

Radio Sales and Service

The National Maga

dealers and Servicemen



*Can you suggest a title for
this picture? - See page 60*

November 15, 1930
Circulation 48,000
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1906

1931



Sell Tubes--not tube troubles!

FORTUNATELY, tubes are no longer a gamble. You can be sure of 1930 tubes. You can be sure of tubes produced during the past month or two, and not a year or two ago. You can be sure of tubes that incorporate the latest improvements and refinements known to the vacuum tube art.

Play safe! Recommend and use DeForest Audions—the oldest tubes on the basis of history and prestige, the newest and latest on the basis of improvements and refinements.

DeForest Audions are standard equipment in Crosley and Brunswick sets.

Let us tell you more about 1930 radio tubes and what they mean to your sales and service. Better still, let us prove to you that DeForest Audions can make and save more money for you.

Remember, there is no substitute for 25 years' experience.

DE FOREST RADIO COMPANY
PASSAIC NEW JERSEY

de Forest
(AUDIONS)

RECEIVING
AND
TRANSMITTING
TUBES



"SUPREME BY COMPARISON"

MODERNIZE your service work . . . make radio engineering progress your partner . . . enjoy "Supreme" higher type of skill . . . "Supreme" profits. . . "Supreme" prestige . . . standardize on Supreme Testing Instruments . . . "Supreme by Comparison."

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SUPREME SET ANALYZER—Model 90

Revolutionary in design, with all readings reduced to one marvelous meter, Supreme Set Analyzer Model 90 assures maximum simplicity and speed, plus a vastly greater number of readings and ranges than any other set tester. Flexibility that is astounding!

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List Price—\$112.15.
Dealers' Net
price, f. o. b.
Greenwood, Miss. **\$78.50**



SUPREME RADIO DIAGNOMETER Model 400-B

Makes every conceivable test on any radio set

Has long been recognized as the most complete testing unit in the radio field. A most complete radio laboratory, including oscillator, tube checker and many other unusual features in compact, convenient portable form. Thousands of unsolicited testimonials from technicians and practical service men attest to the enviable esteem in which it is held.

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Greenwood, Miss. **\$139.50**

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"SUPREME BY COMPARISON"

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Insure Safe Delivery of Radio Sets



Protect your radios against costly damage in delivery. Use Iden Radio Covers. They insure against scratches, eliminate refinishing cost, and remove the most common cause for customer complaints. Compact and serviceable. Iden Covers are padded with woven Kersey Felt. Lining is soft, fleecy, canton flannel, and the covering is heavy green denim. There are no complicated folds or straps.

I den Midget Covers

are ideal for carrying the new midget sets safely. They are just the thing for your demonstrators.

Prices

Trade No.	Description	Price
140	I den Cover, 28" wide x 18" deep x 40" high.....	\$6.75
150	I den Cover, 30" wide x 20" deep x 50" high.....	7.50
160	I den Midget Padded Cover.....	5.00
130	I den Kersey Felt Loading Pad, 60" x 72".....	3.40
132	I den Kersey Felt Loading Pad, 72" x 80".....	4.00
135	I den 2" Web Strap with patent slide buckle, 15' long.....	2.75

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Here's my order. Please ship immediately Iden Covers listed below. (Order by number.)

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NAME.....
ADDRESS.....

ANNOUNCING THE NEW..

IMPROVED

WELLSTON GOLD TEST AERIAL

The
World's
Smallest
Aerial
2 1/2 by 5 inches
in Size



Gets Greater Distance—Eliminates all other Aerials

This NEW-IMPROVED WELLSTON GOLD TEST AERIAL is just a mere handful, yet it eliminates both the inefficient outside and inside aerials. Heralded far and wide as one of the greatest innovations introduced to the radio industry since radio itself, this new improved model follows closely upon the success attained by its predecessor—the original WELLSTON GOLD TEST AERIAL which at present is giving satisfactory service to enthusiastic thousands of radio owners throughout the world. It brings in distant stations with crystal clear tone quality and greater volume—gives selectivity without distortion and helps to eliminate overlapping of stations, noise and electrical interference.

**JOBBERS — DEALERS
Wanted Everywhere!**

It Will Never Wear Out

Made of emerald green genuine solid Condensite with binding posts to match this NEW AND IMPROVED WELLSTON GOLD TEST AERIAL is of the filtered type endorsed by radio engineers. Although small enough to fit the palm of your hand, it has a capacity equivalent to 54 ft. of best grade aerial wire strung 50 ft. high in the air. It is absolutely non-directional, non-corrosive and guaranteed never to wear out. It does away with all lightning hazards and because it does not connect into a light socket, all AC hum and line noise is eliminated. Once installed no further attention is required.

We have an unusual money-making proposition to offer Jobbers and Dealers on this new and improved type of aerial. Exclusive territory open. Complete dealer service — circulars, window displays, counter cards, coupled with a strong national advertising campaign. Write at once for full information, including SPECIAL LARGE DISCOUNTS, Price List, Etc.

Easy to Install

It is a simple matter to install the WELLSTON GOLD TEST AERIAL—even a child can do it in a minute's time. No extra tools are needed. Place it anywhere—inside on the back of the radio cabinet. Once installed no further attention is required.

For Sale by Leading
Radio Dealers

Price **\$2.50** (Retail)

The **WELLSTON RADIO CORP.**, St. Louis, Mo.

Balancing Installations That Have Plural Reproducers

CLIFFORD E. STEVENS

WITH the greatly increased power of radio receivers, many people are finding it possible to enjoy the simultaneous operation of a number of speakers. In the home, for instance, as many as 3 or 4 speakers are being located throughout the house, porch, sun parlor, garden, etc. In general only one fault has been found with the idea of plurality of loudspeakers, and that is the apparent discrepancy between the relative outputs of the different speakers. It is generally found that those nearest to the output operate the loudest, and vice versa.

Resistances Can Be Balanced

It must be remembered that the usual wire in itself has some resistance value, and where one speaker is connected to the set by 10 feet of wire and another by several hundred, there is bound to be some difference in volume. As a rule, this difference is not disconcerting. However, if it is desired to have all the speakers operate at exactly the same volume level, a simple remedy may be applied. This remedy is simply the balancing of the output by inserting small resistors in the leads of the speakers nearest to the radio set. By taking a few small resistors of a few hundred to several thousand ohms and connecting them between the set and the nearest speakers, it is possible to balance the combined resistances with those of longer wires going

to the farthestmost speakers. A sort of resistance network may even be made and connected across the output transformer terminals, and the speakers leads brought to various points of the network for ideal balance.

Service Kinks

We have found an electric turntable and pickup quite useful as part of our test bench. The unreliability of broadcasts during the day when most service work is done made it necessary to have some other method of testing reproduction.

While a test oscillator may be used to check the radio frequency end of a set, it does not give an adequate check on the audio frequency portion.

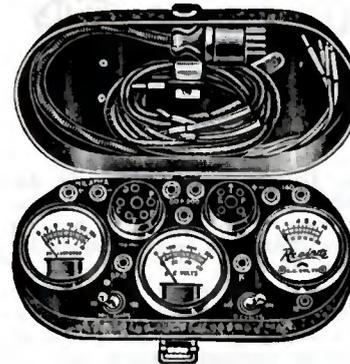
Plugging the pickup into the first audio sockets and playing a record allows one to make a rough test by ear of the condition of the audio system. Since the approximate volume to be expected is known and also the quality of reproduction, deficiency in either will show up quite readily.

When using this method of testing, we can always be quite sure that poor volume or quality is not due to the transmitter.

It also allows us to determine quickly whether lack of volume is caused by trouble in the radio frequency or audio frequency circuits of a receiver.

NEW READRITE SET AND TUBE TESTER No. 245-A

Newly designed to meet the servicing needs of all types of radio receiving sets. Used by experts. Adaptable for every kind of socket test. Also continuity of circuits, a.c. and d.c. and all tubes, including screen-grid, pentode and rectifier. Checks line voltage. Furnished with charts, curve values and full instructions. Accurate. Compact. Simple to use. Seamless steel case finished in beautiful baked enamel.



No. 245-A Closed

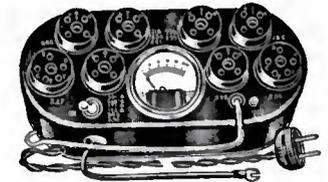
No. 245-A For Servicing Sets, \$20.00

No. 400 For Counter Tube Testing \$20.00

\$12 NET

Order one or more today.
If not at your jobbers we will ship direct.

NEW READRITE COUNTER TUBE TESTER No. 400



A new tester that gives dealer and customer the required tube value information. Definite grid change shift provided for mutual conductance test. Eight sockets for testing all tubes, including the new 2 volt tubes. Connects to a.c. supply. Simple to use. Accurate. Dependable.

Handsome finished baked enamel steel case. All parts completely shielded. For use wherever tubes are bought, sold or used. Complete with tube chart. Be sure to order yours today.

Catalog covering our line of many Servicing Instruments for a.c. and d.c. will be sent upon request.

READRITE METER WORKS

Established 1904

20 COLLEGE AVE.

BLUFFTON, OHIO

To answer an advertisement, tear out page and pin to letterhead

TOBE Servicemen—Attention! **TOBE**

These Are The Items You Will Need Most This Season

TOBE Utility Condensers



Tobe Replacement Utility Condensers are designed for power pack repair work. They are protected from moisture by a new wax coating process recently developed to meet the requirements of condensers for this type of work.

These condensers are very compact, and the terminal arrangement is especially desirable for replacement work, there being a looped tin wire connected to both condenser terminals which may be cut to the desired length when used.

Type No.	Capacity	Working Voltage D.C.	Size	Price	Type No.	Capacity	Working Voltage D.C.	Size	Price
331	1 mfd.	300 v.	1 1/4 x 1 1/4 x 1/4"	\$0.75	682	2 mfd.	600 v.	2 1/2 x 2 1/2 x 1 1/4"	\$2.85
332	2 mfd.	300 v.	1 1/4 x 1 1/4 x 1/4"	1.45	881	1 mfd.	800 v.	2 1/2 x 2 1/2 x 1"	1.70
441	1 mfd.	400 v.	1 1/4 x 1 1/4 x 1 1/4"	1.10	882	2 mfd.	800 v.	2 1/2 x 2 1/2 x 2"	3.35
442	2 mfd.	400 v.	2 1/2 x 2 1/2 x 1/4"	2.15	1101	1 mfd.	1000 v.	2 1/2 x 2 1/2 x 1 1/4"	1.75
661	1 mfd.	600 v.	2 1/2 x 2 1/2 x 1/4"	1.45	1331	1 mfd.	1300 v.	4 x 2 1/2 x 1 1/4"	2.25

TOBE Pigtail Resistors



A non-inductive fused-metallic pigtail resistor.

Pigtails for chassis wiring dispense with necessity for mountings.

Resistance values engineered, not sorted.

2 Watt	
200 ohms to 50,000 ohms.....	\$.75
75,000 ohms to 10 megohms.....	.50
5 Watt	
100 ohms to 30,000 ohms.....	1.10
50,000 ohms to 75,000 ohms.....	.90
100,000 ohms80
1/4, 1/2 and 1 megohm (long type).....	.80
10 Watt	
200 ohms to 25,000 ohms.....	1.25
50,000 ohms to 100,000 ohms.....	1.10
1/4, 1/2 and 1 megohm.....	1.00

Tobe Products are merchandised only through regular jobbing channels. Should you, however, be unable to obtain these products locally, we will be glad to fill your order direct at your maximum discount.

Tobe Products are not to be found in low-priced chain stores.

TOBE Tobe Deutschmann Corp. **TOBE**
Canton, Mass.

To answer an advertisement, tear out page and pin to letterhead

Radio Sales and Service

The National Magazine for Dealers and Servicemen

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EUROPE

VIA SHORT WAVE SUPER-HETERODYNE
A New Thrill
for Radio Fans

Which means **PROFIT** for you

Convert any T. R. F. Set
into a Short Wave Super

GEO. W. WALKER SUPER CONVERTER

1. Operates in conjunction with either A. C. or battery sets.
2. Supplies its own power from the light socket.
3. Uses four tubes, including both '24 and '80 types.
4. Simple to operate, single dial control like a broadcast receiver.
5. Easy to connect. Attach aerial to converter, run wire from converter to aerial post on receiver and connect ground lead to converter.



6. No changing of coils necessary to tune popular S. W. programs.
7. Each converter tested in actual operation at the factory.

Now it is easy to receive programs from all parts of the world—Europe, Africa, Australia, South America. The addition of a Walker Super-Converter to any T. R. F. set makes

a powerful receiver similar to those used in commercial trans-oceanic radio telephony.

The Walker Super-Converter adds a screen grid R. F. stage, regenerative detector, oscillator circuit, and a complete power plant; all assembled and wired to any T. R. F. receiver, making a complete high power short wave super-heterodyne receiver of unusual merit.

Feature a Walker Super-Converter to attract customers to your store! Every T. R. F. set owner is a short wave prospect.

WALKER FLEXI-UNIT



Its 12 in 1 utility has caused it to be described in current radio magazines as the outstanding radio device of the season. Operates as a short wave adapter, short wave receiver, broadcast receiver, screen grid pre-amplifier, radio frequency booster unit, test oscillator, crystal receiver, wave trap, wave meter, and general experimental unit.

Liberal Trade Discounts

Mail This Coupon

WORKRITE RADIO CORPORATION,
1807 East 30th St., Cleveland, Ohio.

Send literature and dealer discounts on Walker Super-Converter and Flexi-Unit. Tell us about the big, profitable market for this equipment among our customers.

Name

Address

Radio Sales and Service

The National Pocket Magazine for Dealers and Servicemen

Chicago, November, 1930

This Midget Business

To a reader of Mr. Massey's article entitled, "What about the Midget?" it is evident that a distinct change in midget merchandising practice is very much in order—but will the midget popularity be permanent?

The present ratio of midget to large set sales is unquestionably abnormal. The quality provided in midgets combined with small size, portability, and low cost, has naturally broadened the radio market tremendously—in fact created a brand new market. Experienced merchandisers know that roughly speaking a 50% price reduction quadruples the market for an article.

Midgets have broadened the market in three directions: (a) their low price has brought radio within the reach of many who heretofore could not afford it; (b) their small size makes them practical for the thousands of small apartments; (c) their portability makes them ideal for transients and as the second set in two-set families.

A few years ago automobile

manufacturers "viewed with alarm" Henry Ford's drastic price policies. Yet his policies brought the automobile within the reach of millions. Just as Fords have educated millions of larger owners, midget sets will develop millions of cabinet set buyers.

Witness the growth of the phonograph—from cheap table models to costly cabinet models. Even radio itself has grown from unsightly table models to beautiful cabinets.

Midgets have come to stay—that they should encroach upon cabinet set sales in a few isolated cases is natural—but in the long run they will help rather than hinder cabinet set sales. Even now most dealers interviewed by Mr. Massey report that in nearly every case battery sets are traded in for cabinet models—a tremendous percentage of midget sales being to those who have no radio sets.

The American public which has so rapidly passed through four to six and eight cylinder cars will not long be satisfied with a four cylinder radio—not if the pocket-book can help it.

Without Benefit of

Yet Miller Brothers, Chicago, Sold 150 Sets
Last Year Inside Their Furniture Store—

By GEO. F. MASSEY



HEARST and his horde of go-getting reporters have little to do with the Miller Bros. Furniture Co., 4020 West 26th Street, Chicago, but the simple methods of a recent Hearst recruit do point an excellent Miller moral. William Randolph Hearst himself tells the story of a blue-eyed innocent who strolled in and asked one of his city editors for a job. The hard-bitten man at the desk put a brusque question, "What can you do?"

"Oh, 'most anything," answered the boy.

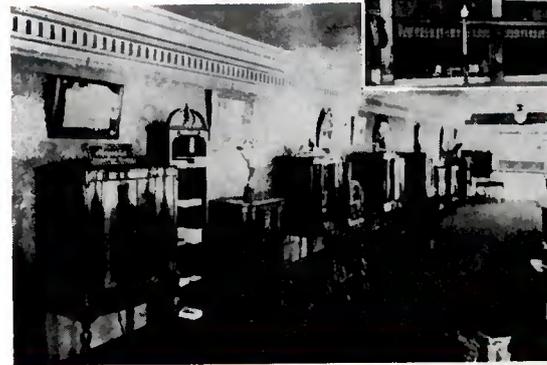
The city editor grinned; so did several of his reporters who stood around eyeing the applicant with amusement. "All right," he said,

scribbling a name and an address on a sheet of copy paper, "go out and get the picture of this woman."

Stuffing the sheet in his pocket, the lad put on his hat and left and the others, without waiting for him to get out of earshot, laughed. Perhaps they had a right to, for this woman was the beautiful heroine of a juicy scandal and they had been trying to get her picture for days. They had shinned up the down-spout of her house, entered the cellar windows and attempted to bribe her maid, but without any pictorial result. Several of them in jocular despair

"HIGH PRESSURE"

Stick to One Line—
No Credit
or Service Grief



The Miller Brothers
Store at 4020 W.
26th St., Chicago.

View of Demonstration
Balcony in
Miller Brothers
Store.

were threatening to try false whiskers. Yes, they probably had a right to laugh.

About two hours later the boy came back and, as innocent as ever, tossed a picture on the city chief's desk. The editor stared at the photograph. "By gravy," he exclaimed, "that's what these alleged news beagles of mine have been after since last Friday night. How in Sam Hill did you get it?"

"Why, I just asked her for it."

That's about the way the Miller Brothers get their radio business. Last year they did a radio volume of \$15,000, representing the sale of one hundred and fifty sets at an average of about \$100 per set. This year things have not been going quite so well; nevertheless,

current trade is relatively fair and the firm expects a decided pick-up not later than early spring. The Millers wouldn't be surprised to see it come sooner.

Officers of the company are: James D. Miller, president; Rudolph R., vice-president; Otto E., secretary-treasurer. An elder brother retired some time ago and now lives in California. Rudolph is married. James and Otto are bachelors and live with a gentle old lady of seventy-six whom Otto calls "our sweet little mother."

That unaffected phrase suggests the atmosphere of the spacious, modern Miller store. Above all things, it is "homey." Customers come there as far as twenty-five

(Continued on page 57)

Your Good-Will Ambassador



Ability
Tact
Agreeableness
Honesty
Neatness

and

Personal Appearance are essential characteristics of a good service man.

ters, he can by a few words do more to satisfy the customer than a salesman or manager could do by lengthy explanations.

Even in these enlightened times when people know so much about everything the magic workings of radio are a mystery to a large percentage of radio listeners. Like a physician, lawyer, or any other trained professional, the serviceman's mastery of radio commands the respect of customers on the subject. To most radio owners the opinion of a serviceman on tubes and sets is weighty. It has a lasting effect and is not soon forgotten.

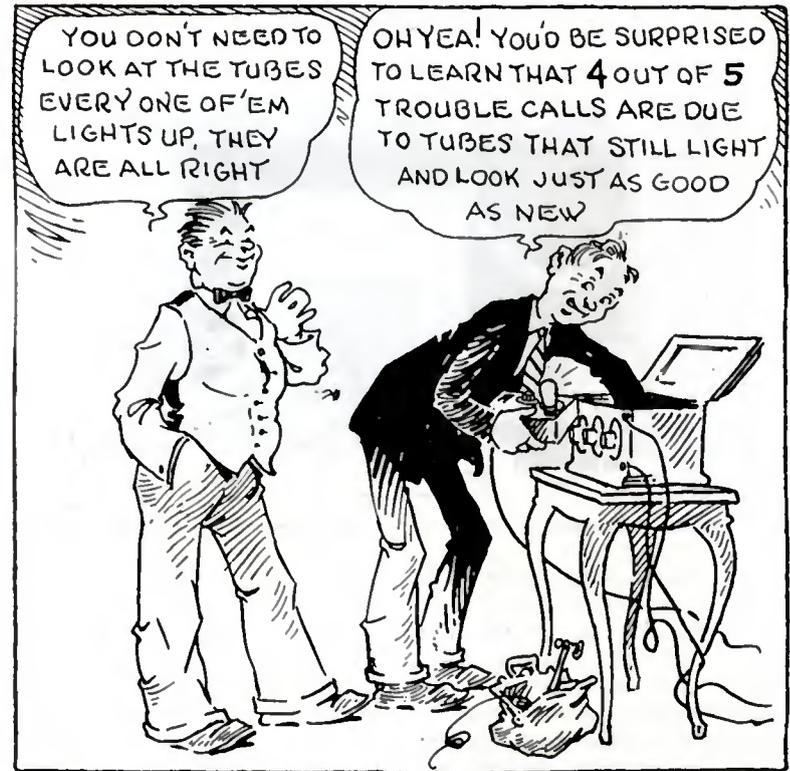
To most of the customers your salesman is just another salesman, your manager is just another manager. It is true that your

(Continued on page 54)

THE importance of radio service and of servicemen in particular is too frequently underrated. A satisfied customer is your best advertisement. One dissatisfied customer can offset the good work of a dozen enthusiastic boosters.

The serviceman is a vital factor in the elimination of every complaint. If in addition to being a good technician he is also well trained in handling difficult mat-

It Pays to Check Tubes Regularly



MANY people think that radio tubes, like electric light bulbs, are all right as long as they light. That radio tubes can and do deteriorate in service from a number of causes, not due to manufacturing defects, is not generally known. Much of the depreciation in set performance can actually be traced to tubes. Set rejuvenation can be accomplished in a large measure by completely replacing all tubes. Frequent checking of tubes is worth many times the trouble and expense it causes. If you want top-notch performance from your radio set keep your tubes in top-notch condition.

RADIO DEALERS—An enlargement, size 11x17 inches, will be mailed to you upon request, accompanied by five two-cent stamps and a letterhead or invoice bearing your name. This enlargement displayed in your store will increase your tube sales. Mail requests to **RADIO SALES AND SERVICE, 549 W. Washington St., Chicago, Ill.**

A Christmas Display for Small Windows

*GEO. J. COWAN



Many radio dealers have small windows and do not have facilities for putting in an elaborate Christmas display. It is, however, vitally important that this dealer make a special effort in his window at this time, because Christmas should be his best season.

There is nothing that the whole family will enjoy more than a radio. This being the case, we have planned this display with the idea of selling the customer on this thought.

This is done by attaching a mammoth tag, such as is fastened to a Christmas gift, with the wording "Merry Christmas to the Whole Family."

If you do nothing else in your window, this will at least put over a strong selling idea.

As a suggestion for a decora-

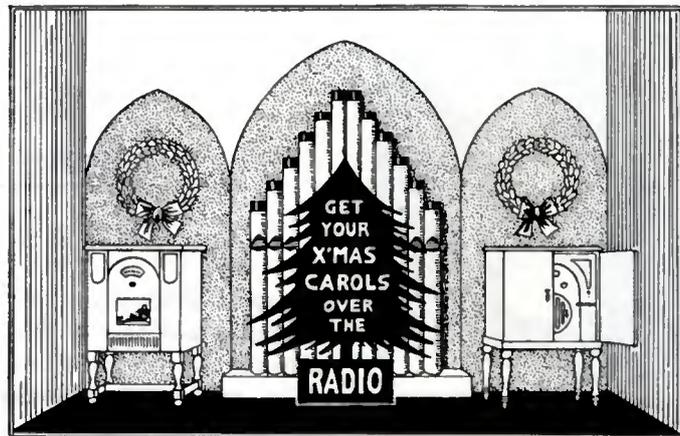
tion for this window we show how you can place a plain panel of wall board back of one of the radios, this panel to be painted in silver paint. The only other decorations you need are a small Christmas tree and some holly garlands and wreaths.

Holly fastened to a strong cord will make the garland that is draped across the top. The three wreaths are placed at the side as shown.

The radio with the large tag is placed on a platform in order to make it more impressive and also to make a more pleasing arrangement than where both are on the floor.

On the next page we show another idea for a Christmas window. If you have a two-window front, you may find it worthwhile putting in both windows.

A Christmas Display for Large Windows



Here is a window display somewhat more elaborate than the one shown on the opposite page and therefore more logical for use in the larger stores that can put in this type of display.

This window is designed to get people to thinking about music and particularly Christmas music. At this time of the year the radio programs contain a wealth of beautiful Christmas music that is well worth hearing. This, therefore, is something new in trying to interest people in a radio for Christmas.

The three panels that make up the background are of wall board with the tops cut in the shape of a Gothic arch which is universally used in churches.

Against the center panel are placed imitation pipes of an or-

gan. These are procurable from any newspaper office, as they are the core of the rolls of newsprint paper. Cover them with plain white paper, with a band of gold paper at the top.

In front of this have a large sign cut out of wall board in the shape of a Christmas tree. This is painted green with the lettering, "Get Your Christmas Carols Over the Radio," done in silver or white with a red border.

Holly wreaths decorate the upper part of the other two panels. These panels will look well if painted in gold or a delicate shade of green. We show only two radios on display, because if you crowd in too many radios you do not permit the decorations to put over your idea of Christmas and Christmas music.

*Mr. Cowan is president of the Koester School of Window Trimming, author of several excellent books on window display, and for twenty-five years has been editor of the window display department of the Dry Goods Economist.



What

Can it

Does it

Has it

A frank discussion of the midget situation—with some constructive suggestions by able radio merchandisers.

GEORGE F. MASSEY

NO recent development in radio is of more practical interest to the retailer, jobber, and manufacturer, than the remarkable selling speed of the midget model. Currently, by all odds, it is the liveliest thing in the trade. Since the small set came on the national market only a short time ago the curve of unit sales has turned sharply upward.

Manufacturers report a tremendous quantity of midget sets on back order. Under such condition the midget should enjoy the merchandising and manufacturing profits of a sellers' market—but does it?

"We sell midgets because we have to," says a chorus of dealers, "but the business isn't profitable." Such dealers say the selling and servicing overhead eats up their margin.

Other dealers hail the advent of the midget with genuine ac-

claim, and though they admit some difficulty on the score of profit declare that these can be gradually overcome as in the meantime the midget enables them to keep their radio business alive and moving.

The following reports from interviews of a number of representative Chicago dealers are extremely illuminating:

"Midgets Kill Sales of Larger Sets," Says Tri-Par

Stanley M. Lersch, Tri-Par Radio Co., Inc., 110 North Wells Street: "The midgets are killing many sales of larger sets on which we could have made a decent profit. We have sold about a hundred of them. It is hard to sell a householder a two hundred-dollar set when he can buy one out of our stock for about sixty dollars. We handle two midget models. Considered purely as a

About *the* Midget

be merchandised profitably

interfere with Console sales

come to stay ???



merchandising proposition, from my point of view as a dealer, the midget business is distinctly negative. I could make it stronger than that, but I guess I won't. We have been offered midgets in quantity—with tubes—at twenty dollars apiece. I don't see how any factory can make them at such a price. And the re-sale figures are far too low. They should sell at around a hundred dollars. That would make them worth-while.

"It costs just as much to install and service a small unit as it does a cabinet set. The buyer expects just as much service as he would on a large job. And the dealer has his service reputation to maintain. If you sell a little set and refuse to service it all the way through without extra charge, you are classed as a 'gyp' dealer. It makes it hard for the salesman as well as the dealer. We have nineteen salesmen on the north side and, with rare exceptions, they can't sell anything but midgets. In a good

many cases we have followed up on them and found that we could not boost the sales from small sets to larger."

"They Buy Midgets—We Don't Sell Them," Says Perrottet

Harry C. Perrottet, proprietor of two radio stores, 45-47 Canal Street, and 2301 East Seventy-First Street: "The average price of the midget sets we sell is \$59.50; the average cost to us is \$37.70. That leaves the narrow average margin of \$23.80, out of which must come salesmen's commissions and the expenses of delivery, installation, and credits. On time payments our shortest period is six months. Does such a set-up leave much room for profit? Not that I can see. And don't forget that the man who buys a midget might have been in the market for a \$100 unit. By selling him the small set we chase him out of that market.

"Since August 15th we have sold some three hun-

dred midgets. Rather, they have been bought. We can't afford to push them. Seventy-five percent of this midget volume comes from well-to-do customers in the south shore district, perhaps the best in Chicago. They deliberately choose the budget as against the larger set. Not more than ten percent of these small deals involved trade-ins. It will be two years before we get a chance to sell these buyers again. Some dealers seem to think that as long as the cash register rings they are making money. So far as I can see with respect to this midget business, we can look forward to a big dumping."

"Ninety Per Cent of Our Midget Sales Go to Apartment Stores," Says S.L.S.

W. J. Leadinghouse, S.L.S. Stores, Inc., 4811 Broadway: "Including the one at this location, we have five stores in Chicago, and since the midget came on the market we have sold about two hundred such sets. What do I think of them? They're bad for the dealer and can't help being just as bad for the manufacturer. Our whole radio volume is about half what it was last season, although, because of the midget, we are selling as many sets. The problem presented is pretty hard to figure out. About seventy percent of our current business is on midgets. Much of the difficulty can be blamed on conditions. Even our best class of trade now wants medium grade merchandise. The man who used to pay as much as five hundred

dollars for a radio now scales his limit down to a maximum of a hundred and fifty dollars and a minimum of perhaps half that. To meet the new demand we are now handling three midget models. Ninety percent of the small set sales are made to apartment dwellers. Some of the factory representatives, when we tell our side of the story, say that if it were not for these small jobs there wouldn't be half the radio business there is now; well, that's one way to look at it, anyhow."

"People Will Start Buying Cabinet Sets When They Have the Money," Says Amber Furniture

H. Silverman, Amber Furniture Co., 3100 Lincoln Avenue: "We started out with one midget model several weeks ago and now we have just taken on another, making two small sets we have to offer. Of course, we had the larger units long before that. So far we have sold about two dozen midgets. In nearly every case of a clean sale, without trade-in, it is a midget set that we sell. One small model didn't seem to satisfy our trade. People wanted to see something else, so we took on the second line. Every sale of a small unit takes the buyer out of the profit field. We neither push nor hinder the sale of midgets. It is the price and terms that sell it. We sell small sets on as long as a year's time—\$5 down and \$5 a month. In my opinion, people will be buying cabinet sets again as soon as they get the money, and probably not before."

"The Midget Situation Makes Imperative the Revision of Radio Merchandising Practice," Says P. H. Korsgaard

Perhaps P. H. Korsgaard, manager of the radio department of the Petersen Furniture Co., 1048 Belmont Avenue, has the most timely set of suggestions to make. For the consideration of all radio dealers, Mr. Korsgaard offers this midget merchandising program:

- (1) Discard all free service beyond the manufacturer's three-month guarantee.
 - (2) Make an installation charge of \$3 for each inside and \$5 for each outside job.
 - (3) Require a minimum down payment of \$15.
 - (4) Handle only well built sets.
- Simple as this four-part pro-

gram is, Mr. Korsgaard believes that if generally adopted it would eliminate most of the mercantile static from the sale of small sets and put midget business more nearly on a par with the sale of cabinet-size radio; also, simple as it is, he realizes that the adoption of such a program must come through gradual retail readjustment to present conditions in the radio field.

"As things are now," says Mr. Korsgaard, "according to average selling practice, there is not enough profit in the sale of midgets. That being the case, too many of us are reluctant to push them. If we adopt this attitude, we only punish ourselves. We must keep on selling midgets and at the same time try to correct

(Continued on page 59)



Sales Stimulants

Radio Sales and Service will pay \$2.00 for each sales idea published. Send in story of successful schemes you have used.

Uses Phonograph in Making Demonstrations

"The radio-phonograph combination set has not been merely a means of clearing a few extra dollars on a sale for us," says Mr. Wilms of the Wilms Electric Company. "Instead we have used recorded music as an important factor to instill the desire for a fine radio in the mind of a prospect.

"Tone consciousness is something which an actual experience must awaken. No amount of reading can bring it to life. Our routine of a home demonstration has been developed with this in mind. We always use a combination for the demonstration or bring along a portable electric phonograph attachment. Our super salesman, a portable mechanical phonograph, rounds out the party.

"As a part of the demonstration, a record, preferably one of the customer's own, is played on both the mechanical and on the electrical phonograph. The experience of listening for non-existent bass notes in the mechanical rendition that are so noticeable in the electrical playing awakens tone consciousness in any prospect, we have found.

"Though only featured incidentally, we believe recorded music does more to make sales than any other factor.

"We often secure the increased profit due to the sale of a combination set, but we profit chiefly by reducing to a minimum the demonstrations which fail to impress the possible purchaser."

Novel Rental Plan Saves Profits on Discontinued Models

Instead of taking a mark-down on discontinued models of radios, Rudy Jungsten, manager of the Golden Gate Electric Co., San Francisco, has worked out a plan which saves profits under circumstances where ordinarily the dealer is glad to break even. This plan calls for placing discontinued models in cigar stores, pool halls, and other places where people with time and money to spend congregate.

Radios are hooked up with a nickel-in-the-slot attachment which connects with the switch. The cost of operation is about 25 cents an hour, and at this rate it doesn't take the owner of the place long to collect \$10 or \$12 representing the monthly installment. Of course his patrons are actually paying for it, and at the end of twelve or fourteen months the radio is his, free and clear. The nickel-in-the-slot attachment is provided free by the Golden Gate Electric Co. and the dealer is permitted to keep it after his radio

has been fully paid for, so that his future radio earnings are pure velvet. A year's free service goes with this radio. Tubes and parts, however, are charged for at the usual rate when replacements are necessary.

With several highly polished mirrors forming the background of his display, the exhibit of radios sponsored not so long ago by a Brooklyn radio retailer takes on considerable point when one reads the window card. "This Deserves Reflection. When will you be able again to buy radios like these for \$67.00?"

Even though he had failed to obtain a location on the principal street of Walla Walla, Wash., J. E. Ransom nevertheless secured for his store a reputation for being centrally situated. He established his store not far from the main thoroughfare and in the vicinity of a long-established concern known as The Bee Hive.

Then, capitalizing on the prestige of The Bee Hive, he created and used in all his advertising and direct mail matter the slogan: "First Street—49 Easy Steps From The Bee Hive."

A free realty bureau is maintained for home seekers by Hale Brothers, radio dealers of Sacramento, Calif. Providing the weekly rental listings issued by every realtor in town, the bureau saves much time that would otherwise be consumed by 'phone calls or visits to the individual offices. The bureau naturally serves to introduce the store favorably to



Slusser
Coin-
Radio
Attachment

« « « turns Listeners into big, new profits « «

Here is a new source of profit for radio dealers—the Slusser Coin-Radio attachment—quickly applied to any radio. Every public place is a prospect—wherever people congregate to listen the Slusser makes a radio profitable.

It's automatic—requires no wiring—plugs into any outlet. Operates only when a nickel is inserted—a nickel plays for six minutes. A number of nickels may be inserted at once, giving continuous operation.

Cash in on it—write today for prices, discounts, and complete description.

R. & R. APPLIANCE CO.
304 N. Main St. • Findlay, Ohio
Sole Factory Representative

hundreds of newcomers to Sacramento.

Present Brings Contracts In

Mr. O. P. Dickerson, of Rockway, New Jersey, writes:

"We employ no outside salesmen, and we find that our time is largely taken up with service work, especially evenings, which sometimes makes a delay in seeing a customer for whom we have a set in on demonstration. To overcome this difficulty when we install a set for demonstration, we tell the prospective purchasers that if they will come to the store two days later and sign contract for the set we will present them with a scarf for the top of the radio. This plan has worked out very nicely."

(Continued on page 64)

Why Radio Tubes Come Back

A. H. FAJEN*

ONE of the many interesting subjects for analysis in the modern radio tube production plant is the reason why some tubes come back for replacement. In most plants careful studies are made of the rejects in order to determine whether the breakdown is due to causes beyond the control of the manufacturer, or whether there is an inherent defect in the tube itself, in which case the production or the testing methods may be subjected to a prompt check-up.



The causes of tube failure are determined in the modern radio tube plant by precise methods and with the aid of special equipment. First of all, the rejected tube undergoes an examination to determine how long ago it was produced, and by what unit of the plant. This is accomplished by referring to a secret code number in the tube itself, which tells the tale. With this important clue to work on, it is possible to check up the entire career of the tube.

The next step is to subject the tube to a series of tests from which characteristic curves may be made up. These tests include hum test, emission, plate current, gas, leakage, and so on. With the general health of the tube deter-

mined, the exact reasons of failure are next traced down to causes. If the filament circuit, for instance, is open, the bulb is removed and the elements examined to find out if the open circuit was caused by short-circuit, over-voltage, or cross wires. Tubes that have been burned out tell the entire story of their untimely end when the filament is examined under the microscope. If the filament has been subjected to an overload of 15 to 20 per cent, the filament wires are elongated

or tapered on each side of the break. If the burn-out was caused by a short circuit between filament and grid, it is found that the grid bears a small discolored spot at the point where the contact occurred. The normal operating filament temperature of the usual oxide-coated filament is 750 degrees Centigrade, and this is greatly exceeded when the voltage overload surpasses the 5 per cent limit or allowance specified by the tube manufacturer.

Short-circuits are not always caused while operating the radio set. They are often due to mishandling or dropping the tube. If this has been the case, a very casual inspection shows the displacement of the elements result-

Short Wave Broadcast Reception Opens a Big, New Market

The interest in short wave radio reception is a new development in radio which is making new sales possibilities for alert radio dealers. For example, at the Chicago Radio Show a vast amount of interest in short wave equipment was displayed.

Colin B. Kennedy writes: "Short wave radio reception has opened another door for the true radio enthusiast in the field of entertainment, education, and experiment. It has given a new lease on life to the "distance hound," and for those to whom radio reception had become more or less commonplace it is providing a distinctly original thrill.

"While much of the former mystery and awe surrounding short wave reception has been eliminated, there still remains some peculiar natural phenomena to be conquered before short wave reception is comparable to that of long wave. In spite of the vagaries and uncertainties of reception on short wave bands, a great deal of satisfaction and pleasure can be obtained with a short wave receiver.

"The importance of short wave transmission and reception is being made manifest daily by the increasing numbers of short wave users in all parts of the world, not only experimentally, but by commercial and pleasure users as well. In the United States, for instance, practically all chain broadcast

features are now available on the short wave lengths with the addition of considerable rebroadcasting of regular programs by independent stations.

"Engineers in all parts of the world are conducting experiments with short wave reception to determine the causes and cures for the 'fading,' 'swinging' and 'skip-distance' effect . . . where certain stations can be heard at great distances but not at relatively near locations . . . the peculiarities of day and night reception and the effect of static and atmospheric disturbances in different wave bands, and other conditions existing on short waves (or high frequencies) not commonly encountered on the long wave broadcast bands."

Short wave equipment broadens the scope of activity for the radio enthusiast or experimenter. International programs may be had by the use of good short wave equipment. A number of manufacturers today are developing short wave apparatus of decidedly improved efficiency. While it is true that London or Berlin cannot be tuned in with the same consistent success as local stations with a regular broadcast receiver on the broadcast band, at the same time all the thrills obtained through distance-searching in the early days of radio with the ordinary broadcast receiver cannot only be duplicated, but multiplied with modern short wave apparatus.

*Engineer in charge of Inspection, De Forest Radio Company.

(Continued on page 54)

How John Drake Made Free Service Pay

EDWARD SALT

OTHER dealers threw up their hands and thought John Drake of Alliance, Ohio, had gone insane when he mailed post cards to all his customers offering a free test of all radios sold by his company.

Drake had been selling radios for two years, and his proposition, which placed the owner under no obligation, was unheard of in the city.

But Drake knew what he was doing. Two months after he began giving his free checkups, he was still reaping the benefit of this offer.

Drake's serviceman who answered calls within a few hours after the return cards were re-

ceived at the store, sold enough new tubes to pay all costs of the service. And in addition to this, the store is now cashing in on a number of prospects suggested by satisfied customers.

"It was the most successful radio stunt we have staged," Drake declared. "Our serviceman always inquired if the customer was perfectly satisfied with the set."

Prompt service is one of the requirements in the Drake store. If a customer calls in about his radio, the serviceman is required to answer the call before he goes home that night.

Because of this standard of service, the five-hundred double

postal cards were mailed out in small numbers so the serviceman could answer them the day they were received at the store.

There was no obligation on the part of the radio owner. The man or housewife was invited to watch the serviceman inspect the set, and where tubes were tested he took particular pains to show the difference between good and worn-out tubes.

If defective tubes were found in the set, the owner was given

previously, but each time he declared that he would not do so until the all electric set had been perfected.

At first he had a 20-foot strip along the rear of his furniture store for radios, but today an entire room on the main floor in the front of the store is required for the department.

Drake does not care for long drawn out deals.

"We close the deal or lose the customer quick," Drake declares.



View of John Drake's Furniture and Radio Salon.

an opportunity to purchase new ones. If the home owner was at work the serviceman left a chart with the housewife showing what tubes were defective, so she could tell her husband when he returned home in the evening.

In one instance the radio owner called at the store more than two weeks after his set had been tested, and bringing the chart which had been left at his home asked for replacement tubes.

Drake entered the radio field two years ago when the all electric set made its debut. He had been urged to enter this field

Salesmen avoid home demonstrations if possible.

Where a home demonstration is requested, the radio is set in for one night only. That evening the salesman must visit the home and attempt to close the deal. If the sale is not consummated, the radio is returned to the store the following day.

"We adopted this system because we found that when any musical instrument is placed in the home, it is played to death the first two or three days and then it is forgotten," Drake said.

Dear Friend:

If you want your radio to give you the clear reproduction that it was built to give, you should have it tested regularly, at least once a year---preferably every six months. Only by regular inspection and test can weak tubes be located and your radio kept to its original power and sparkling tone.

We'll gladly call and test your radio for you, without charge, if you'll fill out and mail the attached card.

John Drake & Company
35 East Main Street
Alliance, Ohio

The post card John Drake mailed to his customers.

The return post card that was attached.

Please have your Radio Service man call and thoroughly test, inspect and check my radio set and its tubes. This service, I understand, will be given me without obligation on my part.

Name _____

Address _____

City _____

« An Encyclopedia of

DeForest Short-Wave Receiver

The DeForest Radio Company of Passaic, N. J., manufactures a short wave receiver particularly applicable to aircraft, police cars, small yachts, and other uses where space is at a premium. The entire receiver, except the plug-in tuning coil which is located on top of the case, is contained



in a case measuring only 5x6x9 inches. Weight is 7½ pounds. The circuit includes one stage of a periodic radio frequency, using a screen grid tube, a space charge detector which likewise employs a screen grid tube, and a two-stage audio amplifier employing —10A or —12A type tubes. Coils may be secured for covering a tune range of 14 to 1000 meters.—November Radio Sales and Service.

Pilot Super-Wasps

The Super-Wasp, manufactured by the Pilot Radio and Tube Corporation, Lawrence, Mass., is a very popular



short wave receiver. It has several unique features which make its oper-

ation quite unusual. There are separate models for both battery and A. C. operation. The battery model has four tubes including one screen-grid, while the A. C. model has a rectifier tube in addition. These sets operate over an unusually wide wave band, 14-500 meters. This includes both the short wave and regular



broadcast bands. On signals of average strength, the operation is very simple, being similar to that of the usual broadcast receiver. An evening's experience will develop the knack of tuning which permits bringing in a world-wide selection of programs. Available in kit form or as a completed receiver.—November Radio Sales and Service.

Kennedy Model 826

The Kennedy Model 826, produced by the Colin B. Kennedy Corporation of South Bend, Indiana, provides for both long and short wave reception in one set, which makes it possible to get the programs of both American



and foreign stations on one receiver. The equipment comprises the Kennedy Royal dual chassis employing eight tubes, short wave chassis employing three tubes, extra large electro-dynamic speaker, selectone control, tapered tube volume control, automatic line voltage regulator, and completely shielded throughout. The

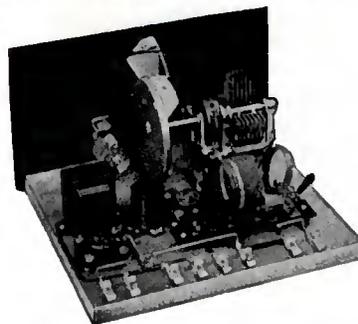
Short Wave Receivers »

unit can be furnished a straight long wave radio, long wave and phonograph, both long and short wave, or long wave and automatic phonograph.—November Radio Sales and Service.

Hawk Short Wave Receiver

A short wave receiver, employing the new '30 type tubes, has been developed by the Hammarlund Manufacturing Company of 424 R West 33 St., New York City.

Two tubes are used which necessitate but a very small battery supply. The filament and plate current may both be supplied from dry cells. Extreme simplicity of operation, as well as excellent sensitivity are said



to be found in this receiver.—November Radio Sales and Service.

Dayton D. S. C. Short-Wave Receiver

A flexible short-wave receiver, designed to cover all wave lengths between 15 and 200 meters and to operate entirely from A.C. light lines, is manufactured under the trade name "Dayton D.S.C." by the Dayton Scientific Corp., 20 N. Jefferson St., Dayton, Ohio. It employs a single stage of tuned screen-grid radio-frequency amplification, regenerative detector and two audio frequency tubes, one in a resistance and one in a final transformer coupled audio stage. Four pairs of plug-in coils, for the R.F. and detector circuits, are used to cover the specified frequency range. Uses one 224, three 227's and a 230. Four tuning controls are provided; the detector circuit condenser, R.F. stage condenser, detector regeneration throttle condenser and a resistor gain control in the R.F. tube screen lead. Only two controls are used for practically all tuning.

Two separate metal chassis, one for

the set proper and another housing the A.C. power pack, are contained in the table model walnut cabinet, a multi-connector plug joining the two units.—November Radio Sales and Service.

Short Wave Reception with Any Broadcast Set

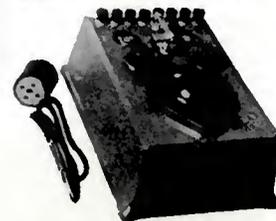
Any t.r.f. receiver may be converted to short wave operation by the use of



a unit made by the Workrite Radio Corp. of 1807 E. 30th St., Cleveland, Ohio. Addition of the Walker Super-Converter changes the t.r.f. set to a super-heterodyne receiver covering the wave band of 20 to 200 meters. Installation of the converter is very simple, requiring only that several leads be connected. Tuning is done with a single dial, making its operation just like that of a broadcast receiver.—November Radio Sales and Service.

Many Purpose Radio Unit

A single unit which may be used for twelve different purposes, has been developed by the Workrite Corporation of 1807 East 30th St., Cleveland, Ohio. Widely heralded as an exceptional development, it finds many applications in both radio service and



experimental work. With a few simple changes it may be made to operate as a short wave receiver, short wave converter, broadcast receiver, screen grid pre-amplifier, test oscillator, crystal receiver, wave trap, and wave meter.—November Radio Sales and Service.

STIKTAPE AERIAL

PUTS AN END TO RADIO INSTALLATION GRIEFS

No troubles with wires, nails & knobs

No hammers, drills, chisels or tool kits



List Price
\$1.00
Complete

Use STIKTAPE—The Adhesive Aerial!

Installing a radio set, after it has been sold, is a mean, thankless job. There is a lot of grief putting up an aerial before the home demonstration.

STIKTAPE Aerial has eliminated the grief of dangling, messy wires, nails, knobs, lead-ins, and the need for hammers, chisels, wrenches, etc.

STIKTAPE AERIAL—a descriptive name for a distinctive product. "STIK"—it sticks to anything, anywhere, because it is backed up by a powerful adhesive "TAPE" which is covered with a me-

tallic alloy resulting in an "AERIAL"—genuine—not a substitute—not an eliminator.

Order STIKTAPE from your nearest jobber. The list price is \$1.00 per roll—your price \$7.20 per dozen.

If your jobber has no STIKTAPE, send for a trial roll and test its marvelous qualities. Mail 60c with the coupon, together with the name of your jobber and a trial roll of STIKTAPE will be forwarded by return mail. Try STIKTAPE with Midgets. It does the trick.

Mail the Coupon for Trial Roll of STIKTAPE, Now!

SAMPSON INDUSTRIES, INC., 4225 Olive St., St. Louis, Mo.

Enclosed find check for 60c for which please ship immediately one trial roll of STIKTAPE.

Dealer's name
Address.....
Jobber's name
Address.....

To answer an advertisement, tear out page and pin to letterhead

Christmas Window Displays

By ERNEST A. DENCH

Radio in Gift Wrapping

For several seasons now electrical refrigerator agents and car dealers have sought in vain for a successful way to dramatize such big articles of merchandise. Here and there radio dealers have been observant enough to adopt the same technique. You see, the confectioner, the jeweler, the women's wear retailer had the overwhelming advantage of displaying their small giftwares in dainty wrappings—tissue paper tied with ribbons or tinsel, colorful gift tags—and the holly box as the finishing touch. Articles which especially appeal as Yuletide gifts **SELL ON SIGHT** because of this attention to detail.

(Continued on page 55)



WITH Christmas the dominant selling angle is the radio as a gift. Not a personal gift, since the radio is unlike a bottle of perfume or a fur coat—used or worn by the ONE relative or friend for whom the gift is intended. The radio, like the car, is a family gift and should be exploited as such—a practice successfully followed in the automotive trade.

The selling angle will be the same in each and every case, but the methods adopted will vary, for reasons already stated.



A distinctive window that carries out the Christmas package idea.

« An Encyclopedia of

Van Horne-Flewelling

This tester, manufactured by the Van Horne Tube Company of Franklin, Ohio, has sockets for testing all types of tubes without the use of adapters. Checks both plates of 280 tubes, the pentode or double screen grid tube, and 800 mercury rectifiers.



Short circuited tubes are indicated without possible injury to the tester. Leads for testing screen grid and tubes with heater terminal on top are also included. Panels are of bakelite equipped with either Jewell or Weston meters. Suitable for operation on 60 cycle, 110-115 volt A. C. circuits.—November Radio Sales and Service.

Jewell Pattern 209

Operates on 50-60 cycle, 110-120 volt A. C. Has a Jewell D. C. meter and six tube sockets in a case of molded



bakelite. Sockets provide the correct filament and plate voltage for each type of tube. Tests are made by the

grid shift method. Readings are checked against the correct values for various types of tubes, engraved on the panel of the tester. Provision is made for testing screen grid tubes and heater type tubes with terminals at the top.—November Radio Sales and Service.

Jewell Pattern 210

Manufactured by the Jewell Electrical Instrument Company, 1642-P Walnut St., Chicago, Illinois. Operates from 110-120 volt A. C. Provides direct readings, eliminating mental arithmetic. In operation tube is inserted in the socket and the plate



current adjusted to a zero meter reading. Pressing a button shifts the grid voltage and the resulting change in plate current reads directly on the meter. Compensation is provided for variations in line voltage over a range of 100 to 130 volts. Tests all tubes, including both single and double wave rectifiers for which a 100 milliamper scale is provided.—November Radio Sales and Service.

Readrite No. 400

This tester, made by the Readrite Meter Works of Bluffton, Ohio, has a single meter with 8 different tube sock-



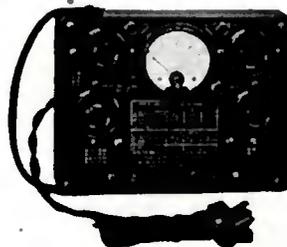
ets of the non-fatiguing type, each plainly marked for the correct tube.

Radio Tube Testers »

In the No. 400 checking tubes by the mutual conductance test has been reduced to the simplest possible operation. Leads for pentode and screen grid tubes are provided. A heat adapter is also furnished, allowing one tube to heat while another is being tested, to save time. November Radio Sales and Service.

Dayrad Type B

This instrument, made by the Dayrad Products Company of Dayton, Ohio, is equipped with a single meter. Has 4 sockets plainly marked for testing all



types of tubes, including screen grid, pentode, Kellogg, and Cardon, as well as the new series of 2 volt tubes. Tests indicate whether tube is good, fair, or poor; also shows short or open circuit. Tests both plates of 280 rectifier tubes separately. Readings for good, fair, and poor tubes are engraved on panel. November Radio Sales and Service.

Dayrad Type C

Same as Type B described above, but has additional connections with 2 volt-meter ranges for testing batteries, resistors, B eliminator outputs, etc. Designed for counter use where tubes and batteries are sold. November Radio Sales and Service.

Burton-Rodgers Tube Checker

Burton-Rodgers Tube Checker similar in design to the Dayrad instrument illustrated above, but equipped with a Hoyt instrument, is distributed by the Burton-Rodgers Company, 755 Boylston St., Boston, Massachusetts. — November Radio Sales and Service.

Supreme Model 19 Tube Checker

The Model 19 tube checker of the Supreme Instrument Corporation, Greenwood, Miss., may be used either

as a counter type tester or for service work. This compact unit accurately tests all types of tubes including pentodes and the new 2-volt 30 series



tubes. Tests are made on all tubes with voltages closely approximating operating conditions. These voltages are secured from A.C. lines through a transformer of ample capacity. Each of the six sockets on the panel is marked for the type of tube and average test readings are given, making it very easy to rapidly determine the condition of a tube.—November Radio Sales and Service.

Weston 555 Tube Checker

The Weston Model 555 Tube checker is designed to effectively test all tubes. All types of tubes may be checked, including both half-wave and full-wave rectifiers. Every test which aids



in determining the condition of a tube may be made. The operation of the tester is very simple. After adjusting the line voltage regulator, the filament selector is set for the correct type of tube. When the filament has heated, the grid meter is read. The difference between this value and that when the grid test button is depressed, is proportional to the mutual conductance of the tube. The greater the difference, the better the tube. —November Radio Sales and Service.

Private Show Proves Profitable for Buffalo Dealer

LLOYD S. GRAHAM



Les Wheeler

BECAUSE Buffalo isn't having a radio show this year, dealer Les Wheeler decided to hold one of his own. He did, and the affair went over with a bang, 35 sets being sold right then and there. And not only that, Wheeler expects to sell over 100 more before the year is out, all as a result of his own show.

Les Wheeler is located in Kenmore, a suburb of Buffalo, N. Y. He has been in the radio business four years—three in Buffalo, and the last in Kenmore. Kenmore is a residential community, although it has many stores such as may be found in any neighborhood. But because it is so close to Buffalo many of its citizens do their shopping in the city, leaving the home town merchant out in the cold.

Increased Business Despite Depression

However, when it comes to radios, they seem to do their buying

at home. As proof of this, Wheeler sells close to 200 radios yearly, despite powerful opposition from the Buffalo merchants. And this year Mr. Wheeler expects to sell an even greater number, regardless of competition and business depression. And that is something worth speaking of, for many people figure on doing a smaller amount of business during a period of hard times than under ordinary circumstances. But not so with Wheeler. He doesn't slip back while business is supposed to be poor, or he isn't satisfied to hold his ground, but he adds a little extra push and advances his number of sales. The recent radio show is just one of these little pushes.

Show Proves a Big Business Builder

Mr. Wheeler has pulled off many stunts to increase his volume of business, all of them more or less successful, but he feels the show has been the best of the lot. It lasted one week, Sept. 27 to Oct. 4 and was open every afternoon and evening during that period to everyone, free of charge. Nearly 4,000 persons attended and, as said before, some turned out to be buyers or mighty good prospective customers.

There were about 45 sets on display of five well known makes,

Majestic, General Electric, Crosley, Lyric and Spartan. Each line was segregated from the others during the show, although in one case two lines had to share their space, while another display of sets occupied double space. To get an idea how the sets were laid out, the size of the store and rooms should be known. The whole store is 20' wide and 60' deep. The front half is one big room and the rear is divided into four smaller rooms. As the fore part of the store is the largest, Wheeler displayed two lines of sets there in addition to an electrical display—Wheeler handles some electrical goods, as well as radios. Directly behind the large room are two smaller sections, one about 12'x15' and the other 12'x20'. One brand of radios filled both these rooms. To the left of the rooms were two others, the first 8'x20' and the second about 8'x15'. Each of these contained one complete line.

The arrangement of these rooms was almost ideal for a display of radios, inasmuch as the public had to pass through every room. The reader will perhaps notice that they are rooms, not booths. Each

room is of permanent construction and not just a temporary arrangement for the show.

Attractive Decorations Enhance Displays

Each room was well furnished and decorated with crepe paper. There were large rugs on the floors covering almost all the floor surface of their respective rooms. And in addition to the rugs, Wheeler had several floor lamps, which not only added light, but lent greatly to the luxurious atmosphere of the rooms. The rugs and lamps helped show off the radios, as they made the display seem more home like.

But the lamps were not the only means of lighting the rooms. Wheeler used his regular overhead fixtures and some spotlights. The latter were covered with colored material so that they gave off an unusual colored light. The spotlights were placed so that their light could be thrown on any radio in the room.

Colored Lights Add to Interest

The colored lights of the spotlights were in keeping with the

(Continued on page 61)



The windows of Les Wheeler's store are always attractively dressed

R. W. A. Surveys Allied Lines for Radio Dealers

ROBERT HIMMEL*

Members of the Radio Wholesalers' Association have found interest in the handling of lines supplementary to radio has grown to a very marked degree this year.

As a result, a survey of the allied lines available for distribution by radio merchants has been undertaken by the Radio Wholesalers' Association. This is a nationwide organization of leading radio wholesalers banded together solely to further the interests of the radio trade.

Manufacturers of supplementary lines have welcomed this new channel of distribution. The appeal of radio merchandise brings the consumer to the radio stores, and it is becoming a recognized fact that this direct contact makes the radio wholesaler and retailer an ideal outlet for all products used in the home.

This development is based on sound principles and will no doubt become a very desirable stabilizing influence in the radio trade. However, the dealer will face the same problems in selecting these lines as he faces in selecting radio merchandise.

One always possesses the natural urge to buy, and when

*Mr. Himmel is president of Hudson-Ross, Inc., distributors of Crosley-Amrad, and treasurer of both the National Radio Trades Association and the Radio Wholesalers' Association. His long experience and keen interest in problems of the radio trade caused him to be chosen as chairman of the R. W. A. Supplementary Line Inquiry Committee.



abetted by a super-salesman a dealer often finds himself stocked with merchandise not having sponsorship that is conducive to ready salability.

In order to provide the dealer and jobber with a means of guiding himself in choosing these allied lines of merchandise, the Radio Wholesalers' Association decided to make this survey.

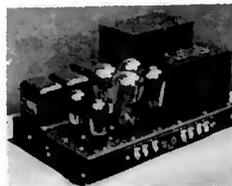
A questionnaire is being sent to all manufacturers who seek to use radio channels for distribution. When these are returned to the R.W.A., information will be available giving the standing of the manufacturer, the names of its officers and their past connections, nature of the firm's busi-

(Continued on page 53)

New Products Section

Compact Power Amplifiers

A line of audio amplifiers including models suitable to meet any requirements is made by the American Transformer Company of 178 Emmet St., Newark, New Jersey. All are of compact design. Installation may be



accomplished in fifteen minutes with the aid of a screw driver, it being necessary only to place tubes in the various sockets, insert a plug in the base outlet, and connect the audio-frequency input and speakers.

A snap switch and two controls—input voltage and bias—are the only adjustable parts.—November Radio Sales and Service.

Antenna with Adhesive Back

Stiktape, a radio aerial in a very convenient form, is made by the Sampson Industries, Inc., of St. Louis, Mo. This is an ingenious combina-



tion of a conducting surface with an adhesive rubber back. It may be placed anywhere and will stick to any surface.—November Radio Sales and Service.

New Motor Driven Brush Cleaner

The Clements Manufacturing Co., 609 Fulton St., Chicago, announces a motor-driven brush cleaner which is equipped for sanitizing, repelling moths, and auto cleaning. Among

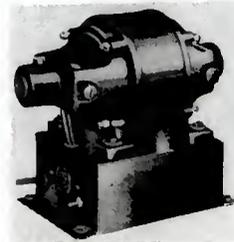
features listed are an industrial motor with super suction; wider nozzle to accommodate a longer brush; heavy duty "kick" switch to eliminate wiring in handle; suction control adjustment to adapt full power to naps of all various depths; adjustable han-



dle to accommodate cleaner to user's height; detachable nozzle for "off-the-floor" and auto cleaning; tilting and locking device on handle; oversize wheels for easy gliding over floor coverings. Accessories include carrier handle, sanitizing compound and sand compound dispenser, in addition to usual cleaning attachments. Carrier handle (which replaces long handle) enables user to carry cleaner about more readily for "off-the-floor" and auto cleaning. Sanitizing accessories claimed to deodorize and repel moths.—November Radio Sales and Service.

New Rotary Converter

The Janette Manufacturing Company of Chicago announces a new Type CA-20-F Rotary Converter. This unit



has a capacity of 110 watts, sufficient for the majority of A. C. radio sets now on the market. It is a quiet, dynamically balanced unit which operates on radio set without ripple or hum. Available for 32, 115 or 230 volts D. C.—November Radio Sales and Service.

Double Tub Washing Machine

The "Twin-Tex" washer having a number of new features is announced by the Haag Brothers Co., Peoria, Illinois. Among the features embodied in this machine is the use of

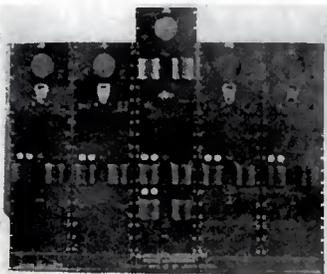


two tubs. It is possible to use both at once for washing, or one may be used for working while the other is used for power rinsing.

This washer is very economical in size and is extremely versatile. It may be secured with either an electric or gasoline motor.—November Radio Sales and Service.

Five Channel P. A. Amplifier

The Operadio Manufacturing Company, St. Charles, Illinois, has developed a power amplifier that provides five channels, four of which are for radio, and the fifth one is a combination channel for either microphone or automatic phonograph. It is designed to furnish musical programs for a 400-room hotel. It incorporates

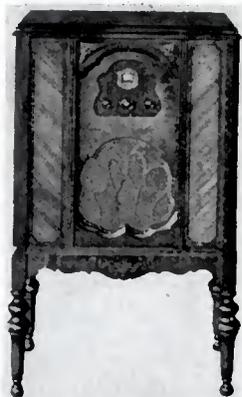


an automatic time clock with which it is possible to set for predetermined programs. There are several novel features incorporated in the design of the amplifier which make it possible to be in direct communication with any room at any time, regardless of whether the speaker in the room is turned on. This feature is especially valuable in case of fire, emergencies, etc. A high grade

screen grid type radio receiver is incorporated in each of the radio channels. There also is a level indicator panel with which it is possible to equalize the volume of all the channels.—November Radio Sales and Service.

Battery-Operated Console

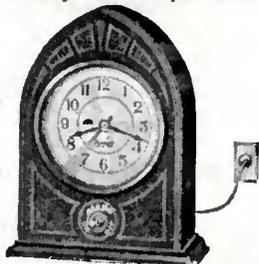
The Crosley Radio Corporation, Cincinnati, Ohio, have introduced their "Crony" console receiving set for use where 110 volts A. C. is not available.



It has all the advantages of the latest A. C. sets in selectivity and quality of reproduction. The set uses three screen grid tubes type '22 in the radio frequency stations, '12-A or '01-A tubes in the detector and first audio stages, and two '12-A power tubes in the push pull audio stage. The power speaker is self-contained and there is also ample space in the cabinet for all necessary batteries.—November Radio Sales and Service.

Westphal Clock

The Westphal Company, Inc., 225 N. Michigan Ave., Chicago, announces a synchronous electric clock which turns on or turns off the radio set automatically at a pre-determined



hour. Another special feature is a built-in radio antenna. Size is 7¼

inches high by 5½ inches wide. Case is of dark walnut bakelite with 3½-inch dial.—November Radio Sales and Service.

New United Receiver

The new Model 50-301, made by the United Engine Company, Department R, Lansing, Michigan, includes eight tube chassis with four screen grid



tubes, a screen grid power detector, tone control, dynamic speaker, and phonograph connections. In an attractively finished Low Boy Cabinet.—November Radio Sales and Service.

A New Resistance Tester

The Hoyt Resistance Tester, manufactured by the Hoyt Electrical Instrument Works, 735 Boylston St., Boston, Massachusetts, comprises a direct-reading ohmmeter with self-con-



tained battery and test leads. It is equipped with small flashlight dry cells, similar to the Burgess Unit No. 1. Cells may be replaced by removing the bottom plate of the tester and an adjusting shunt which compensates for the drop of voltage in dry cells under use.—November Radio Sales and Service.

Clarostat Tone Control

A new tone control is announced by the Clarostat Manufacturing Company of 285 N. 6th Street, Brooklyn. This tone control may be readily connected to any receiver without making any changes in the set itself. By turning the knob from "bass" to "treble" it is



possible to vary the tone gradually. At the bass position the high frequencies are by-passed slightly, accentuating the lower frequencies. As the greater portion of interference, due to atmospheric conditions, is made up of the higher frequencies the use of the Clarostat Tone Control considerably lessens the disturbance from this source.—November Radio Sales and Service.

The Kennedy Coronet

The Colin B. Kennedy Corporation of South Bend, Indiana, announces a new small size radio set. The cabinet is 17 inches high, width 16½ inches, depth 10 inches, and the weight 30 pounds. This small set uses four



No. 224 type screen-grid tubes, type No. 245 power output tube, and a type No. 280 rectifier tube. The audio system is entirely resistance coupled. The Coronet, it is claimed, has a sensitivity almost equal to the standard

large size Kennedy receivers. A full electro-dynamic speaker is provided.—November Radio Sales and Service.

Valley Forge Clock

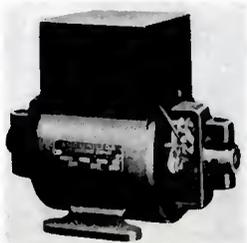
The New Haven Clock Company of New Haven, Connecticut, announces a new striking clock called the Valley Forge. This electric clock has hour and half-hour strikes. The mahogany



finished case is of sharp gothic design. Five and one-half inch dial. Roman numerals and large sweep second hand. Possesses the remarkable automatic control. Height 14 inches, and width 9 inches.—November Radio Sales and Service.

32 Volt D. C. Converters

Compact and efficient units for converting power from 32 volt farm light



systems to 110 volt alternating A. C. current necessary for the operation of A. C. receiving sets, are built by the Mankato Engineering Company of Minneapolis, Minnesota. Models are also available for conversion of 110 volts D. C. to 110 volts A. C. Equipped with a well designed filter system, these units permit the operation of A. C. sets on farm lighting systems with the same satisfaction as when

110 volts A. C. is available. The current draw is very low, models developing sufficient power to operate the average set take power equivalent to that consumed by only three 40 watt lamps.—November Radio Sales and Service.

Jackson-Bell Midget

The new Jackson-Bell Midget has been conceived and engineered for its eye appeal and its easy portability. Its perfect tone control (originated by Jackson-Bell Company of 1682 W. Washington St., Los Angeles, California) allows one to tune to the



lowest whisper without impairing the quality. Each instrument of a full orchestra stands out pure, clear and distinct. The total elimination of A.C. hum, the sharp selectivity, the clear, golden voice of its electro-dynamic speaker gives you all that a radio has to offer.

The cabinets are perfectly proportioned and fit unobtrusively into any decoration scheme.—November Radio Sales and Service.

New A.F. Transformer

The new replacement audio-frequency transformer made by the American Transformer Company of 178 Emmet St., Newark, New Jersey, may be had in types to permit its installation in any set.



These units are of very high quality, and will often improve the tone of the receiver in which they are installed. Second only to the electrical perfection of these transformers is

their construction and ability to resist disintegration due to electrolysis of primary windings.—November Radio Sales and Service.

Rauland Amplifiers

A complete line of power amplifiers for public address and centralized radio systems is announced by The Rauland Corporation, 3341 Belmont Avenue, Chicago. In addition to amplifiers in portable form and also panel types for mounting on channel racks, the line includes portable and panel Mixers, Pre-Amplifiers, and Microphone Current Supply Units and other equipment for complete sound system installations.



The portable amplifier, Type 53F uses seven tubes: one No. 227, two 112A, two 250, and two 281. Its maximum undistorted output in low impedance circuit is rated at 17 watts. It is said that this model will operate from 4 to 10 auditorium type dynamic speakers, or as many as 300 magnetic speakers, at their full-rated capacity. The output is designed for high or low impedance and the latter may be had in either "fixed" or "variable" type.—November Radio Sales and Service.

General Radio Test Oscillator

To meet the demand for a test-oscillator suitable for radio service



work, the General Radio Company of Cambridge, Mass., have developed their new Type 401 oscillator.

It is portable and operates from 110 volt A. C. supply. Such a generator may be used for neutralizing and aligning of receivers, and as a check of the receiver's initial condition.

The comparative sensitivity of a receiver may be measured by using this instrument in conjunction with an output meter. The presence of defects will be indicated by low sensitivity, and conversely, normal sensitivity is definite evidence that the set is not defective.—November Radio Sales and Service.

Lyric Automatic Self-Tuning Receiver

The All-American Mohawk Corporation, 400 W. Madison St., Chicago, announces a new self-tuning receiver. This interesting equipment makes it easy to select a 24-hour program in one setting. The set automatically switches from station to station in accordance with the pre-selected



schedule. Any set of nine stations throughout the country can be included in the program. The unit automatically starts at the pre-selected time and accurately follows through.—November Radio Sales and Service.

Atwater Kent Super-Heterodyne

Announcement has been made by the Atwater Kent Manufacturing Company, Philadelphia, of the addition of a Super-Heterodyne set to their new 1930-31 line of Golden Voice receivers.

According to the factory announcement, the new Model 72 Atwater Kent Super-Heterodyne is a truly super-selective set. It is capable of bringing in clearly and distinctly far distant stations whose markings on the dial are so close to those of powerful local stations that the selectivity feature of this model is little short of amazing.

The Model 72 has the new quick-vision dial, a new enlarged speaker, and a tone control that allows the operator to secure four definite tone shadings.

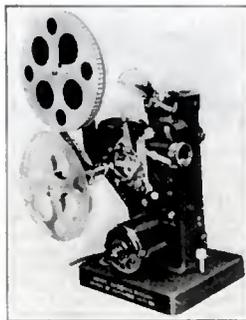


The cabinet is finished in American walnut with matched butt walnut front panels and apron, and rubbed top.

The new Super-Heterodyne circuit uses 9 tubes, including 3 screen-grid and 1 rectifying tube.—November Radio Sales and Service.

HoMovie Projector

The Kodak Electric and Manufacturing Company announces a new Ho-Movie Projector that reproduces both the recently perfected lateral and longitudinal film pictures, as well as the standard 16-millimeter pictures. In this projector the film is moved crosswise as well as lengthwise—re-

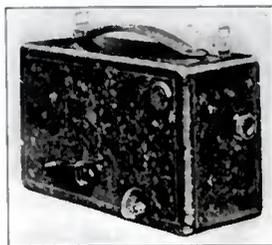


producing four pictures with the new system, where only one picture was reproduced before. This cuts the cost

of motion picture operation in the home seventy-five percent. It is claimed, bringing home motion pictures within the reach of every family that owns a radio. With this projector, using the new type film, a 100-foot roll provides sixteen minutes' entertainment as against four minutes with the old type. Projector is compact, has a 250 watt lamp, forced draft for cooling, and is all made of the finest material.—November Radio Sales and Service.

HoMovie Camera

The Kodak Electric and Manufacturing Co. of Cincinnati, have brought out a HoMovie camera. This ingenious device, it is claimed, permits four



times the number of impressions to be made on films. The camera is small, compact, and light in weight. Furnished in a bakelite case of selected colors. Mechanism is all self-enclosed.—November Radio Sales and Service.

1931 Model Radiette

The Keller-Fuller Manufacturing Company, Ltd., 1573 W. Jefferson St., Los Angeles, announces a new midget set. This 1931 model uses a specially engineered electro dynamic speaker,

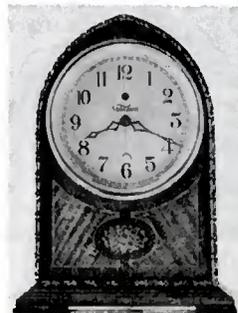


four screen grid tubes, a 245 and a 289; has four tuned circuits, a band pass filter, automatic tone adjustment, and unified control. Cabinet is furnished in two-tone walnut. November Radio Sales and Service.

Telechron Model 604

This illustration shows the Britany Model made by the Warren

Telechron Company of Ashland, Mass. This is one of more than a dozen new models recently brought out by this company. This model has a



carved mahogany case with Spanish high lighted finish and a panel of satinwood with a 5/8-inch gold finish dial. Height 11 1/2 inches, width 8 1/2 inches, and depth 5 1/2 inches.—November Radio Sales and Service.

Coin Control for Radios

The Slusser Coin attachment, which may quickly be applied to any A.C. radio allowing its operation only when a nickel has been deposited, is distributed by R. & R. Appliance Company, Findlay, Ohio. One coin per-



mits operation for six minutes, or six coins may be deposited giving continuous operation for thirty-six minutes.

No change in the set wiring is necessary. The cord is plugged into the device and locked, while a cord from it connects to the light socket.—November Radio Sales and Service.

Under-the-Rug Aerial

The Potter Rug Aerial, made by the Potter Manufacturing Company of 1950 Sheridan Road, North Chicago,

Ill., is ideally suited for use with the popular midget sets. Shield grid tubes in these small sets make them very sensitive, but often somewhat broad in tuning. Use of this efficient antenna, which is quickly installed by merely slipping under a convenient rug, provides sufficient signal pickup and reduces interference between adjacent stations.—November Radio Sales and Service.

Portable Electric Outlet

Often the most desirable location for a radio set is at a point considerably removed from an electric outlet. The portable outlet made by the Belden



Manufacturing Company of 4679 W. Van Buren Street, Chicago, provides a very simple solution. One end plugs into any convenient socket, and the flat rubber covered under-the-rug cord runs in any direction in the room.—November Radio Sales and Service.

Test Oscillator for Servicing Supers

The Radio Products Company of Dayton, Ohio, have announced the Dayrad Type 180 Test Oscillator for aligning and other uses in servicing radio receivers. Improved service methods that are being so rapidly adopted by the servicing profession necessitate the use of this type instrument. For accurate adjustment of the radio frequency stages, the use of a signal from a broadcast station is now considered inadequate. To quickly and completely adjust gang condensers, neutralizing condensers and match intermediate frequency transformers of super-heterodyne receivers, a test oscillator is essential. It has a veritable range of 550 to 1500 kc. and two fixed bands of 175 and 180 kc. These ranges are very suitable for use in servicing the super-heterodyne receivers which are so popular this season.—November Radio Sales and Service.

STATIC



It All Depends

Passenger: "Have I time to say good-bye to my wife?"
 Pullman Porter: "Well sir, how long is you been married?"

* * *

Store Owner: "I would like to give you a good reference, but you were never punctual."

Recently Resigned Serviceman: "Just say I was as punctual in getting to work as my employer was in paying my wages."

* * *

"I'm afraid Jones has forgotten about the \$5.00 service bill he owes us."

"How's that?"

"He always seems so glad to meet me."

* * *

Customer For Someone

He bought an electric ice box to keep the iceman away, and now he wants to buy something to get rid of the refrigerator serviceman.

* * *

Don't Tell Jokes In a Laundry

Art Becker of Evanston, Ill., writes in:

"The haberdashery across the street from my radio shop advertises, 'Shirts that laugh at the Laundry.' One of mine has such a sense of humor that it arrived home the other day with its sides split."

* * *

"You're one of those servicemen who drops his tools and beats it as soon as the whistle blows?"

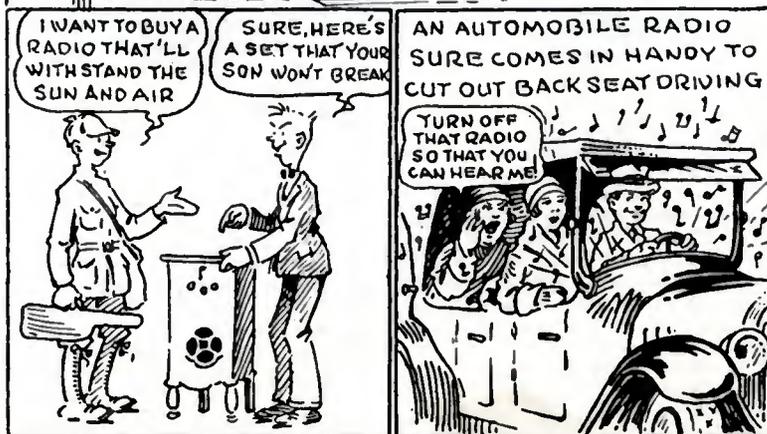
"Not me! After I put my tools away, I usually wait around about five minutes after the whistle."

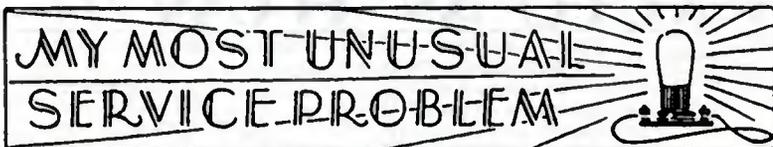
* * *

Way Back When

In 1923 Hugo Gernsback predicted that someday you might be able to buy a tube for \$1.98. They cost six bucks a piece then, and we all thought he was dreaming.

RADIO AN' HOW!!!





Radio Sales and Service will pay \$2.00 for each unusual service problem printed—mail them in

Shorted Condenser Located by Testing

The most unusual and baffling service problem I ever ran up against was trying to make a certain Silver-Marshall custom-built set operate. No music came forth from the speaker and all usual tests failed to show trouble. The tubes all tested O. K. The analyzer showed normal voltages and milliamperages on each socket. The aerial was not grounded and the speaker worked on another set.

Although no music could be heard, a hum and an alive sound could be heard. Tests with a small microphone showed the audio end O. K. so I had at least localized the trouble in the R. F. amplifier. By use of my little adapter I put a pair of phones in the plate circuit of each R. F. tube and put a grid condenser and leak in each control grid. I found I could hear music with increasing volume until I reached the detector tube, then I could hear nothing.

Thinking the detector coil was shorted I took it out of its can, but was disappointed again. The coil was in perfect order and another coil soldered in the same place refused to give signals. Then I took the coil out and got busy with continuity tests that finally showed that the insulator on the trimmer condenser on the detector variable was defective, thus shorting the detector grid to ground. The short could not be seen but only located by testing.

Jim Kirk, Los Angeles California.

Wrong Tubes Don't Work

I was called upon to service an A. C. set that would not work. I checked voltages, connections, ground, aerial, etc., all of which were O. K.

This customer had bought 26 tubes from his garage man who kept radio tubes as a side line, telling him the tubes would help his set which was not working properly. After putting in new tubes, it would not work at all. At once I could see there was something wrong with the new tubes. Upon examination I found the garage man had sold him 201A tubes.

Wolfe Radio Service.

Stops Oscillation

I was called upon to replace a broken belt on the dial of a model 72 Majestic. Upon completion I checked the set and the tubes and found everything else O.K. and neutralized and balanced the set, everything working beautifully when I left.

The next day this same party called and notified me that the set was oscillating from 900 kc. up to 1500 kc.; however, this did not start until the following day after my first call.

Upon trying to rebalance and neutralize the set I found I could not do it and proceeded to look for open By-Pass Condenser or ungrounded shielding, etc., checking every By-Pass condenser, etc., in the set. Finally as a last resort I placed a 1/2 Mfd. condenser

(Continued on page 62)

Replacement Condensers for Radio Servicemen

Prompt shipments are made daily to radio servicemen from our huge stock of condensers for power packs, eliminators, and for all leading radio receivers. Condensers for any standard or special set can be duplicated on short notice.

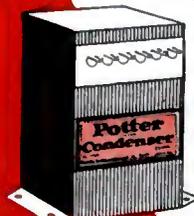
POTTER CONDENSERS

for every radio application are now available to servicemen everywhere through the Potter REPLACEMENT CONDENSER SERVICE. Order your condensers through Potter or your nearest jobber. Special replacement condensers, cartridges, etc., can be duplicated in less than 48 hours. Our container plant makes special cases for any job. Standard by-pass, filter blocks, and replacement condensers carried in stock for immediate shipment for

A. C. Dayton, Apex, Atwater Kent, Audiola, Balkeit, Bosch, Brandes, Crosley, Dayfan, Earl, Eveready, King, Howard, Kolster, Kennedy, Majestic, Neutrowound, Mohawk, Metro, R. C. A., Sterling, Splittdorf, Spartan, Steinle, Sentinel, Silver-Marshall, Temple, Tyrman, U. S. Radio & Television, Zenith, and all eliminators.

Replacement Chart

The new Potter Replacement Wall Chart should be in your service room. It tells at a glance the proper condenser to order for any replacement job. No radio shop is complete without this valuable chart. Send for it.



Ground Clamp

Easy to Install—Permanent—Vise Grip makes Positive Contact—Rust-Proof.

Rug Aerial

Ideal Antenna for Midget Sets—Portable—Sixty Seconds to Install.



Mail this Coupon for New Potter Condenser Wall Chart
To Potter Mfg. Co., 1948 Sheridan Road, North Chicago, Ill.

We certainly want the Potter Replacement Wall Chart.
Please mail us free copy today.

Name

Address

To answer an advertisement, tear out page and pin to letterhead

Interpreting Set Analyzer Readings—*Part 2

By A. E. HOOVER

IN the October issue of RADIO SALES AND SERVICE we touched upon the tests to be made on power packs of the half-wave type. The circuit of such a pack is illustrated in figure 2.

any of these packs and the tube is placed in the analyzer socket, the alternating current voltmeter is placed across the filament as at "V." When reading plate current the milliammeter is connected as

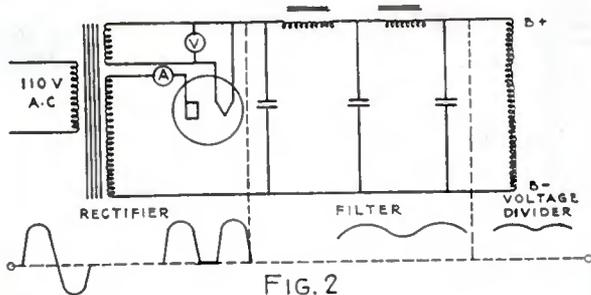


FIG. 2

The full-wave type of power pack is in more general use because of the difficulty of filtering out hum in the half-wave type. Outside of the difference in the high voltage secondary and the difference in tubes they are alike. The circuit diagram of such a

at point "A."

The sine wave forms drawn beneath each section of the diagrams indicate the action of the pack in turning alternating current into direct current. Alternating current changes its direction of flow from positive to

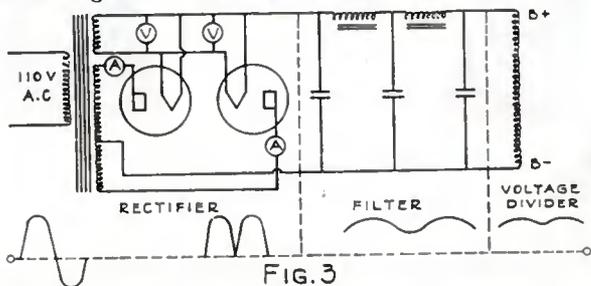


FIG. 3

pack using two 281's is given in figure 3, and of one using a 280 in figure 4.

When the test plug of the analyzer is placed in the socket of

negative a certain number of times per second. Each complete change starting at 1 and ending at 5 (A, figure 5) is called one cycle. Sixty cycle alternating cur-

rent would make sixty of these changes per second.

Difference Between Half-Wave and Full-Wave Rectifiers

The rectifying tube has the property of allowing current to flow through it in one direction

dotted line (zero line) no current flows, but at points 2 and 6 it reaches its peak. In the filter section the condensers become charged at the points where the current reaches its peaks and then discharge at the points where current drops to zero. This discharge serves to fill in the gaps and pro-

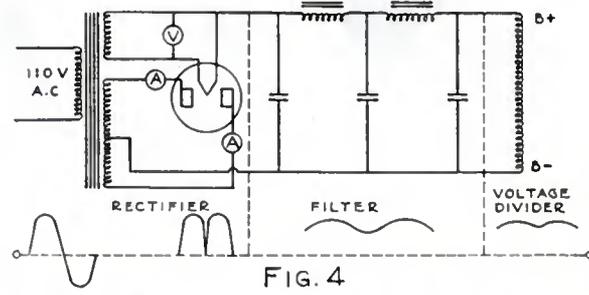


FIG. 4

only. When the filament of the tube is heated it emits electrons which are attracted to the plate when it is positive. Since the plate is not heated, current cannot flow when the plate is negative and the filament positive. In the half-wave rectifier then, current will flow through it only during one-half of the alternating current

duces the less pulsating form of direct current as at "C" in figure 6. The chokes, of course, assist in this process since they function in such a way as to offer little resistance to the flow of direct current and a great resistance to the flow of alternating current or pulsating direct current.

In the full-wave type the action

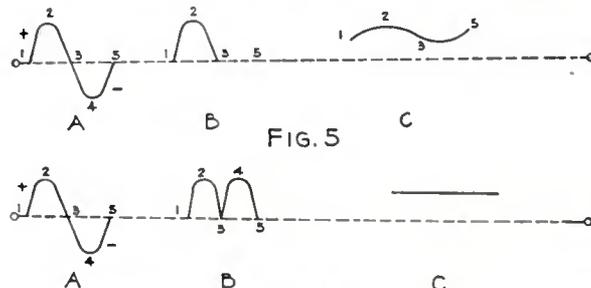


FIG. 5

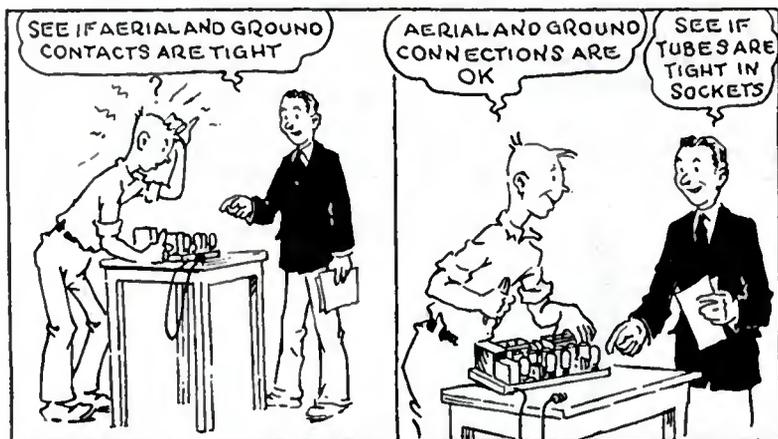
FIG. 6

cycle. The sine wave form from the rectifier will then appear as "B" in figure 5, indicating a raw pulsating direct current. At the

of the rectifier is the same except that two plates are provided, and since they are connected at opposite ends of the transformer wind-

*Copy of October issue containing first installment will be mailed upon receipt of 20 cents in stamps.

Jack and Larry



ing they are always 180 degrees out of phase in relation to each other; that is, one is positive when the other is negative, so that both halves of the cycle are rectified. The sine wave form out of this type of rectifier appears as in figure 6. The action of the filter is the same as in the half wave type, but because of the much smaller gap at point 3 it is much easier to filter.

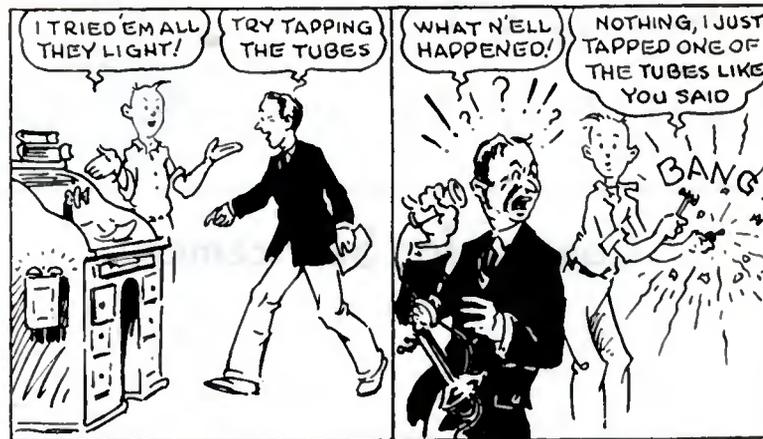
Greatest Strain on Condenser Nearest Rectifier

In repairing power packs when filter condensers are broken down it is well to remember that the first condenser after the rectifier is subject to the greatest strain, due to the heavy pulse, and therefore it should be rated well above the voltage as measured at this point. Twice the actual working voltage is good, safe practice.

In testing full-wave packs with the analyzer, the procedure is

much as outlined for the half-wave (October RADIO SALES AND SERVICE) except that there are two tubes or, in the case of the 280, two plate currents to test. In the case of one using 281's the plate current reading of either tube should never be greater than 10% plus or minus of the other. A difference greater than this will be marked by abnormal hum. If a difference greater than this is noted, and several tubes have been tried without improvement, test the filament voltages. One filament voltage being lower than the other would cause this effect, and since both tubes are lighted from the same winding the fault will be found in either a poor connection between the socket contacts and the tube prongs, or in a high resistance joint where the wiring is soldered to the socket. These tube filaments draw fairly high current at low voltages and for this reason all connections must be perfect.

"Larry Taps a Tube"



If the filament circuit tests O.K. measure the alternating current voltage (800 volt alternating current scale and test leads) from the center tap of the power transformer or any point connecting to B minus to the plate connection of each 281 socket. These voltages will seldom be exactly equal, and a small variation can be overlooked, but where a difference of more than 10% is noted the transformer should be replaced. Some test kits provide for the testing of both plates of the 280 type of tube, but many of them can test only one plate.

When servicing a pack using this tube a test of one plate circuit is generally sufficient since these tubes run fairly uniform. If, however, your kit can test only the one plate and it is found to be all right but abnormal hum is present, try changing the tube. If this produces no change, test both halves of the high voltage second-

ary as in the case of the 281's. If the difference in voltage is slight, look elsewhere for the hum.

Hum May Originate at Point Other Than the Rectifier

The common causes of abnormal hum, in addition to the rectifier defects just treated, are:

1. A filter condenser may be open. (A continuity test will not disclose this defect. All connections to the condenser should be removed and a fairly high direct current voltage [135 volts or more] should be applied momentarily to the terminals of the condenser. If the condenser is O.K. it will take a charge, and evidence of it may be had by shorting the terminals. If it is good a spark will be produced. A leaky condenser may be found by allowing the condenser to stand a few minutes before attempting to discharge it. In making this kind of test remove all connections.)

(Continued on page 53)

SERVICE QUESTIONS



Contest for Servicemen

W. H. Conklin of the H. C. McElroy Company, Youngstown, Ohio, won the Jewell Pattern 574 Volt-Ohmmeter, October prize. Hill's Electric and Radio Shop, Hollidays Cove, West Va., and Hymie Wernick of the Holyoke Phonograph Store, Holyoke, Mass., were runners-up.

The answers of Mr. Conklin are reproduced below:

1. *What is the normal filament voltage and current of a 227 type tube?*

A—Normal filament voltage— $2\frac{1}{2}$ volts. Normal current— $1\frac{3}{4}$ amperes.

2. *Give a simple test for telling whether an open-circuit is in the audio or radio frequency stages of a radio receiver.*

A—Put finger on grid of detector tube. If a buzzing sound is heard, the audio end is O.K. and open is in R.F. end. If no sound is heard, the open is in the audio end.

3. *How would you eliminate interference picked up by the antenna lead-in?*

A—The simplest way would be to use a shielded lead-in, and ground the shield.

4. *Describe a good method for neutralizing and aligning gang condensers.*

A—The best method to neutralize and align condenser gang is to use a grid dip meter on the output of the set. If no meter is available take a

tube of the type used in the R. F. stages of the set and cut off one of the filament prongs. Insert this tube in the first R. F. stage and regulate balancette until no signal is heard. Take out jack tube and insert regular tube, then retune set to peak signal. Repeat this operation with each R. F. stage and set will be in balance. To align condenser gang—set dial on a high-frequency station, then loosen set screws on the two end condensers in the gang and swing them either way until signal is at its loudest and clearest. Tighten up set screws and condenser gang is aligned.

5. *How would you correct interference due to an electrical icing machine?*

A—The interference from an icing machine will come from the motor. Cut the AC line feeding the motor and insert any good interference filter and then ground the frame of the motor.

6. *If you found an unmarked four-prong socket in an A. C. set, how would you determine the correct type of tube to use, by means of a voltmeter and without tracing out the circuit?*

A—Use leads from voltmeter and test socket for filament voltage by putting prods in

two filament prongs. Then test for plate voltage by putting one prod on ground and the other in the plate prong. These two readings will determine at once what tube is to be used.

Filament Voltage	Plate Voltage	Type Used
$1\frac{1}{2}$		326
$2\frac{1}{2}$	250	345
5	135	312A
5	180	371A
5	no reading	380
$7\frac{1}{2}$	300	310
$7\frac{1}{2}$	400-450	350

The November Prize Is a Dayrad

Type R Voltmeter Ohmmeter, which is illustrated above. This complete self-contained combination voltmeter and ohmmeter is equipped with a high grade instrument of standard manufacture pro-



viding 0-30-300-600 voltage ranges (1000 ohms per volt) and 10,000 and 100,000 ohm resistance ranges. A $4\frac{1}{2}$ volt C battery furnishes power for continuity and resistance tests. Locking push button switches select ranges. Test prods and convenient carrying strap are provided.

Questions for November Contest

1. *What test is commonly made to determine the condition of a vacuum tube?*

2. *Should a high or low resistance voltmeter be used to test dry-cell A and B batteries? Power-pack voltages?*

3. *Two by-pass condensers of .5 mfd. each are placed in series. What is the total capacity? Two 50,000 ohm resistances are placed in series. What is the total resistance?*

4. *Describe how a grid dip meter is used in adjusting the gang condenser of a tuned radio frequency receiver.*

5. *Explain very briefly the difference between the rectifying action of full-wave and of half-wave rectifying power packs.*

6. *On a standard screen-grid super-heterodyne receiver, a test shows all voltages and tubes to be O.K. However, the received signals are very weak. It is found by touching the control grid of the first intermediate tube, the signal strength increases. What is the trouble, and how would you correct it?*

Rules of the Contest:

1. Every man employed in full-time radio work is eligible, but winning one prize disqualifies the serviceman for future contests.

2. To enter the contest simply write answers to questions listed on the following page legibly with ink or on a typewriter, and mail them to RADIO SALES AND SERVICE, 549 W. Washington St., Chicago.

3. Answers must be accompanied by a letter-head or invoice bearing the name of the retail organization with which serviceman is employed.

4. Contest closes December 2, 1930.

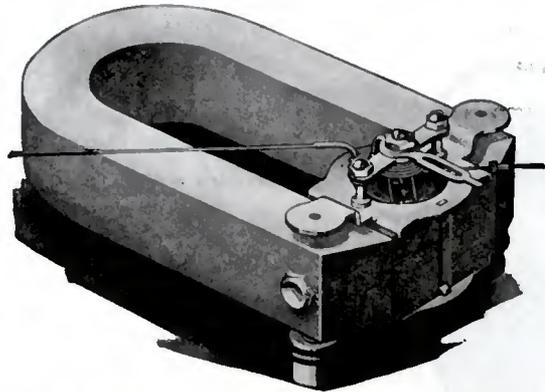
5. Honorable mention will be given to the contestants meriting second and third places.

The Voltmeter

JOHN S. MECK

The voltmeter is the key tool of the radio serviceman. Early service work required only a single voltmeter of the range 0-45 volts. As radio has progressed, more complicated set design, coupled with the demand for more accuracy and speed, has led to the development of the set analyzer.

One of its principal functions is to measure potentials over wide ranges. For this purpose at least one D. C. voltmeter is always built in, and the larger types have several for simultaneous reading of various voltages.



Typical movement of D.C. Instrument showing magnet, moving coil, spring and pointer. (Courtesy of Jewell Electrical Instrument Company.)

Nearly all meters used in radio service work for direct current measurements of voltage are of the D'Arsonval type. An instrument of this type consists principally of a small wire coil suspended between the poles of a strong permanent magnet.

Normally this coil is held at an angle to the magnets as in Fig. 1,

but when a current passes through it, the coil attempts to rotate to a position where its axis will point directly to the two pole faces of the magnet. Opposing this motion is a coiled spring which permits the coil to rotate directly in proportion to the current flowing through it.

The greater the voltage applied to the terminals of the coil, the greater will be the current flowing through it. Thus the rotation of the coil varies directly as the voltage applied to its terminals.

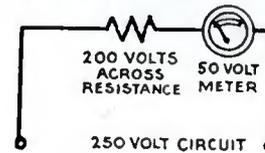
A needle is fastened to the coil and the unit is mounted on jeweled bearings to reduce the effect of friction to a minimum. This

needle moves across a scale on which the units of voltage are marked. The coil, needle and tension spring assembly—called the movement—rotates to full scale deflection when a certain voltage, depending upon the design of the unit, is placed across the coil.

To permit a meter to read higher voltages a resistance is put

in series with it (Fig. 2) which divides the voltage between the meter and the resistance unit.

For instance, take an 0 to 50 voltmeter and place one of these units in series with it. We will assume it is of the correct value to permit only one-fifth the total voltage to go across the meter. Then any reading taken by the voltmeter with the unit in circuit



must be multiplied by 5, or the range of the meter has become 0-250 volts.

Such units take the name "voltage multipliers" and may be supplied for any meter by its manufacturer in sizes to allow a great variety of ranges.

It is by the use of this system that multi-range D. C. instruments and set analyzers can secure voltage readings over a large number of ranges with a single meter.

Interpreting Readings

(Continued from page 46)

2. A shorted filter choke. (Since the resistance of the average choke is somewhere around 1000 ohms, a continuity test will disclose this defect.)

3. A mechanical hum caused by loose core laminations in either the power transformer or chokes. (This condition is readily located by ear. If the troublesome part is enclosed and sealed in wax, place the can in an oven or over a stove at moderate heat until the wax is entirely melted, and allow

it to harden thoroughly before using. If the part is not enclosed, tighten the bolts holding the core together, or if the windings around the center part of the core are loose and causing the trouble, tighten them by driving small wooden wedges between the windings and the core. Care must be taken in doing this that the windings be not broken.)

Other causes of hum may of course be found in defects in the speaker or receiver chassis itself. In a later article we will deal further with this important subject.

RWA Survey

(Continued from page 34)

ness, description of product, patents infringement protection to distributors, and details of their dealer and distributor proposition. Other information tending to show the stability of the firm and whether it intends to develop a permanent distributing organization will be included.

This data will be on file for use by members of the R.W.A. Dealers may secure information they require from any member jobber.

Manufacturers may secure a copy of the questionnaire by writing to the Radio Wholesalers' Association at Chicago, Ill.

Mistress: "And did you have a honeymoon, Mandy?"

Mandy: "Well, Rastus done helped me wid the washin' the first week."

* * *

Our artist had a bad cold and he was undecided as to whether he should stuff it or starve it.

He finally flooded it.

Why Tubes Fail

(Continued from page 22)

ing from such careless handling. Sometimes the dropping of the tube does not result in a complete breakdown of the elements, but serves to displace the relative position of the elements to such an extent that the characteristics are no longer uniform and the tube will not function properly.

It is a surprising fact, no doubt, that a great many tubes returned to the factory as defective actually test up in excellent condition. This is probably due to a faulty receiving set, particularly a poor socket contact or perhaps a loose rheostat contact, for which the tube is blamed. Considerable misunderstanding would be avoided if, when the tube fails to light, the tube were shifted to another socket *designed to take the same tube*. In this manner the trouble would be traced to a defective socket or rheostat or other cause in many instances, instead of rushing to the conclusion that the tube itself is faulty.

The question of sockets is worthy of far more consideration than it is now receiving. Investigation has proved that as high as 65 per cent of all filament burnouts can be traced to placing the tube in the wrong socket. Also, the current should always be turned off when changing tubes. If this is not done and the plate prong of the power tube makes contact before the grid prong, there is danger of excessive overloading of the tube. If set owners would observe these simple points, there would be a marked reduction in vacuum tube returns, even when the DeForest

Audion returns are less than 1 per cent including those due to carelessness on the part of the users. Tube returns should be reduced to a fraction of the present figures in the case of properly manufactured and tested tubes, with the proper care and consideration at the user's end.

Manufacturers of good tubes are doing their share in producing perfect tubes, through rigid inspection, careful testing, and adequate packing precautions. Every piece of material that enters into a good vacuum tube is examined and passed upon. Tubes are thoroughly tested before they can be packed for shipment.

Good-Will Ambassador

(Continued from page 12)

store may be judged by your windows, by its general inside appearance; but in case of trouble when your customer is in the most critical attitude toward your organization, it is the serviceman by whom you are judged. Even the set, no matter how good it is, is valued largely by the serviceman's respect for it; providing, of course, he is the type of serviceman who generates respect in the customer on whom he calls.

Every serviceman in your organization has possibilities of developing more business for you. By selecting and developing servicemen who are tactful, neat, tidy, and agreeable—men who by their contacts create a favorable impression for the store—men who when servicing in the home leave things neat and in order—men who are agreeable to talk to and who know how to say the right things.



Attractive arrangement of display containing many sets.

(Continued from page 28)

The retail distributor of the big articles, be they radios, electric refrigerators or cars, has copied the selling plan "lock, stock, and barrel."

A typical example is this Chicago display. The central feature is a cabinet radio placed on a mahogany dais. This oblong object—the radio itself—is covered with white tissue paper, studded with silver stars, and then artistically tied with wide bands of scarlet and gold satin ribbon. The finishing touch to this ribbon rosette, with the ends of the ribbon reaching to the bottom, is the single poinsettia placed there.

Such artistry needs ensemble support. It is there—flanking each side of the radio is a three-pronged wrought iron candelabra, bearing its cluster of three green wax candles. On the neutral tone plastered wall back (but well above it) is an immense holly wreath that is garnished with artificial poinsettias. The wall at either side is given a living room impression by being graced with

framed paintings of cathedral scenes.

The one flaw to this wrapped radio gift is that people will want to see the model before showing more than casual interest. Again the retailer of small merchandise is slavishly copied. He shows a few of the gifts UNWRAPPED. This Chicago store did the same thing, for at each front side was a cabinet radio model in its gift UNWRAPPED state.

The price of the featured model—another important consideration—was not overlooked, for a neatly framed card in front of the gift wrapped article furnished these particulars.

Varying Degrees of Home Atmosphere

Where space is at a premium for a duplication of the living room setting, a compromise like that chosen by Geo. F. Barton, Bath, N. Y., is helpfully suggestive. The rear wall was "broken" at the middle by a large arched doorway, forming an alcove. This doorway was lighted with a chan-

delier of green, red, and blue colored lights; while a bunch of mistletoe dangled below.

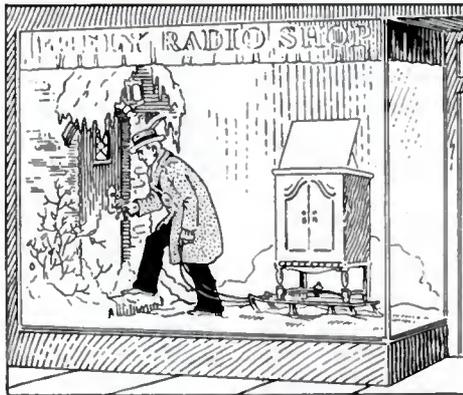
A Key to Happiness

Another dealer cleverly engineered a "Key to Home Happiness" display. The highlight was a regulation size residence front door, inserting the key in the lock of which was the Man of the House (a lifesize cut-out). Behind him lay a large sled holding a cabinet radio, which he had toted from the dealer's. The card,

ining the new radio model that Santa had left overnight. The sly old chap was peering behind the doorway at the other end of the trim, as if pleased with his work. "What Every Family Wants," read a large show card. Rugs, artistically plastered walls, and a few well placed pieces of furniture helped to create the home interior environment.

Second Radio in the Home

A second radio in every home was the underlying idea back of



A radio window full of Christmas and the gift appeal.

in semihumorous vein, announced;

"We'll deliver it in good time for Christmas, and you won't have to become your own deliveryman, either!"

The next step with the home environment, where the facilities permit, is a duplication of a living room interior. Such appeared last season under the guidance of the Idaho Power Company, Boise, Idaho. Two young children and their mother—all radiant with joy that the lifesize cut-outs expressed—were shown delightfully exam-

the trim by the H. and S. Pogue Company, Cincinnati, Ohio. The scene was that of a young man's bedroom, purposely left in a chaotic condition by its untidy occupant. To give him the benefit of the doubt, possibly he had to dress in a hurry to fill a social or business engagement, for his clothes lay everywhere as he threw them off while changing. On the dresser was a table model radio. The show card was interesting.

"Bob is as sore as the dickens.
(Continued on page 58)

Without High Pressure

(Continued from page 11)

miles from all directions except east. Lake Michigan lies that way. If customers lived in Lake Michigan the Miller Brothers, it seems, would be sure to get their share.

The business was begun seventeen years ago in a location farther west. Before that the Millers had been hardware merchants. Seven years ago they built their present building at a cost of some two hundred thousand dollars. With a frontage of one hundred feet and a depth of one hundred and twenty-five, it contains three stories well stocked with furniture.

It was two years ago that the members of the firm became actively interested in radio and other domestic utilities, including electric refrigerators, washers, vacuum cleaners, and ironers. Their first selection of a radio line proved unfortunate. Too much "trouble-shooting" developed. But the Millers didn't give up. They added another line. Later they let the original line go and concentrated on the one make, carrying all five of the current models.

Eleven sets, all hooked up, occupy a space measuring 11x35 feet on the mezzanine balcony which runs clear around the roomy sales floor full of well-displayed furniture. Other sets are scattered throughout the display downstairs, along with the other furniture and models constantly shown in the big show-windows. The store constitutes a permanent furniture fair with radio conspicuously featured.

"We sell sets in the larger cabinets," says Otto Miller. "Our trade has not yet begun to call for the table sets, although such a demand may register overnight for all we can tell. The average buyer with whom we come in contact wants a nice piece of furniture when he buys a radio set. Our best set sells at \$193.50, completely installed with tubes.

"David Novak is our serviceman—and a good one. He is young, experienced, and can do almost anything with a set that needs to be done. We have no other outside radio salesman now and I don't know that we shall get any. Virtually all of our radio business is in-the-store trade."

Here Mr. Miller outlined the store's simple selling policy, which is much like the effective method followed by the cub reporter who "just asked" for the picture. Moreover, the Millers are particular about how they do their "just asking." "We don't know anything about high-pressure salesmanship around here," he said, "and most distinctly we don't intend to learn. The other way works better for us. That much we know. We try to make people feel as much at home as possible in this store.

"When customers come in we are careful not to over-talk our merchandise. We are not so eager to sell that we don't give them a chance to buy." The plan sounds almost too easy, but there is a quiet persistence about it just the same. And it is effective. Last year the firm did an over-all furniture volume of \$300,000.

From the Miller viewpoint, high-pressure attack would have cut that volume down to a much less attractive figure.

"That first radio we took on," continues Otto Miller, "gave us plenty of service grief. I hate to think of the trouble we had following the holiday trade. But things got better in this respect when we changed lines. I never heard a better set than the one we carry. We tried it out in our own homes, and we know it performs.

"At first we made a deal with a free-lance serviceman who charged us \$1.50 a call. That wasn't satisfactory. Sometimes he was two or three days late in answering a service call. Then we hired young Dave Novak who responds promptly and takes an interest in each case, being a direct representative of the store. Dave, of course, knew his radio sets right from the start with us.

"But, generally speaking, we don't worship that word, 'experience,' in our place. We hire no experienced retail salesmen. Too often such experience disqualifies them to work our way. When we hire a man we catch him young and train him in the methods we have found successful. A man that has had too much experience elsewhere can hurt a merchant's business, especially if he is the wrong kind of a man, and more especially if the merchant's policy is one that requires plenty of intelligent tact rather than strong-arm tactics.

"Service doesn't bother us nowadays. The sets we sell don't often get out of fix. And we don't have any credit troubles worth

mentioning. Although our trade comes from all over the city and some of the suburbs, we try to be as careful about taking on a time customer as he tries to be in selecting the goods we offer. We sell sets at ten and twelve payments a year, according to the circumstances. That is also true of our other electric appliances.

"The man who gets credit here must come to us highly recommended. Except for tubes, we pay little attention to radio parts. When the newlyweds come in to buy furniture, of course we try to get them interested in radio which is unconsciously accepted as the symbol of the modern home. Some of these young couples are sons and daughters of old customers of ours.

"We keep open three nights a week. About one o'clock in the afternoon we turn on all the lights in the store, illuminating the balconies as well as the main floors. Then we turn on one radio and let it play softly. When we interest a customer in a set we take him or her to our radio department on the balcony. There we can talk radio without interruption or distraction."

Christmas Window Display

(Continued from page 56)

He is on some high school frat committee and had to pass up a radio programme he revels in. No squabbling in this family because Bob tunes in on programmes Dad and Mother do not care for. A table model in Bob's room has won permanent peace."

About the Midget

(Continued from page 19)

our procedure so as to make them really profitable. Certainly we can't afford to service a fifty-dollar set longer than three months for nothing.

"Four or five years ago most dealers gave a year's free service with nearly every set they sold. Unless they were exclusive radio houses with a relatively large volume, many of them found they were sacrificing profits. Service ate up the whole margin. Slowly most dealers still in business have been swinging around toward ninety days' free service, in line with the average factory guarantee. Some dealers still advertise a year's free service with each job. In my opinion they can't possibly deliver on any such promise, and such advertising seems worthy of investigation on the part of the better business bureau. Nevertheless, few of us feel like turning around and changing our policies overnight. Unfortunately, the trade has been educated to expect certain expensive services; it may be difficult to educate our customers in the opposite direction.

"Have Owner Bring in for Repair"

"From the viewpoint of the credit man, one of the negative features of the midget is its portability. If the time buyer is so disposed he can put it in his trunk and move and an expensive effort has to be made to trace him. But there is a good side to that feature, from the serviceman's viewpoint. If after the guarantee period has expired the

set needs service, the owner can bring it to the store and we can repair it at a proper charge. That would eliminate a good many service trips.

"Cabinet Sales Will Not Be Seriously Affected"

"I doubt that the present place of the cabinet job will be seriously disturbed by the midget. Most people, according to our experience, still look upon radio as an attractive piece of furniture, as well as an instrument of entertainment. They try to visualize how it is going to look in a particular room, as though they were buying an occasional table or a davenport. On this account some buyers even now won't consider a midget set. In my opinion the large sets will show selling speed once more just as soon as general conditions justify.

"Of course we are doing our best to push the sale of the larger units. Just the same, we get calls every day for the midgets. Often, if the case seems to justify it, we take out a large and a small set together and try to sell the cabinet job. We hate to see the demand swinging toward the midgets. Nevertheless we are going after the business, big or little. Even some of the people with buying power won't pay the price for the large set. I know several well-to-do persons in the suburbs who say the midget gives them all they want in a radio. Such people can afford to go to the opera and other expensive places of entertainment. The workingman can't. If he buys at all, he must buy a midget. However, I am inclined to believe that

when the times change most of the buyers will want to get cabinet jobs.

"Midget May Increase Market for Larger Models"

"No matter what we may think of the midget, it has put life into the radio trade. Before it came many customers simply wouldn't consider buying any kind of a radio. Now they are attracted by the small set at a moderate price and enough midgets are moving to keep things lively. That is much to be preferred to a standstill. Perhaps the midget set will work out something like pee-wee golf. Most real golfers get their fun out of the long drive. They like to sock the ball and see it soar over the fairway. You can't get just that kind of sport on a pee-wee golf lot. I have an idea that the average pee-wee player soon acquires an ambition to get out on a real course and try for distance.

"Well, it is just as natural for the owner of a small set to be ambitious to own a larger one as soon as he thinks he can afford to. We might as well make the most of the midget. It's here and the activity it makes possible helps the dealer keep his name prominent. Radio would be pretty dead without it. That's something. Yes, the sale of midgets may have a tendency to do away with expensive servicing. I hope so. When we sell a midget we have to limit the service that goes with it.

"Most Trade-ins Are for Cabinet Models"

"No dealer can tell what he could have done with the larger

\$25

Is Now Offered for

The Best Title

and \$1 each

for ten other interesting titles for the cover of this issue of

RADIO SALES AND SERVICE

1. Contest closes January 1.
2. Contestant must be connected with a radio dealer or service organization.
3. Print plainly your name, address, firm with which connected and position occupied.
4. More than one title may be submitted.
5. In case of a tie each winning contestant will receive \$15.
6. Ten exceptionally interesting titles, following the winner, will be awarded \$1 each.
7. The winner for November will be announced in RADIO SALES AND SERVICE for January.

sets had not the midget appeared on the scene, although I do know that few of the customers who trade in their old battery sets are buying midgets even now; most of them are replacing their obsolete sets with cabinet jobs. Most of our midget customers are roomers or occupants of small apartments. We have to watch our credits."

Private Show Profitable

(Continued from page 33)

color scheme of the rest of the room. Wheeler's color was to be found in his crepe paper. No two rooms were alike as to color and arrangement of paper. One part was decorated with almost every color of the rainbow, while another had but three colors displayed. But because Wheeler used so many colors doesn't mean that the rooms were one big splash. Far from it. As in the case of the many colored room, he had the dark colors together and gradually worked over into the lighter ones, as in a rainbow. Wheeler also used crepe paper streamers running from the molding, about two-thirds up on the walls, to a central point on the ceiling. Briefly, Wheeler employed color in his decorations to advantage and not the reverse.

Prices Shown on All Models

Along the molding, mentioned in the above paragraph, there were several neat signs telling all there was to know about the radios they stood for. And on the floor beside each radio there were other signs telling the price of the set, with and without tubes. This seems to be the proper way of doing things, for often dealers advertise sets giving only the price without tubes. And it isn't every man who knows the price of tubes and can figure out what a set would cost after the tubes were added. But anybody attending the Wheeler show could tell at a glance just what a set cost, without bothering to ask a lot of questions.

Distributor Salesmen Help

But, of course, Wheeler didn't rely on signs to display radios. He had men sent out from his distributors to demonstrate the sets, but they were instructed not to use any "high pressure" stuff on the public. They tried, of course, to sell a set whenever the opportunity presented itself, but they didn't make themselves bothersome in doing it. And by using salesmen from the distributor, Wheeler saved considerable in wages and at the same time helped the company in the matter of sales. Wheeler co-operates with his distributor in more ways than one.

The exterior of the Wheeler store was changed greatly for the week of the show. Instead of the well lighted and decorated windows, there was just one big white sheet with the words "Radio Show" written in large red letters. During the show Wheeler reversed the order of things by decorating the display windows from the inside instead of the outside. He also had a long canopy extending to the curb from his door, such as is often seen at weddings. All this secrecy was planned to draw the public inside, instead of having them looking in through the windows and door.

Newspapers Used to Announce Show

A week or so before the opening of his radio show Wheeler ran his own ad in the Kenmore paper, a weekly, announcing the show, and just a few days before he opened his door he placed six large ads in the same publication. One of these ads, his own, was

more or less of a story telling the reader what he could expect to find at the show and giving all the facts necessary for those planning to attend. This ad covered almost a third of a page—regular seven-column page. Then there were three ads supplied by the distributors, each four columns wide and about one foot deep. There were also two other ads with cuts from the distributor, one three columns wide and about sixteen inches deep, and the other five columns by sixteen inches. In one issue Wheeler occupied with his ads nearly three pages of an eight-page newspaper.

Distributors Share Cost

Mr. Wheeler figures it cost him about \$400.00 to stage the show. Approximately half of this was met by the distributors. Of this sum \$300.00 was spent for advertising and publicity, and the rest for decorations, lights, and other necessary incidentals.

Mr. Wheeler feels that the show was attended so well, because the public wants to see the latest in radio receivers and the newest improvements for 1931 without incurring any obligations. First, the show was free; second, the public wasn't pestered by over-anxious salesman; and third, free estimates were given on sets for trade.

Service Problems

(Continued from page 44)

across the R. F. Filament By-Pass Condenser—that is, from the ground to one side of the filament—and the oscillation ceased immediately. It did not matter which side of the filament to ground this was on.

This is the most unusual case I

have ever had because the original By-Pass condenser was perfect in every way.

A. N. Hubner, Cheviot, Ohio.

Faulty Joint Causes Trouble

When placed on the bench and voltages were tested everything was wrong, cathode and grid voltages were high and plate voltages low on some tubes and high on one or two. All of the by-pass and filter condensers tested O.K., although the voltages indicated shorted or leaky condensers in some circuits. Various trials of remedies did not seem to affect the operation, although the set would work weakly. Tubes were tested and renewed, but still with not enough improvement to pass our requirements. Finally the oscillator coil and couplings assembly was torn out. Under the coil a joint where the filament lead from the power pack joined to the set was found which was not solid. Solder had been dropped over the wire, but it was not solid and the wire could be moved about. This was cleaned and a new solder joint was made. The set then operated satisfactorily.

G. W. Rapson, New Castle, Pa.

Weak Tube Causes Trouble

A Sparton 89 using the Cardon 484 tubes was one of the strangest experiences in servicing we have ever hit upon. When a light in the house was turned off the set would practically stop and would remain in this weak reception condition until retuned or a light was turned on. Tubes were tested and all were nearly normal, except one which was very low. When the set had faded and was retuned it would whistle as a station was tuned in. Normally the set did not oscillate. We found that the tube which tested low would go into oscillation when the light was turned on, even though the change in voltage was too slight to be noticed on a good A. C. or D. C. voltmeter or milliammeter. A new tube placed in the socket where the low one had been remedied the trouble completely.

G. W. Rapson, New Castle, Pa.

NEW PRODUCTS

(Continued from page 41)

Improved Wellston Gold Test Aerial

The Wellston Radio Corporation of St. Louis announces a new improved model of the Wellston Gold Test Aerial. This aerial, like its predecessor,



is of the filtered type. The compact aerial contains the equivalent of 54 feet of aerial wire 55 feet high in the air, it is claimed, and is absolutely unidirectional and noncorrosive. The manufacturers guarantee that this aerial will not wear out. It can be mounted inside the radio cabinet. —November Radio Sales and Service.

Coin Controlled Automatic Phonograph

The Decca-Disc Company of Waynesboro, Pa., has added a sort of a roulette wheel device to their line of coin-controlled electric phonographs. On the front of the phonograph cabinet are ten small lights. These flash on and off, the light traveling from one position to another while the machine is playing. When the record is finished, the light remains at the position at which it will rest advertises the instrument and helps to keep the nickles rolling in. —November Radio Sales and Service.

Canvas Carrying Cases for Midget Sets

Webb Slingabouts are now available for use in carrying the popular midget



sets without any danger of damage from rain or collisions. The Charles

J. Webb and Company of Philadelphia, Pa., believe their handy jackets, well padded and covered with waterproof canvas, will be equally popular for use on the small sets as larger sizes for console cabinets have been. —November Radio Sales and Service.

SHORT WAVE SECTION

(Continued from page 27)

Aero Overseas Four

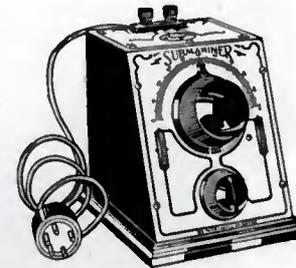
The Aero Products, Inc., of 1611 East Ravenswood Ave., Chicago, Ill., builds a four tube receiver of exceptional efficiency. A high degree of sensitivity and selectivity is main-



tained over both the short wave and the broadcast band. Four tubes are used in the D.C. model, and five tubes are used in the A.C. model. Tuning is very simple and there is a complete absence of any critical adjustments. —November Radio Sales and Service.

Adapter for Superheterodyne

The J-M-P Manufacturing Company, 3325 Fond du Lac Avenue, Milwaukee, manufactures a short wave adapter



for use with superheterodyne receivers. They also manufacture this convenient adapter specially designed for every type of receiver. —November Radio Sales and Service.

* * *

Out of every ten razors in the state of Georgia, only six are used for shaving. The other four are used for social purposes.

Sales Stimulants

(Continued from page 21)

Before a charge sale is accepted at Huston's, however, the account is approved by the furniture dealer over the telephone.

Enclosed in the pay envelope of every clerk in the store of a mid-western radio dealer is generally found a number of printed cards. The cards carry the picture of a radio, as well as a brief line of copy:

"The money spent for these goods was earned at Slack's on Main Street. May we not see some of it again?"

For any purchase they may make anywhere in town, employees are urged to tender one of these cards.



How to capture public fancy in radio tube merchandising through the aid of the world's smallest car was demonstrated recently on one of New York's busiest thoroughfares by a progressive Cunningham radio tube dealer. Here he is shown explaining the whys and wherefores of tube action, while hundreds of passers-by stop to witness the demonstration.—From Cunningham News.

A Springfield, Mass., store last year used Christmas copy that people overlooked no more than they overlook a pay envelope.

A CHRISTMAS WEDDING

Mr. and Mrs. S. Claus announce the marriage of their daughter Miss Mary Christmas to Mr. I. Deal Gift at the store of George H. Hanson, 44 State Street, Springfield, Mass.

The Reverend Good Judgment officiated at the Ceremony. Miss Vera High Quality, as bridesmaid, attended the bride, and Mr. A. Low Price attended the groom.

At home December 1 to 24 at the establishment of George H. Hanson, 44 State Street, Springfield, Mass.

STOP

that
interference

with

Belden Shielded Lead-in and Ground Wire



... and
sell them
Good Aerials
... and make
an extra profit!



By selling a Belden Aerial Kit with every set you provide for your receiver the best aerial equipment possible. By "throwing in" cheap aerial material you not only lose your fair profit, but you permanently handicap the set.

Belden Aerial Kits have full size 7 x 22 wire, Belden Bakelite Lightning Arresters with \$100 guarantee, Ground Wire with Easy-Strip Rubber Insulation, and other accessories essential to a high grade aerial installation.

LEAD-IN and ground wires pick up a lot of interference!

Static and noise due to elevators, motors and other electrical equipment make it difficult to get satisfactory radio reception in hotels, apartment buildings and other metropolitan structures. Power lines also frequently interfere with radio reception.

Belden Shielded Lead-in and Ground Wire improves radio reception by eliminating interference. The copper shielding stops the interference. Lead-ins and ground wires of any length can be used, thus permitting the aerial to be placed away from sources of interference.

Thousands of dealers and service men are solving their troublesome interference problems with Belden Shielded Lead-in and Ground Wire. It assures improved reception for modern receivers. Write for descriptive bulletin.

BELDEN MANUFACTURING COMPANY
4677 W. Van Buren Street Chicago, Illinois

Belden

Aerial Kits and Accessories

Belden Manufacturing Company, 4677 W. Van Buren St., Chicago, U. S. A.

Please send new bulletin about Belden Shielded Lead-in Wire.

Name _____

Address _____

Mail Coupon for New Belden Shielded Wire Bulletin

LET YOUR SERVICE INSTRUMENTS PAY FOR THEMSELVES



Pattern 210 Tube Checker
Gives direct reading on all tubes from UX150
to UX250. List Price \$65.00.
Dealer Price \$48.75



Pattern 199 Set Analyzer
Makes every essential test. List Price \$97.50.
Dealer Price \$73.12.



Pattern 409 Set Analyzer
Gives plate current, and plate, filament, and
grid voltages. List Price \$122.50.
Dealer Price \$91.88.

Investigate the



Easy Payment Plan

THE well-equipped radio serviceman gets the business!

Don't delay equipping yourself for efficient and profitable radio service until you can pay cash for needed testing instruments. Take advantage of the Jewell Easy Payment Plan now extended to servicemen who are alive to the profit-making possibilities of Jewell Service Instruments.

Make a good impression upon your radio clients by coming to

their homes with many snappy looking Jewell Instruments.

Convince your customers that you know your business. Jewell Radio Service Instruments are a badge of intelligent service. They are made in several forms to meet your needs, and are provided with data books containing over 200 set circuits

with complete instrument readings for every set. This data service takes the grief out of your radio service.

TO RADIO JOBBERS:

All sales of Jewell Radio Instruments are handled through recognized jobbers. Write for complete Jewell Easy Payment Plan which assures immediate return to jobber without cash investment or endorsement of notes. Get the facts, today!

30 YEARS MAKING GOOD INSTRUMENTS JEWELL SET ANALYZERS

Mail this coupon for complete information regarding the Jewell Easy Payment Plan. Do it now!

Act Now
for Bigger
Service
Profits

Jewell Electrical Instrument Company,
1642-P Walnut Street, Chicago, Ill.
Please send information on Jewell
Easy Payment Plan for instruments
checked below:

- Pattern 210 Tube Checker
 Pattern 199 Set Analyzer
 Pattern 409 Set Analyzer

Name:

Address: