

According to A. B. Ayers, General Sales Manager of the Sprague Specialties Company, makers of the Sprague Visivox Home Talking Moving Picture Machine, radio dealers have been quick to seize the opportunities in the home talkie field. Following the first announcements made about six weeks ago, wholesale distribution was rapidly started and radio dealers, particularly, have expressed an intense interest. The field of sale is so large, taking in not only every type of home, but also hotels, churches, clubs, camps, etc., that every dealer who has ever

records, and can be used separately as a phonograph if the moving picture apparatus is not desired. The Visivox may also be used as a simple projector of 16 mm. films where it is not desired to use it as a talking picture. Much significance will be attached to the popular prices, which open this type of machine for a much wider sale than hitherto available.

sold a radio set feels he has an equal opportunity to sell a Visivox projector.

Mr. Ayers further states that before the factory production was commenced, the Visivox was subjected to every possible test and experiment to iron out the wrinkles of laboratory production, and that the Sprague Factory in North Adams is now in full production of a thoroughly tested and perfected machine. Deliveries were commenced about two weeks ago and have continued consistently. Distributors have been busy allotting dealer franchises.

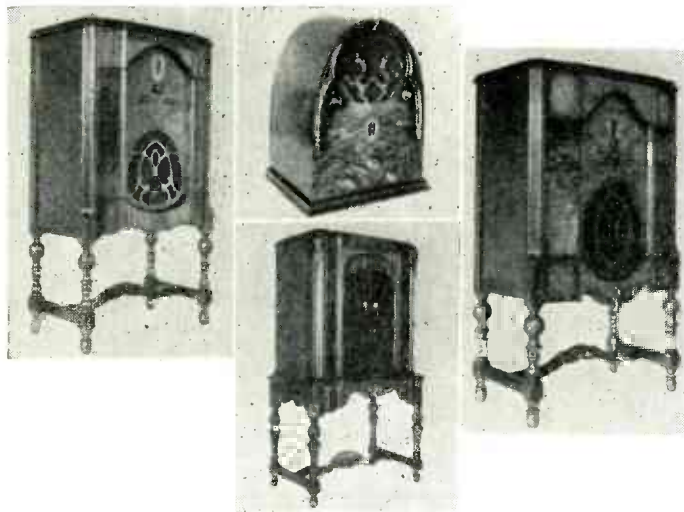
Statement by R. C. Sprague, President

"We have been more than gratified, and the Visivox Division of our plant in North Adams is now in 100 per cent full production on this line. We have been tremendously gratified, also, at the acceptance given to the Sprague Electrolytic Condenser

during the past six months, during which time most of the recognized leaders of the radio industry in American have specified the Sprague Electrolytic Condenser as standard equipment in their most popular models."

RADIO TRADE SHOW

ANNOUNCEMENT BY
SILVER-MARSHALL, INC.



SILVER-MARSHALL *Goes Direct to Dealers*

McMurdo Silver, President, and Howard W. Sams, General Sales Manager of Silver-Marshall, Inc., recently issued the following joint statement to the trade:

"As a result of months of serious consideration and contact with radio dealers all over the country, Silver-Marshall on June 1st put into effect a new direct factory policy.

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

"These retailers represent the backbone of the industry and their gradual elimination is taking place due to manufacturers adhering to the old 1929 'prosperity' policies in spite of present business conditions.

"In eliminating fifty-three distributors Silver-Marshall is conserving 25% plus cost of traveling representatives and is making it possible for the retailers to sell the finest pentode vario-mu superheterodynes at list prices well below competition, and yet make as much profit as though he sold a higher priced receiver.

"In other words the dealer is given an ultra-modern line of superheterodynes that represent tremendous values in the present low market and yet carry an 'expensive set' profit for him."

SILVER-MARSHALL, INC.
6415 West 65th Street, Chicago, Ill.

RADIO TRADE SHOW

GULBRANSEN



Left: Model 235. Center: Model 130. Right: Model 135.

GULBRANSEN Super Heterodyne

Mantel Receiver
Model No. 130
Seven-tube
Superheterodyne

Console Receiver
Model No. 135
Same chassis as
No. 130

Console Receiver
Model No. 235
Ten-tube
Superheterodyne

Gulbransen Superheterodynes for 1931 offer what is, without doubt, one of the most thoroughly engineered lines of radio receivers in the history of the industry. Old "super-het" bugbears are banished. The full value of the new Vari-mu and Pentode tubes is capitalized. Tonal characteristics are astonishingly pure. Gulbransen engineers, recognizing that every service call costs the dealer part of his honest profit, set out to produce radio receivers which would "stay put" without giving dealer and jobber a "service headache."

SPECIFICATIONS

Gulbransen Superheterodyne, Model 235—10-tube (four '35 Vari-mu, two '47 Pentode in push-pull. Compensating Speaker, Tuning Meter (simplified distance tuning), Automatic and Manual Volume Control, Full-floating Variable Condensers, Power Switch. No "blasting" or fading, no cross-talk. Price, less tubes, \$97.50.
Mantel Receiver, Model 130—7-tube Super-

heterodyne (two '35 Vari-mus, one '47 Pentode). 10 kilocycle separation. Large enough to insure excellent tone. Finest cabinet work. Price, less tubes, \$58.00.

Console Receiver, Model 135—7-tube, same chassis as Model 130, in beautifully designed cabinet, 40" high. 2 to 4 micro-volt sensitivity per meter. No tube noises or cross-talk. Price, less tubes, \$68.00.

GULBRANSEN CO., 3232 W. CHICAGO AVE., CHICAGO, ILL.

RADIO TRADE SHOW

PERRYMAN ELECTRIC COMPANY

4901 HUDSON BOULEVARD

NORTH BERGEN, N. J.



Perryman Radio Tubes

Three New Tubes by Perryman, Along With the Standard Line of Tubes Already Being Manufactured

Pentode PA 247, showing extreme sensitivity, allowing greatly increased volume, and reduced distortion. Filament Voltage required 2.5 V., Filament Current 1.5 Amp., Plate Voltage 250 V., Plate Current 32.5 Mil. Amp., Cont. Grid Bias 16.5 V.

Variable-Mu PA 551—Makes possible undistorted reception at maximum input voltage. Heater Voltage 2.5 V., Heater Current 1.75 Amp., Plate Voltage 180 V., Plate Current 5.5 Mil. Amp., Cont. Grid Bias -3 V., Screen Grid Voltage 90 V.

Mercury Filled Full Wave Rectifier PR 588—Filament Voltage 5 V., Current 2 Amp., A.C. Voltage per Plate Max. RMS 500 V., A.C. Output Max. 300 Mils.



All tubes wholly engineered in our own laboratories by our own technical staff, and produced in our own modern factory under rigid inspection specifications

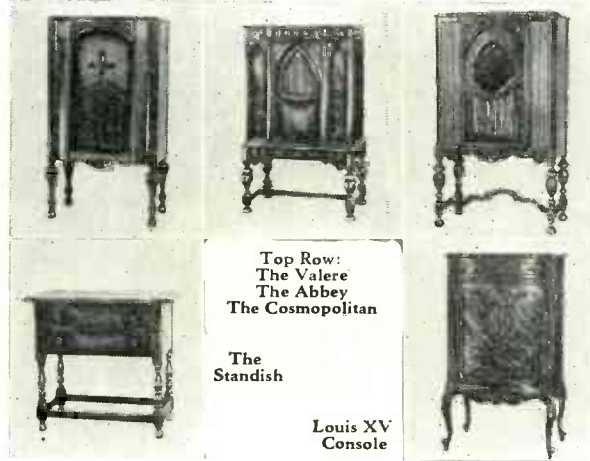


PERRYMAN
RADIO  **TUBES**

Show Headquarters: Booth 9, Hotel Stevens, Suite 619-620

RADIO TRADE SHOW

NEW PRODUCTS OF GENERAL MOTORS RADIO



General Motors Superheterodynes

Improved superheterodyne circuits, custom built period-type furniture models, pentode tubes, greater selectivity, improved tonal quality, "local and distance" switch and automatic volume control feature the new General Motors Radio line.

Two separate lines, with three different circuits—seven, eight and ten-tube superheterodyne—are offered, with prices ranging from \$69.50 to \$350, including tubes. Five models are offered in the standard and nine in the custom-built furniture line. In addition, the Pioneer, the battery set for use on farms and places where outside current is not available, is presented.

In presenting its custom-built furniture line, General Motors Radio offers for the first time a custom-built line in which chassis, cabinet and speaker have been engineered together to co-ordinate perfectly, forming an ideal combination. Chassis and speaker are built complete by General Motors Radio and installed in custom-built cabinets at the radio factory.

The improved superheterodyne chassis offered by General Motors Radio this year represent a long period of useful research and experimentation in the well-equipped research laboratories of the company at Dayton, Ohio.

In the seven and eight-tube chassis the new pentode tube is used, while in the ten-tube circuit two '45 power tubes are employed in push-pull amplification. All three circuits contain the new variable-mu, or super-control tubes, which eliminate cross-talk and interference between powerful stations and give increased volume without distortion.

Complete shielding of condensers, transformers and wiring on the underside of the chassis also contribute largely to the elimination of cross-talk, with improved selectivity and avoidance of radiation which might annoy neighbors. Tone control, a feature of General Motors Radio since its introduction, is continued in all of the new models, while a "local-distance" switch is found on the eight and ten-tube models. The seven-tube chassis employs dual volume control, while automatic volume control is a feature of the eight and ten-tube circuits.

THE VALERE, with the eight-tube superheterodyne circuit, is priced at \$99.50, including tubes.

THE COSMOPOLITAN is equipped with the ten-tube superheterodyne chassis, \$129.50, with tubes.

THE IMPERIAL is a ten-tube superheterodyne. \$149.50, including tubes.

QUEEN ANNE AUTOMATIC COMBINATION, a radio and phonograph combination, with 10-tube superheterodyne chassis. Price complete, with tubes, \$250.00.

THE STANDISH is of the seven-tube superheterodyne type. Price \$95.00.

THE TUDOR is priced at \$95.00.

THE WARWICK is priced at \$95.00.

THE CROMWELL is priced at \$160.00.

THE ABBEY contains the ten-tube superheterodyne chassis. \$165.00.

THE QUEEN ANNE COMMODE is \$175.00.

THE LOUIS XV CONSOLE is priced at \$185.00.

THE WINSLOW is priced at \$225.00.

THE LOUIS XV AUTOMATIC COMBINATION SET is a ten-tube superheterodyne chassis and an automatic phonographic device which permits the playing of 10 records entirely automatically, and is priced at \$350.00, including tubes.

The seven-tube chassis uses a 224 tube as a first detector, a 227 as an oscillator, two 235 tubes for first and second intermediate frequencies, a 227 as a second detector, a pentode 247 in the output stage and a 280 rectifier. The eight-tube chassis employs the same tubes with the addition of a 227 tube after the second detector in an automatic volume control circuit.

In the ten-tube circuit a 235 tube is used in the first R. F. circuit, a 224 as a first detector, a 227 oscillator, two 235 tubes on the first and second intermediate frequency stages, a 227 as a second detector, a 227 in an automatic volume control, two 245 tubes in the output stage in push-pull amplification and a 280 rectifier.

The control panel of General Motors Radio is newly designed and distinctive in appearance. All control knobs are grouped compactly around the station indicator, which is illuminated, making complete control both simple and convenient. Directly beneath the station indicator is the "local-distance" switch, while to the right is the station selector with the volume control at the left. The tone selector knob is located beneath the station selector.

RADIO TRADE SHOW

Wright-DeCoster Exhibits New Speaker



Model No. 207
"The Speaker of the Year"

THE fine tonal quality, clarity and truthful reproduction of Wright-DeCoster Speakers is so natural that it is like hearing the original production. Not a sound escapes its almost uncanny manner of reproduction.

A FULL line of Wright-DeCoster Speakers for the home, theatre, public address systems and outdoor installations will be shown at the R. M. A. Trade Show, Demonstration Room No. 60, Fourth Floor, Stevens Hotel, Chicago, Ill., or full information will be sent upon request.

Wright-DeCoster, Inc.

227 UNIVERSITY AVE.

ST. PAUL, MINN.

Export Dept.: M. Simons & Son Co., 25 Warren St. New York, N. Y.

Cable Address: Simontrice, New York

TOBE Filterette

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VOL. 2, NO. 6

JUNE, 1931

CANTON, MASS.

Analysis of Motor Generator Interference An Important Factor in the Operation of Radio Receivers in D. C. Districts

Although the use of a motor-generator set to allow the operation of an A. C. powered radio receiver in districts where only direct current is normally available is general practice, the methods of overcoming the interference created by the equipment used in changing the direct current to alternating current are not generally understood. Figure 1 is a conventional diagram of a motor-generator set.

In an installation of this type, interference originates at the brushes and commutator of the motor. This interference, which is due to the making and breaking of the electrical circuit, is impressed on the direct current lines supplying the motor, and is distributed along these lines, and being radiated

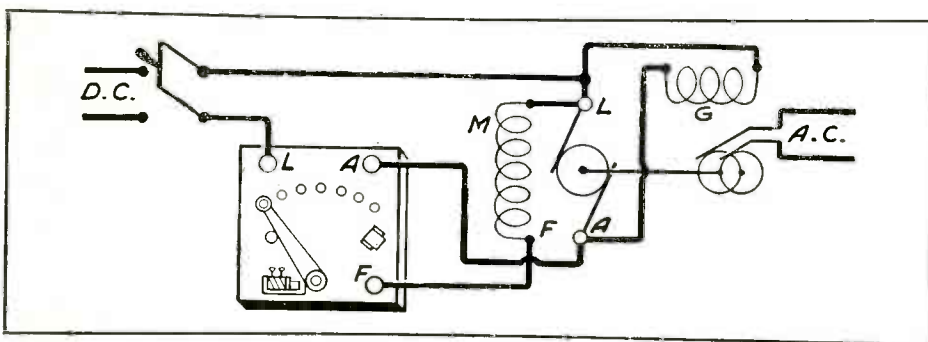
Filterette, which is of the inductive-capacity type is connected in series with the armature leads 'A' and 'L.' If these leads are not accessible, the Filterette may be connected in series with the two line leads ahead of the starting box. This connection is not to be recommended because it generally results in the carrying of long connecting leads between the Filterette and the motor.

Keep Filterette Leads Short

In applying any Filterette, and particularly in the case of filterizing motor-generator or converter equipment, all wiring between the Filterette and the interference source must be kept as short as possible. This connecting wiring should preferably be carried in metallic

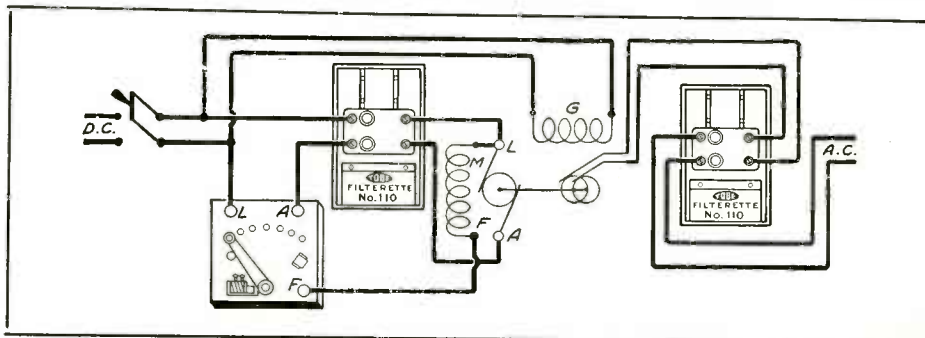
conduit, either solid or flexible, and must be so carried if the Filterette is more than eight inches from the interference source. The conduit carrying this wiring must be bonded to the motor frame. If any appreciable length of open wiring exists between the motor and the Filterette, interference radiated from this wiring is likely to lessen the benefit obtained from the application of the Filterette. By keeping all connecting leads short, and by carrying them in metal conduit, a minimum of interference radiation is assured.

To complete the Filterette installation, a return connection must be made from the Filterette to the motor frame. This connection should be short and direct. The spot at which the Filterette return wire is connected to the motor frame must be clean, and firm contact between the motor frame and return wire must be maintained. If the motor frame is provided with a grounding lug, the return wire may be connected to this lug. Otherwise, a lug should be soldered to the end of the Filterette return lead, and should be fastened with a screw to the motor frame. Before fastening the lug in place, all of the finish at the point where connection is to be made to the motor frame should be carefully removed



from them, may be picked up by the antenna system of the receiver. It is, therefore, evident that if the receiver being used in conjunction with a motor-generator set is to be independent of the interference created by the D. C. motor, some means of preventing the feed-back of this interference to the D. C. lines must be provided.

The application of a Tube No. 110 Filterette to the D. C. motor to prevent this feed-back is shown in Figure 2. The



Advertisement

so that the terminal lug of the return wire will be in direct contact with the metal of the motor frame.

Importance of Return Connection

At this point it should be clearly understood that the question of circuit resistance has a decided bearing on the treatment of filtering problems. The frequencies which are responsible for radio interference have entirely different characteristics from the frequencies (25-60 cycle) generally used for power transmission. Resistance, so slight as to be negligible at power line frequencies, cannot be tolerated in the return circuit of a Filterette. Minimum contact resistance and length of return wire are, therefore, of extreme importance in order that a satisfactory shunt path may be provided for the localizing of interference frequencies.

Satisfactory grounding of power circuits does not mean that disturbing impulses will be carried to ground through this circuit. Grounding the return wire of a Filterette does not constitute a satisfactory filtering circuit, as it is necessary to provide a path of low impedance for the return of interference to its source.

No Interference From Alternator

In view of the fact that alternators in good condition do not normally create radio interference, since there are no making and breaking contacts, it might be assumed that the application of a Filterette at the D. C. end of a motor-generator set, as just described, would provide satisfactory reduction of interference. Further consideration of the manner in which interference is distributed will show why this is not the case.

Radio interference may travel along the wiring system on which it originates; it may be transferred inductively to other wiring systems; it may be transferred capacitively to wiring or conductors such as piping systems, metal lath,

and even stoves or bathtubs; it may be picked up by the antenna system of a radio receiver; or it may enter the receiver through the power connection.

By referring to Figure 1 it will be seen that, since the alternator field is connected in multiple with the D. C. motor, the interference created by the motor is carried directly into the alternator field. It is then inductively transferred to the motor and thus carried out on the A. C. lines to the receiver.

Furthermore, due to the capacitive coupling, as shown in Figure 3, between the motor and alternator, the motor interference is transferred from the D. C. to the A. C. side of the set. The interference thus inductively and capacitively impressed on the A. C. output of the motor-generator will be distributed along the wiring to which the receiver is connected, and being radiated from this wiring will enter the receiver through its antenna system as well as through its power connection.

Filterette Required in A. C. Circuit

It will, therefore, be seen that, in addition to the filterizing of the D. C. motor, Filterettes must be installed in the A. C. circuit as well if it is to be possible to obtain satisfactory radio reception from a radio receiver supplied with alternating current from a motor-generator set.

The correct method of connecting a Filterette in the A. C. circuit is shown in Figure 2. The Filterette shown is the Tobe No. 110, an inductive-capacitive unit. It is connected in series with the output leads of the alternator in the manner already recommended for the application of a similar Filterette to the D. C. motor. All of the precautions given as regards short leads, conduit wiring and firm return connections must be observed when applying the Filterette to the generator.

There is one essential difference in the method of connecting Filterettes at the D. C. and A. C. ends of a motor-generator set. At the motor, the Filterette terminals marked "Load" are connected to the motor input leads, and the Filterette terminals marked "Line" are connected to the incoming line. At the generator, the Filterette terminals marked "Load" are connected to the generator output leads, and the Filterette terminals marked "Line" are connected to the wiring from which the receiver is supplied current.

When the two Filterettes are installed in the manner just described, and when all of the precautions given have been carefully observed, it should be possible to operate a sensitive radio receiver being supplied with alternating current from a motor-generator set, with complete freedom from the radio interference which, under ordinary circumstances, would make it extremely difficult if not impossible to obtain satisfactory radio reception.

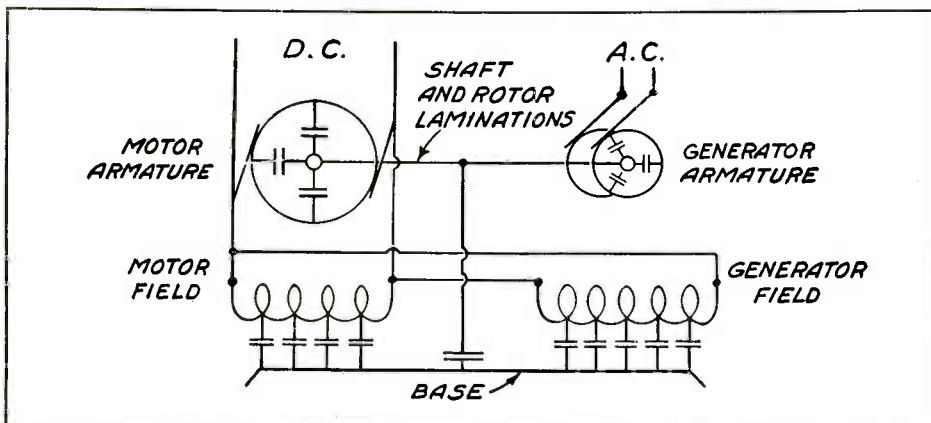
Additional Precautions

There is one more step which may be taken to decrease further the possibility that the interference created by the motor may be transferred to the alternator. As has already been noted (Figure 1), the alternator field is directly connected to the interference source, *i. e.*, the D. C. motor. It, therefore, appears that a means of keeping the interference out of the alternator field would minimize the inductive transfer of interference to the A. C. output of the set.

Some motor-generators are so constructed that the motor and generator field and armature leads are easily accessible. When this is the case, the alternator field leads may be connected at the "Line" side of the Filterette applied to the motor, as shown in Figure 2.

Altho a field rheostat for controlling the voltage of the alternator is not normally required, in some instances such a rheostat may be used. If this rheostat is located at some distance from the motor-generator, interference coupled either inductively or capacitively to the alternator field will be carried along the leads to the rheostat, and being radiated from them, is likely to be picked up by the antenna system of the receiver. If this condition is found to exist, an additional Filterette (Tobe No. 110 or No. 221) should be connected in series with the rheostat leads at the point where they connect to the alternator. When this Filterette is installed, its "Load" terminals should be toward the field.

(To be continued in July issue)



TOBE DEUTSCHMANN CORPORATION

Filterette Division - CANTON, MASSACHUSETTS

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

SAN FRANCISCO, CALIF.
584 Mission St.

PORTLAND, ORE.
383 Oak St.

NEW YORK CITY
136 Liberty St.

RADIO TRADE SHOW

WARE RADIO CORPORATION

420 LEXINGTON AVE., NEW YORK, N. Y.



WARE Pentode Super-Heterodynes

Ware is now in production on two outstanding Pentode Super-heterodyne chassis of durable and appealing design

A SMALL chassis, known as the SB, employs seven tubes and is furnished in the beautiful "Bantam" cabinet, illustrated above, and an attractive Walnut and Maple consolette of tasteful and substantial design. The tubes employed are: one type PZ Pentode, two type 551 or 235 Multi-mu, two type '24 (Screen Grid), one type '27 and one type '80.

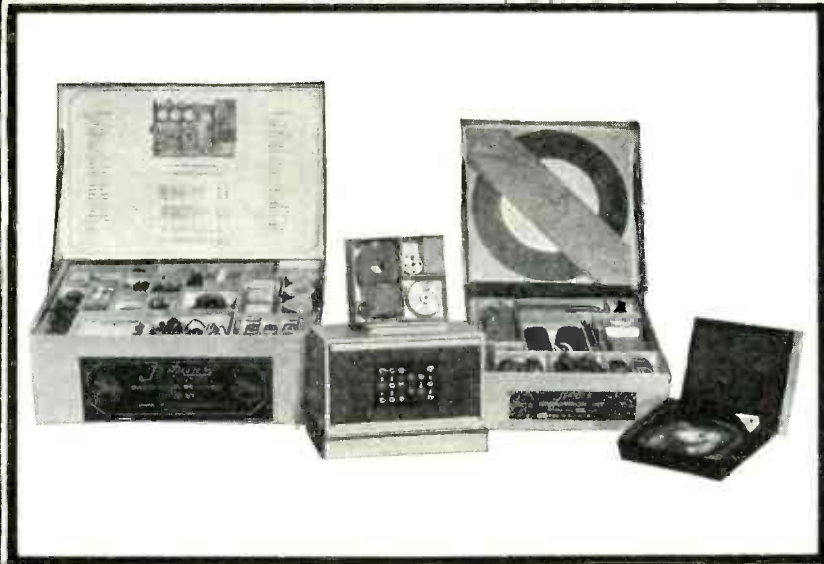
A "DE LUXE" chassis, known as the S-1, employs nine tubes and is installed in a dignified two tone Walnut and Maple cabinet, acoustically equipped so as to give the maximum of tonal quality and clarity. The tubes employed are: two type PZ Pentode, two type 551 or 235 Multi-mu, two type '24 (Screen Grid), two type '27 and one type '80.

Due to superior performance and design these chassis are especially suitable for installation in various types of cabinets.

Further details will be cheerfully furnished upon request to the manufacturer

RADIO TRADE SHOW

JENKINS TELEVISION CORPORATION
PASSAIC, NEW JERSEY



Jenkins Television Equipment

HAVING inaugurated the broadcasting of sight-and-sound programs of genuine entertainment value, the Jenkins Television Corporation has turned to the task of providing the necessary equipment whereby those programs may be tuned in and enjoyed by experimenter and layman alike.

The Jenkins television equipment ranges from the parts and complete kits for those who desire to assemble their own equipment, securing the greatest pleasure from the technical side of the new art, to complete ready-to-use apparatus in attractive cabinet form for living-room use. There are two complete kits now offered, one comprising all necessary components for a television receiver, and the other comprising all necessary components for a radiovisor.

The ready-to-use equipment comprises television receivers in chassis and irtable cabinet form, as well as stripped radiovisors and radiovisors in attractive walnut cabinets.

The units shown in above illustration are the Jenkins Television Receiver Kit, \$69.50 list; the Signal Synchronizer attachment, \$35.00 list; Power Pack for Receiver, included in Kit; Jenkins Radiovisor Kit, \$42.50, and Lens Assembly, \$7.50

The Jenkins kit television receiver is A. C. operated, and includes power pack. It is non-regenerative, yet has ample r.f. for handling relatively weak television signals. It produces good half-tone pictures. The tuning is as simple as the usual broadcast set. The radiovisor is compact, simple and practical, and includes a synchronous motor of unique design. A signal synchronizing attachment is available as optional equipment, as well as the magnifying lens.

RADIO TRADE SHOW

MACY MANUFACTURING CORPORATION

1451 39TH STREET

Cable: "Macy Horn"

BROOKLYN, N. Y.



Macy Portable Public Address System

Features Directional Horn and
High Frequency Speaker Unit

Whole Outfit Contained in Two Carrying Cases

Macy Manufacturing Corporation accomplished an exclusive feature by incorporating in their portable public address system a six-foot air column with an electric dynamic unit in a leatherette carrying case but 26" wide, 15" deep and 21" high.

The directional qualities and the projection power of the exponential types of horns have been accepted to be the best suited instruments for public address and music reproducing systems because maximum efficiency is then realized at a minimum amount of power.

The social and commercial benefits of amplified speech are so varied and many that those in the amusement, social, educational and commercial world have but recently learned how convenient, profitable and economical a voice repeating system can be used for their purpose. Already the amplification of sound has had a significant effect on educational and intellectual life in general and today many schools, lecture bureaus and colleges throughout the country are using public address systems to the mutual benefit of the institution and their audiences.

The two unit Macy portable outfit is designed to be used in a dozen different ways, for its practicability and low cost now permits the use of address equipment in places that heretofore high power reproducing equipment made impossible. The entire weight of both equipment cases is 90 lbs. and it is capable of serving an audience of 1000 or more people.

It is ready for instant service any hour of the day or night, being designed to plug into the light socket.

Macy's (makers of the famous Macy horns) new, low cost portable public address outfit now opens the way for economical, localized broadcasting.

CONTENTS CASE NO. 1

1 2-Stage Audio Amplifier
3 Tubes, Nos. 224, 245, 280
4 1½-Volt Dry Cell Batteries

1 2-Button Microphone
1 Desk Type Microphone Stand
8 Microphone Springs

3 Polarized Receptacles
15 Ft. Shielded Microphone Cable
1 Panel with Volume and Microphone Controls

CONTENTS CASE NO. 2

1 6-Ft. Air Column Horn
1 Midget Dynamic Unit

1 Dry Rectifier
1 Matching Transformer

2 Polarized Plugs
15 Ft. Speaker Cable

Price \$275 Complete

RADIO TRADE SHOW

NEW PRODUCTS ANNOUNCED BY
RADIO RECEPTOR CO., INC.
106 SEVENTH AVE., NEW YORK, N. Y.



Powerizer Portable Model RS-81

The Radio Receptor Co. Inc. of New York City announces a new line of Portable Amplifiers, one of which is illustrated above. They have also announced a series of desk models containing complete Radio and Public Address Distribution Systems, in addition to their regular line of Rack and Panel Amplifier Systems.

Powerizer Portables are designed for use where a permanent installation is impractical. Where space is limited, or if only occasional operation is demanded, the Portable Powerizer meets a very great need. They may be used for the amplification of announcements, recorded music, radio programs, in conjunction with talking movie equipment, or as public address systems.

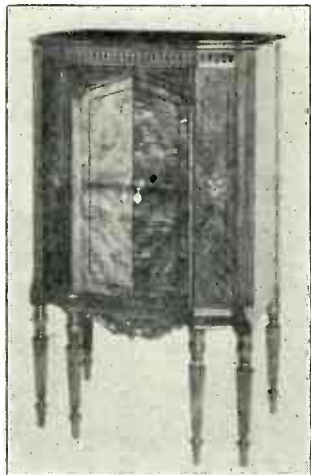
Powerized Portables are built in sturdy oak cases. The cover is fastened with lock clasps and removable hinges. Rubber cushioned feet are placed on two sides so that the unit may stand horizontally or vertically. One compartment may hold the microphone, the other, the microphone battery, wire and tools. The steel panel contains the microphone meter and terminals for connecting microphone, radio or phonograph. It has ten switches for connecting the speakers. The RS-81 has a capacity of 40 magnetics or four dynamics. Dimensions: height 14½", width 17½", length 26½".

Radio Receptor Co., Inc.

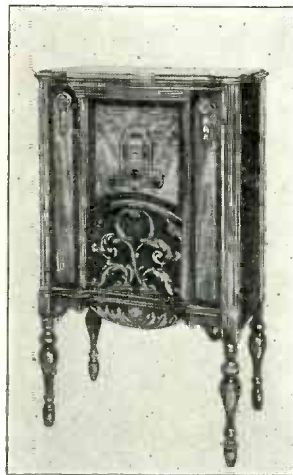
106 SEVENTH AVE., NEW YORK, N. Y.

RADIO TRADE SHOW

EXHIBIT OF
PILOT RADIO & TUBE CORPORATION
 LAWRENCE, MASS.



Pilot De Luxe Superheterodyne



Pilot Universal Console

Pilot Announces 7 Tube Super Heterodynes

THE new line of Pilot Radio Receivers to be introduced at the R. M. A. Trade Show in Chicago by the Pilot Radio & Tube Corporation, of Lawrence, Mass., will consist of Midget and Console Models of a seven-tube super-heterodyne; two full-size Console Models of a ten-tube super-heterodyne; and Table and Console Models of the "Universal" all-wave set.

The seven-tube chassis has automatic volume control, full vision station selector, tone control, phonograph connection and electro-dynamic loud speaker, and uses Variable-Mu and Power Pentode tubes. The Midget and Console cabinets are of two-tone walnut and are handsomely and tastefully finished.

THE ten-tube set incorporates several new ideas in electrical design and mechanical construction. It has unusual selectivity and sensitivity, even for a "super," and with its specially made nine-inch dynamic speaker it approaches perfection in quality of reproduction. It uses a new automatic volume control, developed by Kenneth Harkness, which overcomes fading to a large degree and eliminates blasting and overloading altogether. It has tone control, full vision dial, phonograph connection and visual tuning indicator.

The same ten-tube chassis is available in two console cabinets, one with an open front and the other with hinged doors. These are made of solid walnut, and are beautiful pieces of furniture that will grace any home.

THE "UNIVERSAL" is a combination short wave and broadcast wave set that tunes from 15 to 650 meters without the use of plug-in coils, all wave shifting being done from the front panel by a single knob. It is intended primarily for the reception of foreign stations on the short waves, but it is also an excellent broadcast receiver. The table model requires a separate loud speaker; the console model has a built-in dynamic speaker.

The standard models of all the new Pilot sets are intended for 110 volts, 50-60 cycles A. C. Special models are also available for 25 cycles, for direct current, and for battery operation.

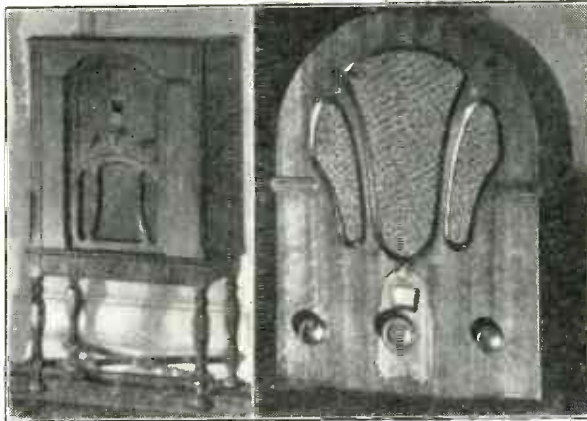
The retail prices of the various sets are as follows:

MIDGET SUPERHETERODYNE	\$ 59.50
CONSOLETTA SUPER-HETERODYNE	\$ 74.50
OPEN-FACE CONSOLE SUPER-HETERODYNE	\$116.00
DE LUXE CONSOLE SUPER-HETERODYNE	\$139.00
TABLE MODEL UNIVERSAL	\$ 99.50
CONSOLE UNIVERSAL	\$149.00

ALL LESS TUBES

RADIO TRADE SHOW

NEW PRODUCTS BY
RCA-VICTOR



RCA-VICTOR Announces New Models

RCA-VICTOR RADIOLETTE, \$37.50

The RCA Victor Radiolette is the smallest table type of receiver to be made by the RCA Victor Company. It is of an improved TRF type, utilizing four tubes, of which one is a Pentode output tube, two UY-224's and a UX-280. It is housed in a walnut finished cabinet of the Cathedral type, together with an improved dynamic loud-speaker, which gives unusual tonal quality, and weighs only sixteen pounds. The dimensions are 15" high, 11 5/16ths" wide at the base and 7 9/16ths" deep. List price \$37.50, complete with Radiotrons.

RCA-VICTOR CONSOLE, \$89.50

The RCA Victor Console Radio is housed in a walnut finished cabinet of 18th century English design. It is a 3-tube screen-grid superheterodyne instrument incorporating two super control Radiotrons, RCA-235; two 227's, one UY-224, two UX-245's and one UX-280. Dimensions: 40" high, 22 5/16ths" wide and 12" deep. Electrical features are same as RCA Victor Superette. List price \$89.50, complete with Radiotrons.

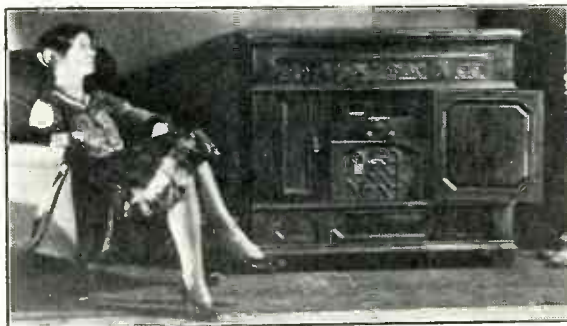
RCA-VICTOR AUTOMATIC RADIO-ELECTROLA

The RCA Victor Automatic Radio-Electrola RAE #8 embodies the latest 9-tube superheterodyne receiver, an automatic electric phonograph capable of reproducing 10 records continuously, and it is equipped with automatic remote control for selecting six stations, regulating volume and varying tone color. The instrument is housed in a cabinet of Old English Chest style. The tube complement includes four UY-224's, two UY-227's, two UX-245's and a UX-280 rectifier. Dimensions: 38 1/2" high, 41 3/4" wide and 21 3/4" deep. List price \$495.00, complete with Radiotrons.

OTHER NEW RCA-VICTOR MODELS

RCA-VICTOR ELECTROLA RE-16, 9-tube Superheterodyne. \$125.00, complete.
RCA-VICTOR WRITING DESK, 9-tube Superheterodyne. \$139.50, complete.

RCA-VICTOR RE-26, 9-tube Superheterodyne, with Pentodes and RCA-235. \$215.00, complete.
RCA-VICTOR AUTOMATIC ELECTROLA DE LUXE, 12 tubes. Superheterodyne. \$900, complete.





Compare the
ERGON PENTODE
 to Any Other on the Market!

By actual test of comparison Ergon tubes are known to stand out head and shoulders above any tube on the market and now the new Ergon Pentode passes the same tests.

The substantial mechanical construction of the Ergon Pentode insures uniformity and freedom from trouble in the field.

The Ergon 551 Variable Mu tube is also making a name for itself due to its great efficiency and uniformity.

Ergon tubes pass the most stringent specifications—more stringent and rigid than those of most tube manufacturers. This results in highest efficiency, greater uniformity, longer life and greater freedom from trouble in the field. Along with the quality goes an attractive proposition for the manufacturers of sets, the distributor and the dealer.

Claims are one thing; performance is another. We invite you to compare the Ergon tube to any tube on the market for standard equipment or resale—write us today.

ERGON ELECTRIC CORPORATION

20 Bergen Street, Brooklyn, N. Y.

Chicago Show Headquarters

(Room 612) 77 West Washington St., in charge of Mr. Clyde Tracy. Telephone Randolph 9179.

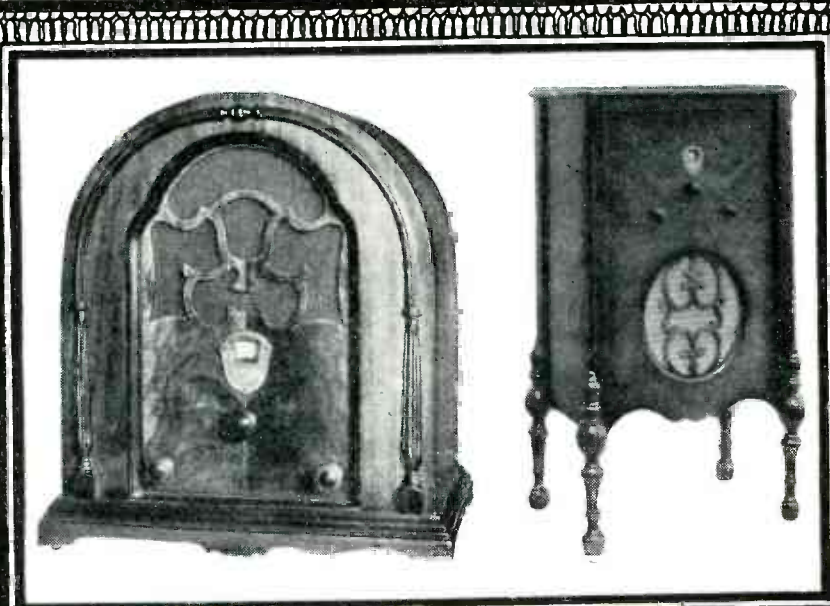
ERGON
 THE QUALITY TUBE

Announcements
from
Los Angeles
Radio Manufacturers
who Distribute Nationally
are found in the pages
which follow



RADIO TRADE SHOW

AUSTIN RADIO MANUFACTURING CO., LTD.
1015 WEST VERNON AVENUE LOS ANGELES, CALIF.



..... **DEALERS**

**Secure This Valuable
Franchise!**

AUSTIN

"The Radio Supreme With Tone As You Like It"

A powerful newspaper advertising campaign is about to break, which will create real interest in AUSTIN. It has a unique appeal centered about **TECHNI-TONE**, Austin's exclusive feature.

This isn't just another campaign. It has the **WALLOP** and is designed to stir the public to a high pitch of interest and curiosity

which will cause them to come into Austin franchise dealers' stores.

Act at once! The advertising starts soon, and you should cash in on the interest which this clever campaign will create. A card from you will bring complete details, together with information on Austin's dealer-franchise plan.

The Austin 8-Tube Superheterodyne is a laboratory-tested precision instrument, embodying every proven advancement of radio science. It is a **BIG** radio in a compact cabinet. Eight tuned circuits . . . screen grid tubes . . . Variable-Mu and Pentode Tubes . . . four-gang ball-bearing condenser . . . pre-selector . . . oversize Magnavox Dynamic speaker, truly shielded chassis, phonograph connection and attractive burl-walnut cabinet, with illuminated vernier dial. Retail complete with tubes, \$69.50. In console cabinet, complete with tubes, \$87.50.

Austin Radio Manufacturing Co., Ltd.
1015 WEST VERNON AVE. LOS ANGELES, CALIF.

RADIO TRADE SHOW

Federal Radio Corporation

DIVISION OF FEDERAL TELEPHONE & TELEGRAPH CO.
717-723 MATEO ST.

LOS ANGELES

Model No. 890

as Illustrated

\$89.00

List Price

Complete with Tubes

Super-Heterodyne
Eight Tubes

Two	Type	47	Pentodes
Two	"	51	Vari-Mu
One	"	24	
Two	"	27	
One	"	80	



Model No. 590

Table Cabinet

\$59.00

List Price

Complete with Tubes

Super-Heterodyne
Seven Tubes

Two	Type	47	Pentodes
Two	"	51	Vari-Mu
One	"	24	
Two	"	27	
One	"	80	

*This Year
it will be*

Federal Ortho-Sonic!

The re-entry of the Federal Radio Corporation into the field brings the most outstanding radio value of the year.

Smart new models with distinctive and exceedingly attractive cabinets that command attention wherever shown.

Entirely new—this greatly improved Federal Ortho-Sonic surpasses all of our former models. All of the latest achievements known to Radio are included in our remarkable chassis.

Each year there is one outstanding radio—this year it will be—

Federal Ortho-Sonic!

DISTRIBUTOR ACCOUNTS INVITED
TERRITORY AVAILABLE

WRITE OUR LOS ANGELES OFFICE FOR DETAILS

FEDERAL RADIO CORPORATION

DIVISION OF FEDERAL TELEPHONE & TELEGRAPH CO.
717-723 MATEO ST. LOS ANGELES

RADIO TRADE SHOW

NEW PRODUCTS OF
Waltham Radio Corporation. Ltd.

AN Automobile Radio

For the Camp
The Summer Cottage
The Motor Boat
..... or in the Home

2 in ONE

USE IT IN YOUR AUTOMOBILE—Connector cable is furnished to connect to the car storage battery. No need to miss radio programs because you are riding in your automobile.

USE IT IN YOUR HOME OR HOTEL ROOM—When you are through driving, simply pull out the plug, carry the set inside, and operate off the electric light line by simply plugging in the other cable furnished for such opportunity. Nothing in the set to change. Use the same tubes both ways.

SMALL IN SIZE—Entire set is enclosed in cast aluminum case, 12" high, 12" wide, and 5" deep.

BEAUTIFULLY FINISHED in antique bronze wrinkle lacquer with grill shaded to gold.

USES FOUR SCREEN-GRID 24's—One Type 227, one 171-A power, and one 280 Type No. 2.

NOT A TOY, but a beautiful set capable of delivering enormous volume, having a depth of tone quality that is surprising.

\$59.50

F. O. B. Los Angeles

Waltham Radio Corporation, Ltd.

4228 SOUTH VERMONT AVENUE

LOS ANGELES

CALIFORNIA

RADIO TRADE SHOW

HERBERT H. HORN RADIO MANUFACTURING CO.
1629 SOUTH HILL ST., LOS ANGELES, CALIF.



Model No. 99

Tiffany-Tone Radios

A Fully Licensed Receiver, With Sound Engineering,
Highest Grade Materials and Workmanship

A Quality Piece of Merchandise in Every Respect

Note the Following Specifications of Above Illustrated Model

2 PENTODES in push-pull.
2 551 Variable-Mu Tubes.

1 224 Screen Grid Tube.
2 227 and 1 280 Rectifier.

SENSITIVITY—Less than one micro-volt over entire band.

SELECTIVITY — Absolute 10-kilocycle selectivity, making it possible to tune in distant stations with the adjacent channel to local stations.

FIDELITY—Audio Amplifying System Efficiently Reproduces All Frequencies from 40 to 4800 cycles. Static Modifier. Pre-Selector. Calibrated Kilocycle Dial.

The TIFFANY-TONE RADIO RECEIVER represents the last word in superheterodyne engineering. Nothing has been spared to make this receiver second to none in performance, regardless of price. Here is a set with every proven modern improvement in radio.



We are now in production and ready to make delivery on our full line, consisting of smaller 8-tube Mantle Type at \$59.50; regular 8-tube Super (above specifications); other Mantle Types at \$72.50; same chassis as in Console, as above illustrated, at \$97.50; 10-tube Super in Console with 12-inch speaker, at \$107.50.

*Immediate Inquiry From Well Established Jobbers and
Manufacturers' Agents Requested*

RADIO TRADE SHOW

PLYMOUTH RADIO CORPORATION
(OF CALIFORNIA)

2825 NORTH MAIN STREET

LOS ANGELES

When this show number was going to press, we were just going into production on our latest midget-model as well as the console line. By the time this meets your eye they will be ready for immediate delivery. So there is no pretty picture to gaze upon in this space, but you can take our word for it that these new models represent genuine values . . . the best since Plymouth Radio Corporation of California entered the field upwards of two years ago.

Variable Mu---Pentode Tube Resistance Coupled

*Accountable for the Best
Tone Quality Known*

THREE NEW MODELS

\$59.50 is the list price for the brand new midget model with latest design in cabinet creation . . . inset panel . . . walnut finish . . . hand rubbed . . . two variable-mus, one pentode, an 80 and a 24 . . . extreme selectivity . . . a signal success assured for this receiver.

\$69.50 is the list for the console-type set. It is bound to be a rapid seller, with quick turnover and reasonable profits. No dead merchandise on your shelves when you carry this set.

\$74.50 is the list for the console model equipped with coin device appliance. This makes a first-class rental machine . . . either renting from the radio shop . . . or for installation in hotel rooms, pool shops and other public places.

Receivers from the Plymouth Radio Corporation of California plant represent real values in parts and assembly . . . models engineered by recognized technical authorities.

Wire or write immediately for open territory or sample sets. Shipments in any amount can be made within 24 hours after receipt of the order. All our models are thoroughly tested in laboratory, and taken out into the field for actual use, before released to the trade as finished products.

Plymouth Radio Corporation of California

2825 NORTH MAIN STREET

LOS ANGELES

RADIO TRADE SHOW

W. BERT KNIGHT, FACTORY REPRESENTATIVE
1646 WEST ADAMS STREET LOS ANGELES



BERT KNIGHT

Representing:

CROWE NAME PLATE & MANUFACTURING COMPANY

Dials and Escutcheons

MEISSNER MANUFACTURING COMPANY

Pioneer Coil Winders

ACME ELECTRIC MANUFACTURING COMPANY

Transformers and Chokes

MATCHLESS ELECTRIC COMPANY

Pilot Light Bulbs

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CORNELL ELECTRIC MANUFACTURING COMPANY

Cub Condensers

AMERICAN STEEL PACKAGE COMPANY

Defiance Variable Condensers

Radio Show Headquarters
STEVENS AND ST. CLAIRE HOTELS

RADIO TRADE SHOW

CONSOLIDATED RADIO MFG. CO.



Size: 10 inches wide, 11 inches high and 8 inches deep

America's Newest Converter **SHORT WAVE**

COMPLETE
WITH TUBES

\$49.50

NOTHING ELSE
TO BUY

SHORT WAVE ADDED TO ANY RADIO

1931's Biggest Sensation

The Mission Converter is to the radio market today just exactly what the midget was two years ago! The demand is **DISTANCE** and "Air-novelty"! Every radio owner is a hot prospect, and every progressive dealer will want one to serve him. . . . A brand new field of enthusiasm and profit-making merchandise. . . . Send for your sample, hook it up to any radio in your store, twist the dial and **FEEL THE THRILL!** Every converter that leaves the factory is thoroughly tested on two stations 3000 miles distant. **JOBBER AND DEALERS**, wire for yours today!

PLUG IN—TUNE IN! . . . A short wave converter brought up to the high standard of per-

formance of the present day long-wave receivers. A converter attachable to **ANY RADIO** (A. C. or D.C.) that adds short-wave meters below the present 200-meter standard. . . . **SIMPLICITY IN ITSELF!** . . . Two wires connecting the converter to your present radio, and your short-wave is ready! . . . Always keep it connected. . . . The **MISSION CONVERTER** is the first on the American market to introduce short wave to the ordinary fan in a simplified manner for everyone to operate clearly and distinctly!

Plug In . . . Tune In!

Consolidated Radio Mfg. Co.

1455 VENICE BLVD.

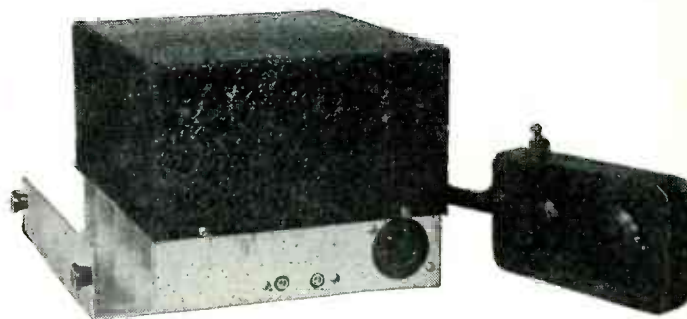
LOS ANGELES

Sheldon Scores Again!

\$ **69**⁰⁰
List Price
With Tubes

Complete, Except Batteries

Includes Dynamic Speaker, Tubes,
B Battery Box, Remote Control . .
Ready and Easy to Install



The Best Automobile Radio Out 10 Reasons Why

- 1—Tubes . . latest auto screen grid and pentode, 236, 237 and 238 types.
- 2—Dynamic Speaker and Audio, giving tone and volume only found in highest-priced console receivers.
- 3—Control . . Dual Spiral Cable and smooth positive drive from Control Box attached to steering post.
- 4—Coils . . LITZ, high efficiency, constant Gain, selective and sensitive.
- 5—SHIELDING of coils, tubes, wiring and condensers most thoroughly accomplished.
- 6—Tuning Condenser. . VERY RUGGED, ball-bearing. Severe vibration does not effect tuning.
- 7—ACCESSIBILITY is a noteworthy feature. Bottom and front slides out after removing two thumb screws.
- 8—SIZE . . 7 x 8 x 6 inches. Makes installation easy.
- 9—LOW CURRENT CONSUMPTION, slightly over an ampere.
- 10—Workmanship and Materials are the best, resulting in a minimum of servicing.

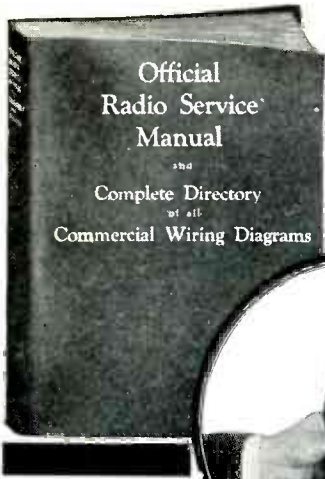
DEALERS! Secure Your Territory and Demonstrator
by making application and enclosing check for \$40.75

SHELDON RADIO COMPANY

2631 W. Avenue 32

Los Angeles, California

*C. C. Sheldon, president of Sheldon Radio Co., established 1923. First prize winner, "RADIO DIGEST" contest, Chicago, 1924-1925



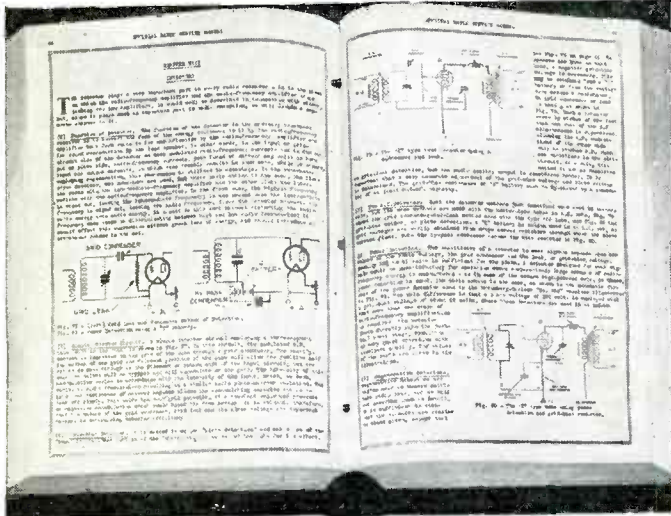
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PREPARED ESPECIALLY FOR THE RADIO SERVICE MAN

NEVER in the history of radio has there ever been published a service manual, so complete, as this new OFFICIAL RADIO SERVICE MANUAL. It is a veritable encyclopedia of service information—worth several times its price. It is invaluable not only for the Service Man, but for everyone interested in radio.

There have been collected for this manual wiring diagrams and data of nearly every commercial set, of which there is any available record, manufactured since 1927, and many earlier ones.

The OFFICIAL RADIO SERVICE MANUAL is made in loose-leaf form in a handsome, durable, flexible leatherette binder and contains 352 pages of the large size, 9 x 12.

Additional service data for new receivers, as they appear on the market, will be published and supplied at a trifling cost so that the MANUAL may be kept up-to-date at all times. But that is not all.

\$3.50 a Copy. Mail Coupon Now!

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As per your special offer, I enclose herewith \$3.50 for which you are to send me postpaid, one copy of the OFFICIAL RADIO SERVICE MANUAL.		
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Amperites Are Improved And Refined



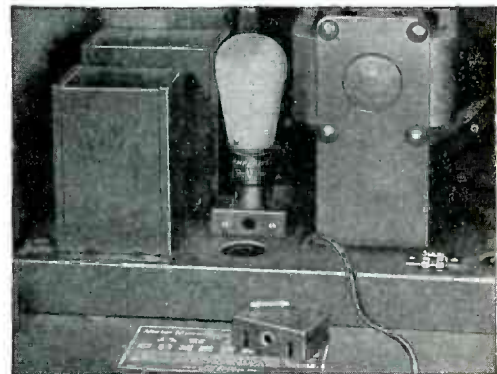
IT is doubtful if any radio component enjoys greater popularity throughout the civilized world than the Amperite. Originally a self-adjusting rheostat for regulating battery current supplied to tubes in the battery-operated receiver, this device today is also available for the proper regulation of the input voltage to the usual A.C. radio set.

The present Amperite line includes a complete list of regulator bulbs for every standard type of socket-power radio set, as well as a complete list of tubular Amperites for every standard type of battery tube, including the latest 2-volt tubes. Amperite sockets and mountings are available.

Important refinements have been made in the Amperite line voltage control during the past year, by way of securing still greater regulation. The curve has been materially flattened with respect to line voltage variation, making possible such a wide range of control that the Amperite is now quite suitable for use with any radio set whether new or old.

The new 2-volt tubes, which have presented quite a problem with regard to battery supply, may now be employed with the usual 6-volt battery, using an Amperite unit to reduce the voltage for the tubes. This arrangement has been found most economical in practice. The battery gives four times as much service from a single charge as when using the usual 5-volt tubes.

The illustrations indicate how the Amperite is employed in a standard type of broadcast receiver for controlling the input voltage, and the latest Amperite for the 2-volt tubes operating on 6-volt storage battery.



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AUTOMOBILE SPEAKERS

\$4.75

6-volt field (Regular \$15.00)

ROLA 90-volt D.C. Dynamic, \$2.95

Write for prices in lots of 100 or more

RADIO ELECTRIC SALVAGE CO.

1446 Market St. San Francisco California

NEW TYPE ROLA DYNAMIC

AUTOMOBILE SPEAKERS

\$4.75

6-volt field (Regular \$15.00)

ROLA 90-volt D.C. Dynamic, \$2.95

Write for prices in lots of 100 or more

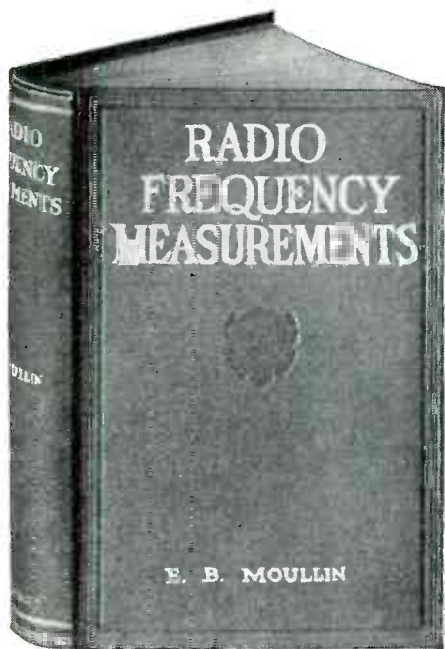
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1284 Market St. San Francisco California

A New and Revised Edition of
The Theory and Practice of
**Radio Frequency
Measurements**

By E. B. MOULLIN
M.A., A.M.I.E., M.I.Rad.Eng.

Second Edition
Entirely Reset and Greatly Enlarged
289 Illustrations 487 + xii Pages Index
\$12.50



This great laboratory manual, the most complete of its kind ever written, is now issued in a new edition, almost doubled in size, but following the same general scheme as the first. An enormous amount of new material on radio frequency measurements has been added, and the present edition of this work is not only the most thorough on the subject, but the most recent and authoritative.

A new section has been added developing the electromagnetic equations and calculating the field near circuits and aeriels. This section should be useful as it discusses the mechanism of radiation, and its methods are used to calculate second-order approximations to the inductance and resistance of circuits and aeriels. The formulae for calculating the effective impedance, resistance and resonance conditions of complex circuits have now been collected into a separate section and the section on the valve generator has been much enlarged and now contains a very complete discussion of the condition for oscillation of various forms of generators.

DIVIDED IN ELEVEN SECTIONS:

- I. The Electromagnetic Field.
- II. Circuit Formulae.
- III. The Valve Generator.
- IV. Measurement of Potential Difference and Current.
- V. Measurement of Frequency.
- VI. Measurement of Resistance.
- VII. Measurement of Capacity.
- VIII. Measurement of Inductance.
- IX. Measurement of Antenna Characteristics.
- X. Measurement of Intensity of Radiated Fields.
- XI. Miscellaneous Measurements and Notes.

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The Demand is Certain to Exceed the Printing

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Pacific Building San Francisco, Calif.

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The Show Report
Issue of "RADIO,"
and a trip through
the Show from booth
to booth.

SERVICE MEN

Special Announcement

WE are going to give away a new Supreme Diagonometer Portable Radio Service Laboratory complete with Carrying Case and large Supreme Test Panel. Latest model. Shipment of this outfit will be made direct from factory or through a factory distributor. Send name and address for full particulars, enclosing five cents coin or U.S. postage stamps to help pay expense of printing, mailing, etc. Your answer to this ad will place you under no obligation whatever.

Sandusky Radio Hospital
1109 Erie Boulevard Sandusky, Ohio

Volume Control GUIDE

By Engineering Staff of
CLAROSTAT

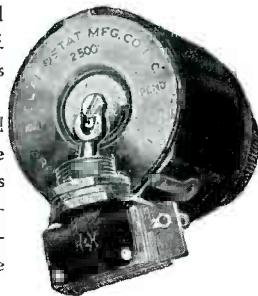
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Man, Dealers
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or obligation.

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Free new No. 23 Edition of our greatly enlarged Radio Service Treatise. Every radio man must have it. Contains some 75 new hook-ups, circuit diagrams; over 350 illustrations. Positively the greatest book ever put out by anyone. Editorial contents: Vacuum Tube Treatise, with many illustrations; Vacuum Tube Average

Characteristics Chart; How to Take Care of Your Tubes.

How to Connect Phonograph Pick-ups. Improving Tone Quality of Old Sets; Connecting Additional Loud Speakers; all fully illustrated with diagrams. Other articles: Modernizing Old Radio Sets; How to Convert Battery to Power Sets; Selection of Tubes; Push-All Amplifiers; Replacing Audio Transformers; Phone Attachments; How to choose Power Transformers; Voltage Dividers; Warrage of Power Transformers; Selecting and Installing Replacement Parts in Radio Sets; Filter Condensers; Repairing Eliminators, etc.

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\$6.00 PER DISPLAY INCH

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Remittance Must Accompany All Ads

Radioads for the July Issue Should Reach Us by June 25th

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

POWER PACK SERVICE and transformer winding. Quick service and fair prices for all types of power transformers and chokes. Condenser blocks replaced. Guaranteed work. California Radio Laboratories, 2523 South Hill St., Los Angeles, Calif.

COMPLETE POWER-PACK SERVICE—Transformers rewound, Condenser blocks repaired. Resistors repaired or duplicated. Specially equipped shop. Work guaranteed. Clark Brothers Radio Co., Albia, Iowa.

WHOLESALE DISCOUNTS. Approved parts. \$50,000.00 stock. Over four pounds, catalog, circuits, data, 50c. prepaid (outside U. S., \$1.00). Weekly (new items, test reports), bulletins, 20 weeks, \$1.00. Experimenters, 56-page house organ, 25c., prepaid. Kladag Radio Laboratories (established 1920, over 4,000 radiowise customers), Kent, Ohio.

SERVICE MEN'S HELPS

ATTENTION . . . SERVICE MEN AND EXPERIMENTERS—Build a Direct Reading Capacity Meter. Simple and inexpensive. No special parts needed. Range 0.1 to 7 mfd. Reading evenly across scale of meter without recalibration. Send one dollar for circuit and instructions to Radio Repair & Service Co., 41 Vesper St., Akron, Ohio.

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Comfort ~ Hospitality

You will appreciate the excellent service and moderate rates. The city's most centrally located hotel. One block from Pershing Square—convenient to all leading shops, theatres, financial institutions and electric depots for all resorts. Garage adjoining.

All Outside Rooms—Each With Bath
One Person - \$2.50, \$3, \$4
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FRANK SIMPSON, JR., Director

Hotel Savoy

Sixth & Grand

THIS MONTH

You can get "RADIO" and "RADIO NEWS"—both for one year for \$3.00
"RADIO," San Francisco



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The Marvel City

is the ideal spot to hold conventions . . . because of its many places of historical interest . . . its wonderful Lake Front advantages . . . and its ability to handle crowds without congestion.

The place to make your home while in Chicago is THE NEW BISMARCK. Just a few blocks from the Merchandise Mart and the Wholesale District . . . on La Salle, the great financial street . . . in the theatre and amusement belt . . . and within easy reach of all points of civic interest.

It's the one Chicago hotel where your comfort and pleasure are the first consideration of the management. Luxurious lounges and rest rooms . . . Quiet, outside rooms, with comfortable beds . . . the best of food and service . . . and every modern convenience.

Rooms \$2.50 up.
With Bath \$3.50 up.

Send for booklet with map of Downtown Chicago

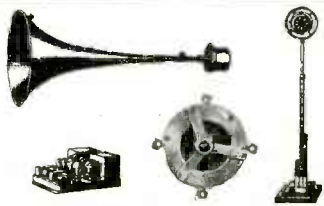
NEW

BISMARCK HOTEL

RANDOLPH at LaSALLE

CHICAGO

FOR COMPLETE
PUBLIC ADDRESS EQUIPMENT



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RADIO · SERVITOR · TUB AND
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OUTSIDE SAMPLE ROOMS

600 ROOMS
127 AT \$3.50 PER DAY

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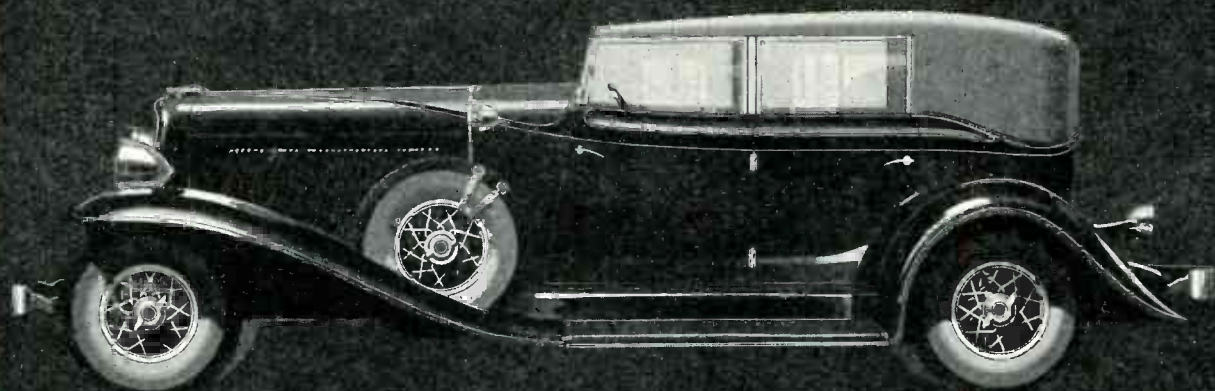


Hotel Sir Francis Drake

SAN FRANCISCO

HUCKINS-NEWCOMB HOTEL COMPANY

CUSTOM
MODELS
With Free Wheeling



Convertible PHAETON SEDAN \$1345
CABRIOLET \$1245

The greater the height of public confidence a manufacturer attains, the higher the standards he must maintain. Every new evidence of public favor becomes a challenge to renewed creative effort. Again Auburn introduces a new originality in design; entirely closed—or entirely open—or top up and windows down! Improved L. G. S. Free Wheeling, with exclusive lock-out lever, enables you to drive either completely in Free Wheeling or completely in positive gear.



AUBURN

POWERED BY LYCOMING

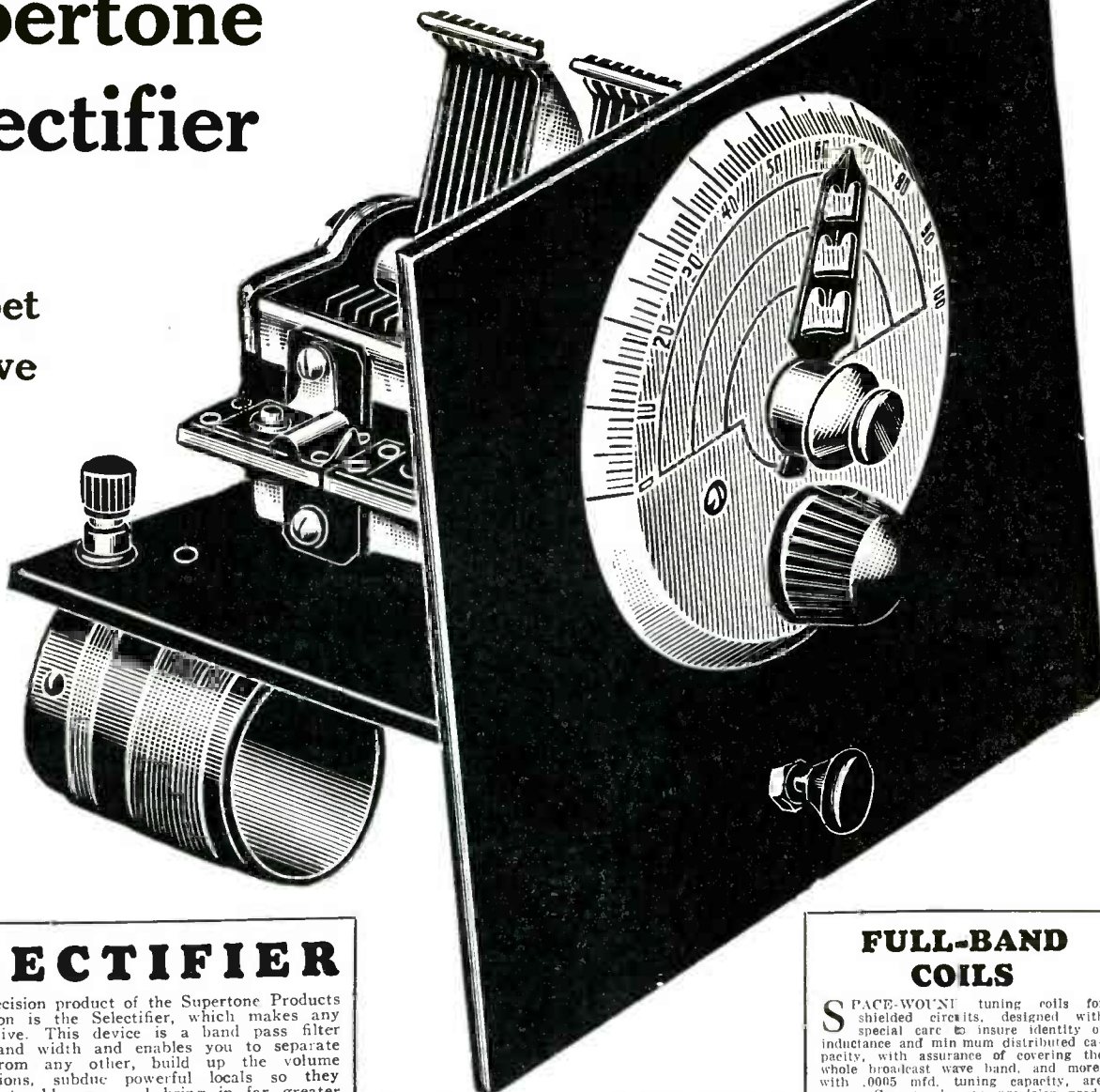
Illustrated above is the Five-Passenger, Custom Convertible Phaeton Sedan, Straight Eight. Silent-Constant Mesh in Standard Models. Also Free Wheeling in Custom Models

Custom models 8-98A: 5-passenger, 2-door Brougham \$1145; Business Man's Coupe \$1195; Convertible Cabriolet \$1245; 4-door Full Sedan \$1195; Convertible Phaeton Sedan \$1345. All Custom Models include Free Wheeling. Standard Models 8-98: 5-passenger, 2-door Brougham \$945; 4-door Full Sedan \$995; Convertible Cabriolet \$1045; Convertible Phaeton Sedan \$1145; Business Man's Coupe \$995. All prices f. o. b. Connersville, Indiana. Equipment other than standard, and wire wheels, at extra cost. AUBURN AUTOMOBILE COMPANY, AUBURN, INDIANA. Prices subject to change without notice.

Tell them you saw it in RADIO

Supertone Selectifier

Makes
Any Set
Selective



SELECTIFIER

A NEW precision product of the Supertone Products Corporation is the Selectifier, which makes any set selective. This device is a band pass filter with 10 kc. band width and enables you to separate any station from any other, build up the volume of weak stations, subdue powerful locals so they are no longer troublesome, and bring in far greater distance, and more of it, than you ever thought possible with your set.

Many persons own sets excellent in every respect, except for insufficient selectivity. Why not capitalize on the heavy investment already made, by installing a Selectifier, and rid yourself forever of interference from other stations, due either to cross-talk or crossmodulation?

By tuning the Selectifier to the same frequency as that of an interfering station, that interference is totally eliminated. By tuning the Selectifier to the frequency of a desired station, the volume of that station is approximately doubled.

Not only is the Selectifier an interference eliminator and volume booster, but it is also an accurate frequency meter for broadcast frequencies, since the tuning curve is obtainable. A conversion table, also furnished, makes the Selectifier a wave meter, so you can tell either wavelength or frequency.

So, even if your set is not calibrated in kilocycles or meters, you can tune the Selectifier to the desired frequency or wavelength, and then turn the dial of your set without looking at that dial, to bring in the desired station.

There are only three connections to make: (1) Remove the aerial from the antenna post of your receiver and connect it instead to the antenna wire of the Selectifier; (2) Connect a wire from the ground of your set, leaving ground connected there, to the ground wire of the Selectifier; (3) Connect the output wire of the Selectifier with a wire to the vacated antenna post of your set.

The Selectifier, a band pass filter pretuner, has two ganged tuned circuits. No tubes are used in it.

Get one of these new Selectifiers right away! Enjoy real selectivity without sideband-cutting. Modernize your set by endowing it with a band pass filter.

Supertone Selectifier, wired model, on 7 x 7 inch front panel, in an attractive cabinet, order Cat. SEL, List Price, \$15.00

Calibration curve and conversion table for constituting the Selectifier a frequency meter and wave meter, order Cat. CC, List Price \$5.00

175 KC Transformer

A DOUBLY tuned fixed-frequency transformer, 1 to 1 ratio, tuned to 175 kilocycles, is another of Supertone's new precision products. Two loosely coupled dual-wound high-inductance choke coils constitute primary and secondary. Suitable for all uses where 175 kilocycle frequency is desired, and affording high selectivity, without sideband cutting.

The transformer may be mounted on the side of a chassis, in horizontal position, or upright either above or below the chassis top.

Supertone 175 kc. Transformer, for screen grid tubes, with tuning condensers across primary and secondary, both accessible; in aluminum shield 2 1/4 inches diameter, 2 1/2 inches high, with removable bottom, both horizontal and upright mounting facilities. Order Cat. FF-175, List Price, \$4.00

For other than screen grid tubes (secondary alone is tuned to 175 kc.; ratio is 1 to 4). Order Cat. FF-175-G, List Price \$3.00



SUPERTONE PRODUCTS CORPORATION

216-P Wallabout St., Brooklyn, N. Y.

FULL-BAND COILS

SPACE-WOUND tuning coils for shielded circuits, designed with special care to insure identity of inductance and minimum distributed capacity, with assurance of covering the whole broadcast wave band, and more, with .0005 mfd. tuning capacity, are among Supertone's new precision products. These coils have a secondary tap, so that most of the secondary may be cut out of the tuned circuit, to enable experiments with reception of short waves, about 30 to 110 meters, merely by switching, or the tap may be used for stabilizing or other purposes.

These coils are wound on 1 1/2 inch diameter natural Spaulding bakelite, threaded for space-wound secondaries, while primaries are wound in a slot. Space winding is essential, where ganged tuning condensers are used, for perfect matching. Colored wire out-leads, 6 inches long, are soldered at the factory to the coil terminal rivets, shielded wire being used, however, for control grid connections. Code and instructions are contained in each coil box.

With each coil is supplied a drawn aluminum finished shield, 3 inch diameter, 3 3/4 inches high.

ANTENNA COIL for all circuits, also interstage coil where the primary is in the plate circuit of a general purpose tube; shield, hardware. Order Cat. 15-85, List Price \$3.50

INTERSTAGE COIL, where primary is in the plate circuit of a screen grid tube; shield, hardware. Order Cat. 25-85, List Price \$3.00

IMPEDANCE COIL for the tuned grid circuit of a band pass filter; shield, hardware. Order Cat. 85, List Price \$2.50

OSCILLATOR COIL, consisting of secondary, fixed tickler and small pickup coil winding, each winding wholly independent of the others; shield, hardware. Order Cat. 8-80-85, List Price \$4.00



"It has a big section of Service Data," continued the Boss to the Service Manager, "that will save our men a lot of time in servicing sets."

"Leave it with me," said the up-to-the-minute Service Manager, "and I will look it over."

"Be sure to write 'Federated' for the complete series," said the Boss.



Here are just a few typical "hard to get" items which we carry in stock for you

Power Transformers

Victor 226, 227, 171, 280.....	\$2.75
Radiola 17, 18, 33, 51.....	3.25
Peerless Kylectron.....	1.50
Earl 21, 22.....	3.00
Kolster K24.....	5.75
Stromberg Carlson 635, 636..	5.50
Philco 65, 87.....	3.90
Zenith 10, 11, 12.....	4.25
Freshman Q.....	3.85

Filter Condensers

Victor 10½ Mfd.....	\$1.75
Radiola 17.....	4.95
Philco Midget.....	2.85
Philco 500 series.....	1.85
Fada, all models.....	1.50
Erla.....	1.85
King.....	1.65

Atwater Kent 37.....	\$3.75
Majestic.....	3.95
Zenith 11, 12, 14.....	1.85
Temple, all models.....	.95
Eveready-Bosch.....	3.95
Freshman Q.....	1.50

Miscellaneous

Muter A.C. Dynamic Speaker Chassis (280 tube).....	\$8.95
Kolster K-6 Magnetic Speaker.....	4.25
Acratest Wire Wound Potentiometers, from 400 to 500,000 ohms.....	.50
Volume Controls for all Radiola sets.....	.45
Replacement Resistance Strip for AK37.....	.50
Apollo RCA Licensed Tubes, 227 type only.....	C. 10.00

Federated Purchaser

**23 PARK PLACE
New York City, N. Y.**

Tell them you saw it in RADIO

REPORT

of the RADIO TRADE SHOW
and SPECIFICATIONS OF NEW RECEIVERS

in

RADIO

for

JULY

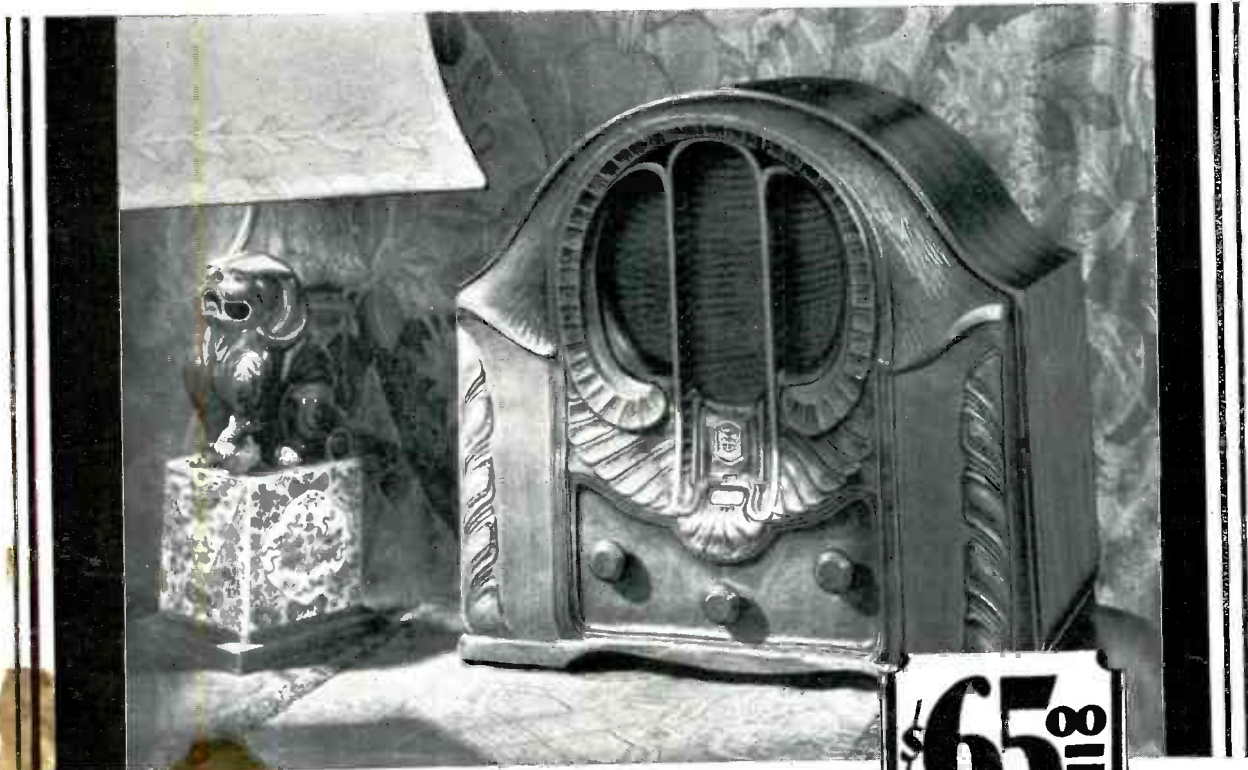
Staff writers for "RADIO" and special editorial correspondents have been instructed to furnish a complete report of the Chicago Radio Trade Show for publication in the July issue of "RADIO." This special annual issue will reach you next month. In it you will find the complete story on everything worth telling about the latest innovations in merchandising . . . the current trend of the radio times . . . the report of the show as "RADIO" sees it. Brought to you without prejudice or bias and written for the benefit of the radio dealer who desires to continue in business at a profit.

THE demand for copies of our Annual Trade Show Report Issue has always exceeded the supply Those who want extra copies of this important issue should place their orders **NOW**

RADIO

415 Lexington Avenue - New York City, N. Y.

~~CROSLEY~~ presents a Low Priced 7-Tube Superheterodyne Pentode (Pliodynatron) Radio Receiver



The New Crosley **SUPER BUDDY BOY**

\$65⁰⁰

COMPLETE WITH
TUBES AND
TENNABOARD

Montana,
Wyoming,
Colorado, New
Mexico and
West, price
slightly higher.

16 FEATURES

1. *New Crosley Superheterodyne Pentode Circuit
2. Seven Tubes (Six Screen Grid)
3. Five-element Pentode Output Tube
4. Exponential or Variable Mu Radio Frequency Tube
5. Exponential or Variable Mu Intermediate Frequency Tube
6. *Pliodynatron Oscillator
7. Full Floating Moving Coil Dynamic Speaker
8. Continuous (Stepless) Static Control
9. *Illuminated Angular Vision Ribbon Dial
10. Vernier Drive
11. Continuous (Stepless) Variable Tone Control
12. Combined Volume Control and On-Off Switch
13. *Crosley Tennaboard
14. *Beautiful New One-piece Molded Cabinet
15. Perfect Tone and Powerful Undistorted Output
16. Priced Complete with 7 Tubes at only \$65.00

*Exclusive CROSLEY Feature

SINCE its introduction only a few weeks ago The New Crosley **SUPER BUDDY BOY** has enjoyed unprecedented success. The radio public is ready, willing and anxious to accept this radio sensation which can boast of so many outstanding features (five features exclusive with Crosley).

The **SUPER BUDDY BOY** incorporates the most recent of all radio developments — the Five-Element Pentode Output Tube. Its use is equal to two stages of amplification. The Variable Mu tubes impart a richness and fullness of tone to reception remarkably free from the customary background noises. The use of a Screen Grid tube as the Pliodynatron Oscillator — an exclusive Crosley feature — eliminates adjustments that are necessary with the three-element oscillator used in all other superheterodynes. In spite of these astonishing features, The **SUPER BUDDY BOY** is small in size and can be easily carried from room to room in the home.

Never has there been a radio receiver that holds the possibilities of big sales and profits as The **SUPER BUDDY BOY**. Get in touch with your Crosley distributor today — see and hear this marvelous new receiver.

THE CROSLEY RADIO CORPORATION

POWEL CROSLEY, Jr., *President* Home of "the Nation's Station" — WLW
CINCINNATI

Also manufacturers of the CROSLEY Battery Radio Receivers and the
CROSLEY ROAMIO Radio Receiving Set.

YOU'RE THERE WITH A CROSLEY

~~CROSLEY~~ RADIO

Answers to Questionnaire

1. Does dealer carry midget line?
351 answered Yes; 19 answered No.
2. Does he consider midget a good merchandising item?
72 answered Yes; 298 answered No.
3. Do customers he carry line?
Yes? No.

This questionnaire, reproduced from a recent issue of "RADIO", shows the opinions of 370 representative radio dealers on various angles of selling midget sets. Notice question No. 12, where these dealers list the most important mechanical troubles of midgets.

11. Does dealer install and service midget sets free of charge?
329 answered Yes; 41 answered No.

12. What are the mechanical difficulties most often encountered?

208 answered Tube trouble
9 answered Wiring
92 answered Aerial
40 answered Bad installation
110 answered Selectivity
47 answered Shielding
50 answered Outside noises
42 answered No more trouble than other sets
24 answered Bad treatment by owners.

Thousands of Dealers

know the way to end the most common complaint in

Question No. 12—

“Use ARCTURUS Blue Tubes”

In any set, midget or standard size, under any conditions, summer or winter, Arcturus Blue Tubes give the kind of reception that means satisfied customers



Many radio dealers have a lot of tube trouble with midget sets. The reason is obvious—midgets are often equipped at the factory with low-cost inferior tubes. When the customer makes his legitimate kick, the dealer has to make good.

But there's a sure-fire way to avoid tube trouble in midget sets and all other sets. See that they leave your store equipped with Arcturus Blue Tubes. The quick action and life-like tone of Arcturus Tubes insure the kind of set performance that satisfies your customers. And thousands of dealers have found that Arcturus Tubes cut their costly service calls 50% or more.

If you haven't tried Arcturus Tubes, use them in the next ten midgets you sell and see how they cut tube trouble down to the minimum. Ask your jobber.

ARCTURUS RADIO TUBE COMPANY • Newark, N. J.

ARCTURUS

The **TUBE** *with the* **LIFE-LIKE TONE**

WESTERN DIVISION:

Arcturus Radio Tube Co., 1855 Industrial Street, Los Angeles, Calif.