

Published every Saturday by IVERSON C. WELLS, 2721 South Michigan Avenue, Chicago, Ill., Phone Calumet 8810. On all Newsstands at 5 cents per copy. \$2.00 the year, postpaid. In Canada, \$3. In Foreign Countries, \$3.50. Entered as second-class matter October 4, 1924, at the Post Office at Chicago, Ill., under the act of March 3, 1879.

# Everybody's 5¢ RADIO

IVERSON C. WELLS, Editor

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JAMES GRAYAR WELLS  
Technical Advisor

Vol. 3—No. 13

CHICAGO, SATURDAY, DECEMBER 12, 1925

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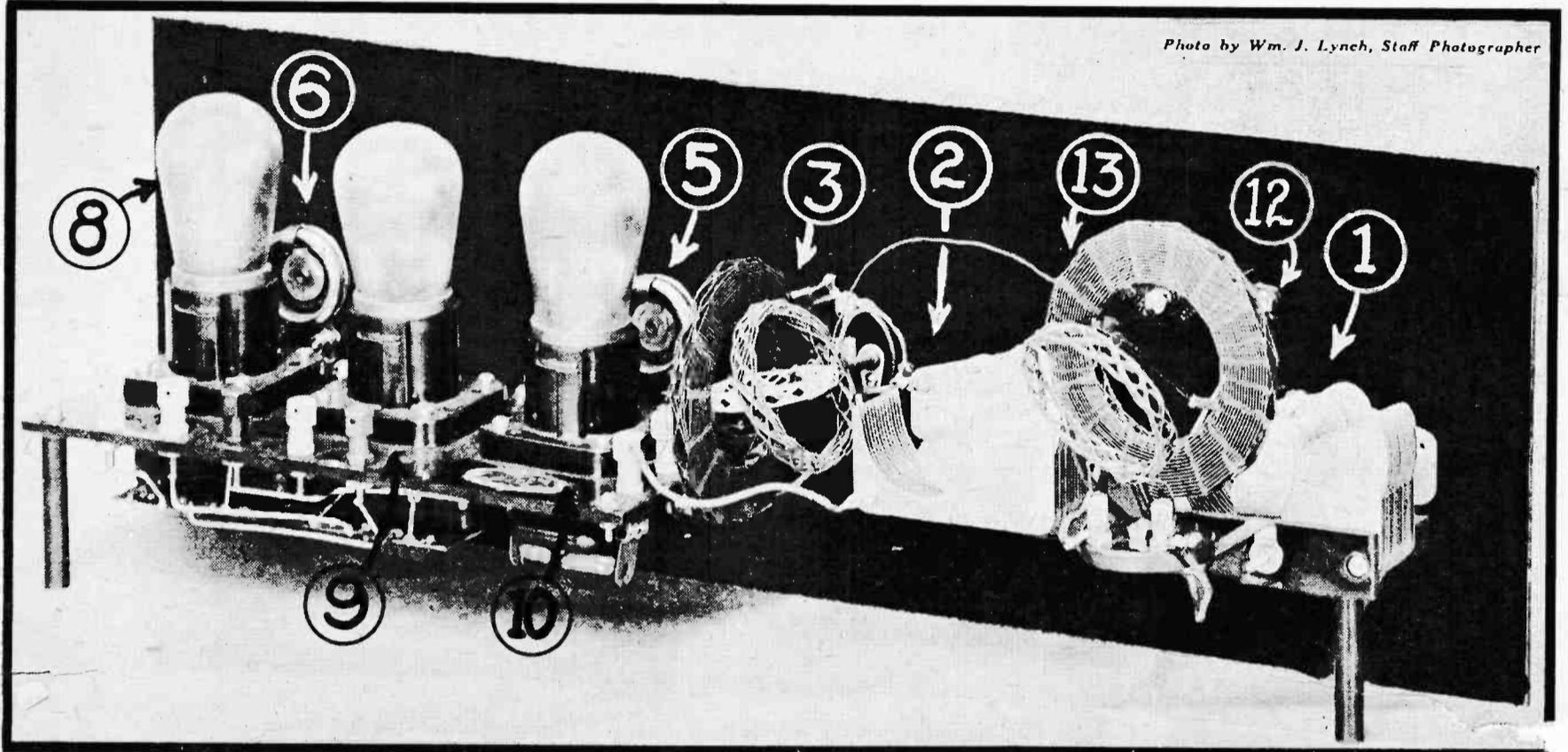


Photo by Wm. J. Lynch, Staff Photographer

Laboratory Model No. 4 of the new Jim Wells Link Circuit Three-Tube Receiver. It uses the Buell Tuner and Antenna Coupler and Silver-Marshall Variable Condensers. The Welty Detector and Amplifier Unit saves wiring and cuts cost of construction. This model won praise from a number of visitors the past week who heard it operate. Their names and addresses are given in the text.

## Call Jim Wells Link Receiver a Marvel

### Hundreds Hear Set Demonstrated in Laboratory Test

By IVERSON C. WELLS

**H**UNDREDS of radiophans visited EVERYBODY'S RADIO Weekly demonstration room the past week by ticket or admission. They came to see and hear the model receivers of the Jim Wells Link Circuit operate. They wanted absolute proof of the optimistic statements made in these pages the past three weeks—they got it.

One group of visitors Friday evening, December 4, was so enthused over the entertainment a vote was taken and the members made statements as their names were called. Here is what each one said:

J. F. Lees, 3310 Carroll Avenue, Chicago: "That was the best radio reception I ever heard from any receiving set and I've heard them all. It is everything that has been claimed for it and more. The selectivity is all that could be wished for by anyone. And the volume is greater and the tone is better than I have ever heard from any receiver. I certainly am tickled that I came here tonight."

F. R. Fross, Maywood, Ill.: "That is the clearest reception I ever heard from any radio receiving set. Every station tuned in, local or distance, was so clear, so bell-like, I think it is marvelous. It certainly can't be beat for selectivity. I heard a \$400 receiver recently and either one of those model sets I have just heard certainly beats it to death on every point."

D. F. Bland, 424 South Taylor Street, Oak Park, Ill.: "It's the best reception I ever heard. I heard a seven-tube Music Master the other evening and a \$165 Radiola 25 a few nights ago and either one of these three-tube models are so far ahead of those sets there is no comparison. They equal them in volume, in fact I believe they have even more and certainly the tone is superior and the selectivity far greater. I never heard a three-tube set bring in stations like that."

L. H. Halt, 112 South Maple Avenue, Oak Park, Ill.: "What I have heard here tonight is far beyond my expectation. It certainly has been a wonderful demonstration of radio. I never heard such selectivity and the tone of each one of those receivers is just simply wonderful. I have never heard a three- four or five-tube set do what these sets have done here tonight, and what I have heard here is far better than what seven out of ten seven-tube superheterodynes can do in the way of distance, volume and selectivity. The tone, of course, can't be compared."

Such statements like those should convince you

### What Others Think of the New Jim Wells Link Set For Selectivity

These are only a few of the many that have listened to the programs coming through the new Link circuit in a set and made statements as follows:

J. F. Lees, 3510 Carroll Avenue, Chicago: "It was the best radio reception I have ever heard from any receiving set and I have heard them all."

F. R. Fross, Maywood, Ill.: "That is the clearest reception I have ever heard from any radio receiving set. I think it marvelous. It certainly can't be beat for selectivity."

D. F. Bland, 424 South Taylor Street, Oak Park, Illinois: "It is the best reception I ever heard."

L. H. Halt, 112 South Maple Avenue, Oak Park Illinois: "What I have heard tonight is far beyond my expectations. I have never heard such selectivity and the tone of those receivers is simply wonderful."

doubting Thomases and start you building a Jim Wells Link Circuit receiver at once.

When the conditions under which the sets operated on the night in question is understood, the value of the statements made by these witnesses can be appreciated. There was a steady rain all evening and the atmosphere certainly was not favorable for good reception; also a 176-foot aerial was used, which is far too broad for the most selective of other receiving sets to use. And yet we pushed right through all the Chicago stations and tuned in at will on either of the four model sets which we were operating any of the standard stations throughout the country.

And, mind you, all this reception was on a loud-

### Witnesses Declare Results Surpass Multi-Tubers

speaker of the non-power type, we using alternately a Welty, Burns and a Temple horn.

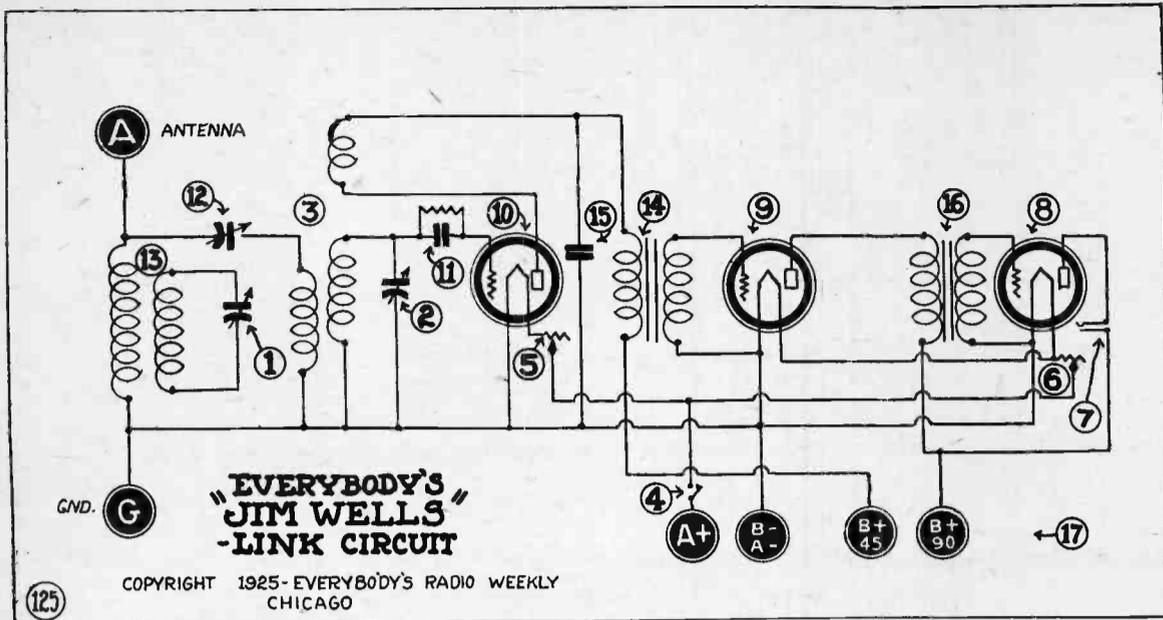
As I sit before my typewriter writing this story of achievement on Sunday evening, December 5, with a nasty half-snow, half-rain storm beating against the window, and while WQJ, WHT and KYW of the local stations are pounding the air, with WBAP of Fort Worth, Tex., working like a local in volume, I am listening to KFI of Los Angeles, the volume being sufficient to be heard throughout an ordinary home apartment and the tone as clear as a bell.

I have been listening to KFI for at least three-quarters of an hour, occasionally turning one of the dials just HALF a degree to listen to the very good program that is coming from Fort Worth, and occasionally listening in to WHB of Kansas City, which is just ONE degree on the dial away from WGN of Chicago, and comes in with just the same volume and certainly clearer in tone quality. Also, I have been listening in to a special test program from WJZ of New York City, just one and one-half points on the dial below KFI.

It is no problem any evening for me to take any one of the four model receivers we have constructed to date and, while either WGN or WEBH of the locals are working hard, bring in WGY, Schenectady, N. Y., without the slightest interference. It is no uncommon feat to separate WGR of Buffalo and WSMB of New Orleans and bring either one in without interference from the other, although both are on the SAME wavelength, or are supposed to be.

On the Friday evening referred to above we tuned in on any of the model sets we happened to have at work at the time, half a dozen outside stations between WLIB of Chicago and WLS of Chicago. Earlier in the evening, when more of these stations are radiocasting, we easily tuned in the following eight stations between those two locals: WJAR, Providence, R. I.; KDKA, Pittsburgh, Pa.; WHAG, Richmond Hill, N. Y.; WGR, Buffalo; WSMB, New Orleans; KOA, Denver; WSAI, Cin-

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If you prefer to follow the electrical wiring plan, such as a schematic drawing gives, here it is for the Jim Wells Link Circuit Three-Tube Receiver. All the index figures used correspond with those used in the other illustrations as well as in the text

cinnati, and WBZ, Springfield, Mass. We have tuned in a total of twelve stations in the same space, including WLIB and WLS in the count.

How many of you superhet owners ever tuned in half that number of the above stations? How many of you five-tube set fellows ever got more than two of those stations between WLIB and WLS, if any?

As I wrote the above paragraph (1:03 a. m.), KFI suddenly came in as strong as KDKA usually comes in at our station, which was so amazing to me that I could hardly believe my ears. In a minute or so it signed off for the night. I did not take the time to turn off the current from my set immediately and soon had an explanation, as the howl of a single-circuit blooper, which is a mighty close neighbor of ours, suddenly pierced my ears. This fellow evidently had been trying all evening to get KFI and, of course, got his set oscillating and cut down my volume considerably. Then, for a minute he got off the wavelength and that let KFI come in on full power. It was amusing to hear this fellow try to pick up KFI again after it had signed off. He fished around until he struck a harmonic whistle of WGES, which was just about one point on the dial above KFI. He held on to that, undoubtedly, believing that it was KFI. WGES ended his misery just as he

on the harmonic by signing off for the morning. I am beginning to get in some reports from readers who have built the Jim Wells Link Circuit three-tube receiver. I am going to save most of these for a subsequent issue so we can make a good presentation. However, one or two cases can be mentioned to spur on some of you sleepers.

J. C. Snow, 1034 Lamon Avenue, Chicago, is one of the first to give us a report. He had a three-circuit regenerative receiver which was not giving him what he required in the way of distance, selectivity and tone. Here is the first night's tuning as he reports it to us:

WOC, Davenport; WEA, New York City; WMC, Memphis; WSB, Kansas City; KOIL, Council Bluffs, Iowa; KFNF, Shenandoah, Iowa; WBAP, Fort Worth, Texas; KFI, Los Angeles; CKCD, Vancouver, British Columbia; WSAI, Cincinnati; WLW, Cincinnati; WTAM, Cleveland; KDKA, Pittsburgh; WGR, Buffalo, and KCAL, Cedar Rapids, Iowa.

Those stations were tuned in on Friday evening, December 4, while all the locals were on in full blast. You must admit it was a pretty respectable showing for a first night's job, with not only a new receiving set, but also an entirely new circuit. You'll note

that he has KFI and CKCD in his list. Vancouver is about 1,800 miles distance, and is the farthest west station in America.

Mr. Snow, however, had a kick coming. Here is what he said: "It's the most wonderfully selective outfit I ever heard and certainly brings in the distance, but I do not get the volume I expected. I do not even get this on the local stations, and so I am bringing the set out to you to inspect."

Our Service Department discovered that his last stage audio transformer had been "shot," and instead of adding its share to the volume of the set, it was really acting as a resistance and was not permitting the first stage transformer to deliver what it was capable of. That all the stations came in clear and loud enough to hear on a loudspeaker, and on just one inefficient stage of audio, with the single exception of KFI, is remarkable, don't you think?

Mr. Snow used the following parts from his old receiver, which was a B-T hookup for a three-circuit regenerative, with one stage of radio frequency: B-T tuner, B-T radio-frequency coil with variable primary, B-T variable condenser to match the coils, Howard rheostats and Paragon audio transformers. He had to buy only the small X-L variocoupler to make his Jim Wells link receiver, and, of course, discarded his fourth socket and tube, as his new set requires only three tubes.

W. E. McCarthy, No. 3 West Ohio Street, Chicago, reports in that he had a five-tube neodyne that cost him \$200. It was not selective enough to tune through the Chicago stations. He built up one of the Jim Wells link units, as is described on page 7 of this week's issue, following the hookup of the November 28 issue, which used the Gen-Ral coils. Mr. McCarthy gave us his business telephone number, Delaware 6177, so that anyone who doubts this narrative will be able to verify it by calling him.

Mr. McCarthy says that before he attached the Jim Wells link unit to his receiver he was absolutely unable to tune in any distance stations, and that some of the locals spread "all over the dial," and interfered with other local stations. "I have to actually HUNT for the local stations now just as I do with the distant ones. Once I get them logged, however, it is plain sailing.

I want to remind you five-tube fellows that the action of the Jim Wells link unit on the tuned radio-frequency sets is entirely different than that of the regenerative one- or three-tube receivers. In the

regenerative sets the Jim Wells link circuit acts as a TUNING circuit, just as does a stage of tuned radio frequency. It has none of the characteristics of a wave trap, as many people seem to think it has, before they build and operate one of the circuits.

However, in the tuned radio-frequency receivers the unit acts very much like a wave trap when all the dials are in EXACT resonance, except the action is reversed and much more efficient. If this resonance point is not struck, then it does have a tuning characteristic. I discovered this fact the first time I attached a unit to a five-tuber. We haven't any model sets of our own that tune broadly, but after waiting patiently a few days one of our readers brought one out to "Everybody's Service Department" for correction. Before it was sharpened up I attached the Jim Wells link unit, which was published in the November 21 issue. KYW is the worst interference we have at our Laboratory, and on broad-tuning sets runs down more than half way on the dial. It came in at 83 on each of the four dials, with a hair-tuning click just as any distance station does. When the four dials had been adjusted at resonance the volume was terrific. I left the link unit dial untouched and tried to tune down the scale on the three dials of the set. I brought in several high wavelength stations without interference from any source. Then I discovered that I had not touched the link circuit dial and hastened back up the scale to 83 on each of the three dials of the set. To my surprise, KYW was not there. It had been trapped completely out. I found it necessary to throw the link unit dial off 83 and then come back again before I could bring its music or signal in.

It was necessary, therefore, to tune out an interfering station, to first tune all four dials to resonance on that station's signal and then forget the link unit dial and tune with the other three dials for whatever station that is desired. I would like to hear some reports from others who had experiences with five-tube receivers. We are not fortunate enough to have any broad-tuning five-tubers and so are handicapped in our experience. Perhaps there are some of you who have a five-tuber that won't push through that will bring it out to us some evening (be sure to phone first for appointment) and let us "play with it awhile." Such a receiver probably will be a neodyne or some other hookup other than "Everybody's Five-Tube Loss-Less," as that hookup is very selective when properly built and will not need any help.

This week we are presenting Laboratory Model No. 4 of the Type A receivers, and it is worthy of your full attention, as it has some exceptionally clever features about it. For instance, we use the Welty detector amplifier unit in building the receiver. This saves the work and time of hooking up the detector and audio-amplification end of the receiver. All the parts—the tubes, transformers, rheostats and battery terminals—are ready-wired. As you will see in the pictures and pictorials, only four short wires are to be attached to the Welty unit from the Buell tuner and the Silver-Marshall condenser. One should build a set like this in the early part of the evening and tune in on some out-of-town stations before they sign off for the day. We used the Buell tuner and coupler because they saved space. If you do not object to the length of the receiver you can use any of the other coils.

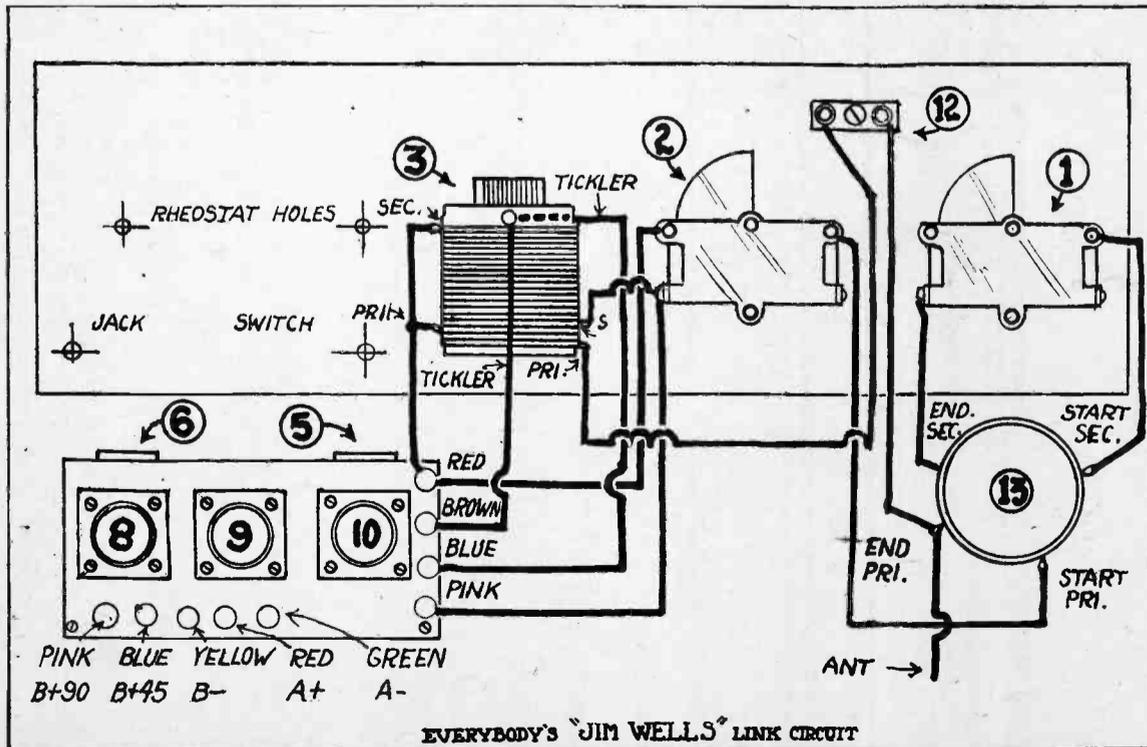
This was the receiver that was used largely in the demonstration referred to on Friday evening, December 4, although Model A, using Barrett & Paden condensers, Buell coils and Karas audio transformers, came in for its share of attention, as did the Gen-Ral coils and the Aero coil hookups, Models B and C, respectively. The receiver I used this evening as I wrote this story of its performance was Model No. 2, published November 28, and using the Gen-Ral coils and Meloformer audio transformers.

Complete specifications for all these model receivers are given below, so that you who want to refer to them will find a ready reference in them.

I would like to add at this point just one caution: If you already have some parts from an old and inefficient receiver, it is all right to experiment with them, but if you are buying NEW parts, I suggest that you follow pretty closely our bill of particulars, as we have tested all these parts and know they are good. You won't make a mistake if you observe this advice. We are seeking other efficient parts and will have some reports to make later on these. In the meantime stick to the four sets of specifications given you. There is ample variety in these four hookups to suit anyone.

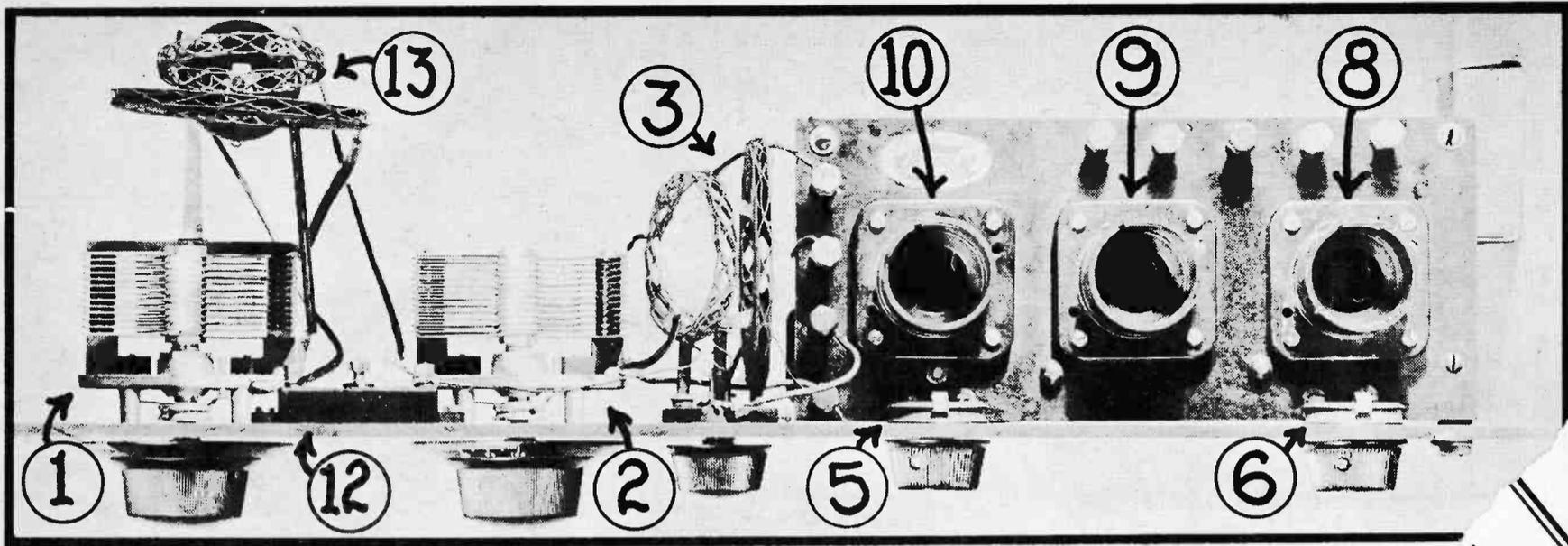
Here is something else I want to impress upon you: While the aerial we have been using lately is 176 feet in length and approximately sixty-five feet in height above all grounded objects, and it helps, of course, in bringing in distance and particularly volume, I am using it for a different purpose. The aerial with any other receiver, even with our "Five-Tube Loss-Less," tunes too broadly for nearby locals, but is very sharp with the Jim Wells Link Receiver. We used the condensers without vernier dials and succeeded in getting away with it, but we would advise against anyone trying the same stunt without verniers, unless you are an expert at tuning. Our standard 135-foot aerial must be tuned with a vernier dial condenser, although by careful work we have worked fairly successful without vernier dials. On our 100-foot aerial the plain dial is out of the question.

As to the length of aerial to use, the 176-foot one we have described is, of course, ideal for this receiver. The 135-foot one is the next best bet. When you get below 100 feet of aerial you are losing volume and distance with any regenerative hookup. Of course, if you can't have the best, take what is



If you use the Welty Detector-Amplifier Unit in building your Jim Wells Link Circuit Three-Tube this pictorial diagram shows you how to hook it up. The Welty Unit makes the wiring job quite simple as the detector and audio circuits are already wired for you

"It Isn't Everybody That Can Advertise in EVERYBODY'S."



If you stood over this week's model of the Jim Wells Link Circuit Three-Tube Receiver and looked down into its internal construction, this is the way it would appear to you. The det end of this set is made with the Welty Unit. This unit comes already wired for you. Constructing the set is only a matter of an evening's work

the best you can have; it is your hard luck if that is not "good."  
Here are the list of parts used in the four model receivers so far published, Model No. 4 being the first given:

**MODEL NO. 4—TYPE A SET**

Essentials	
Fig. 1—Silver-Marshall SLF .00035 variable condenser	\$ 5.75
Fig. 2—Silver-Marshall SLF .00035 variable condenser	5.75
Fig. 3—Buell three-circuit tuner, new style	4.85
Fig. 4—Filament switch	
Fig. 5—Rheostat	
Fig. 6—Rheostat	
Fig. 7—Jack	
Fig. 8—Audio frequency socket	
Fig. 9—Audio frequency socket	
Fig. 10—Detector socket	
Fig. 11—Grid leak and condenser	
Fig. 12—X-L Vario Denser, Model "G"	1.50
Fig. 13—Buell antenna coupler	3.75
Fig. 14—Audio frequency transformer	
Fig. 15—Fixed condenser	
Fig. 16—Audio frequency transformer	

\*These parts are incorporated in the Welty Detector-Amplifier units \$ 19.50  
Celeron panel, 21"x7" 3.45

Total for essentials \$ 44.55

Accessories	
Three "Continental" or QRS "Red Top" tubes at \$2.50 each	7.50
One 7x21 Balkwill & Patch cabinet	5.50
One "Fireday" Storage "A" battery	18.00
One 96-volt "Bang" Storage "B" battery	45.00
	\$ 76.00

Total for complete outfit \$ 120.55

**MODEL NO. 3—TYPE A SET**

The complete list of parts used in Model No. 3, published in December 5, 1925, issue, follows:

Essentials	
Fig. 1—Karas .00037 Orthometric variable condenser	\$ 7.00
Fig. 2—Karas .00037 Orthometric variable condenser	7.00
Fig. 3—Aero coil three-circuit tuner	8.00
Fig. 4—Walbert filament lock switch	.50
Fig. 5—Carter improved 25-ohm rheostat	1.00
Fig. 6—Carter improved 6-ohm rheostat	1.00
Fig. 7—Yaxley open-circuit jack	.50
Fig. 8—Buell socket	.75
Fig. 9—Buell socket	.75
Fig. 10—Buell socket	.75
Fig. 11—Muter 2-meg. grid leak and Muter .00025 condenser	.85
Fig. 12—X-L Vario Denser, model "G"	1.50
Fig. 13—Aero coil antenna coupler	3.00
Fig. 14—Karas Harmonik, all-ratio audio frequency transformer	7.00
Fig. 15—Muter .002 fixed condenser	.40
Fig. 16—Karas all-ratio audio frequency transformer	7.00
Fig. 17—Jones Multiplug, complete	4.50
Panel 21"x7" Starrett drilled and engraved model "100C" walnut finish	3.95
Sub panel 20"x7" Celeron	3.45
X-L antenna push binding post	.15
Wire, hardware, etc.	.50

Total for essentials \$ 59.55

Accessories	
Three "G. R. S. Red Top" tubes at \$2.50	\$ 7.50
One Balkwill & Patch 7"x21" cabinet	5.50
One 100-ampere, 6-volt "Bang" Storage "A" battery	24.00
One set 96 volts "Bang" Storage "B" battery	45.00
	\$ 82.00

Total for complete equipment \$ 141.55

**MODEL NO. 2—TYPE A SET**

The apparatus used in Model No. 2, published in November 28, 1925, issue, is included in the following bill of specifications:

Essentials	
Fig. 1—Crest convertible variable condenser	\$ 5.00
Fig. 2—Crest convertible variable condenser	5.00
Fig. 3—Gen-Ral three-circuit tuner	5.50
Fig. 4—Yaxley Midget battery switch	.50
Fig. 5—Yaxley air-cooled, 25-ohm rheostat with dial	1.35
Fig. 6—Yaxley air-cooled, 6-ohm rheostat with dial	1.35
Fig. 7—Yaxley open-circuit jack	.50
Fig. 8—Howard socket	1.25

Fig. 9—Howard socket	1.25
Fig. 10—Howard socket	1.25
Fig. 11—Muter .00025 fixed condenser with mount and Muter 2-meg. grid leak	.85
Fig. 12—X-L Vario Denser (Model "G" .001 mfd.)	1.50
Fig. 13—Gen-Ral antenna coupler	3.50
Fig. 14—Multistage Melformer	4.00
Fig. 15—Muter .002 fixed condenser	.40
Fig. 16—Multistage Melformer	4.00
Fig. 17—Jones Multiplug (completed)	4.50
Starrett drilled and engraved panel model, mahogany finish (Model 100C), 21"x7"	3.95
Baseboard 20"x9", hardware, wire, etc.	.50

Total for essentials \$ 46.15

Accessories	
Three "QRS Red Top" 201A tubes at \$2.50	7.50
One Kuersten cabinet 21x7x9	7.00
One Burns concert loud speaker	22.50
One 100-ampere "Fireday" storage "A" battery	18.00
Two 45-volt vertical large size Stewart "B" batteries at \$4.	8.00

Total for accessories \$ 63.00

Total for complete outfit \$ 109.15

**MODEL NO. 1—TYPE A SET**

Here is the list of parts used in Model A, published in November 21, 1925, issue:

Essentials	
Fig. 1—Barrett & Paden .00025 variable condenser	\$ 6.00
Fig. 2—Barrett & Paden .00025 variable condenser	6.00
Fig. 3—Buell three-circuit tuner, new style	4.85
Fig. 4—Walbert filament switch	.50
Fig. 5—Howard 25-ohm rheostat with dial	1.10
Fig. 6—Howard 6-ohm rheostat with dial	1.10
Fig. 7—Yaxley open-circuit jack No. 1	.50
Fig. 8—Howard socket	1.25
Fig. 9—Howard socket	1.25
Fig. 10—Howard socket	1.25
Fig. 11—Muter .00025 fixed condenser with clips and Durham 2-meg. grid-leak	1.10
Fig. 12—X-L Vario Denser, Model "G"	1.50

Fig. 13—Buell antenna coupler	
Fig. 14—Karas audio frequency transformer, stage	
Fig. 15—Muter .002 fixed condenser	.40
Fig. 16—Karas audio frequency transformer, all stage	7.00
Fig. 17—Jones Multiplug, complete	4.50
Starrett drill and engraved panel, model 100C	3.95
Baseboard, 20"x9", wire, hardwood, etc.	.50

Total for essentials \$ 53.60

Accessories	
Newark cabinet 18" to 26" adjustable	13.75
Three Continental tubes	6.00
Temple loud speaker	21.00
Fire dry 6-volt "A" battery (100-ampere)	21.00
Two 45-volt Stewart "B" batteries, vertical heavy duty	8.00

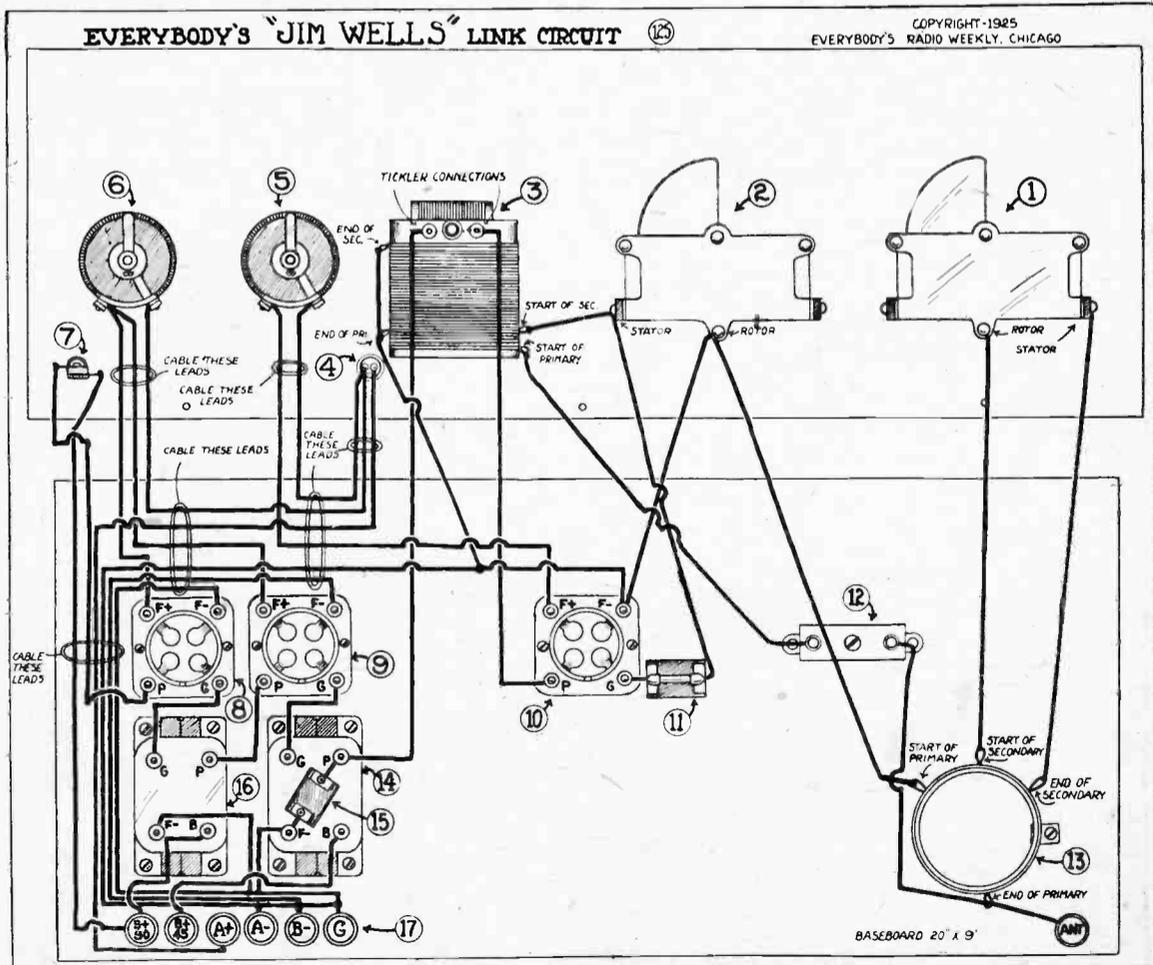
Total accessories \$ 69.75

Total for complete outfit \$ 123.25

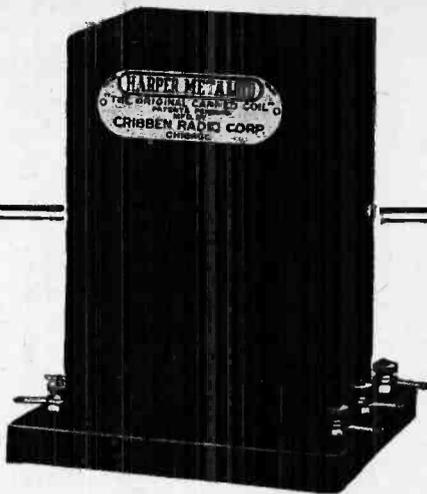
The panel for Model No. 4 measures 21" by 7". None of our standard panels will fit this layout of parts due to the spacing of the Welty detector-amplifier unit. If you intend to use parts other than specified the panel will have to be much longer. By looking at the photograph you will notice the closeness of the parts mounted on the panel. The Buell tuner is one of the narrowest made, so if another tuner is substituted much more room will be required between the variable condenser (Fig. 2) and the Welty unit.

The measurements of this panel are as follows: Two and one-half inches from the left edge, looking at the front, is the center of the hole for variable condenser (Fig. 1). Four and three-quarters inches to the right of the center of this hole is the center of the hole for variable condenser (Fig. 2). Two and three-quarter inches to the right of the center of this hole is the center of the hole for the three-circuit tuner (Fig. 3). The centers of these three holes are all three and one-half inches from the top edge of the baseboard. The center of the hole

(Continued on page 8)



For those of you who will want to use other parts than those specified this week the above pictorial, showing standard apparatus, will give you all the constructional aid you desire. The battery leads that are to be cabled are shown looped in the sketch. You can place an old forty-three plate (.001 mfd.) variable condenser in the link end where Fig. 12 indicates the little X-L Vario Denser, if you prefer. On page 7 is shown how this may be done



**NO PICKUP!**  
They're Shielded

**VOLUME!**  
They're Shielded

# How You Can Use Harper Metaloids in Everybody's Jim Wells Link Circuit

They can be used in any Five-Tube Tuned Radio Frequency Circuit with the Jim Wells Link Circuit linked into the antenna circuit. They can be used in a Three-Circuit Regenerative Hookup with the Jim Wells Link Circuit. They can be used in a Four-Tube Regenerative-One Stage Radio or the Brown-ing-Drake Hookup. In the Five-Tube R. F. circuit, build in the usual way (with tandem

or dial condensers if you wish) and add the Jim Wells Link Circuit to it in the usual way. In the regenerative hookup, use one Harper Metaloid for an antenna coupler (with the new Link circuit added to it) and a Harper Metaloid as a tuner and a variometer in the plate circuit for a feed-back or tickler. Models with these combinations are shortly to appear in Everybody's Radio Weekly.

**A Shielded Radio Frequency Transformer**

Price **\$5** Each

**HARPER METALOID**

*The Original Canned Coil*

**A Shielded Radio Frequency Transformer**

Price **\$5** Each

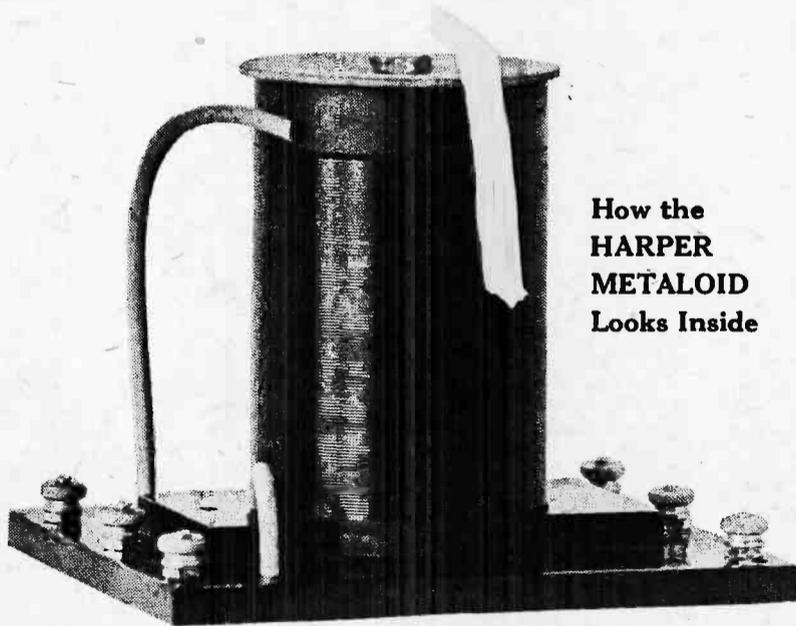
The HARPER METALOID produces unusual volume, distance range, tone quality, and selectivity. It picks up no strays or outside disturbances. It eliminates inter-stage coupling of coils. It prevents stray feed-back and allows better control of regeneration.

It reduces interference from strong local stations. The effective electromagnetic and electrostatic SHIELDING makes this possible. You don't have to worry about WHERE or HOW you place HARPER METALOIDs in your set. There's no critical angle—

there's no coupling between coils or between coils and other apparatus. You don't have to worry about your wire leads running too close. Place your hand on the coils. Lay your screwdriver across the tops of all three coils—it makes no difference.

**What HARPER METALOIDs Are**

In the HARPER METALOID the more efficient solenoid form of coil is used. But the size of coil is reduced to approximately two inches in diameter and two inches in length. Enameled wire is space-wound on a threaded rubber tube. This insures very low losses and gives high ratio of inductance to resistance. It has both primary and secondary windings, with the primary tapped to operate with large or small tubes and a variety of circuits. With its "can" shielding this complete tuned radio frequency transformer is 5/4 inches



**How the HARPER METALOID Looks Inside**

**What HARPER METALOIDs Are**

high. Mounting base 3 1/2 x 4 1/2 inches.

With a secondary inductance of approximately 320 microhenries, which covers the broadcast range of wave lengths, it has an average resistance of only 9.5 ohms. Effective electromagnetic and electrostatic shielding; reduces interference from strong local signals; eliminates inter-stage coupling due to coils which prevents stray feed-back, thus allowing better control of regeneration; no critical angle for mounting.

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Write today for FREE Technical Circular and hookups especially prepared by W. W. Harper, the designer of the METALOID. It tells you all about this NEW method of using radio frequency.

Book of Hookups, showing many ways to hookup the HARPER METALOID.

# New Way to Build Link Circuit Unit

WELL, you fellows who have those old-timers—the forty-three plate (.001 mfd.) variable condensers—are in for an inning this week. We are showing the Jim Wells Link Circuit Unit, built around one instead of the regulation X-L variodenser. We advise it only to those who already have one of the old fellows lying around inactive. If you have to buy one, get an X-L variodenser. It is much smaller and works equally as efficient.

This separate unit is presented for those who have a broad-tuning, three-circuit regenerative hookup, either with or without audio amplification, and for a broad-tuning, five-tube tuned radio frequency set, such as the neutrodynes and other tuned radio-frequency receivers that use "lossers" for neutralization purposes.

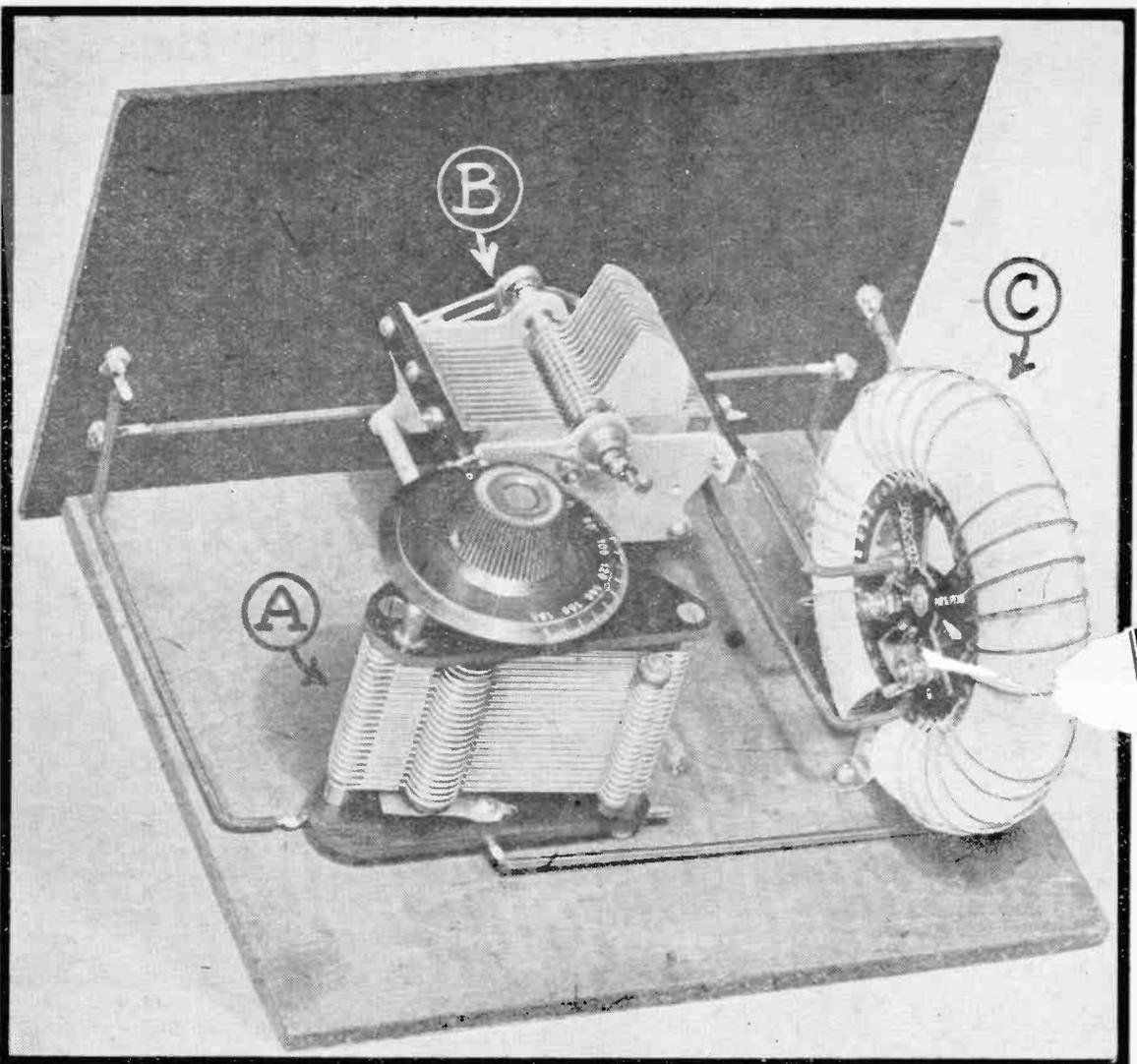
We have described the tuning characteristics of the unit in previous issues, and in the article on page 3 this week Editor Wells gives a few pertinent remarks about the unit. Be sure to read what he says.

There seems to be a lot of trouble with the little X-I variodensers. This is due to the fact that there are two types—Model G and Model N. Of the Model G there are two separate capacities. This fact is responsible for the confusion, coupled with the fact that once the little condensers are out of their original package, it is almost impossible to tell the difference between any of the three. They have no markings to identify them. We have suggested a distinctive marking for the manufacturer in the way of a small printed label, which he can stick on the bottom of the condensers without much expense or trouble. We hope he will do this for his own good, as well as the good of our readers who are buying his product.

We have had a number of complaints the past few days that the variodenser does not seem to have any effect on the circuit. If it doesn't, the fault is due either to improper adjustment or to trouble mentioned above. If you have one that is not working right in the circuit, take it or mail it to the manufacturer, whose advertisement appears in this issue, and have him make a test and replace it with the proper capacity if yours is wrong—that's the safest way.

The proper capacity to have is the one rating up to .001 mfd. capacity—that is just barely enough. I have seen times when some slight deviation in the wiring plan, construction work or one of the coils requires a little higher capacity.

We have been experimenting with Ambassador coils, which have a fixed primary in the tuner. So far our efforts have not been very well rewarded. The fixed primary in the antenna coupler is not so bad, but there seems to be a real necessity for both volume and selectivity in having a primary that can be loosed as far as possible from the secondary coil. It may be that a tapped primary will suffice something like the "Pfanstiehl" tuner, which addition very easily can be made. Another method might be to make a variable primary. One of our readers, who witnessed a demonstration one evening last



week, was advised to try it. He was to saw off and entirely separate the tubing end that holds the fixed primary and mount it either on a small hinge or on a post, so that it could be moved to and from the secondary coil. We may have a report from him next week.

Here is the list of parts used in this week's model unit:

Fig. "A"—Kellogg (.001 mfd.) variable condenser.....	.....
Fig. "B"—Ambassador .0005 variable condenser.....	\$ 5.50
Fig. "C"—Naxson antenna coupler.....	4.00
Rathbun SLF converter dial.....	3.50
Phenolite panel, 9"x7".....	1.00
Four Howard binding posts.....	.80

\* This condenser is obsolete. X-L Vario Denser can be substituted if you do not have an old .001 mfd. variable similar to one illustrated..... 1.50

Total .....\$16.30

The old forty-three plate variable condenser used in the unit this week is one of two condensers bought by the Editor and his son for their second radio receiving set more than four years ago. They were the same condensers that were in the original "Old Reliable" hookup, which Editor Wells described in the first issues of the Radio Magazine section of the Chicago Evening Post, of which he was then editor and which became quite famous, not only in Chicago but also from coast to coast. It not only was and still is a highly selective set, but had immense volume. "Everybody's 100% Low-Loss" is the offspring of the "Old Reliable," and it will have to hump even today with the improved parts to take any laurels away from the old-timer. We know of three- and four-tube receivers which were built four years ago that are still punching through Chicago nightly without any effort.

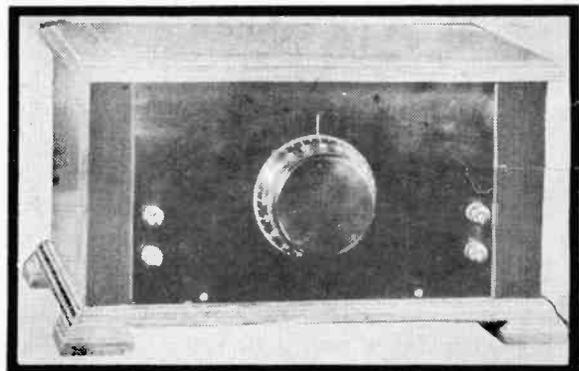
"Old Reliable's" only handicap is the number of controls on it. There was a variometer dial, a variocoupler dial, two variable-condenser dials, two dials for the tapped primary and one critical dial on the detector rheostat, as we were forced to use the old soft, or No. 200, detector tube in those days, as the present 201A type had not then been marketed. They were very critical and require close adjustment. The condenser shown is a Kellogg, and had straight line wavelength even at that time.

The few construction details necessary for building this week's model are given below:

The panel measures 9" x 7". In the exact center is the hole for mounting variable condenser (Fig. B). There are four holes for mounting the binding posts, two on either side. The center of one of these holes is one inch from the bottom edge of the panel and one-half inch from the edge. The center of the next is one inch above the center of the first hole and one-half inch from the edge of the panel. The two holes on the other side of the panel are the same dimensions. In this model a large variable condenser is mounted on the left of the baseboard. This variable condenser takes the place of the X-L-Vario Denser mounted on the panel of other models of the Link Unit.

The Naxson antenna coupler has four binding posts. Two on one side are labeled "A" and "G". The coil is mounted on the baseboard with these two posts facing toward the right, looking at the rear. The other two posts on the coil are labeled "F" and "G".

The wire used for this model is No. 14 stiff cloth covered but any flexible, insulated hookup wire you



Upper picture shows how this week's model of the Jim Wells Link Circuit Unit looks. Note that a variable forty-three plate (.001 mfd.) condenser is used instead of the little X-L Variodenser which has been specified in previous issues. This is just as effective, but, of course, takes up considerably more room. The lower picture shows the unit in a cabinet and gives you an idea how the panel looks from the front

have will do, of course. A lead goes from the upper binding post at the left edge of the panel to the stator post of variable condenser (Fig. A). A lead goes from the lower binding post at the left side of the panel to the lower or "ground" binding post at the right side of the panel and from here continues to the post labeled "G" on the right side of the antenna coupler (Fig. C).

A lead goes from the top or antenna binding post on the right side of the panel to the post labeled "A" on the right side of the antenna coupler (Fig. C) and from here continues to the rotor post of variable condenser (Fig. A).

A lead goes from the rotor post of variable condenser (Fig. B) to the post labeled "F" on the left side of the antenna coupler (Fig. C). A lead goes from the stator post of variable condensers (Fig. B) to the post labeled "G" on the left side of the antenna coupler (Fig. C).

### MAKES OWN SOLDER PASTE

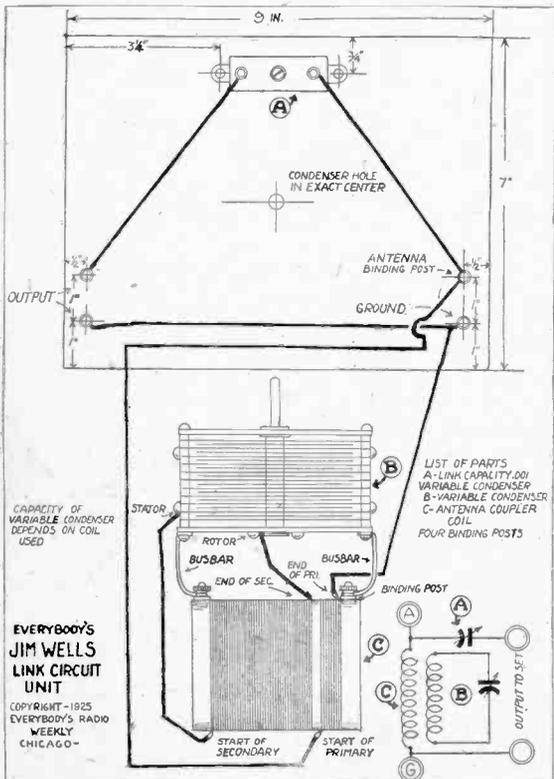
A solder paste that will be found satisfactory can be made easily by mixing equal parts of vaseline and sal ammoniac. It is well to note that when you are using this or any other paste in your construction work that all of it should be removed after the soldering job is completed. You're welcome.

### VARIOMETER IN GROUND LEAD

A receiving set often may be improved by putting a variometer in series in the ground lead. The action is similar to that of a wave trap and often improves both volume and selectivity. It does not change the natural wavelength of the set to any great extent. You're welcome.

### WHEN WIRES TOUCH

When two or more wires that connect any battery to a set touch each other, the battery becomes short circuited. For this reason it is always better to disconnect the wires at the batteries first. Then disconnect the wires at the set end. This prevents short circuits and neither the tubes nor the batteries will suffer. You're welcome.



This is the pictorial diagram of the Jim Wells Link Circuit Unit. The schematic diagram is in the lower right corner. The little X-L Variodenser (Fig. A) is shown in the pictorial, but a forty-three plate (.001 mfd.) variable condenser of the rotor type can be used instead, as shown in the photograph elsewhere on this page

New Model  
MULTISTAGE

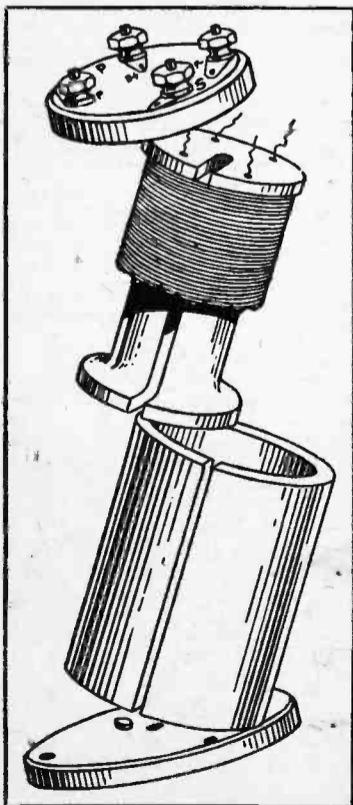
# Meloformer



This is a Full-Size Illustration of a MELOFORMER. Note its small base-space—its compactness. You can mount three or four stages in the space used by two ordinary transformers.

## Puts Power and Purity Into Jim Wells Link Circuit Receiver

The new model MELOFORMER is used in Everybody's Jim Wells Link Circuit Receiver. Hear The MELOFORMER in the model receiver now being demonstrated at Everybody's Radio Weekly Demonstration Room. It is the season's sensation in audio amplification. Tests by Everybody's Experimental Laboratories show MELOFORMER works FOUR stages of audio amplification without distortion. No other audio transformer has done this. Editor Wells says it was difficult to find a home-type loudspeaker—power or non-power, or any tube, excepting the five-watters, that would handle the tremendous volume that pours forth from the FOUR MELOFORMERS. Three MELOFORMERS give more amplification than is required usually. In this case two 201A tubes in parallel on the last stage, or one Five-Watt Power Tube, was necessary to take care of the output. Two stages of MELOFORMER give forth tremendous volume (without distortion) by using two 201A tubes. The new UX Power tubes work most efficiently in the last stage.



### Why MELOFORMERS can amplify without distortion

Look at the full size illustration of the internal construction. The MELOFORMER does not use laminated plates. It has departed from the beaten path. It uses an iron core that is cylindrical in shape. It uses a shell that is cylindrical in shape. Both cylinders are slit longitudinally. This eliminates the troublesome eddy currents. It presents an evenly distributed iron path. It produces perfectly stabilized impedance. It prevents leakage flux. It automatically prevents stray coupling. That's why The MELOFORMER amplifies without distortion. That's why The MELOFORMER will operate THREE or FOUR stages of audio SUCCESSFULLY.

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tributing Co.  
1506 Pine St.  
St. Louis, Mo.  
Sanderson & Hasley  
Sales Co.  
613 Fulton Bldg.  
Pittsburgh, Pa.

## Link a Marvel

(Continued from page 5)

for the left mounting screw of the X-L Vario Denser (Fig. 12) is three and three-quarter inches from the left edge of the panel and two and one-quarter inches from the top edge.

There are four holes to drill to mount the detector-amplifier unit. The centers of the two rheostat holes are three and one-half inches from the top edge of the panel. The center of one of these holes for rheostat (Fig. 5) is three inches to the right of the center of the hole for the three-circuit tuner (Fig. 3). The center of the other rheostat (Fig. 6) hole is five and three-quarter inches to the right of the center of the first rheostat hole.

The center of the hole for mounting the jack of the unit is one inch from the right edge of the panel and one and three-quarter inches from the bottom edge. The center of the hole for the filament switch is seven and one-half inches to the left of the center of the hole for the jack and one and one-half inches from the bottom edge of the panel.

The antenna coupler is mounted on variable condenser (Fig. 1). As there is no bakelite on one side the Silver Marshall variable condenser, a strip about one inch wide, having two holes for the screws was mounted on this side with a bolt extending through the center. A piece of angle brass long enough to keep the coupler two inches from the condenser was mounted to this center bolt and the other end bolted to one side of the circular bakelite base of the Buell antenna coupler. This completes the mounting of parts.

The Welty detector-amplifier unit has four binding posts on the right edge. The one nearest the panel is red. The start of the secondary winding of the three-circuit tuner (Fig. 3) is attached to this red post. A short piece of flexible wire is also attached to this red post and it goes to the rotor of variable condenser (Fig. 2) and continues from here to the start of the primary winding of the three-circuit tuner (Fig. 3). The post next to the red post is brown. A piece of flexible wire goes from this brown post to the outside end of the tickler winding of the three-circuit tuner (Fig. 3). The post next to the brown is blue. A lead goes from this blue post to the inside of the tickler winding of three-circuit tuner (Fig. 3). The fourth post is pink. The end of the secondary winding of three-circuit tuner (Fig. 3) is connected to this post. A flexible lead also goes from this pink post to the stator of variable condenser (Fig. 2).

A lead from the rotor of variable condenser (Fig. 2) goes to the primary winding of the antenna coupler (Fig. 13). A lead from the right post of the X-L Vario Denser (Fig. 12) goes to the other primary connection of the antenna coupler (Fig. 13) to which the antenna lead-in is connected direct. A lead from the start of the secondary winding of the antenna coupler (Fig. 13) goes to the rotor of variable condenser (Fig. 1). A lead from the end of the secondary winding of the antenna coupler (Fig. 13) goes to the stator post of the variable condenser (Fig. 1). A lead from the left post of the X-L Vario Denser (Fig. 12) goes to the end of the primary winding of the three-circuit tuner (Fig. 3).

The Buell three-circuit tuner is mounted on a circular bakelite base, the tickler coil being in the center. The primary is adjustable by being mounted in a ball and socket joint. There are two screws for making the tickler connections on the base but the primary and secondary leads are long enough to make connections direct to the instruments. The start and end of the windings are easily determined by looking at the coil, the inside lead is naturally the start and the outside the end of the winding. The Buell antenna coupler has an adjustable primary, and there are two posts for the primary leads mounted on the base. The start and end of these coils are easily seen also.

This completes the wiring of the instruments. To make the battery connections, there are five more binding posts at the rear edge of the Welty unit. These are colored as follows: "Pink" is the "B" plus 90; "Blue" is "B" plus 45; "Yellow" is "B" minus; "Red" is "A" plus, and "Green" is "A" minus.

## A SHARP TUNING AERIAL

The ambitious phan who wishes to construct a sharp tuning aerial can readily do so. It is known that the resistance in the oscillatory circuit is the cause of many broad tuning sets.

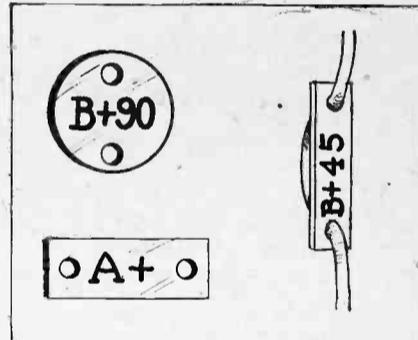
The parts in your set may be of the low resistance required if you buy the low-loss parts that are recommended and solder all the joints and connections in the construction. The ground in many cases cannot be improved on from a resistance standpoint as the only possible place is the water pipe or a branch of that system.

Of course, care should be taken to eliminate all long leads as far as possible. So the only resistance that you will find bothersome will be the antenna. In many cases you cannot remedy this and it would be useless to try. But for the phan who has difficulty in erecting a proper aerial, he will find the following loop is an efficient selective aerial, although not as much so as an outdoor one.

And by using a loop we do not mean the conventional wound loop on a frame of two feet and 43 turns or 13 turns of wire with a tap taken off in the middle, but one wire taken from the antenna post of the set to the ceiling of the room and around the molding into the next and as far as is practicable, then return the wire by way of the floor to the set and connect this end to the binding post marked ground. The advantage of this aerial is that there are no unknown factors and that the resistance may be kept down if one continuous wire is used with no soldered connections.

## MARKERS FOR RADIO LEADS

Beginners in set building are often apt to become confused and mix wires. Hence some method for marking the different leads in a radio receiving set is convenient, and where the usual engraved binding posts are not available, small cardboard disks marked to



suit will be found useful. Cut the disks to about the size of a quarter or a half dollar. This kind of terminal marking is especially essential in portable sets where space is at a premium, and it becomes important to run the wires through partitions from the batteries of the set. The illustration depicts how the disks are used.

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# Building 500-Volt Meter

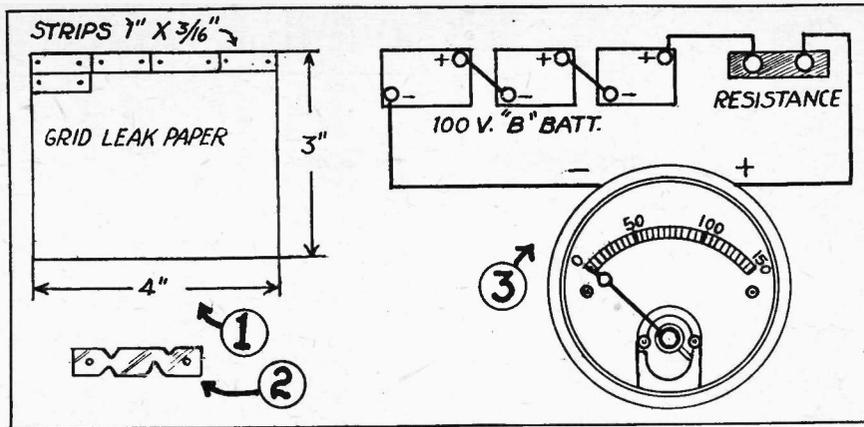
HERE is how to take an old 150-volt meter and, by adding an external resistor to it, convert it into a meter that will read 500 volts and even higher—say to 1,500 volts.

DeForest Urey is responsible for the idea. He says a voltmeter having a reading of from 0 to 150 volts with external resistor was used and a high resistance was added, as shown in Fig. 3. The high resistance was made of Rasco grid leak paper, but if this is not to be obtained, soak a sheet of writing paper in Higgins water-proof India ink, but it won't be so accurate. A sheet of the paper 3 in. x 4 in. was marked off, as shown in Fig. 1. Five strips are needed, each 1-inch long and 3/16-inch wide, as shown in Fig. 1. In each strip two holes were made 1/8 inch from the end, just large enough to let a binding post go through fairly tight.

A binding post as shown, was used to make contact with the five strips of resistance. It may be that five strips will not be enough, but these were found sufficient by Mr. Urey.

The voltmeter is to have a reading of 0 to 1,000 volts. One hundred volts are used to set the voltmeter by. With 100 volts, the voltmeter will show a reading of 10 volts if the resistance is right. A sixth strip may be cut, as shown in Fig. 2, if needed.

Mr. Urey says he has used the voltmeter up to 500 volts with excellent results. It will show a reading of 50 volts when you have 500 volts on the circuit. No higher voltage than 500 has been used. If the voltmeter will stand a higher voltage it will show a reading of from 0 to 1,500 volts.



An external resistance used in connection with a low voltage meter for use in make test on high powered lines up to 1,500 volts

## NAVY RECOMMENDS SCHNELL FOR PROMOTION

Washington, D. C.,—Once more the Navy Department has expressed its appreciation of the accomplishments of Lieut. F. H. Schnell, traffic manager of the American Radio Relay League, who spent seven months in operating experimental short-wave radio station NRRL with the fleet on its Pacific cruise. Admiral E. W. Eberle, chief of naval operations, has extended his felicitations and at the same time announced that Lieutenant Schnell has been recommended for promotion to the grade of lieutenant-commander in the naval reserve force.

It is understood in naval circles here that the navy expects to make many changes in its methods of radio communication, which will place a larger amount of short-wave equipment in active duty. These changes are expected to be based upon the observations made by Lieutenant Schnell.

Admiral Eberle's letter of congratulation follows:

"My Dear Lieutenant Schnell—On the occasion of your release from active duty in the navy, I wish to extend to you the thanks of the Navy Department for your extremely valuable services in connection with high-frequency radio communication in the fleet.

"It is considered that, largely through your efforts, this method of communication is now a part of the navy. It is difficult to estimate the benefits to the navy which will be derived through the use of high-frequencies, which use you have so ably furthered on your recent cruise with the fleet to Australia."

## HOMEMADE TESTING DEVICE

A simple, inexpensive trouble shooting instrument for detecting the mysterious troubles that may develop in the units or circuits of a radio set can easily be built by any phan who possesses ordinary mechanical skill.

First construct or obtain ready made, if possible, a small wooden box of quarter-inch thickness and of sufficient dimensions to receive two 1 1/2-volt dry cells. Detach one side of the box for a panel upon which you mount the parts as shown in the accompanying diagram, four binding posts, a three-point switch and a buzzer.

In wiring the panel you will observe that a lead from the plus post of the battery marked No. 1 goes to the terminal marked "A" of the buzzer, and from the other buzzer terminal designated as "B," a lead goes to the binding post of the test point marked "C." A lead from the minus post of No. 1 battery goes to the plus post of battery marked No. 2. Another lead from the minus post of this battery goes to switch point No. 2. A lead from the switch point No. 3 is con-

ected to a lead that goes to the phone post designated as "F," the latter going to the "D" binding post of the test point.

A lead from No. 1 switch point connects to the lead which runs between the buzzer post marked "B" to the test point post marked "C." Another lead goes from the switch arm designated as No. 4 to the phone post marked "E."

In the wiring of the device use any good insulated copper wire, an excellent kind being Belden rubber covered No. 18. Solder all connections carefully and keep all wires from touching each other or the wood.

The two test leads should be four foot lengths of flexible cord equipped at the end with three-inch lengths of bus wire as test points. The headset cords are attached to the two phone binding posts "E" and "F."

Having hooked up the different parts on the panel, you fasten it to the box with small screws as shown in the accompanying diagram to the left.

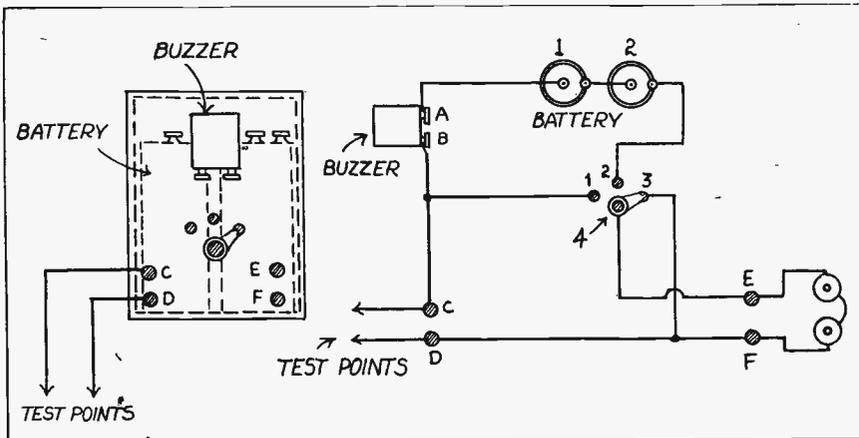
This simply made testing device can be employed for diagnosing any hidden defects and for testing all sorts of shorts or opens. It can readily locate poor jacks and other troubles. Lack of space does not permit us to give full instructions here regarding the use of this device in testing antenna, inductance coils, condensers and transformers, etc., but as this is a separate subject, we will discuss it more completely in a later issue of EVERYBODY'S RADIO WEEKLY.

## DIVISIONS OF REGENERATIVE SET

As a general rule, the usual type of regenerative set consists of four divisions: (1) the tuning system, (2) the radio frequency amplifier, (3) the detector, and (4) the audio frequency amplifier. The tuning system comprises coils, condensers or a combination of these elements, one of which is variable, so that the system, including the antenna or loop, may be tuned to the high frequency of the incoming wave. To the radio frequency amplifying system is assigned the task of amplifying the incoming signal to a point at least above the critical strength necessary to operate the device, either a crystal or a vacuum tube, which converts the amplified radio frequency to an audible frequency. This is then amplified by the radio frequency amplifier.

## ONE-TUBE RANGE

One-tube sets, just the detector unit alone, will bring in the same distance as if three tubes (two stages of audio amplification added) were used. However, head phones have to be used. That is the only difference. Amplification amplifies only what the detector detects.



"It Isn't Everybody That Can Advertise in EVERYBODY'S."

# Amateur Keeps Bands

IN A LETTER of appreciation to Hiram Percy Maxim, president of the American Radio Relay League, Secretary of Commerce Herbert Hoover praises the accomplishments of radio amateurs in this country. The chief of all radio activity in this country, in commenting on the recent radio congress, expressed his pleasure at the fact that the American transmitting radio amateur will be permitted to continue his activities in the same bands that he has heretofore occupied.

Secretary Hoover's letter to Mr. Maxim follows: "My Dear Mr. Maxim—It is always a pleasure to see you at the radio conferences, and I was very glad that you were able to attend the one which has just adjourned. As you know, I have been especially interested in the amateur side of radio. There was no desire manifested in the conference for any interference with amateur operations. It is gratifying to know that that was the condition, and I am particularly glad that the conference did nothing to interfere with the amateurs in the slightest degree. I thank you very much for your service as chairman of the amateur committee."

## HOW ELECTRONS ACT IN TUBE

That the vacuum tube is the fundamental principle of modern radio is a fact that admits of no denial. Small sized tubes are used for receiving set and large one for transmitting. The chief feature of a vacuum tube is its ability to amplify—that is, it will give out more than you put into it. And speaking of tubes and also the energy or electrons animating them, Dr. Fulton Cutting, A.B., A.M., M.E.E., S.D., a noted electrical authority, has recently said:

"A common form of tube is constructed as follows: Centrally located is a straight wire about one inch long. It is heated to incandescence by a battery and is called the filament. Around the filament and extending its entire length is a spiral wire called the 'grid.' Filament and grid are enclosed in a metal cylinder called the 'plate.' None of these parts touch each other.

"If you connect a battery between the plate and the filament the electrons will be drawn through the openings in the spiral grid and into the plate. A current flows across the vacuum between the filament and plate returning through the battery which supplies the driving force. The grid is the lever by which we can control the magnitude of this current.

"If we charge the grid negatively, it will tend to drive the electrons in the vacuum tube back into the filament with the result that the current through the tube will be reduced.

"If we charge the grid positively, the electrons in the vacuum are urged toward the plate and the current increases. By only slightly modifying the electrical condition of the grid we can greatly alter the current through the tube. Very little power is necessary to operate the grid compared to the amount of power it controls. That is why the tube amplifies."

## ARRANGE ALL YOUR LUGS

When you are ready to mount the components used in a receiving set on the baseboard and panel, arrange your soldering lugs on all connections. This facilitates wiring 100 per cent and makes a much neater and more efficient job. You're welcome.

## USE NO ACID WITH SOLDER

Bear in mind when you solder the terminals and wires in a receiver that acid should not be employed to make the solder hold. This substance rapidly corrodes, causing leakage, which results in noises and loss of efficiency. You're welcome.

## Calls Heard

- 9DDE, 3034 Leland Ave., Chicago. DX worked 40 meters with 50 watts: 1AAO, 1CK, 1CPL, 1WD, 2KU, 2MM, 2KG, 3CDN, 3MQ, 4OA, 4MI, 4MF, 4DO, 5ASD, 5AKS, 5OX, 5JD, 6ADW, 6ANC, 6CEY, 6DAO, 6DAI, 6DAA, 6BLS, 6CQA, 6BJD, 6CSW, 6CHL, 6KB, 6CRS, 6BAV, 7FL, 7SF, 7AEK, 7AKV.
- Cuba: NAV, NISM.
- Canada: 3XI, 3NF, 3NI, 3AZ, 3DH.
- Naval: NQG-1.
- Reported R9 by 6DAA.
- DX HEARD 40 METERS: Australia: 2YI, 3AD, 3BM, 3EF.
- New Zealand: 1AO, 2AC, 2XA.
- Brazil: 1AN, 1IA, 2SP.
- Hawaii: 6BUC, NPM.
- Samoa: NPU.
- Italy: LER.
- Sweden: SMZS.
- England: 5LF.
- Miscellaneous: PCMM, AGA, FW, GDVB, SGC, VDM.
- 9APY, 3337 Oak Park Ave., Berwyn, Ill., U. S. A.: 1ADW, 1AMM, 1AOF, 1BQD, 1BUE, 1CMX, 1DB, 1KJ, 2ADK, 2AIB, 2AKV, 2AMJ, 2ANA, 2BUM, 2CDS, 2CEP, 2FF, 2GP, 2MT, 3AFW, 3AL, 3BMT, 3BQP, 3CJN, 3COV, 3GT, 3PT, 3YO, 4BP, 4CCB, 4FR, 4VO, 5AAV, 5ABI, 5ADA, 5APG, 5API, 5AQX, 5ARY, 5ATA, 5ATZ, 5AWF, 5FH, 5FQ, 5JU, 5QZ, 5RG, 5SG, 5TT, 6CAE, 6CCO, 6CMG, 6WT, 6XBM, 7DD, 7DM, 7PP, 8AHC, 8BRD, 8BVJ, 8CFV, 8GI, 8NN.
- Canadians: (C-3KA).
- Miscellaneous: AF2, NKF, OVR, SRD, WIR, WIZ, WQO.
- Cards waiting.

## THE WHY OF VACUUM TUBES

Theoretically, the action of the vacuum tube is as follows: When the filament is lighted it throws off electrons which are attracted to the plate by reason of its having a positive charge. These electrons are the only means of the current flowing between the plate and filament of the tube, therefore a current can flow through the tube only when the filament is connected to the negative terminal and to the plate of the positive terminal of the "B" battery. You're welcome.

## USE "A" GROUND CLAMP

You will not be able to make a good soldered joint to a pipe while the water is still flowing in it, as the temperature of the pipe never gets above 100 degrees of Centigrade, which is the boiling point for water. We recommend that you buy a ground clamp for this purpose. A suitable ground clamp can be obtained from any radio store.

**Questions—Answers**

**Electrical Disturbances**

5186—WILMETTE, ILLINOIS: My trouble is electrical interference. My home is right near the North Shore Electric Lines and one block from the end of the elevated.

Crackling noises continue to interrupt regardless of anything I have done to eliminate them, including the installation of a subantenna by the Subantenna Corporation of Chicago.

Can you advise any set or accessory to overcome my trouble, or must I sell my home? I must have good radio reception. My set is a Garod Neutrodyne.

The only remedy we know of to eliminate the electric disturbances you speak about, is to have your receiver carefully shielded by some expert, and really this is only a risk. The North Shore Electric Company might aid you if approached in the right way.

The trouble is undoubtedly coming through leaky insulations in the feed wires or tracks, or probably bad connection somewhere along the line.

If your antenna is run at right angles to the railroad, you will have the minimum of interference.

**Dry Cell Tube Trouble**

5176—CHICAGO, ILLINOIS: I have built from your magazine descriptions your "100% Low-Loss" three-tube, using parts and panel formerly used in my Ambassador, except with three-circuit Kel Coil tuner, Condenser 00025.

Week nights, except Monday, fine reception from: WGN, WEBB, WHT, KYW, WMAQ and WLS, all with fine volume through Victrola connection. Could not get WMBB and WBCN. Monday night WOK hogged the air, all over the dial. Tuned in New Orleans, but WOK crowded them out, and could get nothing else, even with earphones. I could not find WOK on other nights. Why?

I am using Radiotron UV-199 tubes, two 45 "B" batteries, connected for 90 volts, four dry cells in series for the "A" battery. I tried it out with three cells, but could get no volume on any of the local stations. Now, after seven nights work one tube has gone dead and will not light. All new tubes, and all new batteries, and new 100-foot Beldenamerial aerial, connected to 30 feet unenameled seven-strand wire, all outside of the house, leading to set through a wall insulator, ground through wall insulator, 18 inches outside wall, then through wall insulator and connected by the clamp to the cold water pipe in basement; about six-foot ground and 130-foot aerial.

I wired my set with all bell wire, one Howard rheostat, 40 ohms, connecting the three tube sockets, no wires cabled, but battery wires low down on the baseboard and the aerial wires high up, and the regulation bakelite-strip binding post. My house is a frame bungalow in the open country, but still no DX.

1. The primary of your Kel Coil tuner is too large. You should only have ten turns on your primary, in order to get more selectivity.

2. You are paralyzing your tubes by having four dry cells in series, which gives you six volts; and your 199's are three-volt tubes. This is the reason why your tube will not stand up very long. Connect only three dry cells in series, and then check over your set for bad connections in the transformer.

**Silver-Marshall Super**

5181—CHICAGO, ILLINOIS: 1. Is it necessary to use Silver parts in the Silver Super? Or are other well made parts just as good?

2. Where can I get a blueprint of this circuit? I would sooner have a print than the wiring diagram of the set as given in the March 7 EVERYBODY'S RADIO Weekly.

3. Where can I buy the Silver parts?

1. No, not absolutely necessary, although the parts specified are of exceptional and proven merit, as we have tested them and know that the coils are properly matched. The Silver intermediate transformers are especially good, and while you will use other manufactured products in the hook-up, we would suggest that you stick to the specifications in this respect. However, if you prefer, you can use the St. James, or Welty coils, which also are highly efficient.

2. Write to the Silver-Marshall, Inc., 110 S. Wabash Ave., Chicago, and mention the hook-up in the March 7 issue of EVERYBODY'S RADIO Weekly.

3. The Silver-Marshall, Inc., retail store is located at 105 S. Wabash, Chicago.

**Testing Sets in Laboratory**

5099—CHICAGO, ILLINOIS: I am now constructing a five-tube receiving set which I propose to send out of the city. I do not have tubes, batteries or loud-speaker which will work in the set, but I wish to be sure it will work before I send it on.

It has occurred to me that after I finish wiring the set I could bring it out to your shop and test it out, using your equipment. I would want to use five 201A tubes, storage battery, 90 volts "B" (Continued on page 12)



**FIRE DRY Storage "A" Batteries**

They require no water. Won't spill. Terminals don't corrode. Supplies smooth current. Charge up quicker. Idleness doesn't harm. Buy them of your dealer.

FIRE DRY STORAGE BATTERY COMPANY  
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7 x 21	4.50
7 x 24	5.50

It will pay anyone to come direct to our factory. We are located one-half block west of Fullerton "L" station. Samples can be seen at Everybody's Radio Laboratory.

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Made for use with Raytheon—Magnatron—Cunningham and R. C. A. Rectifying Tubes.

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SELLING AGENTS  
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REJUVENATE reflex or crystal set with DETECTOR trouble eliminator—always LIVE

**CRYSTAL DETEX \$1 COMPLETE**

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"ROLL THE PERFECT" Crystal over 368 GOLD catwhiskers—100% CONTACT  
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Oscillators, Intermediate Transformers, etc., to your own specifications. Practically at 1/2 cost of regular standard manufactured products.

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**CONTINENTAL**

The Guaranteed Radio Tube

BEST FOR COAST TO COAST RECEPTION

Ask Your Neighborhood Dealer

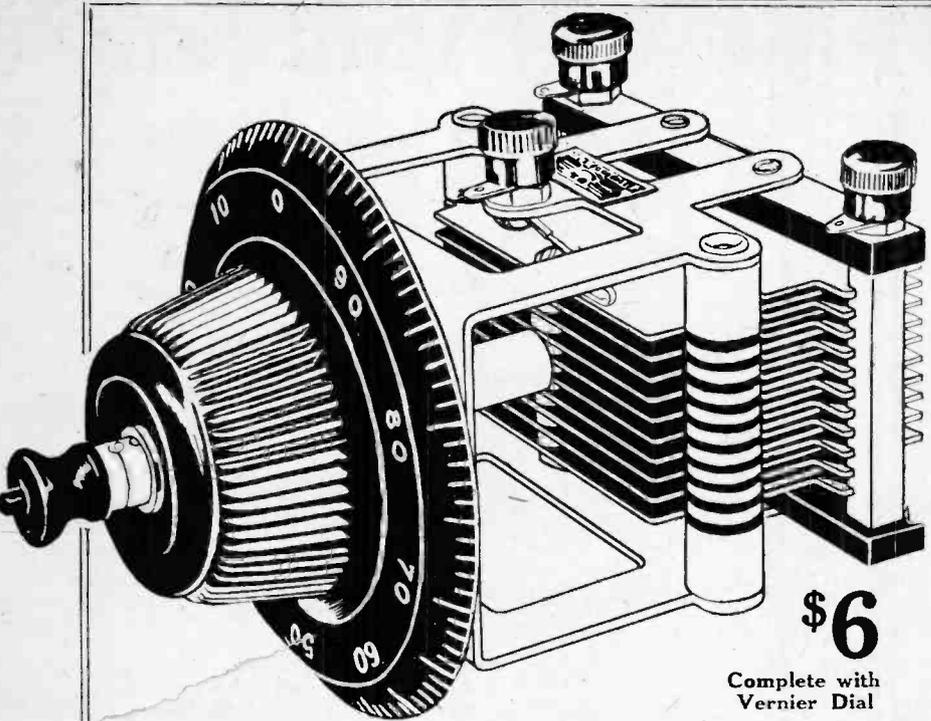
CONTINENTAL TUBE LABORATORIES

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By laboratory test has no superior  
Amplifies without Distortion

Ambassador Sales Co., 326 West Madison St., Chicago



**\$6**

Complete with Vernier Dial

**You'll Need This Condenser**

**To Tune the Jim Wells Link Set**

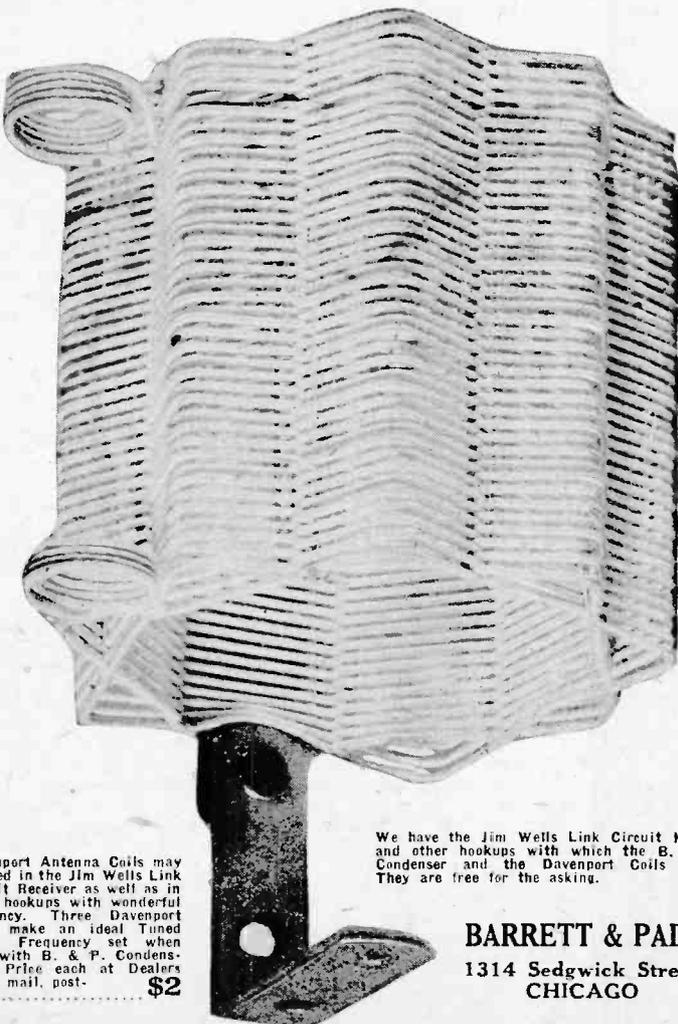
This is the condenser used to tune the first model receiver built and described in Everybody's Radio Weekly using the new Jim Wells Link Circuit. The Jim Wells Link is Selective. No ordinary condenser, even equipped with a vernier dial, can tune this highly selective hookup half so well. You'd pass over many a distant station which this condenser will pick up and bring in with clarity and volume. Stations are pulled apart twenty times the distance on your dial when you use a BARRETT & PADEN Micrometer Condenser.

**BARRETT & PADEN MICROMETER CONDENSER**

A True Straight Line Type

This is because of the radical construction. There are no rotor plates. The movable plates slide in between the stators, back and forward, with a patented micrometer adjustment. It takes one complete revolution of the dial to move the plates just one graduation! This means that stations separated only by a fraction of a degree on the dial of an ordinary condenser are separated on the Barrett & Paden by TWENTY times that distance. Use the B. & P. in any circuit when selective tuning is desired.

**\$2-DAVENPORT R.F. COILS--\$2**



Davenport Antenna Coils may be used in the Jim Wells Link Circuit Receiver as well as in other hookups with wonderful efficiency. Three Davenport Coils make an ideal Tuned Radio Frequency set when used with B. & P. Condensers. Price each at Dealers or by mail, post-paid \$2

We have the Jim Wells Link Circuit Hookup and other hookups with which the B. & P. Condenser and the Davenport Coils Work. They are free for the asking.

**BARRETT & PADEN**  
1314 Sedgwick Street  
CHICAGO

# Practical Helps for Home Set Builders

Contest Weekly Develops a Wealth of Practical Ideas for Home Experimenters

## A NEAT AERIAL

Contest Entry

By M. W. POWELL,

2610 Walnut St., Evanston, Ill.

I am submitting an aerial installation which is efficient mechanically, electrically and is artistic compared to the usual unsightly antennas. It is even considerate of the owner of the roof itself.

Almost all flat roofs have a piece of wood set in the brick work to which the roofing is fastened before tar is applied. The porcelain insulators for the guy wires are fastened to this piece of wood with wood screws. This not only makes a neat job, but prevents water from getting under the roofing and is far stronger against the pull of the guy wires and the cost is little if any more than a spray of half a dozen nails driven at all angles.

The most important feature is the rigging for pulling the aerial to the top of the pole very much like a flag is raised. Rigged in this manner the aerial can be adjusted for length so that when raised near the top, by pulling down on the return line, it will stay put with the desired tension and can be lowered within reach without disturbing the supports for cleaning occasionally.

## TYPE "C" INDUCTANCE

Contest Entry

By CHARLES MARINO,

2418 Seminary Avenue, Chicago, Illinois.

The inductances are bank wound on one piece of tubing, 3 1/2 inches outside diameter, and 4 inches long, No. 22 insulated magnet wire, either enamelled single, or double cotton covered may be used.

Fibre or hard rubber tubing may be used. A No. 27 machine screw thread is cut on a lathe over the entire outer surface of the tubing. The bottom turns of the winding lay in the thread grooves to support the winding. Do not attempt to pile a bank over a smooth surface, for the winding will fall down.

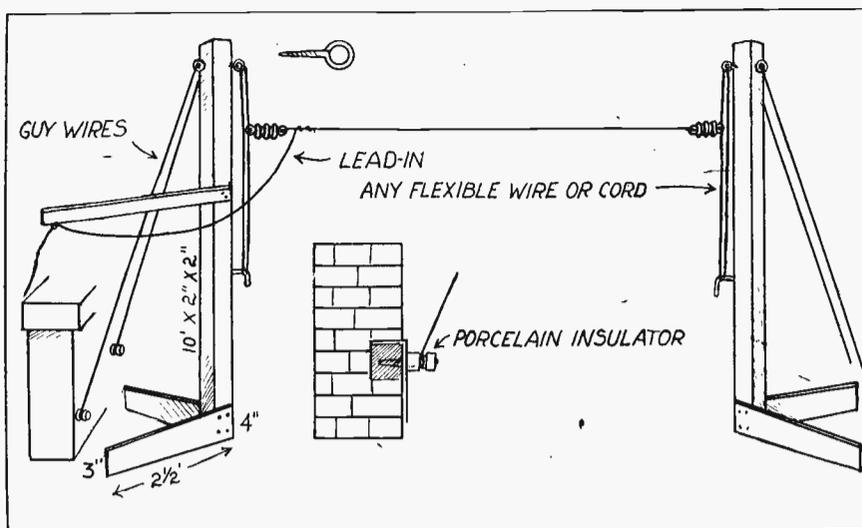
Starting at one end, two small holes are drilled 1/4 inch apart, crosswise of the length of the tube. These are used to fasten the end of wire, which is inserted through from the outside and brought back to the surface through the other hole. Leave about 7 inches of the wire extending to be used later for a lead, and tag this end "G."

Start winding wire in place in a groove, and this groove is carefully followed. In starting a bank winding, first, two coupled turns are made, side by side. The wire is then slightly kinked with the finger nails, so that it can be placed in the saddle formed by the first two turns. A turn is then made and the wire brought down to the surface where a turn is made. It is then kinked and placed on top of the last turn (4th). A turn is again made which is now on top of the fourth against the third one. It is kinked and placed on saddle form by turns three and five. The wire is then brought to the surface again, and turned up the sides until the pile is of proper height and width.

Then the two turns side by side are again formed to make another pile, and so on, until the required amount is placed on the tube.

The selector coil consists of seven piles, each pile is five turns wide at the base, five turns high and one turn wide at the top. Bring down the wire from the top of last pile and secure it through holes in the tubing, leaving six inches of wire for a tap lead. A tap wire is soldered to the top of each of the first six piles. The seventh tap is the end wire.

The amplifying coil is now wound. Starting 3/8 of an inch from the end of selector winding the wire secured through holes in the tubing. Leave this end about seven inches long and tag it "3." A solid bank winding consisting of a pile of six turns wide at the base, four turns high, and three turns wide at the top, placed on tubing. Then six piles each consisting of four turns wide at base, four turns high, and one turn wide at top, com-



Aerial supports for use in erecting a single line aerial on the surface of a flat roof. The standards are held by guy wires attached to the brick with insulator knobs

plete the inductance. Secure the end of wire through tube and leave six inches long for tap.

The end turn of the first pile (18th turn) has a tap soldered to it, and also the top turns of the next five piles. The end of the winding is the seventh tap.

While winding, collodion should be applied freely to the turns to hold them in position and prevent any of the windings from falling down.

A bracket may be made of thin strip brass to hold the inductance to the panel or baseboard by securing to bracket to tubing with screws.

## LINK CIRCUIT IN CRYSTAL SET

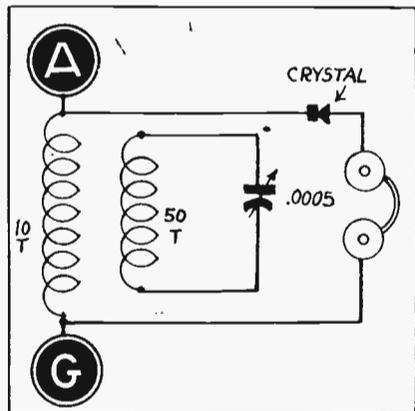
Contest Entry

By WILLIAM COLVIN,

403 Delphan Avenue, Chicago, Illinois.

I discovered that by taking off the vario denser of the Jim Wells Link circuit unit and replacing it with a crystal a good crystal set can be made.

I have been building many crystal sets and found that to tune stations



out is difficult but with this set it is a knockout. I can tune WGN from WHT and not know that WHT is on.

This is a wonderful set, not only in selectivity but also volume.

Now for the construction. Wind a spiderweb coil with 10 turns on the primary and 50 turns on the secondary. This coil is used with a .0005 condenser. The illustration shows a schematic diagram of the crystal set.

## ERECTING COUNTERPOISE

Counterpoises should be erected about six feet from the ground and placed directly under the antenna. Use four or more wires spaced about eighteen inches apart. Insulate it as you would your aerial.

## EXPERIMENT A LITTLE

You will find that some regenerative sets work better without a grid leak, therefore, if your regenerative receiver is not working efficiently, remove the grid leak and see what happens. You're welcome.

## USE LEAD CLIPS

If you're using wet "B" batteries, remove the tips from one end of the multi-colored cable you bought at the "5 and 10" for your batteries, and replace with lead clips. You're welcome.

## CARE OF COLLOID RECTIFIER

Contest Entry

By V. G. BIDENHARN,

Cleveland, Ohio.

I have added greatly to my radio knowledge through following your articles and have applied to my own use many of the hints to be found in the magazine.

The writer has a five-tube super of his own build which uses 199 tubes. Battery equipment is all wet and the "A" battery consists of two Philadelphia U. D. 44 batteries hooked up in series parallel. I thought it might interest you to know that I have been using a Colloid rectifier for charging this "A" battery as well as the 90-volt "B" battery. The "A" battery can be fully charged in 12 to 16 hours with the Colloid rectifier using a 100-watt lamp in series. This has proven very successful over a period of one year and the only change necessary when charging is to hook the two blocks of batteries in series.

Originally I found that after charging either the "A" or "B" batteries that the lead and aluminum electrodes of the rectifier would coat if left in the solution. This made it necessary to sandpaper and clean them before the rectifier would charge properly, and resulted in some extra work. I have found now that if after a charge has been completed the cover is removed from the rectifier and the electrodes immersed in clean water instead of remaining in the solution, that it is never necessary to clean them and the charger will operate and the series lamp dim just as soon as the electrodes have been replaced in the solution and necessary connections made again.

This hint may save someone the bother of sandpapering their electrodes to keep them bright and you may pass it on if you deem it worthy of attention.

## HOME-MADE C BATTERY

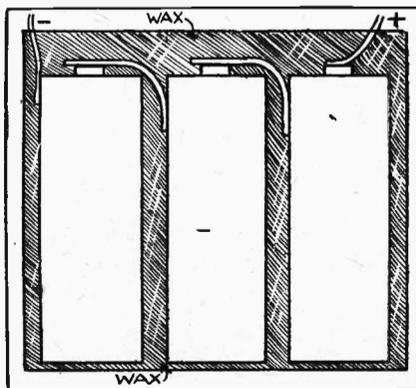
Contest Entry

By DICK WHEATON,

Hobart, Indiana

Secure three 15-volt flashlight batteries, a cardboard box a little larger than the three cells, an old "B" battery and a foot of flexible wire.

Hook the three cells in series by soldering a wire from the center of each cell to the shell of the next one



and so on, leaving the ends about six inches long.

After you have these cells wired, place them in the cardboard box. Then

## TUNER FOR LOW-LOSS

Contest Entry

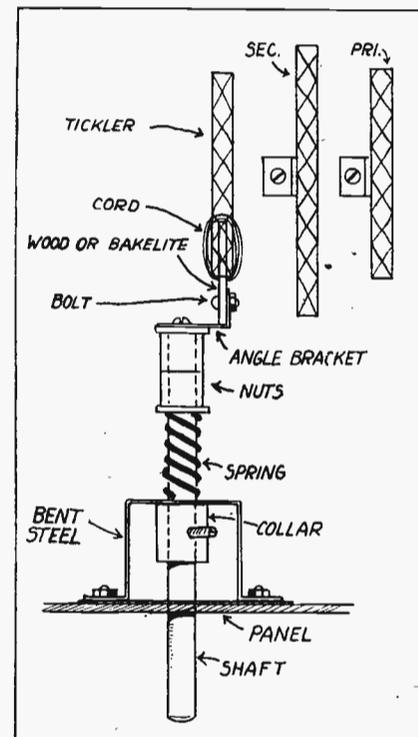
By CARL N. FRANCK,

248 Front Street, Aurora, Illinois

The tuner shown in the illustration is one I made at home and it is very efficient for use in my four tube Low-Loss set. It is a modification of a tuner presented in this department several months ago by R. H. Boyle, but it is much more compact and it requires no clearance for the movement of the tickler.

The parts required are, one condenser shaft assembly which can be purchased at the five and ten cent store, one cheap dial, which is broken and the hub used for a collar, one package of vario coupler parts, one ten cent Erector parts, which contains two pieces of perforated steel, angle brackets with nuts and bolts.

Bend the large piece of Erector steel as shown. The small piece is used for additional brace or support. Wind the primary and secondary on a two and one-half inch hub having sixteen spokes. This form can be purchased at the five and ten cent store. Place eight turns on the primary and on the secondary as many turns as your condenser requires. I wound the tickler



on a hub two inches in diameter, which was cut from the end of a thread spool. Spokes were put into the hub and fifteen turns of wire was wound on it. To fasten the coil to a piece of bakelite or wood, cut notches in the edges close to the coil and twist thread or cord tightly around it. The shaft will need to be sawed off about one inch from the end. Be sure not to saw off the threaded end.

take the old "B" battery and melt the wax on top of it and fill in around and on top of the cells. Be sure the cells are insulated from each other.

Before the wax gets hard, put a cross by the positive wire and a minus sign by the negative wire with a screw driver.

The only cost you will have will be the three cells. I also make my fixed condensers the same way.

## NO GAIN IN MANY WIRES

You will find that nothing is gained by using three, four, or five wires in place of a single wire for an aerial. In fact because of the capacity between the wires, the efficiency of the aerial is decreased. You're welcome.

## GROUND TRANSFORMER CORES

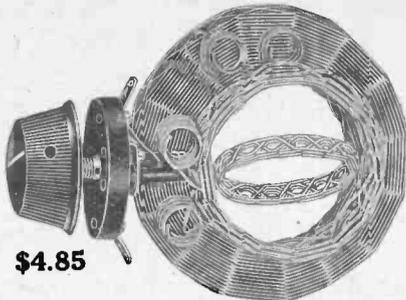
Distortion in audio frequency is reduced and sometimes done away with entirely by connecting a wire from the ground to the iron core of the transformer. This also cuts down inter-circuit interference and is a good thing to do in every case.

"It Isn't Everybody That Can Advertise in EVERYBODY'S."

# Use Buell Coils and Condensers

In the New Jim Wells Link Circuit Receiver

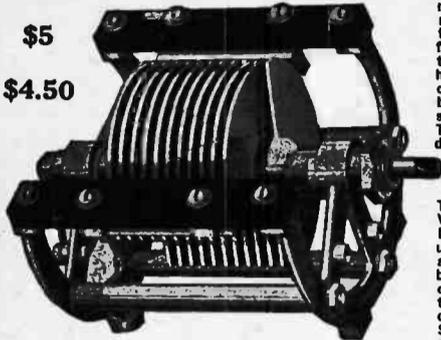
Don't take any chances in the new Jim Wells Link Circuit Receiver. Use the same tuner and antenna coupler specified and used in the FIRST Laboratory Model, published in the Nov. 21, 1925, issue. When these coils are tied up with the BUELL SLF Variable Condensers you get what you seek—real SELECTIVITY in the Jim Wells Link Circuit Receiver and the best one of any circuit.



\$4.85

### BUELL'S TUNER

This is the Three-Circuit Tuner that has made the Jim Wells Link Circuit Receiver perform stunts of selectivity that amaze the radiofan. It pushes through Chicago's TWENTY-SEVEN stations as if they did not exist. Works three tubes on a loud speaker on coast-to-coast (from Chicago). If it does these things in Chicago it will work much better elsewhere. The BUELL Three-Circuit Tuner is the simplest made. No gears—no cams—no levers—nothing to get out of order. Smallest made. Takes up one-fourth the space of most tuners. Makes big sets smaller. Just the thing for portable sets. And yet it has a kick on distant signals! It's the coils that do it. Panoakes have the highest inductance because the distributed capacity is lowest. The BUELL new adjustable ball-and-socket primary is the secret of BUELL selectivity. Insures any coupling—loose or tight. The BUELL usually is at the best dealers, or by mail, postpaid..... \$4.85



\$5

\$4.50

### BUELL'S SLF CONDENSER

The BUELL SLF Condenser is used in the Jim Wells Link Circuit. Be sure to use it with BUELL Coils to get the BEST results. Hook it up with the BUELL Tuner and Antenna Coupler and know what real tuning is. The BUELL is built to last a life-time. Plates thickest of any condenser. Won't warp or short-circuit. Only two pieces of dielectric and they are OUTSIDE of condenser field. Big ball bearings. Positive stop. Shaft adjustment makes plate alignment permanent. Solder-lugs direct to pigtail connections. Extra heavy frame, die cast. All plates soldered. Mounts on baseboard or panel. Plates designed for STRAIGHT-LINE FREQUENCY curve. Straight-line frequency type made in two capacities—.000175 mfd. at \$4.50, and .00035 mfd. at \$5.00. Straight-line capacity type .00025 mfd. at \$4.50 and .0005 mfd. at \$5.00

### BUELL'S ANTENNA COUPLER

The antenna coupler in the Jim Wells Link Circuit Receiver plays an important part. It should have high inductance and low resistance. It should have a variable primary if you want to obtain the proper adjustment. The BUELL has all these requirements as proven by "Everybody's Laboratory" tests and usage. The BUELL Coupler was used in the FIRST Laboratory Model printed of the Jim Wells Link Circuit Receiver, in the Nov. 21, 1925, issue of "Everybody's Radio Weekly." Be sure you get one for your receiver. Price at all dealers, or by mail..... \$3.75

### BUELL MFG. CO.

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Phone: Douglas 2222 CHICAGO

### BUELL MIDGET RECEIVER

No bigger than a small kodak camera, yet NOT a toy. Uses three tubes and two full-size audio transformers of powerful amplification. Smallness and compactness are made possible by the BUELL BABY tuner—the smallest, finest efficient tuner made, and the BUELL BABY condenser, the smallest, tiniest efficient variable condenser made. Works just as efficiently as the best of the three tubers and much better than most of them.

COMPLETE KIT—Ready to Wire—BUELL Midget Receiver Kit No. 1 consists of all parts, including leatherette carrier case, with drilled panel and ready to assemble and wire. Price at all dealers or by mail..... \$28.55

COMPLETE KIT—Assembled and Partially Wired—BUELL Midget Receiver Kit No. 2 consists of all parts, including leatherette case with parts all assembled and mounted and partially wired. All you have to do is to make a few simple wire connections. For sale at all dealers, or by mail, postpaid..... \$30.00

Used with the new Jim Wells link circuit receiver



# Burns SPEAKER with CONCERT UNIT

Distinctive and pleasing in design. Remarkable volume with exactness of reproduction. Adds to the enjoyment of any receiving set. Made up with flare of horn in several handsome finishes.

## THE HEART OF THE SPEAKER

The large size and scientific construction of the Concert Unit gives the remarkable tone values which combined with the special amplifying properties of the Burns Horn produce the wonderful results obtained.

#### LIST PRICES

- No. 205B With black flare.....\$22.50
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- No. 100 Phonograph Unit..... 10.00
- No. 120 Concert Unit..... 12.00

At Your Dealer's or Direct

MANUFACTURERS

**American Electric**  
COMPANY

CHICAGO, U. S. A.



CONCERT UNIT

(Continued from page 10)

battery and a loudspeaker for a few moments to see whether or not the receiver will function.

Will you permit me to come to your shop and make the test as I have outlined? I would be willing to pay whatever is reasonable for this service.

We would be very glad to have you bring your set out to our demonstration room some evening and test it out with our equipment. We have all the necessary tubes, batteries, loud speaker and other equipment to make your set function. We have closed our Service Department and, therefore, could not give you any service of that nature, but our test table is at your service without charge.

I would suggest that you come some Wednesday or Friday evening, as those evenings are reserved for our demonstration evenings. I hope that others that read this notice will not impose upon us, assuming that this invitation is general, as we only issue these invitations on written request. Tickets are mailed to our readers for these occasions and we are very glad to have all of you take advantage of this opportunity up to the limitation of our accommodations.

### Building the Low Loss Welty

5184—HARVARD, ILL.: I have been an interested reader of your paper for nearly a year and have planned to build a three-tube Low-Loss set such as you have frequently described. It seems to me that the model in the November 7 issue, using the Welty Detector Amplifier unit is about what I want. However, I would like a little further information before ordering the parts. (1) Are the transformers used in this unit the equal of the Karas transformers in every way? If not, could the Karas be substituted? (2) Can I get this unit with parts adapted to dry cell tubes? I live in the country and cannot easily have a wet battery charged. (3) In case this receiver should not give sufficient volume, what would you advise me to add to it to make it stronger? (4) I live sixty miles from Chicago and want primarily a receiver that will get the Chicago stations with sufficient volume for a loud speaker and the best quality of tone and reproduction. Will this model three-tube receiver, using dry cells fulfill these requirements as well as any previous model you have described? (5) Does the Barrett & Paden condenser log permanently so that when a certain station is once formed it can always be turned to when desired?

(1) The transformer used in the unit you mention can be supplanted with the Karas, if you desire to do so. There is practically no difference between the transformers.

(2) To change this circuit for dry cell tubes, all that would be necessary for you to do is to use the tube sockets for the dry cell tubes.

(3) You will have enough volume if this set is properly built to bring in distant stations as well as local. It has been made and tested out in our laboratory for that purpose.

(4) You will be able to get sufficient volume at your country place to operate a loud speaker. You should have no trouble to get selectivity. The model 3-tube receiver using dry cells will fulfill your requirements as good as any that we have published.

(5) The Barrett & Paden condenser can be logged so that you can pick out any station you desire at any future time. It always can be turned to the number, and that station will come in for which it is set.

### Ellis D Coils

5149—CHICAGO: (1) Which radio frequency transformer do you consider the best on the following points, the Ellis "D" coil or Harper Metaloid? Tone, selectivity, range, lack of pickup, lack of interstage, coupling, volume.

(2) In your issue of June 27 you advise an Ellis "D" coil wound for a .0005 variable condenser, but in issue of October 17 you advise an Ellis "D" coil wound for a .00025 variable condenser. Which will give the best results?

1. Both the Ellis "D" coil and Harper Metaloid rate equally in the points given.

2. The larger inductance and the smaller capacity will give better results. .00025 is the one you should use.

### Litz Wire in Winding Coils

5102—DENVER, COLO.: I have started to make your one tube three circuit set and it says the primary consists of 10 turns of litz and the secondary 42 turns of wire, so I took it that the secondary was of litz also, but after starting to wind the three circuit I am doubtful if litz is O. K. for the secondary, so please answer these:

1. Is litz O. K. for secondary to three circuit tuner?

2. How far apart should the primary be from the secondary?

3. Would it be of any advantage to fix the primary separate from the rest of the tuner on a hinge arrangement so it could be adjusted from the panel as per illustration?

4. Is a Remler .0005 variable condenser O. K. with this tuner? Why don't you describe any two tube sets?

5. Which would be the best for DX—one stage radio frequency and detector, or detector and one stage of audio amplification?

## A New SUPER-KIT \$17.50

With Perfectly Match Transformers and Filter



### This Is a SUPERADIO Product—Your Guarantee of Satisfaction!

The most selective, the most powerful, longest ranged, finest toned 8 tube super ever designed. Intermediate transformers matched to identical peaks and filter tuned to same peak. Kit includes Antenna Coupler, Oscillator Coupler, Special Variable Condenser, Tuned Input Transformer, 8 matched intermediate transformers and hardware. Complete with booklet, diagrams and full-sized working drawings which positively assure perfect success. Order now. Only \$17.50.

### SAVE MONEY ON THIS COMPLETE OUTFIT

Every Kit Made Up of Individually Tested Parts as Follows:

Superadio Inductance and Transformer Kit, 2 Heath Radiant Condensers, 2 Keystone Audio Transformers, 8 Benjamin Sockets, 2 Carter Rheostats, 1 Potentiometer, all necessary fixed condensers, 2 "Megits" Grid Leaks, 1 Mounted Binding Post Board, 1 Base Board, 1 Drilled Panel, 2 "Dialog" Vernier Dials, 2 Truax Rheostat Dials, 3 Carter Jacks, 1 Carter Filament Switch, Soldering Lugs, Bus wire and wood screws, diagram and instructions.

**\$73.50**

Write for Our Free Radio Catalog of Newest Parts  
**WILLIAM A. WELTY COMPANY**  
36-38 So. State Street CHICAGO

# MUTER

MUTER Radio Products are used in the laboratory models of all of "Everybody's" hookups. They particularly are of value in the new "Jim Wells Link Circuit" receivers. Read this week's description of this new circuit and be sure you use MUTER products in it.

MUTER Products consist of Muter Resistance Amplifier, Muter Grid Leaks, Muter Fixed Condensers, Muter Audio Transformers, and Muter Lightning Arresters. Descriptive Catalogue of all Muter Products sent by mail on request. All dealers sell Muter Products or will get what you want.

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CHICAGO

## Now Ready Blue Prints Popular Hookups

Use full-size working blue prints of hookups. Full-size front panel layout, full-size back panel and baseboard layout and schematic drawings. Anyone can hook up these popular sets without the least trouble. Sent postpaid.

Model 6A—100% IMPROVED Low-Loss 1-Tube.....	\$4.00
Model 6C—100% IMPROVED Low-Loss 3-Tube.....	.75
Model 6D—100% Low-Loss 4-Tube.....	1.00
Model 6E—Five-Tube Lessons.....	1.00
Model 100B—100% Low-Loss Reflex 2-Tube.....	.75
Model 100C—100% Low-Loss Reflex 3-Tube.....	1.00
Model 101C—Unitex Reflex 3-Tube.....	1.00

Blue Print Dept.

EVERYBODY'S RADIO WEEKLY  
2721 Michigan Avenue CHICAGO

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They've Been Tested by "Everybody's Radio." At All Dealers

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Three Circuit  
Tuner

Price

\$5.50

At All  
Dealers



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This is the low-loss tuner that made "Everybody's IMPROVED 100% Low-Loss" Three-Tube Set famous. See July 25 issue. Don't take any chances with other apparatus. Use just what Editor Wells specified and get the same results he did. Price, at all dealers, or by us **\$5.50** postpaid

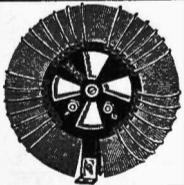
Write us for Hookups on Gen-Ral Tuners and R. F. Transformers.

**GENERAL MFG. CO.**  
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Phone: Fairfax 6965

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By special arrangement with Everybody's Radio Weekly we have cut, drilled and engraved all the standard hookup panels appearing in this magazine and carry them in stock. All panels made of genuine Bakelite. Special drilling and engraving done to order.

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**STRAIGHT LINE CONDENSER**

Space wavering evenly over dial of 800 de-  
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415 So. Dearborn St. CHICAGO

6. What would be the range of this one tube set with WD12 tube?  
7. Which is the best kind of wire for an aerial?  
8. Would a Bradley Dubilier Micadon be O. K. for the .0025 fixed condenser?  
9. Is the antenna supposed to be cabled to with the battery leads, ground, etc.? If you will answer these I will surely be glad. I sure do like your little magazine. It is better than some of the high priced ones.

1. The litz wire on the secondary may be used. 2. The distance of the primary from the secondary is one-half inch. 3. You would gain more advantage by having the primary separated from the other parts of the tuner. 4. The .0005 variable condenser is proper for this tuner. 5. One stage of radio frequency with detector would be the best for DX. 6. It would be impossible for us to determine the range of this one-tube set you are referring to. 7. The best kind of wire for an aerial is Belding, 7 strand. 8. Either one of the fixed condensers may be used. 9. The antenna is not supposed to be cabled with the rest of the wires.

### B. T. Nameless Set

5111—GARY, IND.: I have a five-tube Bremer-Tully Nameless set and it is too broad tuning. Could you help me to make it more selective?

1. Would taking a few turns off the primary of the antenna-coupler make it finer tuning?  
2. Would it cut down volume very much?  
3. Could I use two power tubes in the stages of audio?  
4. What size rheostat should I use for these tubes? Would a thirty be alright?  
5. Would moving my coils back farther from condenser make any difference?  
6. How many volts of wet "B" battery can I use on my radio frequency and audio frequency?  
7. Is 120 volts too much?  
8. How many volts will power tubes stand? I am using all 201A tubes now.  
9. When cleaning condensers, should I use denatured alcohol on the pipe cleaners?  
10. What kind of wire is best?

1. We suggest that you try taking off a few turns from the primary.  
2. It will cut down the volume to some extent.  
3. Yes, you can use two power tubes in the stages of audio.  
4. It is best to use a 6-ohm rheostat.  
5. Moving the coils back from the condenser would make some difference.  
6. You should use 90 volts on each radio and audio frequency.  
7. It will depend on the set action in using 120 volts.  
8. Power tubes will stand 160 volts on the plate.  
9. It is best to use a pipe cleaner for cleaning the condensers without alcohol.  
10. Use No. 14 solid wire for battery leads.

### The Buell Tuner

5180—CALUMET CITY, ILLINOIS: I have a three-tube Tresco set with WD-12 tubes and .0005 Mfd. 15-plate condenser. Would like to know if I could use a Buell tuner in my set?

You have the wrong conception on the right capacity for your condenser. If you have a 15-plate condenser, your capacity will be .00035. You can use a Buell tuner with this condenser, if it has 10 turns on the primary, 55 turns on the secondary, and 21 turns on the tickler.

### UV199 Tubes for Low Loss

5064—LAFAYETTE, INDIANA: Would you advise me on the following: Can the "Low Loss" receiver published in the June 27th issue be built with UV-199 tubes? What capacity rheostats will be necessary? Would it be necessary to change any other parts as listed? Has the principle of reflection as applied to loud speakers proven very successful?

Yes, but you will sacrifice a little volume and distance, as compared to the 201A tubes.

40-Ohms on the radio frequency, 40-ohms on detector, 25-ohms for the two-audio, for UV199 tubes.

It will not be necessary to change any other parts.

We do not know if it has. We have not made a test in our laboratory.

### Reflex Crystal Dead

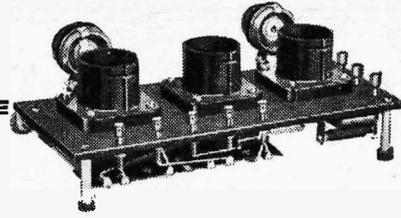
5183—CHICAGO, ILLINOIS: I have an Ultralogo reflex set which gave loud speaker volume until recently, when it apparently stopped working on the crystal.

The volume now is about equal to a crystal set and it tunes very broadly.

It works just the same whether the crystal is hooked in or not. Volume is not increased by the crystal. The transformers test all right. The wiring checks all right. The crystal works all right in another set. Can you tell me what the trouble is?

Your trouble would not be in the transformers or any other parts of the set.

You had better test out some new crystals in the circuit you have. You will find your difficulty in the crystal alone.



The following standard merchandise will be used in the laboratory models to be shown in early issues of "Everybody's Radio Weekly" of the new **JIM WELLS LINK CIRCUIT** described in this week's issue; **WELTY'S** Detector-Amplifier Unit; **WELTY'S** Keystone Audio Transformers (3 1/2-1); **WELTY'S** Pioneer Sockets, and **HEATH'S** Variable Condensers.

## Anyone Can Hook Up Any Set With This Unit

In a Few Minutes, Saving Time, Labor and Cost

You can use it with "Everybody's Jim Wells Link Circuit" Receiver, "Everybody's 100% Low-Loss Three-Tube set," "Everybody's Five-Tube Loss-Less," Welty's "Superadio" Lopez set, or any three, four, five or eight-tube set. It is Detector and Audio (two stages) circuit completely wired with all necessary rheostats, switch, sockets, transformers, binding posts, etc. Add any three-circuit tuner and condenser and make an efficient three-tube. Add tuned radio frequency to it and make a four or five-tube set. Everybody's Laboratory uses it in their highly efficient model receivers. You can use it in the set you are building or intend to build. It eliminates wiring, no soldering, no blue print as color scheme is used throughout. Any three-tube set can be built up quickly and without mistakes.

## WELTY'S Detector-Amplifier Unit

"Makes Building Easy"

It's a small, compact unit 4 1/4 x 9 1/2 inches. Every part necessary ready wired, even battery binding posts with color code and cable battery wire ready to hook up. Four color code posts for attaching either flexible or buss wire to color marker points on condenser and tuner. Positive

contacts are assured. The grief is all taken out of set building and you are assured of a set that will function as Loudspeaker as soon as set up. Simply mount unit, tuner and condenser on panel, make the four connections, hook up batteries, plug in, and listen to stations far and near.

### PRICES

Welty's Detector - Amplifier Unit as illustrated above and ready to hook up to your tuner circuit. At any dealer's or retail store or sent by post-paid mail.  
Price ..... **\$19.50**

Welty's Detector - Amplifier Unit in a kit with Heath or Barrett & Paden S. L. F. Condenser and Buell Tuner with panel.  
Price ..... **\$28.50**

Welty's Detector - Amplifier Unit with same kit as above, kit with "Aero" three-circuit Tuner.  
Price ..... **\$32.50**  
Lopez Tuner also in stock.

All parts are of highest grade and standard, guaranteed by us, and approved by Everybody's Laboratory as well as other engineers. Comes in single unit or in kits consisting of "Detector Amplifier," condenser, and tuning unit and panel. It is distortionless and gives wonderful volume and tone.

Write for description and catalogue of all of Welty's Quality Radio Products. We will save you money.

Dealers and jobbers wanted

Radio Department

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# Blue Prints

Everybody's

## JIM WELLS CIRCUIT

Model A Receiver

Complete working plans—full size blue prints, Model A Receiver, Three-Tube Regenerative Type, with full instructions for wiring up the set, consisting of three sheets; also complete full size working blue prints of unit, adaptable to any ready-built receiver.

Price ..... **\$1**

For Sale at Radio Stores  
or by Mail Postpaid

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**EVERYBODY'S RADIO WEEKLY**  
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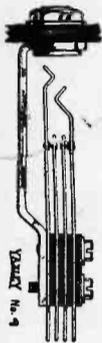
# YAXLEY

APPROVED RADIO PRODUCTS

Used in Jim Wells Link Circuit Receivers

Yaxley Products not only are approved by "Everybody's Radio" Laboratories, but by all other recognized radio authorities and the radio public in general. Good radio depends upon GOOD apparatus, even in the smallest parts. Why invest from \$50 to \$200 in apparatus and skimp on the small parts? Your Jacks and rheostats are just as important to your set as your coils and condensers.

### YAXLEY Radio Jacks



Jacks for every need in fine radio sets. One nut mounting in  $\frac{1}{8}$ -inch panel hole. Genuine phosphor bronze springs; pure silver contact rivets and terminals tinned for soldering. Used in Everybody's Radio hookups because they are efficient. Price, No. 4 Inter stage Jack as illustrated, 80c each

### YAXLEY Rheostats



Don't compare this rheostat with any other rheostat made because it is DIFFERENT. It is a marvel in design and construction. Coil is air cooled, exposed on all sides. Adjustable contact sliding lever. No vernier required. One nut mounting. Price with knob \$1.35

Etched Dial Plate, 15c Extra

### YAXLEY Battery Switch



It's a quick "make" quick "break" "A" battery switch and should be in every radio receiving set. Neat and compact—quick, positive snap-break contact. One nut mounting in single hole. Hard rolled bronze springs—constructed for lifelong service. You see it every week in the laboratory models of "Everybody's Radio." Price, each, 50c

### Yaxley Booklet Free

This is not the entire Yaxley line. Write for the Free Yaxley Booklet describing all the Yaxley Approved Radio Products. One of the newest Yaxley items is the Yaxley Wall Socket Jack. You can wire every room with radio by their use. Write today.



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## Phans Phorum

### Getting Out of Blooper Class

C. L. Chadwick, 4519 Wilcox Street, Chicago, Illinois, writes his objections to our editorial on silent night and comes in with a letter as follows:

After reading your silent night talk in November 14 issue, I am hurrying to you for help to get myself out of the "bloopers" class. There are a few points on which I do not agree with you. On my set, I have listened to about forty out-of-town stations ranging from KFI to WBZ, and from WCCO to WSMB, and various Texas stations. Almost all of these have been heard on Monday nights, WOC at Davenport and KDKA at Pittsburgh being the only stations I ever brought in on a week night besides Monday, and these two only came in once or twice. I also find the same condition among most of my friends, and therefore, object to your statement that most of us are unable to get distance on Mondays or any other night. We can listen to the best in the world right here in Chicago, six out of seven nights, but to most of us, there is a big kick in seeing how far away we can get even though we only listen long enough to get the call letters and try and educate all those who have selective sets, and yet can only get out-of-town on Mondays, would be a bigger job than keeping a silent night.

We will admit it is quite a task to educate the public in any one thing to do and it is only keeping at it that the public learns to do that thing which is most necessary for their benefit. It is only by experimentation that they find it best to follow the advice of those who know just the thing to do.

### Silent Night Question

W. J. Warris, Navy Yard Puget Sound, Bremerton, Washington, has good performance with his 100% Low-Loss on the Pacific Coast and writes: Allow me to congratulate you upon your editorial, "The Silent Night Question" in the November 14 number of "EVERYBODY'S." It hits the nail on the head. I have had copies made and am sending it to all Seattle newspapers (they control two of the three Seattle radio stations) in hopes that they will publish it.

Some time ago, the Victor Talking Machine Co. sponsored a program from KGO featuring some of the world's best talent and in order that all who possessed radio receivers might enjoy the program all Seattle stations were silent from 8 until 9 that evening. The result was that all anyone heard on KGO's wave length was a continuous scream from the dozens of "bloopers" who's fond owners were either trying to hear the recital or trying to prevent everyone else from hearing it. They succeeded in the latter.

Had the Seattle stations not been so considerate, particularly KJR (separated 20 meters from KGO) at least those of us with selective sets could have heard something worth while.

I have a four-tube "Everybody's 100% Low Loss" receiver made of Bremer-Tully condensers, home-made skeleton wound coils, and General Radio 285 transformers with which I can tune in KFI (468 meters) through KFOA (455 meters) and KGO (361 meters) through KJR (384 meters) any night in the year. KGO is 600 miles, KEI is 950 miles. Can you beat it? I am located about 14 miles from Seattle.

Glad to hear from you so far away and that you are getting best results from the home-made set after the design of our 100% Low Loss. When you have a set that passes through all the broadcasting stations and picks up distance, you surely can get some "kick" from it.

### Brings Dead to Life

A regular play written by Ray Winship, 3532 North Hoyne Avenue, Chicago, tells of induced appetite and increased vigor since reading EVERYBODY'S RADIO for November 21. Here is his playlet:

#### Scene I—Sick Room

Patient: A usually healthy, super-active radio fan whose battery charger gave out the night he came down sick and has tried to run a 6-tube neut. five nights, including Sunday afternoon on a small battery.

Wife: A good soul, hard-working, thrifty (too thrifty for radio fan's ideals) who has almost reconciled herself to the life of a radio widow, but finding herself boss, won't let R. F. ask for return of a Silver-Marshall superhet that has both A & B eliminators that he loaned to the minister. Color of hero—blue!

Scene II—Time, Tuesday noon  
Arrival of Nov. 21 copy of EVERYBODY'S Radio with Link Circuit.

Scene III—Time, 6 p. m. same day  
Patient throws medicine bottles out the window, gets up and eats a big supper and is well.

Boys! That issue is good enough to raise the dead.

There seems to be no comments to make on this letter. The result from that issue is surely gratifying.

### Mounting for Three-Circuit Tuner

William Hawkyard, 400 Penobscot building, Detroit, Mich., is one of our recent family additions through the yearly subscription route and has shown he is a good comrade by contributing frequently out of his store of

## Everybody's RADIO DEALER Co-operators

To avoid having readers chase here and there hunting for products advertised or specified in EVERYBODY'S RADIO Weekly we have arranged with the retail radio dealers, listed below, to act as our co-operators. They have agreed to stock merchandise advertised in this publication or to obtain same on a few hours' notice. Just tell them you're an "Everybody's" reader and you'll get prompt service.

### Buy from These Dealers—

They're Trustworthy

We have selected these dealers because they are in full sympathy with our quality merchandise policy and will stand back of their promises to you. They have agreed to co-operate with our readers and us because they know that all merchandise advertised in EVERYBODY'S RADIO Weekly has been TESTED and proven for QUALITY and PERFORMANCE and is safe to buy and sell.

#### LOOP DISTRICT—

CHICAGO RADIO APPARATUS CO.  
407 S. Dearborn St., Chicago  
NEWARK ELECTRIC COMPANY  
225 W. Madison St., Chicago  
NELSON ELECTRIC COMPANY  
508 S. Dearborn St., Chicago  
SILVER MARSHALL, INC.  
105 S. Wabash Ave., Chicago

#### WEST SIDE DISTRICT—

ATWOOD ELECTRIC COMPANY  
3122 W. Madison St., Chicago

#### NORTH SIDE DISTRICT—

WONDER SALES COMPANY  
3152 Irving Park Blvd., Chicago

#### SOUTH SIDE DISTRICT—

H. & H. RADIO SHOP  
5638 S. Ashland Ave., Chicago

NOTICE TO DEALERS: Your name will be added to this list without charge if you will qualify as an "Everybody's Radio Co-Operator." Phone Mr. Morford, Calumet 3310, for particulars.

Used in "Everybody's Jim Wells' Link Circuit" Receiver



## Plug in Your Batteries!

One plug does the work for all batteries, your aerial and your ground. Just as easy as plugging in your loud speaker to a jack. Once your batteries are connected your troubles are ended. No mistakes—no blown-out tubes. Wires all cabled.

TYPE BM.....For set building, \$4.50  
TYPE BP.....Adaptable to any set, \$5.00



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THE STANDARD SET CONNECTOR

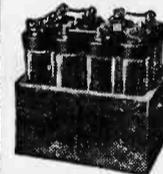
HOWARD B. JONES, 618 S. Canal Street, CHICAGO

# BONG

Radio "A & B" Batteries



Perfect Reception



No Plates  
No Separators

BONG BATTERY CORP.  
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## RW The Long Distance Crystal Detector



Used by "Everybody's" in its Long-Distance Hook-up

### SELF-ADJUSTING

ALWAYS SENSITIVE; ALWAYS READY  
AT ALL RELIABLE DEALERS or—Send \$1.50 and your dealer's name for one by prepaid post.

R. W. Mfg. Co., 228 N. Halsted Street, CHICAGO, ILL.

SUBSCRIBE TO EVERYBODY'S RADIO WEEKLY. TWO DOLLARS THE YEAR.