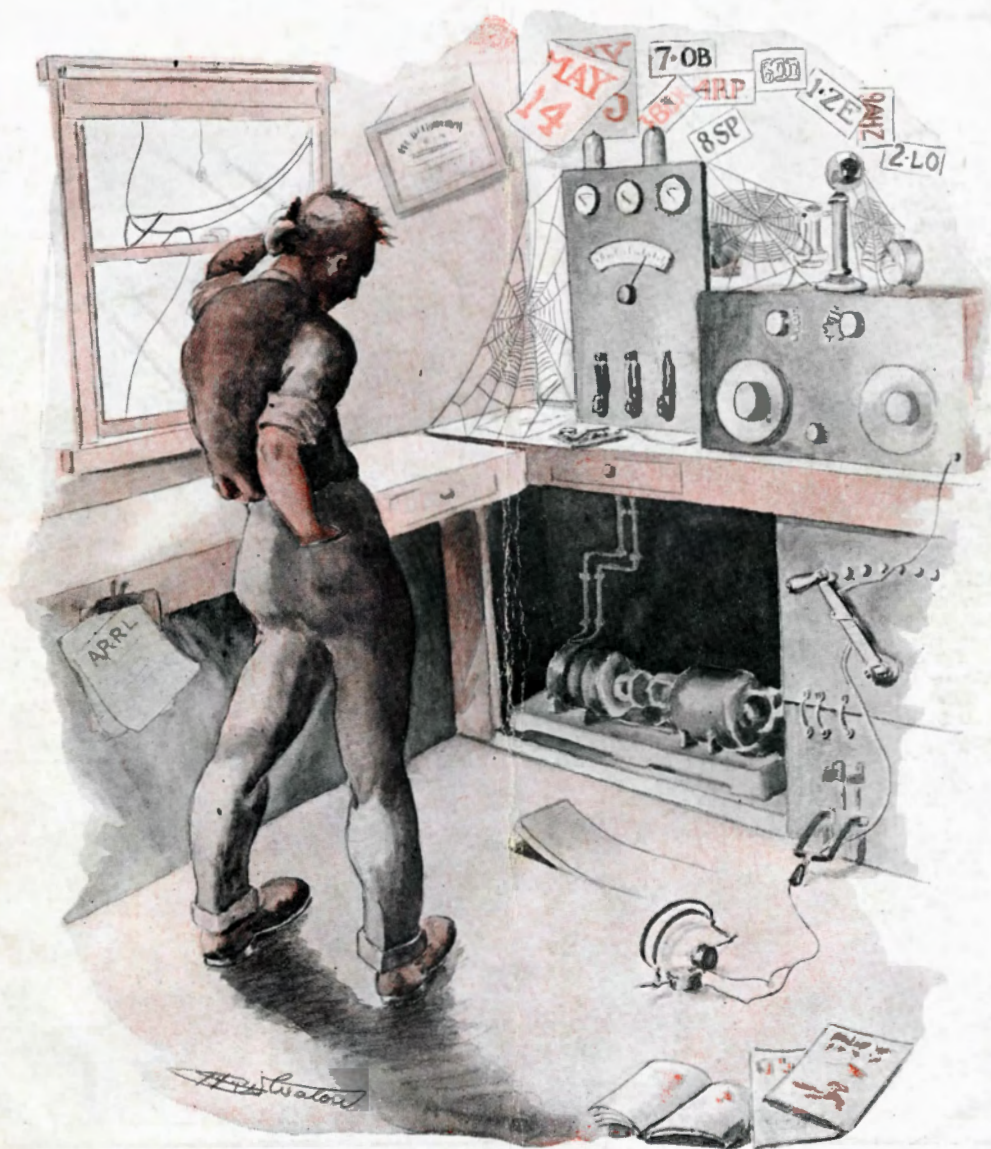


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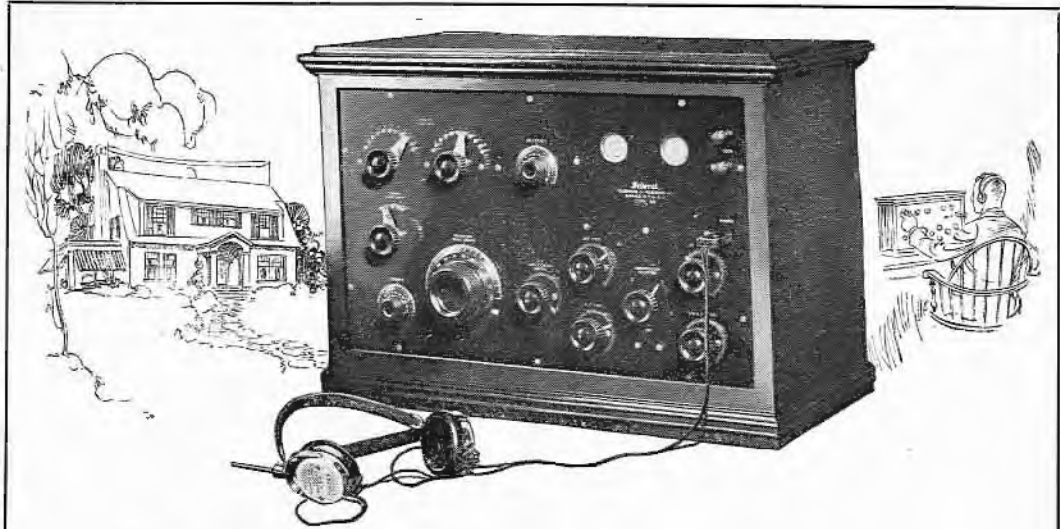
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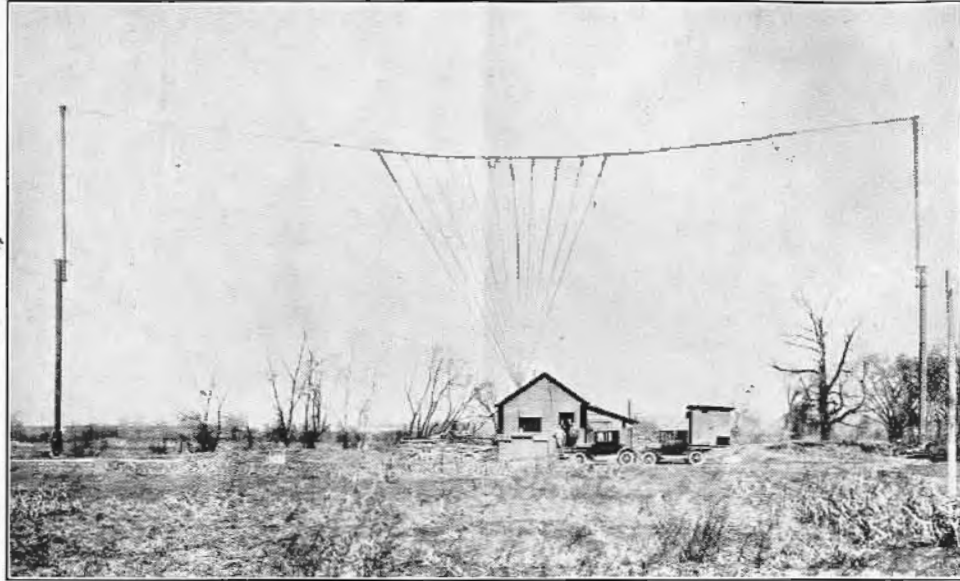
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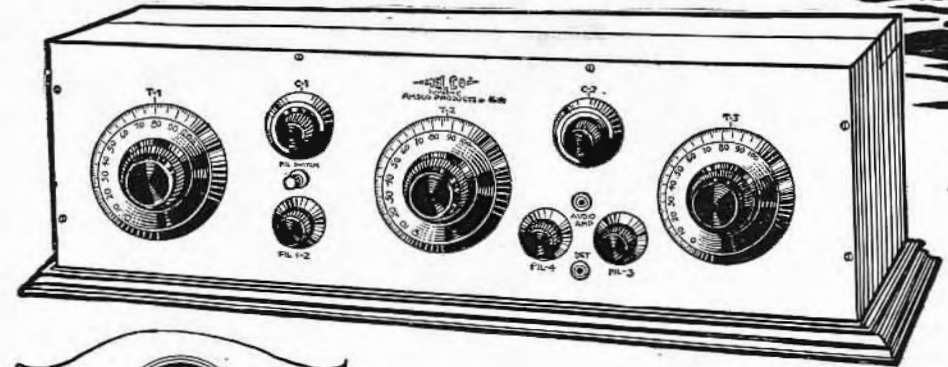


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# AMATEUR RADIO

With which is combined Radio Relays

VOLUME 3

SEPTEMBER, 1924

NUMBER 9



## How to Transmit Ultra Short Waves

An exclusive article written specially for "Amateur Radio"

By John L. Reinartz, 1QP, 1XAM

For some time, rumors have been heard to the effect that John Reinartz had something new in the line of transmitters up his sleeve. In fact, he has been experimenting for the past few months with short waves, in co-operation with the U. S. Navy, the General Electric Company, and with other amateurs. We were just as curious as others as to what this experimental genius had to offer this time, and we are glad to present to the readers of AMATEUR RADIO this series of exclusive articles written specially for them by John L. Reinartz

### PART I. ANTENNA CONSIDERATIONS

ONE of the first considerations in short-wave work is the antenna design. Not every and any type of system will serve the purpose. A particular type can be chosen for a given condition, but it is important that the amateur study carefully the advantages that result from the final choice. The result of months of study and experimenting by Reinartz are given in these paragraphs on antenna for short-wave transmission.

the lines of radio progress which we have been experiencing for the past several years. The amateur will again come into his own, with the limitations of the quiet hours removed from this field. In many respects, this new era will be somewhat

The assignment of several wave bands below 100 meters may have come to some as a surprise. As a matter of fact, it seems to have been but the logical development along

like the period directly after the war, one of great activity and expectations. We will delve into new problems that face us with new zeal, making and breaking records, and most important of all, contributing our little part to the general information available on ultra-short waves today.

It is with pleasure, having been given this opportunity, to relate the work which led to the achievement of transmitting on a wavelength of two meters on a regulation amateur antenna of the usual type. Generating these frequencies is in itself perhaps not a great feat, but transferring the energy thus available at that frequency to an antenna with a fundamental wavelength of 105 meters is indeed a problem that taxes the ingenuity of the amateur. It started investigation along certain lines of research that never failed to sustain interest, and to provide the experimenter with endless problems which had to be solved one by one.

Perhaps the first consideration of the experiment in general is the antenna system. This problem is treated first, because it is the most important. A good understanding of antennas will save the experimenter much trouble, and the burning out of many vacuum tubes.

### The Antenna and Its Fundamental

Ordinarily, any elevated wire, with its lower end connected to the earth is considered to have a quarter wavelength. When this wire is connected to a counterpoise at the nodal point, which, in this case, is the ground connection, the antenna-counterpoise system constitutes a half wavelength. It must not be forgotten in this instance that the counterpoise "balances" the antenna, so that its period to the ground connection is exactly a quarter wavelength. Either of the cases considered above is a radiation system taken at the fundamental wavelength, which is, except as listed later, the most desirable wavelength at which it should be operated. All future references in this article to radiation systems will denote the Antenna-Counterpoise type, as shown in Figure 1.

### Multiples of Fundamental Frequency

Obviously, we must operate the antenna system at some multiple frequency below the fundamental of our antenna, if it has a wavelength of 100 meters or more, and if we desire to operate it at 20, 40, or 75 meters. This means that whether we leave our old installation, or if we build an antenna with a fundamental near 100 meters, we will have to operate the system at some well determined multiple frequency of that wavelength. Knowing the action and desirability of certain wavelengths from more than a year's experimenting with them, my choice would rest between 40 meters for daylight work, and 75 meters for night work.

It then becomes necessary, if the experimenter desires to take these figures as suitable for his work, to choose that size antenna which will adapt itself to those wavelengths most readily. If you

have plenty of outdoor room, use an antenna with a fundamental wavelength of 129 meters. If you are limited, the fundamental wave of the antenna is better fixed at 80 meters.

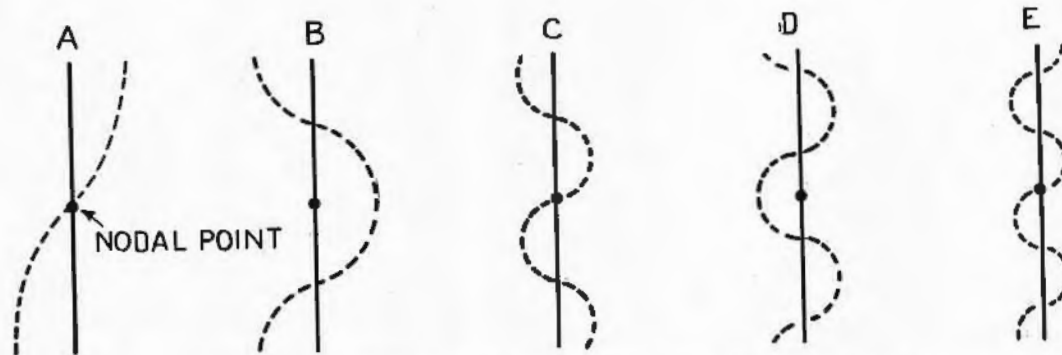
The multiple frequencies are evolved by making the antenna oscillate as shown in the various ways shown in Figure 2. In our experimenting, the frequency multiples will revolve themselves about types A, B, and C, the best adaptations being A, C, and E.

### Coupling the Radiation System to the Driving Circuit

The new ruling for operating transmitters on waves below 100 meters calls for transmitters of the inductively-coupled type. This simplifies our problem somewhat, as now we can choose such a combination of inductance and capacity values as will cancel out, and leave our radiating system fundamental frequency undisturbed. The diagrams shown in Figure 3 shows how this is accomplished. For the present we will disregard the driving circuit, which will be discussed in detail in another part.

Figure 3-D shows an arrangement which is very interesting. It consists essentially of fixed inductances L-1 and L-2, and a variable capacity of the type which has two stationary sets of plates, with one plate revolving, as shown in detail in E. This type of condenser is usually known as the "balanced type," and is used to some extent in radio frequency receiving circuits for balancing the plate and grid circuits. The rotor of this instrument is connected to earth through a radio frequency ammeter, with a scale of one ampere. Inductances L-1 and L-2 are alike in inductance value. The radio frequency meter will only indicate if there is a lack of balance in the radiating system circuits, this condition of affairs being indicated through a current flow to ground by a reading on the meter. This is a good visual method of telling whether something abnormal is going on in the radiating system.

(Turn to page 336)



A vertical antenna may be made to oscillate at several frequencies, as shown here.



### THE RAISIN' BUSINESS

*A little discussion on a much 'cussed subject, in a way that is certainly the "berries"*

By A. G. Clark, 6QD

REPORTS from Northern New Jersey tells as how amateur radio in that country is looking up once more. This sure is a great change to take place in a short time, especially being in Joisey. It seems most of the credit by rights goes to Louie Clark, 2PE and "SL" at 20M. Since long skirts came back and Louie put up his pole there ain't much else for a ham to do. Now you can go most any place in the country and tell which way Ridgewood lies by one look up at the sky.

Probably you have gathered from this preamble that it ain't one of those things you could hide till the company goes away. You ought to see the thing itself. It all started from him claiming he could drape a fan on a single pole with no outside assistance. He did it right enough, but if you never seen his honest eyes you would swear he cheated. It starts off with ten tons of concrete and a steel plate on the bottom. The stick starts there and goes a hundred and five feet up in the air before it stops. Then across the top, real casual, he lays a forty-foot spreader, and makes nice geometric designs out of lumber to hold it up there. The whole effect is a suspended triangle with criss-cross work inside. Half way up the pole he puts some more lattice work which looks like a railroad bridge but sticks out thirty feet like a branch off a tree. He calls this a "strut frame," but I ain't aiming to strut on it away up there. Down on this side is where the shack goes. A ten-wire cage aerial runs from the shack up to the strut frame as straight as a drunken Indian, and something beyond my understanding keeps it from fouling on the wood anywhere. Then it slants on up to the top, spreading out till it covers the whole forty feet with a regular slanting fan. The outside wires come in pairs but the other six are spaced even all the way across. He sent all the way to Illinois for twenty white porcelain rods to insulate the wires from the spreader and strut frame and they look right pretty when the sun shines, but as I told him, I would hate to wash them off when they get sooty. Besides all this there is eight guy wires coming down to four big rocks, three more off the top spreader and two off

the strut frame. These are "busted up" every so often with porcelain "eggs" to make a place for birds to build their nests. The mast took about two weeks after it went up, feeling which rock was weakest, and it picked on one and had it pulled six inches out of the ground before they noticed what was wrong.

The whole inside story of this affair would be pretty long. According to what he says, Louie must have got interested in radio about 1908 or 1910, but this writer was getting interested in teddy bears and alphabet blocks about that time, so we can't argue again' that. Along about five years back he cut two fifty-foot sticks and let them lie in his backyard while he put up everybody else's mast but his own. Then he built a mast a lot like the present one and put it up, but a squall came up and wrecked it before it was guyed. Last year he decided to make a heavy one and he sure did! A lot of the gozinto stick work was done by Bill Mitchell, M.E., and radio 2IC, who can rattle off formulas like a railroad man does stations.

Now Louie goes out and admires the pole every morning before he goes to work for the Amsco people. You see, raisin' masts has got to be a hobby with him. He put up those at 20M, 2AJA, 2IC and others, besides his own. He is also a regular old-timer, the kind which argue for spark and use C.W.

Well, stranger, I can't get to tell you nowheres near enough about that pole in this little space, and you ought to get Louie to tell you himself. There's a heap more to this pole raisin' business than you'd think there is.

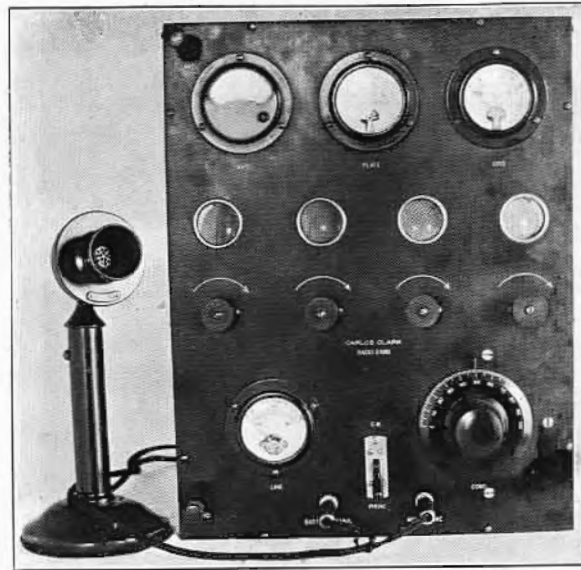
### AMATEUR RADIO For October

*will contain the second installment of John L. Reinartz' Short-Wave article. The most up-to-date information for Short-Wave Amateurs.*

# A Phone Set Worth Talking About

Complete constructional details for the making of an ideal low-power transmitter rated at 20 watts, which combines beauty with efficiency

By Carlos Clark, 2ABD



SEPTEMBER is proverbially the time when amateurs look over their old junk pile, renew the batteries, change the tubes, overhaul the ol' aerial, and get ready generally to tackle the winter transmitting in first class shape.

I know of many transmitters and receivers that should undergo a little alterations during this month of preparation. True, it is no small matter to scrap the set that has been used from one season to another, for we gradually develop an attachment for old stuff which makes us procrastinate from year to year.

The transmitting set described in this article was built by the writer after a lengthy consideration of just such questions. Then, there was also the problem of combining as much of the equipment as it is possible in the set itself, thereby avoiding the common arrangement of having apparatus scattered over the table.

With the exception of a chemical rectifier or other means of rectification, this set is self-contained and compact. The plate voltage for the four 5-watt tubes, which are all used as oscillators, may be supplied by a generator if so desired. A step-up transformer used in conjunction with a chemical rectifier, and a simple filter circuit, is a very satisfactory and inexpensive means of obtaining a source of direct current. The transformer and the filter-circuit equipment are an integral part of the set.

To operate the telephone of this transmitting set it is necessary to throw the key-switch on the panel to the "PHONE" position and to press the button on the microphone stand. The pressing of the button causes the operation of a magnetic switch. When this switch is in an operated position it brings about the following changes:

- (1) Disconnects antenna from the receiver and connects it to the transmitter.
- (2) Opens "A" battery circuit to the receiving set.
- (3) Closes the "A.C." 110 volt line to the 200 watt "C.W." transformer.

The set is now ready to transmit the voice modulated signals.

### Continuous Wave Operation

To operate this set for "Continuous Wave" throw the key-switch to "C.W." position. This operation closes the circuit to the magnetic switch and holds it in an operating position. The key circuit is broken by the means of a small relay, which is actuated by a local battery circuit through the key. The use of this small relay in the set eliminates long high voltage leads, which would ordinarily need to be connected to the key itself.

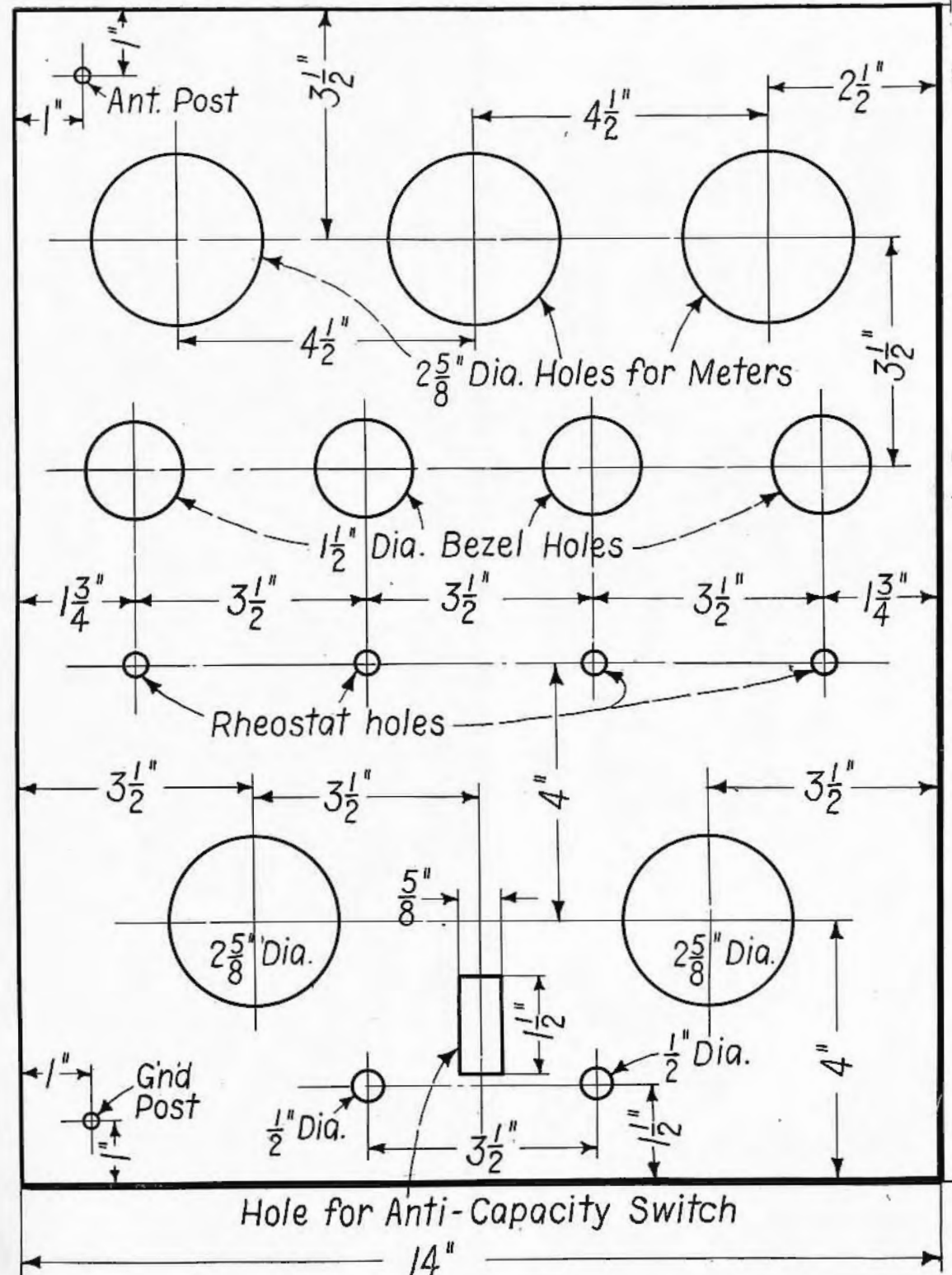
The filter-circuit consists of two Acme 1½ henry choke-coils shunted on both sides by two 1-M.F.D. 1,000 volt condensers connected in series with the mid-point grounded. This filter system has been found exceptionally good. Using loop-absorption modulation with the Reverse Feedback circuit, receiving stations at three miles distant reported this modulation practically perfect. This set has been reported heard on Continuous Wave at approximately 2,000 miles and on telephone at 200 miles.

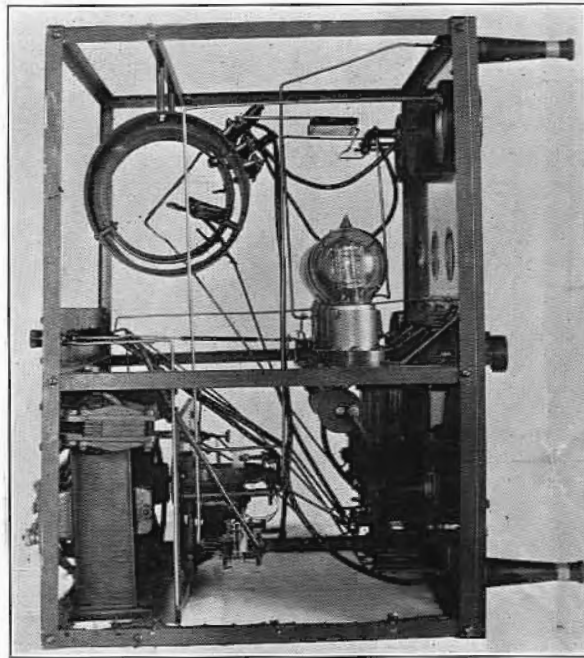
### Constructional Details

Having described the set generally, the writer will now give a few constructional details to aid those who may desire to build the set.

The following materials were used in the construction of the set above described:

- 1 Bakelite panel, 14" x 18" x ¼"
- 1 Bakelite panel, 6" x 10" x ¼" (for mounting magnetic switch and key relay)
- 2 Bakelite strips, 2" x 17½" x ¼" (for binding post strip on back of set)
- 1 Bakelite strips, 3" x 14" x ¼" (for socket shelf)
- 1 Bakelite tube, 3" long by 4½" diameter (for winding grid coil)
- ¼ lb. No. 12 D.C. C. B. & S. gauge copper wire
- ¼ lb. No. 22 D.C. C. B. & S. gauge copper wire
- 1 Acme 200-watt "C.W." transformer (with filament winding)
- 1 Acme "C.W." inductance
- 2 Acme "C.W." choke-coils 1½ henry





The side view of 2ABD's transmitter shows how the components are assembled on the framework and panel.

- 1 Roller Smith hot wire ammeter, 0 to  $2\frac{1}{2}$  (antenna ammeter)
- 1 Roller Smith D.C. Milliammeter, 0 to 500 (plate meter)
- 1 Roller Smith D.C. Milliammeter, 0 to 50 (grid meter)
- 1 Roller Smith A.C. Voltmeter, 0 to 150 (line meter)
- 4 General Radio reversible sockets
- 4 General Radio power rheostats
- 4-1 M.F.D. 1,000 volt condensers (filter condensers)
- 1 Telegraph sounder, 50 ohm (to be rebuilt for magnetic antenna switch)
- 1 Small relay (for breaking key-circuit)
- 2 Plugs
- 1 Single-circuit jacks
- 1 Double-circuit jack
- 1 Federal anti-capacity switch
- 1 Grid condenser (mica), .002
- 1 J. H. Bunnell variable condenser 23 plate (heavy brass plates)
- 4 Beezels  $1\frac{1}{2}$ " (nickel plated)
- 1 Pathé 4" bakelite dial (Grebe type)
- 2 Large power binding posts (for ant. and gnd.)
- 14 Small binding posts
- 15 feet No. 10 hard-drawn copper wire tinned
- 3 Lengths spaghetti (to fit above wire)
- 5 doz.  $\frac{1}{8}$ " 6-32 R. H. brass machine screws
- 21 ft.  $\frac{1}{4}$ " angle-brass
- $2\frac{1}{2}$ " tubular fuse clips (for mounting grid-leak)
- 1 Ward Leonard grid-leak 2,000 ohm
- 12"  $\frac{3}{4}$ " brass tubing (for mounting C. W. inductance, etc.)

Minor materials are omitted from this list.

List of materials needed for chemical rectifier (if desired) is as follows:

- 10 strips of sheet lead  $\frac{3}{4}$ " wide, 6" long,  $1/16$ " thick
- 10 strips of pure aluminum, same as above
- 10 pint jars
- 1 box 20 Mule Team Borax

### Frame Work

The construction of the frame-work is a simple matter if directions are observed.

Cut the following lengths of angle-brass:

- 2 pieces 54 inches long.
- 1 piece  $42\frac{3}{4}$  inches long.
- 2 pieces  $17\frac{7}{8}$  inches long.
- 4 pieces  $12\frac{1}{2}$  inches long.

Take a 54-inch length of the angle-brass and cut the ends at an angle of  $45^\circ$ . At 14 inches from the right hand end, cut out a triangular piece on one side of the angle-brass and on the same side cut out another triangular piece of 18 inches from the first cut, and another one at 14 inches from the latter, as per illustration. Next, place this piece of angle-brass in a vise with point "A" securely held and bend at right angle. Do likewise at points "B" and "C." This is the frame-work for the panel mounting. Make two of these frames, one for the panel and another for the rear supporting structure. Bolt these two frames together, using the  $12\frac{1}{2}$ -inch lengths for the corners. Now you will have a complete self-supporting frame.

Next, take the  $43\frac{3}{4}$ -inch length of angle-brass and at  $12\frac{7}{16}$  inches from the right hand end cut out a triangular piece. At  $17\frac{7}{8}$  inches from this last cut, cut out a similar piece. All cuts to be made on the same side of the angle-brass as illustrated. Follow above instructions for bending into a "U" shape. Mount this frame inside other, at about 8 inches from the bottom of the set, placing the  $17\frac{7}{8}$ -inch length across the back of the set. This frame is for mounting the shelf for the sockets.

Now, take the two  $17\frac{7}{8}$ -inch pieces of angle-brass and mount one directly across the top of the frame. This is for mounting the C.W. inductance. The other  $17\frac{7}{8}$ -inch piece should now be mounted at 3 inches from the back frame, at the bottom.

The frame-work is now all built and it should have all joints properly soldered, which will give it strength. It should be japanned at a reliable finishing concern, which would make it better than if it were merely painted.

Now take the bakelite tube, which should be 3 inches long and  $4\frac{1}{2}$  inches in diameter, and beginning at the left hand end, wind 15 turns of Number 12 D.C.C. wire, tapping the winding every fifth turn.

On the same tube, wind 17 turns of Number 12, D.C.C. wire, allowing one-half inch separation between the two windings. This winding will constitute the loop absorption coil for radio phone modulation. This tube is mounted inside of the antenna inductance coil, and the entire unit is placed on top of the frame, but suspended downward, as shown in the photograph.

All other apparatus is mounted in suitable places in the frame work, as may be seen in the illustration.

This set was on exhibition at the booth of the Rockville Center Radio Club during the Exposition of the Second District Executive Radio Council, at the Hotel Pennsylvania, March 3rd to 7th last. At this Exposition the first prize for construction and design was awarded to its builder and owner, the prize being a Fansteel Bakelite Battery Charger, which was donated by the Fansteel Products Company and which has proved to be a valuable addition to the station.

## The Oscillating Pole

Maybe you didn't think that it was possible to make a pole oscillate. Here it is, however, and it makes a good substantial antenna at that. This novel arrangement will save time, trouble, guy wires, and space. Make one grow on your roof or in your backyard

By Lloyd Jacquet, 20Z

RADIO engineers the world over seem to come to a sudden realization of the value of short waves. Marconi is experimenting with short wave directional transmitters in England. General Ferrié is conducting short wave tests from the Eiffel Tower in Paris. General Electric and Westinghouse engineers are broadcasting concerts unheard of distances with short waves. KDKA uses a wave of 70 meters, while WGY has been as low as 15.58 meters!

With the vast research laboratories and facilities that are at the disposal of these engineers, short wave development should proceed rapidly and steadily. Many interesting things can be learned by the amateurs by observing what their professional comrades are doing in this field.

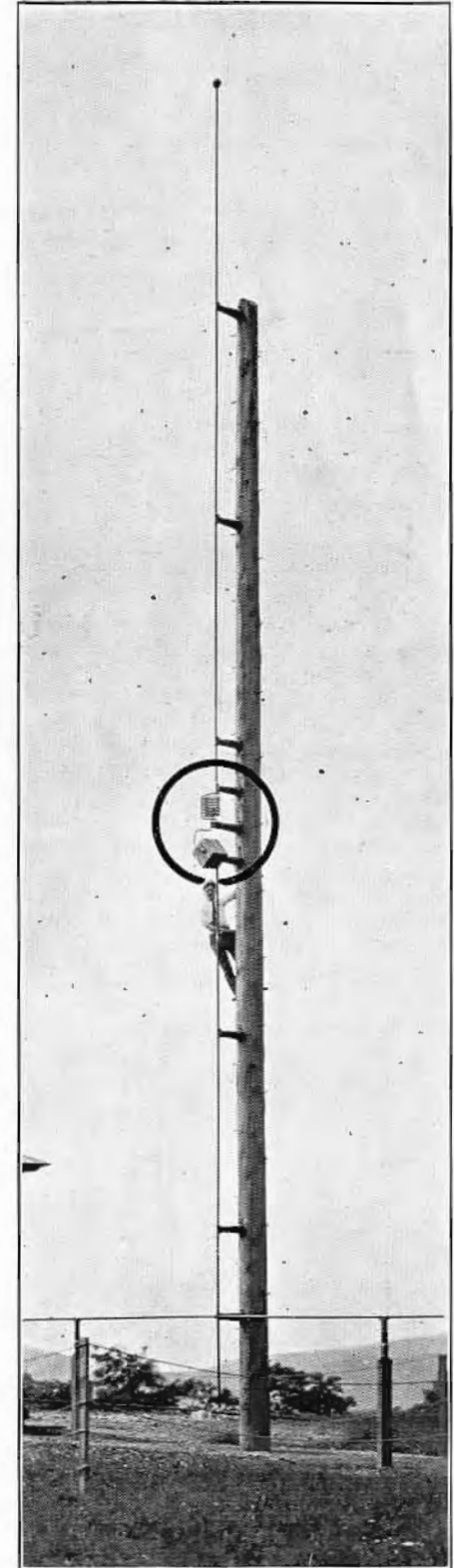
Perhaps the most original work in short waves has been undertaken by Frank Conrad, 8KX, a tireless experimenter and engineer, to whom most of the credit for successful commercial short wave work is given. He has been the moving factor at station KDKA, and was instrumental in getting its short wave re-broadcasting system established. While studying and working on this problem, he has evolved a rather novel transmitter, which is discussed herewith.

One of the first types of antenna that Conrad experimented within his short wave work was a steel mast, about seventy feet high, located on top of one of the Westinghouse factory buildings in East Pittsburgh, Pa.

Recognizing that the vertical antenna was the theoretically perfect and practical type of radiator, considerable work was done with it. Due to various conditions, among which may be mentioned the difficulty of keeping the frequency of the system constant, this antenna was temporarily abandoned, in favor of the one shown in Figure 2, which was used at stations KDKA, and at Hastings, Neb., for re-broadcasting. This radiating system contains some points of interest to the amateur. It was designed for work on a wavelength of from 70 to 110 meters, depending upon the wave chosen. The antenna is tuned at exactly the frequency on which it is desired to transmit, by means of the inductance in the vertical portion. It is built essentially for rigidity, as may be noted from the absence of swinging wires and cables. The spreaders are fastened directly to the poles, and the lead-down is made of copper tubing insulated from the pole.

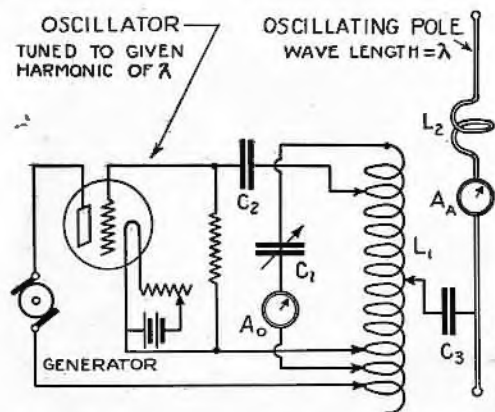
Only a single wire is used to connect this antenna with the transmitting apparatus, which is located in the radio room a short distance away. The energy from the transmitter, which is also tuned at exactly the wavelength of the antenna, or a multiple thereof, causes the system to oscillate. This antenna design proved to be very satisfactory and efficient.

The circle encloses the inductance and antenna meter. The pole is about 50 feet high



In the October, 1924, issue, Charles M. Srebroff will describe an improved radio receiving that makes use of tuned radio frequency with regeneration. It utilizes low loss coils, and low loss condensers, and has been called a "super-neutrodyne" receiver.

Work on the vertical type antenna was only temporarily abandoned, however, for only a short while ago, the oscillating pole was brought out,



and placed in service for the broadcasting of the Democratic Convention. This installation is most unique and original.

Following along the lines of previous antenna design, and stressing rigidity, the entire system consists merely of a length of copper tubing supported by a wooden mast. The design is extremely simple and inexpensive. The pole is made self-supporting, and there is no strain on it. The need for guy wires, with their attending shortcomings and losses are dispensed with. A short piece of tubing is used as a counterpoise at the bottom of the vertical portion of copper tubing. The tube, which carries the high frequency cur-

rents is, of course, well insulated from the pole, by means of pillar insulators of porcelain.

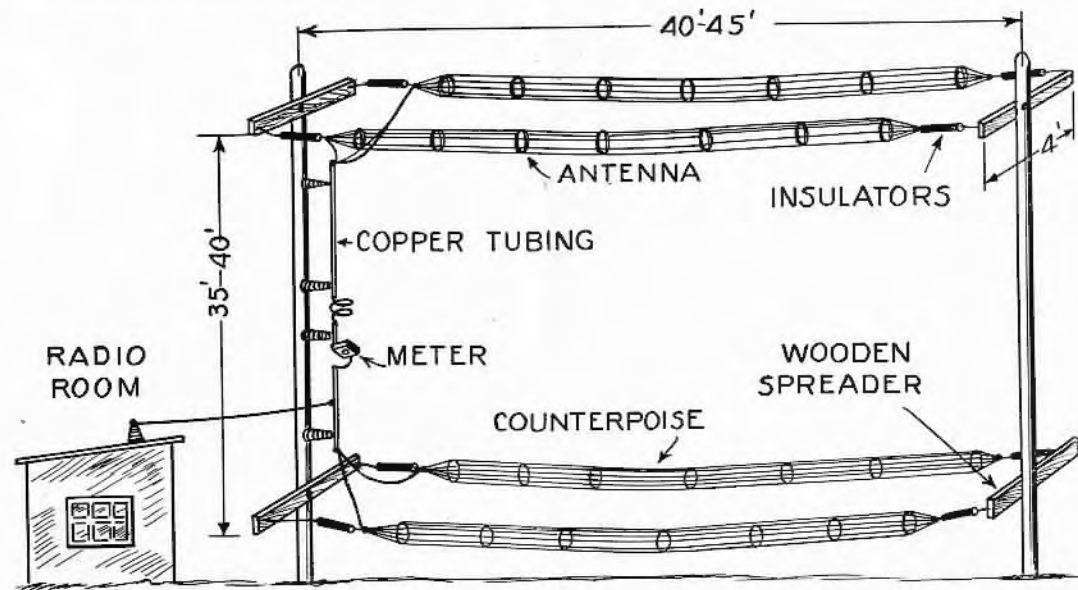
The transmitter built to excite this system is of 150 kilowatts capacity! With this apparatus, it was possible for the KDKA signals to register in Argentine in daylight, which constitutes quite a record indeed. The transmitting apparatus is arranged as shown in Figure 3. The "power plant" proper consists merely of an oscillator, which is so tuned that it generates a frequency which is equivalent to that for which the antenna system is designed. A harmonic could be used also.

The energy from this oscillator is transmitted to the radiating system by means of a coupling condenser, which is of very small capacity. An inductance may be substituted, however. Thus, only one lead goes from the oscillator to the antenna. The station and the antenna may be located some distance away from each other without detracting from the efficiency of the arrangement. This method of energy transfer has many advantages. Because of the fact that only one lead,—which in this case carries comparatively little current,—need be insulated, this problem can be well taken care of. The apparatus may be located away from the antenna and outside of its field.

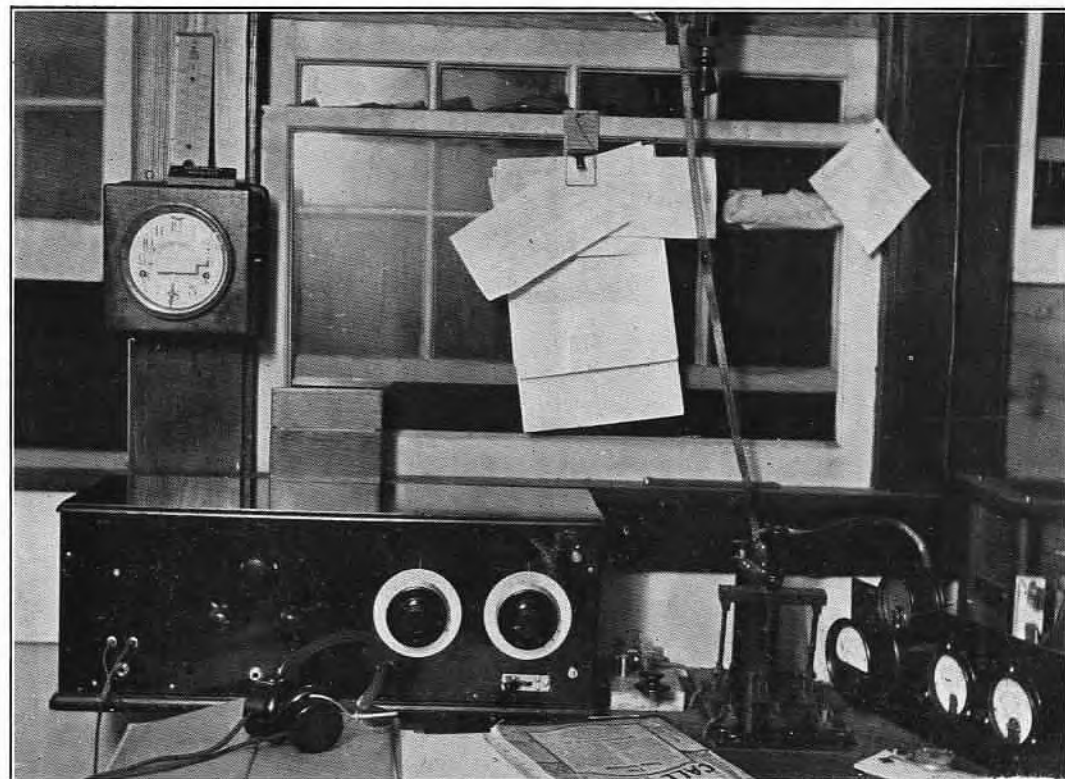
To measure the current in the antenna, a thermocouple ammeter is employed. It is connected in series with the inductance of a few turns, and the counterpoise down-lead. It is set at an angle, so that the operator may be able to read the current from the ground. The instrument should be located in the center of the system.

The coupling lead is so located along the radi-

(Turn to page 334)



Where space is no consideration, this kind of an antenna can be installed. It is the same as that used at KFKX. A full description of it can be found on page 256 of the July, 1924, issue of "Amateur Radio."



—Photo specially made for "Amateur Radio" by Boyd Phelps.

A new addition to the stations of this district is 2EB, owned and operated by Boyd Phelps, formerly of the First District. The short wave tuner which occupies most of the picture is described herewith. The mouse-trap tacked on the window is as much a part of the set as anything else. It holds the S/W schedules before the operator.

## Receiving the Ultra Short Waves

It's a case of "Now that we got them, what are we going to do with them?" We have the transmitters ready that can send on the low waves, but how are we equipped to receive them? Herewith, BeeP, formerly of QST staff, makes a few remarks on the receiving question. He's evidently out for something unusual in the line of tuner design, and he presents herewith some of the problems which will be encountered in the making of the ultra-short wave receiver

By Boyd Phelps, 2EB\*

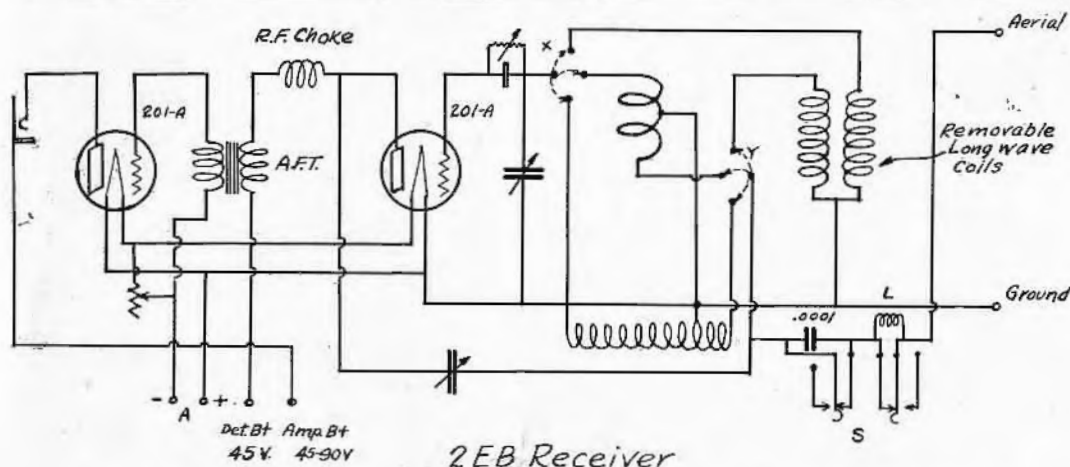
WELL Gang, now that we have the new waves, what are we going to do with them? When the 200 meter wave was dished out it was thought impossible to work any distance on such a short wave. Several, however, had an idea that the short waves had lots in store for us. Those of us that have worked across the Atlantic on waves around 100 meters know that good signals can be put out on such waves with moderately low power. Up until recently there has been a misconception that these short waves did the trick, whereas it is more likely that the almost total absence of interference with reception was the most important factor. Dropping from 200 to 100 meters only doubled the frequency or halved the

wavelength and one could not expect much more of a radical change than in returning an 800 meter station to 400 meters.

But not for the third time we must change our conception of what constitutes a short wave. Our Navy Department, remembering that we amateurs did them a good turn once upon a time, has given consent to the Bureau of Navigation to assign some of their waves to general amateur use. Not only is this action bound to produce much information not now known about these new waves, but there are two additional "kicks" along with the new regulations that should prove a great boon to amateur radio. By this is meant the lifting of Quiet Hours, a regulation that was eating the heart out of amateur radio, and allowing the type

\* Experimental Engineer, Sleeper Radio Corp.





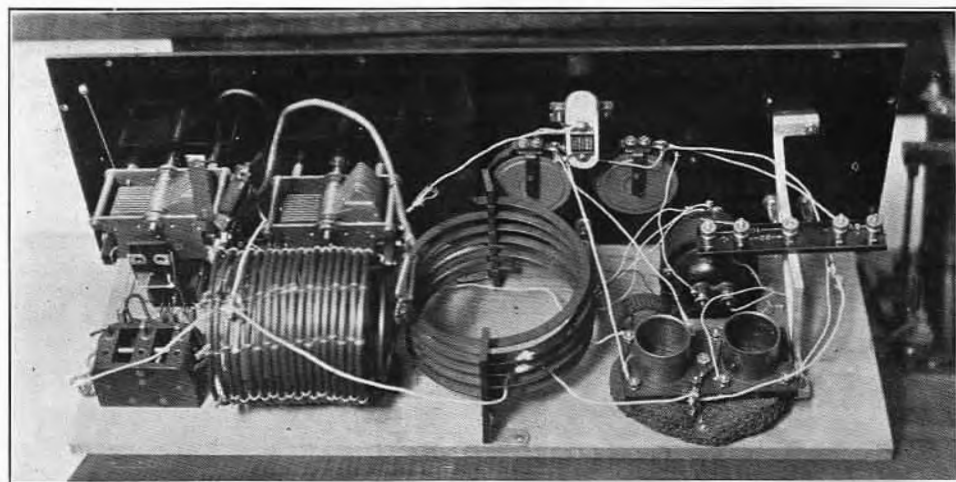
Switch "S" allows shifting antenna natural wave above or below listening wave for more uniform oscillation. "L" may be a 75-turn lattice wound coil. "X" and "Y" are flexible cords for connection of grid circuit and plate-antenna circuit to various coils.

of transmission that causes the worst interference with broadcast reception to operate further from the broadcast waves. Spark and raw a.c. transmitters that formerly were required by law to operate between 176 and 200 meters now can go down to 150. It would have been more logical to have placed such types of transmission between 150 and 176 meters in the first place had it not seemed too radical at that time. These changes we hope will serve as a heart balm for the hard feelings that have existed between amateurs and broadcast listeners in some places, although we still must watch our step and modulation during the evening hours.

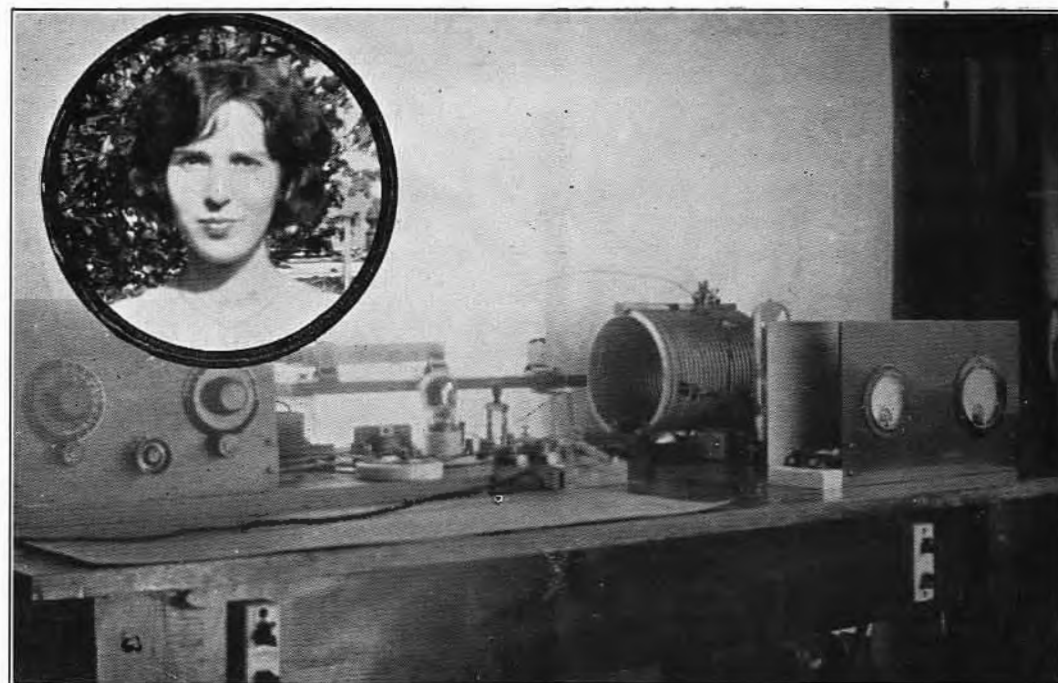
### Speaking in Kilocycles

To be more specific, let us get somewhat of an analysis of what we have been let in on. In the first place, although the use of kilocycles instead of wavelengths generally seems confusing, a clear conception of what we are now working with cannot be obtained until it is thoroughly understood what the frequencies are at these new waves and how they vary, and vary immensely, for a meter change of wavelength at the new ultra short waves. The whole broadcast band of wavelengths runs from about 525 kilocycles (570 meters) to 1,350 kilocycles (222 meters) or is 825 kilocycles wide.

(Turn to page 331)



—From a photo made for "Amateur Radio" by Boyd Phelps. This is the back view of the receiver, and not of the transmitter, even though that inductance in the middle was formerly a Murdock O.T., and the wire on the other winding could carry five amps. with safety. The presence of the sponge under the tube sockets at the right is merely to absorb the shocks, not the damped waves.



The girl in the medallion is, of course, 1AID. You will have no difficulty in identifying the rest of the picture

## Rhode Island's YL Station

An Interview with 1AID

By Helen G. Daniels

IT seems that you can't keep a good man down, —nor a good YL, witness Miss Mildred Lorentson, owner and operator of Station 1AID, at Providence, R. I. It also seems that when a YL does something out of the ordinary she must be complimented in decidedly masculine terms, for it has been said that 1AID has a "manly fist." Which recalls another remark about "manly shoulders." However, we'll let that pass as we're not arguing the feminist movement or woman suffrage.

Somewhat over a year ago, Miss Lorentson became acquainted with a radio, a "violent one," according to her, and she wondered a good deal about the attraction that could drag "him" out of bed in the wee small hours of the morning to pound the key. His enthusiasm never ceased and his spirits never dampened, and one day he sent her the alphabet and promised to fix up a set for her if she would learn the code. So she did, and soon was serenading the city with a spark coil. It had a beautiful note,—most of the time. But often in the middle of a particularly enjoyable conversation, it would develop a gasping, wheezing noise, followed by silence. Frantically, she would make the gap smaller or larger with no results, and impatiently look at the set thinking many things. Then a final adjustment to the wires and

a joyous press on the key at the same time. It was a lovely sensation,—particularly the first time.

It was difficult to think of the spelling and number of dots and dashes required for each letter at the same time, and she very often wrote out what she intended to say as she had the bad habit of stopping in the middle of a word wondering how far she had gone. She was afraid to send out a "CQ" for fear someone would send back at too great a speed for her to copy.

But those not easy days have gone. The spark coil has given way to a fifty-watt CW set. The walls of her radio room are slowly being covered with cards, and she is handling traffic with the rest of them, as most of you know. She has a good deal of respect for the fellows whom she has worked for being courteous,—there being but one who was not, and whether you call her "OM" or "OW" or any of the others, it makes no difference, provided she is accepted as a real "dyed in the wool" ham.

I might add that she has been accepted as such, for from the reports that come from Rhode Island she is a better operator than many old-timers heard on the air, and they are mighty proud of her over ther. (How's that, Mildred?)

## AMATEUR RADIO

with which is combined Radio Relays

Founded 1921 as The Modulator



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SEPTEMBER, 1924

### "CO-OPERATION"

THAT word "co-operation" is perhaps used more than any other in this great hobby of ours. That's because our entire structure is founded upon it. Every day its use becomes more urgent. This time, it relates to the new Hudson Division, that will officially come into being on the first of September.

The amateurs of the Second District are trying to get across the biggest job ever done in the history of Traffic Department of the League. They have the beginning, and a very good one at that. They have the material, and the time is just ripe.

There are but a few weeks left for organization before the relay season starts. But the time is not so short that we cannot have in a workable shape a complete traffic organization that will be able to cope with the emergency.

In Glaser we have a very capable Division Manager who knows traffic thoroughly, and who is well acquainted with the traffic difficulties of the district, and particularly in the Metropolitan area, where they are greatest. He can pick good men to carry out the task, and his work of organizing traffic lines will proceed without a hitch.

But with all the good will in the world, even the best man can do nothing if he does not receive all the support that he needs. Co-operation is what Glaser will ask for, and what he will get from every amateur in the division is *co-operation*. "Co-operation," fellows, is the only thing that will get us somewhere, and the only way that will justify our existence as a new division.

### REAL SHORT WAVES

A FEW years ago, the A. R. R. L. officials, and every right minded amateur was straining every effort to keep their fellow-amateurs from exceeding the legal 200 meter limit. Only a few months ago, the same efforts were made to restrain the over-ambitious "hams" from going into forbidden territory. How contrary the human mind is. At one time, amateurs wanted more room above 200 meters. Now you can't keep them off 100 meters!

But now we have the really short waves. The fact that the Department of Commerce has opened to the amateurs this immense field with its unlimited possibilities for work is in itself a tribute to the American amateur's past record. Again, however, we must proceed cautiously, and carefully heed the provisions with which these new privileges were accorded. The Department is allowing the amateurs to use these short waves for an indeterminate period only and the order is "necessarily tentative." It is safe to predict that, however long this period will be, that amateurs themselves and their record will have a great deal to do with its length and permanency.

Radio Supervisors will have a great problem with this new regulation. Every amateur can help them, and himself as well, by playing the game. Don't abuse of your privileges, O.M., and play the game squarely.

### WAVEMETERS AGAIN

MUCH has been said about the need for wavemeters. Nevertheless, in view of the new allotment of wavelengths, we'll say some more.

Strange as it may seem, laziness and selfishness are closely allied. Not that we like to be either lazy or selfish; but it is human nature. For instance, despite the years that amateur radio has been growing and despite the easiness with which a serviceable measuring instrument may be built, there are but comparatively few amateurs who possess a wavemeter. This can be traced solely to laziness. Yet, every amateur wants to be on the air as much as possible and he wants just as great a range of wavelengths as possible, but without the wavemeter; and, therefore, without the proper calibration; the wavelength—that is, the *actual wavelength*—of the average amateur transmitter is merely guessed at. "Somewhere near" is the usual calibration formula; and "somewhere near" is about 2 per cent. of the approximate wavelength, to say nothing of the absolute wave. Really, is not this "somewhere near" proposition an assumption that the air belongs entirely to you, —and is it not just a little selfish? The new wavelengths given to us make it absolutely necessary to calibrate our transmitters correctly. In getting your apparatus ready for the coming season's work, why not build a wavemeter first?—V. E. F.

## The New Short Waves

By W. J. Halligan, IUL

One of the most welcome pieces of news by the entire amateur fraternity was the recent announcement that amateur radio operators were to be allowed the freedom of very short waves, without the necessity of special licenses, and the observance of the quiet hours. This new order from the Department of Commerce changes our whole system, and is only another sign of appreciation from the Government toward the American Amateur. What this is all about, and what you are expected to know concerning these new wavelengths is told below.

OUR district radio supervisor, Mr. Arthur Batcheller, has, together with the Radio Supervisors of the eight other districts, received orders from the Commissioner of Navigation of the Department of Commerce concerning a new schedule of wavelengths for the radio amateur operators. He has been instructed to issue general and restricted amateur radio station licenses for the use of wavelengths between 75 and 80 meters, 40 and 43 meters, 20 and 22 meters, and for 4 and 5 meters. These new wavelength assignments may be used at any hour of the day.

This is indeed a great piece of news for the amateurs of the whole country. This latest act on the part of our very liberal Government is expected to arouse new interest among the men in our field, and the combined intellect of thousands of keen minds should produce some very wonderful results and add considerably to our knowledge of ultra-short waves. It is but another sign of appreciation for amateur achievements, and we should be proud of the fact that so much trust has been placed in our ability to accomplish something in this comparatively unexplored field.

The new wavelength schedule does away with the quiet hour period for the band below 80 meters. This will remove one of the "sore spots" of amateur radio, although, of course, the regulations concerning quiet periods will remain in force on the regular waves of 150 to 200 meters.

The letter sent out by the Department of Commerce to Radio Supervisors read as follows:

**"Effective this date (July 24), you are authorized to issue general and restrictive amateur radio station licenses to permit the use of any one or all of the following bands of short-wavelengths: 75 to 80 meters, 40 to 43 meters, 20 to 22 meters, 4 to 5 meters, in addition to the band 150 to 200 meters, provided application is made by the owner of the station, which station must be prepared to use the wavelength, or wavelengths, requested.**

"The use of continuous wave telegraphy only will be permitted on wavelengths other than 150 to 200 meters, and the antenna circuit must not be directly coupled to the transmitting circuit.

"Silent hours will not be required of amateurs while using the wavelengths within the above bands below 80 meters except where the transmitting station is so situated as to produce objectionable interference with other services.

"Hereafter special amateur stations will not use wavelengths above 200 meters. They may be authorized to use the band of wavelengths from 105 to 110 meters in addition to the wavelengths within the bands authorized for general and restricted amateur use, where the special amateurs are engaged in conducting tests with Government or commercial stations.

"General, restricted and special amateur stations will be permitted to use the entire band of wavelengths from 150 to 200 meters employing pure C. W., spark and modulated forms of transmission.

"It should be made clear to the amateurs that the authority granted above is necessarily tentative because of the rapid development taking place in radio communication, and the bands of wavelengths authorized may be changed whenever in the opinion of the Secretary of Commerce such change is necessary."

The Department of Commerce also appreciated the situation and relieved the condition to a certain extent by issuing experimental licenses which permitted certain amateurs to operate on 100 meters or lower. The present order of Commissioner Carson, however, opens up the short waves to the rank and file of the amateurs, which, with the elimination of silent hours, conforms with the desire of the amateurs.

While the new regulations are designed to simplify interference problems, it is pointed out that much confusion can result by an incorrect interpretation, and so amateurs, desiring to take advantage of these new privileges, are advised not to make any hasty changes in their wavelength until they know what is expected of them. They must first make application to the radio supervisor of their district to operate on any one or all of the new wavelengths, and *get their licenses properly amended*. They are also asked to take note of the fact that *they must use a coupled circuit in the transmitter*. A provision is made that silent hours will not be permitted if the station is situated so as to produce objectionable interference with other services.



## The Log Book

By Edward M. Glaser. 2BRB

Traffic Manager, Executive Council

THE Low Wave hounds ought to be satisfied now that four bands from 4 to 80 meters are obtainable without "X" licenses. There will be a lot doing on these high frequencies this coming season and some new records will no doubt be made. The abolishing of quiet hours on the high frequencies when no QRM to other services is caused, certainly makes us feel as if the real old times have returned. But there will surely be many a family quarrel over Broadcast Reception vs. Low Wave Transmission during the evening "Non-quiet Hours."

Many stations have shut down as usual during the hot weather and QRM takes the place of QRM. The DX weather has been fierce. The majority of the Ether Busters are away on vacations, "rebuilding" sets, or just "off radio" for the summer. However, here's what the live ones are doing:

### First District

IAVF received four cards from England, one from the Sixth and one from the Seventh Districts despite the summer weather.

ICJD and IZW have been appointed ORS. FB, OMs. IZW had the misfortune of having his antenna repose on Mother Earth for most of the month, but managed to QSR 19 messages.

IXAX succeeded in working 3ZO, using one of those Oscillating Crystals with 5 watts input. 3ZO reported very good sigs thru heavy QRM. ILM and IBZQ are on regularly.

Aha! we have another YL station in the First District—IKY who knows how to handle traffic. IAID is busy pushing traffic as usual.

Watch Hill expects a new station to open up with 7 fifties (Omy, Oh my). The new station owner is H. B. Joy, President of the Packard Motor Car Co. IBVB sez "He sure will blast some hole in the air." HI. We'll say so.

IAAP is doing excellent work with two fivers. IGV has rebuilt his station and installed a new antenna system. Sounds that way the way he pounds in.

IXP-1BKQ, which has been closed since March, expects to be open in the fall.

IASU, 1DB and ICPN do a trick now and then. ICJM is on almost every night with a 50 and sez "Pretty good luck."

IUM in Shrewsbury is getting out in great shape, nice note, too.

IAQM—Well, with YLs, Summer nights, and Gas Buggies, things in the radio line can wait. HI. IDE has only recently opened up. He is ex-IBYN and operator "IJ" of ICPN.

IJQ, A. S. McLean, has resigned as ADM of Western, Mass. It will be difficult to find a man to take his place that will spend as much time and co-operate as well with the fellows as he did. Lee A. Bates, IGY, has resigned as Dist. Supt. of Worcester County. Don't know what we will do without these old-timers.

IAWW is heard occasionally but not often. IABF is working steadily. He has fine kick in N. Y.

IIL has been to Camp Devens but is now on the air again. He was recently heard in London.

IABG reports 35 miles with a UV201A transmitter and loop.

IASU is heard daily in N. Y. in mid-day. 1DB has two new 303-As with 2,000 on the plate and works Schenectady and further west in dalite.

IBFQ makes a good relay point from Worcester to Boston.

IABY is building a new home in Leominster with a special room for radio. FB, EH?

IBCR has moved to Princeton, Mass., and acquired a new call—1RF. IAER is quite consistent. IAEL from New Haven has fine sigs.

—Helen G. Daniels.

### Second District

THE following stations have been appointed Official Broadcasting Stations of the Second District Executive Radio Council in addition to those mentioned in the August issue:

2RB—Woodside, L. I.

2BMR—Jersey.

For some unknown reason, most of the stations don't pay the slightest attention to the new A. R. L. policy of numbering messages as described in QST and AMATEUR RADIO. I have asked many operators, both personally and over the air, to read the article describing how messages should be numbered and use that method. There is no reason why ALL stations shouldn't use it. All operators are also urgently requested to read the fine article in August QST by Traffic Manager

lyn. 2AHI has a wicked fist but it seems to be improving. Traffic—2WZ-121, 2BRB-103, 2CPQ-86, 2ADC-72, 2CHY-60, 2ABR-26, 2AHI-23, 2AX-12, 2ABN-10. ABN has just been appointed an O. R. S. FB, OM.

WFBH, a new broadcasting station, has put the lid on Amateur Communication during the hours of its operation for several miles. 2CHK, City Mgr. of Manhattan, says they have a mean bunch of ripples from the generator to make things worse.

### ONLY THE LOG BOOK

will carry the complete Traffic Report and news of amateur activities of the new Hudson Division. Read the full "dope" right here every month. This section is in charge of E. M. Glaser, Council Traffic Manager, who has just been appointed Traffic Manager of the Hudson Division. Communications should be addressed to him, care of this magazine.

Schnell on page X on How to Get "Repeats" or "Fills" in Messages. There isn't one op out of twenty who ask for, or gives these repeats correctly. Some ask for a repeat of the whole message when they missed one word and others just as dumb repeat a whole message when you ask them for a single word. This doesn't happen occasionally; it happens very often. Learn to handle messages quickly and surely.

2WZ leads Brooklyn in activity and traffic for July. Working as at present, 2WZ will be an O. R. S. in a short time,—provided he learns how to send a short snappy CQ. WZ uses a fifty with about 400 watts in-put. 2CHY, A. R. R. L. city and publicity manager, is trying hard to get the job of Division Publicity Manager of the new Hudson Division. Here's wishing you success, O. M. George M. Smith, Jr., 2CJS, Second Op at 2BRB ("G. S.") is responsible for the activity as E. M. C. is away at Long Beach, L. I. The QRA of 2CJS is now Long Beach and E. M. G. is Second Op. HI. The 8-watt transmitter at 2BRB has been used most of the time with 25 watts in-put which has been QSO 1,000 miles easily on 176 meters. This transmitter will be put on 75 meters while the 50-100-watter will remain on 150 for the present. 2CWO has been off the air due to other activity (?). 2WC and 2CLA failed to report. Don't forget, Oms,—No Reports—No O. R. S. Sending in regular monthly reports is one of the four main requirements for an O. R. S. 2AX has a new Flat-Top antenna. It doesn't work as good as the ole cage. (We knew it) HI. 2CJR isn't as active as usual. 2CPQ, 2ADC and 2ABR are doing their share of traffic handling. Keep it up, Oms, and there will be more O. R. S. in Brook-

2KR is the most active station. 2CIZ is coming along fine. 2CHK is going away. 2CSL, 2CZR, 2EV and 2BNL are all co-operating nicely and doing good work. Traffic—2KR-99, 2CIZ-30, 2CHK-21, 2EV-22, 2CSL-14, 2CZR-12, 2BNL-8.

The hot weather hit the Bronx badly. Only three stations reported to the C.M.-2CWR. 2CWP is a newcomer in sending in reports. Keep it up, OM. 2CWR has been appointed a Lieutenant in the Life Saving Service, Signal Division, and given the office of Traffic Manager. Congrats, OM. F.B. 2CRQ stopped sending Official ARRL Broadcast Messages for a few weeks. Traffic—2CRQ-69, 2CWP-48, 2AAL-18, 2BBX-185. Vy F.B. OM.

There is very little doing in Staten Island. 2CEP has been appointed an O. R. S. Traffic—2CEP-11 and 2CEV-28. CEV still on spark.

There is less yet doing in Queens. 2APM-12 messages constitutes the activity. Not much we'll say. 2RB, 2IU and a few others are on the air a great deal, but never report. What's the reason, OMs?

### District Reports

DISTRICT NO. 1, N. Y. 2CXB-15, CNM-8, 2BPB-7, 2AV has opened up on Fire Island with a very broad spark. 2ABD can't get enough help to raise the antenna. 2CJS at Island Park, Long Beach, is being erected.

District No. 2.—2BQB is the only active station. 2CVU has agreed to send in reports. BQB handled 40 messages which is FB art. He will operate IAJG while he is away for a few weeks.

District No. 3.—2CDH has been recommended for an O. R. S. Traffic—2CDH-60 and 2ANM-29.

District No. 4.—C. Kenneth Taber, 2AGQ, Milton, N. Y., has been appointed District Superintendent in place of 2CX, who resigned. All stations in Rockland, Sullivan, Ulster, Orange and Greene Counties, New York, should send reports and news to 2AGQ on the 16th of the month. Only report—2AQR-54. AQR has been recommended as an O. R. S. 2AGQ has been appointed an

O. R. S. When 2CXG gets going as he has been, he will be recommended for an O. R. S. They are all A-1 stations. Steven Vanderveer, 2CNP, has resigned as City Manager of Newburgh and A. A. Johnson, 2CNI, has resigned as C. M. of Kingston. No new managers will be appointed until these cities show some real action.

### AMATEURS YOU OUGHT TO KNOW



### FRANK FURTER, FIRST AMATEUR TO WORK EGYPT. THE TUBE USED WAS A W.D. II TYPE.

District No. 5.—2GK-2XAB has not been doing much as the whole operating staff has been away. By the time this is printed, the station will be in full swing tho. 2CGH handled a great deal of traffic. FB, OM, 8BXP and 8AVJ are rebuilding. 2CDH sends his report to 2ANM and 2GK. It will be found under District No. 3. Traffic—2CGH-104, 2CTH-16.

Yonkers—2ADD, C.M., got all the active members of the Yonkers Radio Club to sign a pledge that they would QSR, deliver, or mail all messages they received within 48 hours. They also promised to keep records so that ADD could inspect them. F.B. Gang. VERY FINE WORK. 2AAN is a new station. The whole gang are co-operating very well. Traffic—2ADD-19, 2APY-17, 2BGD-14, 2CIL-8 and 2AQH still on spark, 14.

Schenectady—2BY is on the air quite a bit. 2ACS is on a vacation. 2CWJ has been heard on the coast and is on the air very often. 2CPA has sold out completely. 2CGJ has just completed a 90-foot tower, making his place look like a Commercial Station. It sure is a beauty. Traffic—2BY-30, 2ACS-28, 2CGJ-8.

We are sorry that 2WR didn't send in the Report with news from New Jersey. 2CXE has been on a good bit lately with raw A.C. but says his rectifier will soon be finished. 2BMR has a terrible kick with that high power outfit of his. 2CQZ is back from camp and as active as ever. 2CYQ heard WNP recently.

We hear that Herman A. Fisher, ex-2AT and an old commercial operator, is leaving the ham ranks for a short time. Prospect of having a YL for second op. His new QRA is Westfield, N. J. Good luck, AT.

Thanks vy mch o m

Louie Hardy, Sec.

### Third District

3XAN is on the air in full swing. One 50-watter is used in the Meissner Circuit which does fine work. Would like to arrange schedules with stations operating between 1:15 and 4:30 P. M. A 250-watter is being installed soon.

3CBX is the star station in Trenton this month. He has handled lots of traffic and worked many stations in spite of the weather.

3OH and 3BFH have left for the west coast via

the Canal. They expect to visit many 6s during their stay.

3CS is operating daily at 3XAN and is helping to put Trenton back on the air and give 3CBX some assistance.

3FP's op "FA" recently got married. We are wondering whether this will interfere with the re-opening of 3FP.

3BLZ has changed QRA. Was part of 3XAN but now is located at the Carteret Club of Trenton.

New QRA 3CS-3ZI is 315 Beechwood Ave., Trenton. 3HW is doing good work considering the weather. 3XM ought to be going again soon.

—E. G. Raser, 3CS.

3CEL is confined to business and consequently we do not hear his homemade cootie with the awful punch behind it.

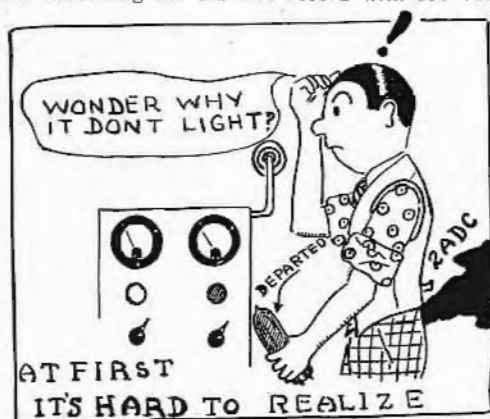
3BZ, the Roanoke Division Managers' station, is heard back again with the same old kick.

3CA is having lots of fun trying to make the 4-coil Meissner work. HI.

3BVL with the pretty note is heard whenever the operator chances to get home. He still has the four 5-watters.

3MO has been heard in Australia with his 50-watter. FB, OM. 3TJ is CQing on Lover's Lane instead of on the air. HI. 3CFV, the 100-watter of Glen Allen, must have a similar disease. 3CKL uses S tubes on his two 5-watters. 3CKK, of Hampton, Va., is very consistent. Traffic for Norfolk and vicinity may be given to 3BMN who works on schedule with 3CKK. 3MK and 3BBT are enjoying (?) themselves at the C. M. T. C. for a few weeks.

3CKA has a good signal for a pair of fivers. 3TI, 3IN, 3CJX and 3UU lean on the key when other sports fail to give a similar thrill. HI. 3BUY and 3LX roll thru very often. 3AAU is fast rebuilding his old DX record with 850 volts



of home-made B battery on two fivers. 3ATB sold his transmitters to WBBL but promises to be back with another.

3BMN gave the neighbor BCL a pacifier in the form of a modified loop for biting on when the

Key-Klick program is mightier than KDKA and WGY. HI. The shack and transmitter have been remodeled. One fiver is used with S tube rectification. A portable set is being constructed with the call 3CCJ.—Raymond J. Carr, 3BMN.



### Miscellaneous

4PY is very QSA on 85 meters. 4FT has a terrible kick with that high power. 4GW is very consistent and among the best. 4JR and 4UN are heard occasionally.

Wonder where all the fives are these warm nights? The air is lonesome without the old gang. 6CMR QSTs messages to New Zealand and hopes someone is listening over there.

8CXM from W. Va. is the most consistent and best station from his locality. 8BT has a pretty signal to read thru the heavy QRN. 8AXF is a snappy op and has a good note.

We are looking for a Canadian correspondent. Anyone want to send in some news every month?

### Eighth District

8BNH is improving his transmitter and putting in remote control.

8BYN visited the stations in Akron, July 4th. 8ANM will be back strong in September. 8COM is selling out. 8CPK dropped his 50-watter and knocked part of the grid out but she still perks to the tune of 4 amps. on 175 meters.

8BVR was in the Second District and visited many well-known stations. 8GZ-8ZG is now using four 5-watters. 8CFX, of Akron, is now 8CDT. 8HN is going strong. 8CYT is putting up a 60-footer and will be on in September.

8BRC works the West Coast right thru the summer. 8DKI and 8CON, of Warren, Pa., have good signal. 8NB is not on as much as usual and doesn't seem as QSA either. Probably low power for the hot weather. 8CYI is the loudest Rochester station now. He uses two fifties.

8BQR is stepping out pretty good for summer weather with his 5-watter. 8DMX is always very loud in the Second District. 8BKM has a good

DC peep with his low power. 8CWP and 8BKH are loud and consistent. 8AJN has a fine signal thru the QRN.—W. E. Slabaugh, 8BNH.

### Ninth District

9ARP has an excellent DC note and a heavy kick. 9AAW has a very coarse note now tho he is as QSA as ever, 9AQO has a Super-Het and hears both coasts regularly on a loop.

Many stations throughout the Eighth and Ninth Districts are changing to either Coupled Hartley or Meissner Circuits. Better efficiency most always results besides the non-changing frequency while windy. (Remember, on the waves below 80 meters, inductive coupling is required.)

The Northeastern Ohio Executive Radio Council will hold a picnic on August 17th at Milton's Dam. The council is composed of about 75 amateurs throughout Northeastern Ohio.

9DNG radiates nearly 4 amps. with three 5-watters. Must be a real ampere hound Ar't. Wonder how close the Antenna is to the Counterpoise. HI.

9ZT is reliable as always. 9AAU is the loudest 9 at 8BNH and has an easy way to QSY. He is on a different wave every few minutes. HI.

9CEE must be using QRP for the summer as he isn't as QSA as before.

9DWV is now at Liberty, Mo.

9CZE is one of the best 9s on the air during the hot weather.—W. E. Slabaugh, 8BNH.

### ALL'S WELL THAT ENDS WELL

ON August 9 about fifty hams, ow's and yl's from five districts gathered at Poultny, Vt., to attend the first Vermont State A. R. R. L. Convention which was held under the direction of the Poultny Executive Radio Council, affiliated. The morning and early part of the afternoon were devoted to visiting local stations, hamfesting, etc. At 3 o'clock A. A. Herbert addressed the Technical Meeting and told how to get our transmitters down to the low wavelengths. Mr. Herbert also told how to make an excellent wave meter at low cost. The Traffic meeting, at 4:40, was in charge of W. M. Hall, A.D.M. for Vermont. After his talk a general discussion of affairs in Vermont ensued.

At 6:30 an excellent banquet was served. After the "cats" had been disposed of, George Wood, Jr., President of the P. E. R. C., gave an address of welcome. C. Roddy, 8DMT, then gave a very interesting talk, telling of his experiences in the British Navy and commercial service as radio operator. W. F. Moore, IAPU, told of his radio experiences in the U. S. Army and showed how the amateur can help his country in time of need. A Reid, C2BE, conveyed Canada's greeting to the Convention. Charles Kibling, 1BIQ, told how to make money as a commercial operator and showed the relation between commercial and amateur

(Turn to page 332)

# Our Hudson Division

After many months of waiting, the A. R. R. L. Board of Direction has approved our petition for the formation of a new Traffic Division, which was to be called the "Hudson Division." Our work now begins, for we must not only organize traffic routes, but we must almost get going the personnel which is to make the Division the first of the country

By **W. J. Howell**

President, Executive Radio Council, Second District

**H**AVE you ever glanced at a map of these United States divided up in radio districts? If you did, you will have noticed that the smallest of all nine districts is the Second. If you are possessed of an A. R. R. L. map, and look for the position the Second District occupies with respect to the A. R. R. L. Traffic Divisions you will see that it makes up part of the Atlantic Division, which includes also the Eighth and Third Districts.



Remember that in the Second District, we had some of the first and most famous five kilowatt amateur stations. Doc DeForest invented the audion in this district, and Armstrong played with his first regenerative receiver. The Second District gave to amateur radio such wonderful stations as 2JU, 2PM, 2ZO, 2ZL, 2OM, 2BRB, and so many others. It holds the Hoover Cup for 1922.

For three years the district has had an Executive Radio Council. These bodies come and go, but ours has stuck, and there are plenty evidences of great vitality. We also have our little magazine, and we are conceited enough to believe that we have the best organization of any district in the country.

Remember, the district was the first to adopt C.W., and to convert its stations to the new and more efficient method of signalling. Yet we are old-fashioned enough to have the best sparks going.

So it isn't with vainness that we are announcing herewith that we have full intentions of capturing all honors with the new Hudson Division. We have the reputation of getting what we go after.

At the meeting of the A. R. R. L. Board of Directors which was held, as you fellows know, on July 25th last, it approved, and officially established what is to be known as the "Hudson Division." This is to become effective September 1, 1924.

To form this new division it was necessary to include territory from another division. The new division, therefore, consist of the following counties, which were formerly a part of the Atlantic Division: In the State of New York the counties of Richmond, New York, Bronx, Kings, Queens, Nassau, Suffolk, Westchester, Albany, Rensselaer, Orange, Ulster, Dutchess, Columbia, Green and Schenectady. In the State of New Jersey the counties of Bergen, Passaic, Essex, Union, Middlesex, Monmouth, Hudson and Ocean. In all, twenty-six counties, which are spread along the Hudson River, and which give the new division its name.

If you compare the new division with the district geography, you will see that they coincide perfectly. In fact, the Second District *IS* the Hudson Division!

We are advised by **Mr. F. H. Schnell**, Traffic Manager of the League that our man, **E. M. Glaser**, who is Traffic Manager for the Executive Radio Council, will receive the appointment of Division Manager of the Hudson Division. A

Now the Second District happens to be so situated that it has, per square mile, more amateur stations than any other in the country. In other words, its radio field is saturated. There are somewhere between 2,000 and 3,000 licensed amateurs in this district, many of them located in New York City, where the R. S. has his headquarters.

vote was taken among the A. R. R. L. members in this district to determine whether they wanted a new division in the first place, and what their candidate for this position would be brought but few votes against it, and so many declared themselves in favor of Glaser, who is well known through his station 2BRB, and who holds the job of Assistant Division Manager of the Atlantic Division, as to make his appointment practically unanimous.

There will, of course, be named some assistants, such as two Assistant Division Managers and District Superintendents, with probably a Publicity Manager. As soon as Mr. Glaser assumes his position on the first of September, he will no doubt want certain men to work with him, and *work hard*. If your qualifications are such that you think that you should have a good chance, write to him, and tell him about it. He will run the affairs of the new division under the general policy which has been adopted by the A. R. R. L. Traffic Department, but it is evident that he will want fellows who have proved their worth, and who will want to work, and *work hard*.

One of the direct results of the formation of this new division was the fact that the Second District will have the first opportunity that it has ever had to be directly represented at League Headquarters. It will have full voice in all its affairs and problems. It is entitled to one Director, who is to take office at noon on January 1, 1925, and who will hold the position for the term of two years. Nominations for this man will take the usual course. In the September and October issues of QST nominations will be advertised for candidates for Director of the Hudson Division, and ballots will be mailed in November for the election. Every amateur in this district who interests himself in its welfare cannot afford to overlook this important matter.

By the establishment of the Hudson Division, the Second District assumes a new position in the traffic and operating matters of the country. The bond between the Executive Council, who has advocated and brought to a successful close the entire work, and the League that has sanctioned it will be further strengthened. In the words of Schnell, we "feel sure that the Hudson Division will be one of the headliners in all A. R. R. L. work." Come on, men, let's show 'em!

## HUDSON DIVISION HEAD-QUARTERS

will be located in Room 201, 120 Liberty Street, the offices of the Executive Radio Council, Second District. All communications relating to the Division and for the Division Manager should be forwarded to the above address. Thank you.

(Continued from page 322)

Our former band of waves covered from 1,500 to 2,000 kilocycles (200 to 150 meters) or 500 kilocycles. One of our new bands from 75 to 80 meters covers half as much frequency change, and the three meter band from 40 to 43 meters allows more frequency separation between our 16,000 stations than existed under the 150-200 meter regulations. The old 50-meter band of 500 kilocycles looks sick along side the two meter band from 20 to 22 meters which is a band 1,364 kilocycles wide. But the real jolt comes when we figure out that five meters wavelength is 60,000 kilocycles and four meters is 75,000 kilocycles! Why, all the amateur, broadcast, ship, Navy, and long wave arc stations could be operated in this one band with far greater frequency separation between them. We wonder if we could find more than two or three stations per night if all 16,000 of us were operating in this four to five meter band. No wonder the Navy gave this band away! If it came from any other source we might suspect it an attempt to throw our forces into confusion by breaking down our organization. An amateur on 4.272 meters has somewhat of an excuse for an occasional CQ now, although fortunately the term kilocycle separation does not mean quite as much on short waves.

But seriously, now that we have these waves and the first shouting is about over, what are we going to do with them? Sure, we predict great things for the coming year. Last year was a corker, as we look back, but next year is up to us. Believing that the Second District, pardon me, the *Hudson Division*, is about the most enthused over short wave work and has many stations that have worked across the pond on 100 meters, we can, by an early and concerted effort, grab and hold the jump in new development in this field. Mr. John L. Reinartz has made some very interesting discoveries in short wave transmission that he is releasing to the great majority of the world that have not heard of the dope. John is one of these amateurs that reasons two and two makes four and then sets out to prove it, whereas some of the rest of us let it go at three and a half. Trying to avoid the latter tendency, it is hoped the following will be of use in getting started on the problem of receiving design.

## Only Air for Insulation

It seems that high frequency insulation becomes even more of a problem at the new waves. The common stunt, for example, of determining the resistance of a variable condenser at 1,000 cycles and substituting this in a formula to get the resistance at any radio frequency is modestly called "la bunque." Our ideas on low loss coils again have to be renovated until we come to the conclusion that the only insulation to use is air and even then the set will not work well in some cities. Tuning for NKF with a 23 plate variable con-

denser is liking using a 500 plate condenser on long waves. Turning the dial very slowly brings the station in and out again so fast that it sounds like a piece of static hitting the aerial and one easily passes it by. Most verniers do not give any real micrometer adjustment and those that come anywhere near a 100:1 ratio either are noisy or have far too much slack in the train of gears, which is very noticeable when the direction of rotation is changed, for a lot of cranking has to be done that does not mean anything before the plates suddenly move back with a bump. A good small capacity condenser with a long handle at right angles to the shaft seems to come as near to the answer as anything. Obviously with such a small variable capacity or even with a .0005 microfarad condenser several coils must be used to cover the waves.

The problem of shifting coils certainly demands some consideration. Honeycomb mountings are the first to be considered and thrown out because of the losses at such high frequencies due mainly to the plugs. Likewise come tapped coils and switches, including the alleged anti-capacity breed. We may have visions of the coils being inserted in clips like the glass chimney fits on the old kerosene lamp (now stowed in the attic but brought out when the last fuse and cent is gone). But this does not work out well, for all sizes of coils and too much insulation is needed. For the present it looks like a clip and flexible lead from each of two condensers to one of the various coils nearby is the best answer. The photograph shows how this arrangement worked out well in an experimental receiver formerly a super-heterodyne.

### Nothing Complicated

In this particular receiver a form of the Reinartz circuit is used, the cylindrical coils for the various wave ranges and other features being given a try-out rather than a recommendation. The diagram shows the arrangement about as in the set. The ground-filament lead is connected to all coils thus eliminating one variable contact. This leaves only two clip leads, which are shown in dotted lines in the diagram. A honeycomb coil mounting made of rubber together with low loss coils for long waves can be used between 200 and 20,000 meters. The coils are not left in the set when working on low waves because of the possibility of their natural periods or harmonics causing bad absorption.

The main coil on a horizontal axis consists of eighteen turns of 3/16-inch copper tubing with a ground-filament tap soldered on the third turn. This not leaving enough inductance in the grid circuit, three smaller turns of No. 4 wire were soldered to the end of the coil, the smaller diameter additional coil being inside the larger, wound in the same direction, and having no visible means of support save one soldered end. The ideal coil should be supported only where the ground con-

nects and should be of stiff enough wire, tubing or bar to be self-supporting. It was found necessary to keep the turns separated in the outer coil by treated twine and the whole unit fastened down between two strips of radion panel. Using .0005 condensers for tuning and regeneration, this circuit oscillates from 60 to 200 meters with 201-A tubes.

The low wave coil is the remains of a Murdock O. T. except that radion strips form the supports. There are five turns 4 3/4 inches inside diameter with the ground-filament lead soldered to the middle turn. With the grid and plate condenser leads clipped to opposite ends the waves from 9 to 60 meters can be obtained and with fewer turns placed in the grid circuit by a movement of the grid clip, waves considerably lower can be obtained, about 3 1/2 being the lowest, but not always with oscillation over all dial settings on this set. The switch throws in capacity or inductance to enable operation on an antenna fundamental where otherwise oscillation is liable to be erratic. Other details of possible interest in this set are Cardwell condensers, Carter rheostats, Bradley adjustable leak, sponge cushioned sockets, Radio Corp. audio transformers (for good 1,000 cycle amplification), Jalisco lattice coils and mountings, Accuratune dials, etc. As stated previously, this is an experimental set made entirely from odd parts on hand and does not represent the ideal by any means. It works very nicely and gives good signal strength on distant signals with remarkable selectivity. The picturing and description of it are given only to serve as a working guide for some who seem all at sea as to how to bust into short waves and hear what is going on. Many refinements and improvements will occur to the constructor and by passing on his ideas through AMATEUR RADIO we can all keep pace with the game. QSY es cul.

### "For She Luv'd Mike"

did you read what C. I. C. has to say on page 344?

(Continued from page 329)

operators. Mr. A. A. Hebert, A. R. R. L. Treasurer and Field Secretary, was the chief speaker of the evening. He gave a very interesting and valuable talk on "Our A. R. R. L." Certainly, after hearing Mr. Hebert, everyone who attended the Convention will be a loyal A. R. R. L. supporter. The matter of Vermont's participation in the I. A. R. U. meeting in Paris next spring was taken up, and it was decided that Vermont would do her best to raise money to send a representative.

Next year's convention will in all probability be a two-day affair held in either Rutland, Burlington, or Springfield. Among those present from the Second District were 2BQB, 2CHZ, 2GK, 2BY, 2ACS, 2CYJ and others.

## Keeping faith with the amateur

**A**LTHOUGH broadcasting has increased our business many fold we haven't forgotten the amateur, with whom the radio business started. We have a sense of gratitude toward him. For this reason, while it seems that many others have ceased to do so, Acme still makes transmitting apparatus.

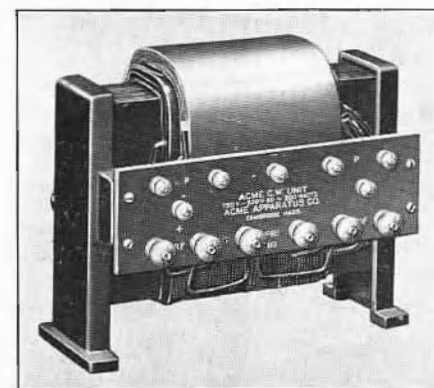
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.0001	.35	.003	.60
.00015	.35	.0035	.70
.0002	.35	.004	.75
.00025	.35	.005	.75
.0003	.35	.006	.75
.00035	.35	.0075	1.00
.0005	.35	.008	1.00
.0006	.40	.009	1.00
.0008	.40	.01	1.00
.001	.40	.015	1.50
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### Exclusive Features of Freshman Noiseless Tested Mica Condensers

1. No losses through di-electric hysteresis of fibre covers.
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**Chas. Freshman Co. Inc.**  
Radio Condenser Products

106 Seventh Ave., New York

(Continued from page 320)

ating system that it is along any point that is not a nodal one. After a little practice, it is said that Conrad can locate this point with unerring accuracy. A little experimenting will prove the correct location.

A check upon the working of the oscillator, which causes the antenna to oscillate to a given frequency is had by means of meter Ao. This meter reads low when Aa reads high, as it is an indication that more energy is being withdrawn from the oscillator. The variable condenser used in the oscillator circuit is of special construction, of a type called "Tank," and should be able to withstand considerable voltages and high currents. The high voltage point on the coil of the oscillator is found by experiment, but it should not be so located that it will cause the oscillator to stop oscillating because of the withdrawing of too much power by the antenna.

The action of this transmitter resembles somewhat that of the impact excitation system by Dr. Cutting. The oscillator provides the periodic "shocks" that cause the antenna to oscillate in its own period, just as a tuning fork is caused to vibrate constantly at its own frequency by sustained shocks from a felt-covered hammer. Regardless of the unsteadiness of the impact excitations from the external source, the system will continue to vibrate at its own frequency.

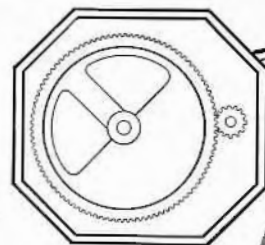
An advantage of this antenna design is the fact that it may be operated efficiently at harmonics. For instance, it would be necessary ordinarily to have a vertical pole approximately 240 feet high for an antenna with a period of 80 meters. It is possible to erect an antenna of 20 meters, which is about 60 feet, and excite it at four times this fundamental, or 80 meters. Shorter waves call, of course, for smaller vertical antennae, and when the values decrease to 10 and 5 meters, the construction of the radiating system is just as simple. In fact, it then becomes possible, because of the very peculiar construction, to place reflecting screens around the vertical tubing, and achieve directional transmission.

Without a doubt, the vertical antenna is most efficient and easy to operate, and now that it has proved its worth, commercially, perhaps amateur experimenters will be quick to appreciate its advantage and its simplicity and apply it to their own work.

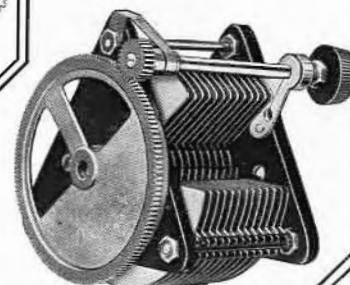
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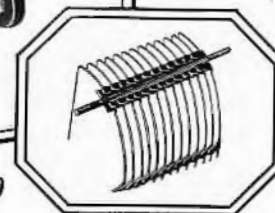
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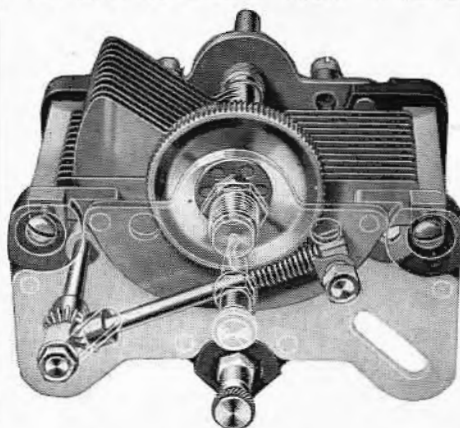


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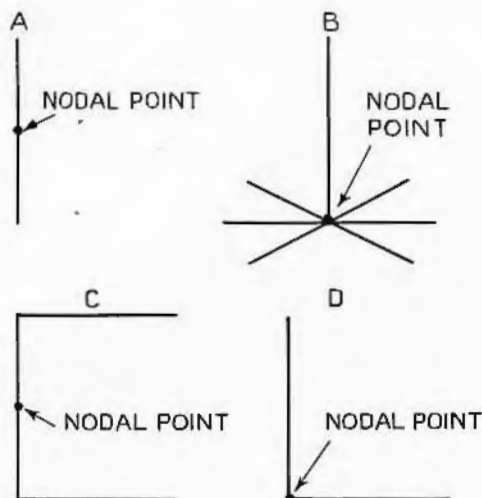
**American Brand Corporation**  
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(Continued from page 314)

### Antenna Construction

Much can be said about antenna design, although most of us have their pet construction with which they have accomplished perhaps some very good work. The important considerations in antenna design in this work is greatest height and perfect balance. The type preferred is that shown at B, Figure 1, with A next. Type A might be, for instance, a vertical cage of six Number 14 or 12 enameled copper wire, the cage being not less than 9 inches, and not more than 15 inches in diameter, and presupposes that the apparatus is located on the second or third floor of the house, the lead-in to be located at the nodal point.

Type B, on the other hand, might be a vertical cage of six Number 14 or 12 enameled copper wire, not less than 9 inches, nor more than 15



inches in diameter. The counterpoise for this system would consist of three radial cages of such length that the nodal point of the system would be at the junction of the vertical and horizontal portions.

At U-1XAM, use was made of a 50-foot vertical three-inch conductor pipe antenna, insulated at the base with a Pyrex glass bulkhead insulator. The pole was guyed three ways with rope boiled in wax, and attached to the springs at the guys to keep a steady tension on the mast. The counterpoise consists of three radial wires to the guys, and another wire from each guy to the next, thus forming a triangle, and the whole system placed twenty-four inches above the ground. Its fundamental was found to be approximately 70 meters.

Just to prove that a single wire antenna will work also, while experimenting with an antenna made of a single wire of the inverted L type with a suitable counterpoise, working at fundamental

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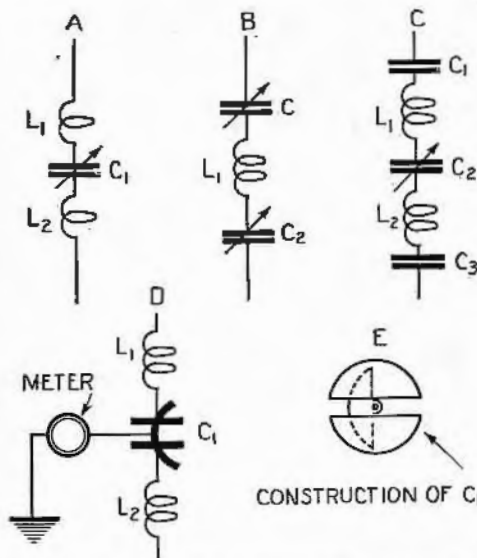
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wavelength of 70 meters, my signals were picked up by Maxwell Howden in Melbourne, Australia, on May 29th last, at 7 P. M. his time with good signal strength, while I was calling CB-8. The type antenna I was then utilizing is shown in Figure 1-C.



The balancing of the antenna and counterpoise is of the utmost importance. This has been most forcibly brought to my attention through the "going West" of some six perfectly good (therefore) UV 203-A's. In conclusion, it is advised to keep the antenna and counterpoise capacities as low as possible, and to make up for the decrease in the fundamental wavelength by going up in the air as high as possible.

(This is the first of a series of several articles written by Mr. Reinartz for AMATEUR RADIO on the results of his experimenting on ultra-short wavelengths. The second article, "Driving Circuits for 20, 40, and 80 Meters," will appear in the October issue. These articles will appear exclusively in this magazine.—The Editor.)

### THERE ARE TWO SIDES

to every question. So it is with radio. There's the transmitting side, and the receiving. John L. Reinartz, the champion short-wave juggler, is taking care of the transmitting problem for our readers, in his article, "How to Transmit the Ultra-Short Waves." We rely upon Boyd Phelps, late of the First District, to raise a few questions with the receiving business.

What have you to say on either question? Let us have your suggestions, and your reactions. What have you developed along those lines that will be of benefit to your fellow-amateurs? Would you like to see your material appear in print? Then send it to AMATEUR RADIO.

**\$200**  
**TRI-COIL**  
is a radio frequency transformer that has made an especial hit in one tube reflex circuits. Handsome bakelite case.

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TWO TYPES  
AMATEUR—45 TO 225 METERS with tap  
BROADCAST—250 to 550 METERS  
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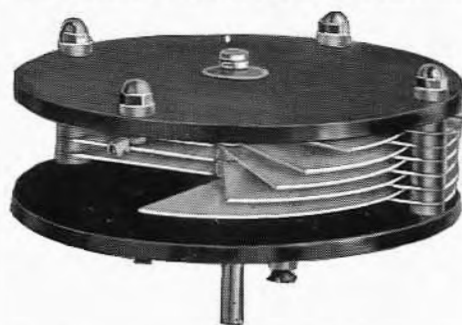
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**Capacities**  
0.00025 mfd.  
Without stagger plates  
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**YONKERS RADIO CLUB**

**W**E have applied for affiliation with the S. D. E. C., and by the time you read this we'll have received all the trimmings and choke coils and everything. The two delegates to the council are E. B. Wilson, Jr., of 2ADD, the city traffic manager; and E. Peacox, of 2ADH, the city correspondent to the A. R. R. L.

We have a committee for the investigation of interference that's right on the job, and has already pacified a few BCLs who were bothered by the Sound steamers when listening in on a lovely single circuit tuner. The Club gets a very good representation in the local papers, and is recognized as a real asset.

The Yonkers stations who are in actual operation are 2KQ, 2ANN, 2AAC, 2AAD, 2AQH, 2APY, 2AHB, 2BGD, 2CIL, and occasionally one or two others. These stations would like to have schedules with stns located in New Jersey and Brooklyn in order to clear local traffic, a difficult thing at times.

The meetings are held every other Friday evening at the local Y. M. C. A., and generally we have a very good attendance. Several of the fellows from New York City and the Bronx have dropped in at the Club, and 2CJE, who lives on 231st Street, has joined. Some more of the New York hams should drop around; watch the Saturday Radio Section of any of the New York papers to get a line on the dates of meetings.

Those of you who like to get into a hot battle over power factors and the method of trisecting a phase angle of some poor variable condenser, come up and meet our technicians. If you know how to build a good rectifier and get a D.C. note meet Mr. E. B. Wilson, of 2ADD; he'll pay good money to learn.

If you like a grand scrap between spark and C.W. stir up some of our old spark men, and then sit back and take it easy. The C.W. always wins, but they're the only ones who know it, the others just can't be subdued.

W1, gess nil nw, so Cuagn 73 u 2ADH.

—E. Peacox, P.M., Y. R. C.

**NORTHERN NEW JERSEY NOTES**

CNT is the A. R. R. L. city correspondent for the Ridgewood section. His first report was good for seventy-five inches—come on you other city correspondents.

The Northern New Jersey Radio Association will meet in Ridgewood, N. J., some time in September. Listen for a "QST" from Jersey Stations.

2CRO is going into the game again with fifty watts. New Zealand papers please copy.

2BMR, on two hundred and fifty watts, will do his bit again for Jersey traffic totals.

2AWH now 2GM at Schenectady, N. Y., is looking for schedules with Northern Jersey stations. Drop him a line if interested. When not studying at Union College he works in the G. E. Labs, and as a result has good dope for the gang that chew the fat with him.

2PE has a new mast that can be seen in the heavens from a distance of several hundred miles. He figures on allowing the sigs to leave his aerial and do real dx before they hit the ground.

Mr. E. Debuchy, 2A1, and C. W. Guyatt, 2CXE, are now supplying to the amateur trade a line of low loss short wave apparatus. This includes low loss series condenser, low loss tuner coils of the 1BGF type, plate glass insulators, etc. Information is to be had for the asking.

**Attention Amateurs**

**Transmitting material at a sacrifice**  
The following Meters are manufactured by General Electric Co. They are in original cartons and uniform size.

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also 0-500 volts. List price \$22.00  
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**D.C. Milli-Ammeters**  
0-250 or 0.500 milli-amps. List price \$15.50  
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Manufactured by Roller-Smith Co. List price \$13.75 **OUR PRICE \$3.25**  
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0-150 milli-amps. Manufactured by General Electric Co. **\$3.25**  
**Spark Transmitters**  
75 watt, portable, made for U. S. Army Aeroplanes. Government cost \$45.00  
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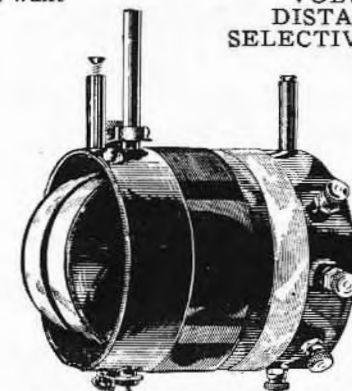
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**UNCLE SAM MASTER TUNING COIL**

Verifications from satisfied users prove conclusively such DX Reception as Philadelphia to KFAE (Pullman, Wash.), Ardmore, Pa., to WKAQ (Porto Rico), Trenton, N. J., to KHJ (Los Angeles). And as to selectivity, a committee of engineers in Philadelphia clearly heard 49 different stations sign off in 8½ hours on the air.

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Only \$5.50**

*At all good dealers*  
Ask your dealer or send self-addressed, stamped envelope for FREE wiring diagrams of circuits using this coil.

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**Special resistance to order at \$2.50**

Used in all circuits and resistance coupled amplifiers. Dealers write for discount.

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The greatest season for amateur radio is almost here. Keep posted on the developments on the new short waves by subscribing to

## Amateur Radio

By subscribing during the month of September you will receive the October and November numbers free, containing Reinartz's latest achievements in short waves and we will start your subscription for a year with the December issue.

This offer holds good *only* during September.

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Please enter my subscription to AMATEUR RADIO as per your September Offer for which is enclosed \$1.50.

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If renewal mark R on this blank.

### TRADE NOTES

The wide popular favor with which the radio public has accepted General Radio apparatus during the past few years has made necessary an expansion program.

The plans call for a considerable increase in manufacturing facilities to attain a production rate adequate to meet the rapidly growing demand for the well known General Radio products.

The growth of the General Radio Company is due primarily to its reputation for apparatus of unusual quality and efficiency. This apparatus was scientifically developed by experienced radio and electrical engineers in the well equipped General Radio laboratory.

Melville Eastham, president of the organization, is nationally known as a radio authority, having spent over 20 years in radio research and experimentation. In 1917 the first closed core audio frequency amplifying transformer available for the radio amateur and experimenter was introduced to popular use by the General Radio Company. This transformer was designed by Mr. Eastham after a long period of exhaustive research and study of actual operating conditions.

Other instruments which embody features of advanced radio design and developed by Mr. Eastham are: geared vernier low loss condensers, vario couplers, medium frequency transformers, and many other instruments including those employed in making precision measurements for laboratory use.

The success of many popular radio products made by other well-known manufacturers is due to the inventive genius and extensive radio knowledge of Mr. Eastham as consulting engineer.

The Radio Receptor Company's "Receptrad" tuned filter coupler is especially designed for use in a super-heterodyne set. It consists of two tuned herringbone coils (special Receptrad feature), whose coupled combinations are exactly alike and correspond with the Receptrad intermediate frequency transformers best range, being laboratory tested at the wavelength of the filter coils and their condensers, overcoming the resistance that must be avoided in the tuned circuits, combining selectivity with the absolute elimination of interference.

The Radio Receptor Company's "Receptrad" oscillo-coupler is especially designed for use in a super-heterodyne set. The oscillator and coupler coils are mounted on highly nickel plated supports and are wound in spider web form, making them most efficient for generating the oscillations near the signal wave and transferring this energy to the tapped coupler.

Geo. Latchford, 2ADV, announces the formation of the Aladdin Radio Research Laboratories, 233-39 West 42nd Street, New York City, where a full line of apparatus of the leading makes will be kept in stock. In addition, complete facilities are provided for the construction of all kinds of sets and installation work.

### CLASSIFIED ADS

Classified Advertisements accepted for publication in Amateur Radio at the rate of three cents per word.

**LOW LOSS**—Get into the short waves this winter where there are no quiet hours. You will need low loss coils of the 1BGF type for ultimate in efficiency. We have them, built according to DST's specifications. No dope or varnish used, neat and very rigid. Sold in sets of three, Primary, Secondary, and Tickler. Per set—30 to 125 meters—\$1.50. 95 to 220 meters \$2.00. Build a real rectifier by using Canadian Aluminum. It is the only stuff that you can be SURE is chemically pure. This Canadian aluminum was only obtained after a lot of trouble and have only a limited quantity on hand. Per sq. ft. \$.90. Per strip 1 inch by 6 inch—\$.06. Use genuine plate glass insulators like 9ZT uses and which are highly recommended by QST. Supplied drilled with 1/4-inch holes at each end. 3/8-inch by 1 1/2 inches by 18 inches. Very strong and only \$.90. Write for list of other other low loss apparatus, series condenser, radio frequency chokes, etc. Give us a try, and you will like our square deal methods. DeBuchy & Guyatt, 31 Palisade Ave., Bogota, N. J.

**LOOP ANTENNA WIRE** 65 strands 38 reinforced with five strands phosphor bronze, mahogany color, double cotton overall. Better than Litz. \$1.25 per 100-foot spool, postpaid. Van Blaricom Co., Helena, Mont.

**IS YOUR NEUT RIGHT?** To revitalize unneutralizable Neutrodyne, we devised this Kladag Coast to Coast Circuit. Uses same panel, etc., as Neut. except three less parts. Merely rewire. Success certain. Necessary stabilizer, 22 feet gold sheathed wire, circuit and complete, simple instructions—\$5.00 prepaid. Many have already rebuilt their Neuts—and written wonderful testimonials. Thousands will do it. Be FIRST—have the finest five-tube set in your neighborhood, revitalize others' Neuts. Description, etc.—10c Radio Lists—2c stamps accepted. Kladag Laboratories, Kent, Ohio.

**DIRECTIONS** for constructing home-built Radio with two thousand mile receiving range. Maitland Roach, Electrical Engineer, 2905 Columbus Ave., Philadelphia, Pa.

**HAM SPECIALS**—Acme 75 watt CW Unit, full mounted, \$10.00. RCA UC1819 Condenser, \$5.00. Connecticut J107 Condenser, \$3.25. What do you need? Van Blaricom Co., Helena, Mont.

**FOR SALE**—Genuine bakelite Dayton vario-coupler and variometers, green silk winding. Quality guaranteed at \$3.50. Monroe Martin, 3EO, Annville, Pa.

**HAS YOUR CLUB ONE?**—We have on hand a limited supply of volumes 1 and 2 of "The Modulator" (October, 1921, to September, 1922), bound in flexible leather. A valuable addition to any club's library. Over two hundred pages of real amateur radio information. Copies will be sent for every \$2.50 received while the supply lasts. Publication Committee, Executive Radio Council, 2nd District, 120 Liberty Street, N. Y. C.

**"HOW TO BUILD A CW SET."** By L. M. Cockaday. Tells how to construct a low power CW SET, using Voice Straight C. W. and Modulated C. W. Written by a well-known authority. Fully illustrated. Sent postpaid for 25c. or free with a Subscription (\$1.50) to Amateur Radio, 120 Liberty St., N. Y. C.

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## For the Love of "Mike"

(With Brogue and Blarney Filtered Out)

A Soft Answer turneth away Wrath;  
A Loud Speaker . . . ! !

### Porcine Persiflage

The YL, next door, wanted to know why *Amateurs* were nicknamed *Hams*; and as usual she did not wait for our authoritative and exhaustive elucidation, but went on to say that her brother (who is a BCL) maintained that the etymology of *ham* could be traced to his hereditary habit of *hogging-the-air*.

The subtle implication, that our column was the official organ of a swineherd, so raised the temperatures in our cervical area that our Van Whosen wilted and we replied more in anger than in sadness that the reason an *Amateur* was called a *ham* was because a good ham was cured, which was more than we could say for many BCL's we have heard "squealing."

There is something *phoney* about MIKE.

### AMERICA'S INDOOR SPORT

The Collar Button Tournament  
(As it might be broadcast by an expert)

"THIS is station KNOX. We are about to broadcast the weekly tournament of the collar button game direct from the Fourth Floor Back. The plays will be given by Tobe Joy of the Daily Blab. Stand by one minute, please."

"Good evening, everybody. This is station KNOX. Tonight I will try and carry you through the plays of the weekly game of what is, perhaps, America's greatest indoor sport,—the collar-button tournament. This is being played on the Fourth Floor Back.

"While we are waiting for the game to start, I will try and describe the scene of activities. The entrance to the playing field is four flights below me; and there is a long passage from the top of the flights to the Fourth Floor Back. The Fourth Floor Back is, as may readily be understood, four flights above the entrance which is four flights below. It is a small arena, eight feet long by six feet wide. There is not much room for strenuous play. Approximately fifteen square feet of the floor of this arena are covered with a bed. One and one-half feet are covered by a chair. Two square feet are taken up by a table; and twenty-four square feet are devoted to a trunk and a bureau.

"The object of the game is for the player to insert a simple object, known as a collar button, into the back button-hole of a newly starched shirt. The principal rule of the game is for the player to wear the shirt throughout the tournament. The player has arrived and the game is about to start.

"The first play was off-side and the button slipped. The player recovered and again went into action only to make another miss. This miss was caused by a twitch of the player's fingers at an inopportune time.

"The player has now set his teeth in determination. He again assumes the correct position,—he is playing close,—it looks like a home run. No! He misses! It was a scratch shot to the corner of the room.

"The player recovered the button, and is resuming the play. A quick play brought the button almost in the hole; but the player sneezed and lost it. The button is out of sight. It is under the bureau. A try from the front failed to regain the button. The player is injured—he bumped his head on the trunk. He quickly recovered and tried an attack from the side—he slipped and was again injured, having bumped his nose on the floor. He appears dizzy but resumes the game. He has finally recovered the elusive button.

"Slowly but surely the player is feeling his way. The point of the button is in the hole,—he is exerting a gentle pressure,—the button is home,—it is a goal! The play is ended. The score is for the player. Total time of play being five minutes, thirty-nine and three-quarters seconds. I hope you have enjoyed the game. This is station KNOX signing off. Good night."

—Vernal Fuller, 1KH.

### HAM vs BCL

It is more blessed to transmit than to receive.

Noah operated the first *archaic* transmitter, and he grounded the set on Mt. Ararat.

IF WE SHOULD  
WRITE OUR  
COLUMN  
THUS,  
YE ED. L. J.  
WOULD MAKE A  
FUSS!

whereas if we should throw the well-known *taurus*, reclining in our so-called Morris (chair), we would receive the praise of "Lloyd" for filling up our monthly void.

In a typographical vote on the relative merit of 6 & 8 point type, the "eyes" have it.

Signing off until October.  
USUAL "73s"

—Charles Irving Corwin.

**New!** Remember—These parts are new this season! Be Sure to see them at your dealer's.

## Improved Reception

The One Big Thing in Radio That Interests Everyone!

**FIL-KO-STAT**  
SCIENTIFICALLY CORRECT RADIO RHEOSTAT  
with Battery Switch



\$2

Improved Reception Through "Tube Tuning" with a Scientifically Correct Radio Rheostat.

There have always been plenty of rheostats that served to open and close the "A" battery circuit, but until the Fil-Ko-Stat was made it was impossible to adjust the filament heat to the most efficient operating point, giving maximum audibility in phones or loud speaker. Only the Fil-Ko-Stat, designed to give improved reception, allows infinite control of filament current, making possible louder, clearer signals from distant and local stations in any Radio Receiver using any type of tubes. And now—the NEW model (insist on the NEW model at your dealer) gives even finer control than ever before. It's \$2 including the battery switch attachment. And it's unconditionally guaranteed.

**FIL-KO-LEAK**  
SCIENTIFICALLY CORRECT VARIABLE GRID LEAK  
its calibrated



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Improved Reception Through Maintaining Correct Grid Bias with a Hand Calibrated Grid Leak.

Likewise, there are many forms of grid leaks, some variable, others fixed. The Fil-Ko-Leak, however, is the only grid leak that can be set for a specified resistance and adjusted for best results. It's hand calibrated (and double checked) over the operating range for all tubes— $\frac{1}{4}$  to 5 megohms. Markings can be read through a panel peep-hole, and it's also equipped for table mounting and mechanically, it gives scientifically correct control of grid potential—for \$2.

**FIL-KO-ARRESTER**  
SCIENTIFICALLY CORRECT RADIO LIGHTNING ARRESTER  
with the 100% Guarantee



\$1.50

Leakage Losses You Never Thought of are Eliminated by this Scientifically Correct Radio Lightning Arrester.

Even were the Fil-Ko-Lightning Arrester no better than the average, it would still be worth far more because it comes to you with a guarantee that is virtually an insurance policy. You get \$100 or we repair or replace your set if damaged through fault of the arrester. But the Fil-Ko-Arrester is better. It eliminates all leakage losses from aerial to ground, all radio impulses reaching the antenna are sure to pass through your radio set, insuring maximum reception. Hermetically sealed Bakelite insulation is protected by an umbrella-shaped shield that keeps off dust, moisture and other conductive matter. You get positive protection for \$1.50.

**FIL-KO-SWITCH**  
SCIENTIFICALLY CORRECT "A" BATTERY SWITCH  
Simple—Sturdy—Sure



50¢

There's also the Fil-Ko-Switch, at 50c. It won't improve reception—but it's one of the few battery switches that won't impair it. Made of non-magnetic metal, wipe-action contacts, assuring sharp, clean "make and break", entirely insulated from nickel-plated brass housing and knob. Scientifically correct to avoid current leakage and extra capacity. Carries the usual Fil-Ko-Part for Radio guarantee!

Improved Reception Through Scientific Tuning

A book that will help you get better results; tells all about vacuum tubes and how to control them as to get more DX, greater volume, longer tubes and battery life—maximum regeneration and clearest signals. Write to Dept. ARS24 for free copy.

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Thompson power and selectivity, Thompson ease of operation, and Thompson freedom from trouble, are features that should be investigated before an investment in radio entertainment is made.

The Thompson 5-tube, factory-built Neutrodyne Radio is made up of parts that are known to be the standard in their group. Yet, the manner in which these parts are built into the finished instrument is the chief reason why the Thompson Neutrodyne Radio is a revelation to both layman and expert.

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*The Thompson Neutrodyne Radio is NOW \$125  
without tubes or batteries. The Thompson Speaker  
with adjustable sound knob is \$28.*

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