

THE MODULATOR

February
1923

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THE MODULATOR

THE REAL AMATEUR RADIO MAGAZINE

Official Organ of the Executive Radio Council, 2nd District, Incorporated

Volume 2

for FEBRUARY, 1923

Number 5

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THE MODULATOR

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EDITORIAL

DESPITE the fact that The Modulator has always been after the high wave operator, the Radio Service is still receiving a great many complaints of fellows who are operating on illegal wave lengths. What seems to be the matter with you fellows, anyway?

An instance has come to note very recently of a chap who was operating an amateur phone set on 340 meters. It was quite true that the Voluntary Lid was observed all right, but what right had he to transmit on this wave, even if it was after ten thirty? He was logged by one of our friends and this man then rang up this office looking for redress. The only thing that we could possibly do was to agree with him as the fellow was certainly without a leg to stand on. The listener was located at considerable distance, and the operator was using a phone set, so it was not a case of a near by station causing QRM. The man who kicked is using a Reinartz tuner and knows a few things about the game.

Now here is what happens in a case like this. If the complainant has really proof that he can submit, the offending station is warned officially by the Council. If he still persists, an affidavit is made out and simply turned over to the Radio Inspector. Fellows, can't we impress it upon you, that cases of this kind are actually going to kill amateur transmission altogether unless some concerted action is taken? Simply because there are a few selfish stations on the air, is it any reason why the whole game should be stopped? If a man is legally operating on 200 meters, no one can stop him and no one will try, but a case of this kind **MUST BE STOPPED AT ONCE**.

This is no joke but a very serious thing. Do not think that the Council or The Modulator is trying to own the air, because they are really only trying to save the amateur from himself. All of the better class of amateurs realize this fact and abide by it, but some of the smaller ones, usually in the smaller towns say, "Pshaw, this darned Council can't tell ME what I'll do and what I won't do."

Now fellows, this is just what the Council is going to do, and what's more it will do it every time and also with the full cooperation of the Department of Commerce. It is proven every night that there is a certain class of amateurs who are incapable of giving the least consideration to anyone else, who will operate on any old wave they happen to hit on and who will cause all sorts of interference simply because the radiation meter shows a half an amp more. The Executive Radio Council of the Second District has got teeth and it will use them when the time comes and don't be fooled into thinking that it is powerless.

The Council is a strong federation of the better class of radio clubs, and they are out to make things radio sit up and take notice in the Second District. If, through your carelessness or heedlessness, you happen to get caught under the wheels, you have no one to blame but yourself. This magazine has been warning you every month for a year and a half and it is time we got busy. Some amateurs as soon as they get behind a key, have absolutely no consideration for anyone but themselves and go on QRMing everything in sight and hearing until old man Ether himself turns over in his grave. A few years ago, a wave around 270 was not considered a terrific offense, but now we have entirely different conditions, the air is overcrowded and stations allotted certain wave lengths for transmission must stick pretty close to them. Can you imagine the howl that would go up if WJZ or WEAJ was suddenly to swoop down to 200 meters and transmit on full power from ten in the evening until one in the morning? Put yourself in the other fellows shoes. Show a little consideration for other amateurs by helping the game and not trying to ruin it and spoil amateur transmission altogether.

One of the best known amateurs in the Second District was logged on 273 meters on C.W., every single night of the Transats. What kind of an example is this for this man to set to the rest of the fellows? When questioned about the matter he promptly came back with the retort that he didn't give a ——— for anyone, let 'em go ahead and suspend him. It's fellows like this that must be stopped. Can't you see the sense of it men? It is possible for the largest ship afloat to be sunk by one little child opening the sea cocks. Are we going to let this happen to amateur radio? Are you going to stand there idly and let your favorite hobby be ruined simply because a few selfish amateurs **MUST** transmit on a high wave? Wake up—take action and cast these men forth! The Council won't stand for it any longer and action is essential. From now on a letter from the Council warning you is not to be sneered at, it has teeth and it is going to **BITE** good a id hard. **WATCH YOUR STEP!** Executive Radio Council

The Construction of a Good Relay Station

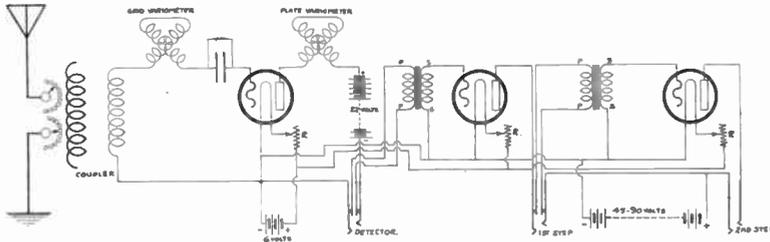
Part 1

The Receiving Set and Amplifier

THIS series of articles has been secured through the cooperation of several of the owners of the best amateur stations in the district, and while different operators may have different ideas, it is believed that the articles will prove their worth and possibly help some of the struggling relay stations to better themselves. This first article deals with the receiving set best suited for this sort of work, the second of the series will have to

do with the transmitting set, and the third will have to do with the aerial, ground and counterpoise. A fourth installment will probably cover the exact procedure in order to become a licensed operator, and will also contain much helpful information regarding relay work, operating and so on.

lot is the one where the coupler is placed between the two variometers and this is the design that has finally been decided on. There are other circuits that may do the work about as well, but this particular one has seen the highest amount of development for amateur work and it will probably prove itself the best. The Reinartz Tuner as described in the October 1922 issue of The Modulator is used by a great many, but it has generally



Hook-up for the set with two stage amplifier

do with the transmitting set, and the third will have to do with the aerial, ground and counterpoise. A fourth installment will probably become a licensed operator, and will also contain much helpful information regarding relay work, operating and so on.

The Receiver for the Relay Station

This is a part of the apparatus of a really successful station, that will need extreme care in its construction. It has been found by actual investigation that a great many of the amateur stations are equipped with such poor receivers that their signals actually go out further than they can hear. In other words, it has happened many times that some second district may be calling a one or a three and possibly some distant five or nine may come back at him. The second district op may never hear him because his receiver is not of the best and will not permit the reception of real DX signals. This article will tell how a really efficient receiver may be made and it will be sort of a combination of all of the receiving sets that have been investigated and found to be all right.

Generally speaking, most amateur traffic is handled on the old two variometer and variocoupler circuit that seems to be a familiar piece of apparatus in every station visited. There are many variations to this set, however different arrangements, different apparatus and so on. The most efficient receiver of the

been observed that one of the older type variometer and variocoupler sets is always ready in reserve.

Amplification

Here is another point which has been carefully investigated. Practically none of the DX work is done with the aid of Radio Frequency amplification. Experimental sets have been built by the hundred, but when DX work is to be handled, straight detection is used sometimes with one stage of Audio Frequency amplification. Most of the sets are equipped with two stages, but as a rule only the first stage is used for relay work. The second stage increases the tube noises and other local disturbances to such an extent, that is it frequently impossible to read the other fellow through these sounds.

We have now decided on the right type of receiver, and the correct amount of amplification. Now to proceed with the set itself.

In the first place, it will be necessary to purchase the parts at some good radio house. Avoid moulded products as much as possible, as they will not give the results that wooden variometers will. When buying the variometers, be sure that the windings are not covered with either shellac, varnish or paint. All of these cause losses that really count when long distance work is done. Get the variometers of good wholesome size, the wider the better, as this will make the set much more selective. Do not get a variocoupler

that has a lot of paint on the windings, either. Be sure that there are sufficient taps to get efficient tuning. A forty three plate condenser may be added in the ground lead, which will help in the tuning considerably, it is not absolutely essential, however.

Here are the parts that will be needed to make the receiver:

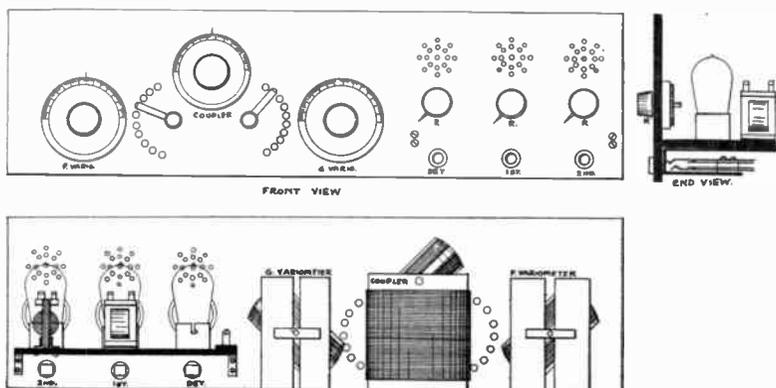
- 2 Wooden Variometers
- 1 Variocoupler
- 1 Switch arm and switch points for the taps.
- 4 lengths yellow spaghetti
- 8 Binding posts
- 1 Cabinet and panel, about 24"x7"x7" deep
- 1 Detector tube
- 1 Socket for same
- 1 Rheostat
- 1 22½ volt variable B battery
- 1 6 volt storage battery
- 12' of No. 14 Hard drawn copper wire for wiring set

Grid leak and condenser

This will take care of the tuning unit and the detector. For an amplifier it will be best

The accompanying drawings will give a better idea of how the completed set should look than anything else and should be studied over very closely before starting to build the set. The wiring diagram should be followed very closely, all wiring be done in a neat and workmanlike manner, the heavy wire being rolled out into straight lengths and then cut and bent to shape, the spaghetti being slid over the wire before it is bent. Be sure that all connections are soldered tightly. A hinged top to the cabinets will help matters considerably and improve the value of the set considerably.

The set should be located somewhere in the house where it is readily accessible, yet not apt to be noisy, or where its operation will not disturb any sleepers when it is operated late at night. A good deal table will do very well for the operating table, but an oak typewriter desk will look better. It will also be equipped with plenty of drawers for stowing B batteries tubes and other miscellaneous "junk." It will be easy to locate the storage battery under this desk and the charger should be also locat-



Front, rear and side views of the set

to allow for a two stage, even though only one stage is used. Therefore we will need the following:

- 2 Amplifying Tubes
- 2 Sockets for same
- 2 Rheostats
- 2 Amplifying transformers
- 2 Double Circuit Jacks
- 1 Single circuit jack
- 1 Plug for receiver cords
- 4 binding posts
- 2 lengths yellow spaghetti
- 3 22½ volt B batteries
- 8' No. 14 hard drawn copper wire
- 1 Cabinet and panel about 7"x7"x7" deep

It will be best to make the amplifier in a separate cabinet because if ever the receiver is to be sold it will be easier to sell it separately, and also because the amplifier may be added to other sets at some other time and all that will be necessary will be to simply disconnect it from the regular set and connect it to the new one. It will be easier to handle and easier to experiment with.

ed near it with a double pole, double throw switch fastened to the side of the desk to change the storage battery from the charger to the set. These desks may be purchased from any of the second hand office equipment stores in the city for a very reasonable sum and will more than repay the operator for their convenience.

Next month the construction of the C.W. transmitter and phone set will be taken up in detail, together with the aerial change over switch.

Radio As She Is Writ

Dear Ed:

The Mod recd hr in fine shpe. Mani thnx for sampl copi. It sur is ok and shud be in hnds of evri 2nd dist op. 2OMs Tfk Dept is gud, and is wt is neded, also artcls on constr of sets etc. Tel 2AWS 2 kep on wth gud wrk. Tt Jan covr is FB. Enclod is moni 4 yrs subs, Nm hr nw, 73s de—

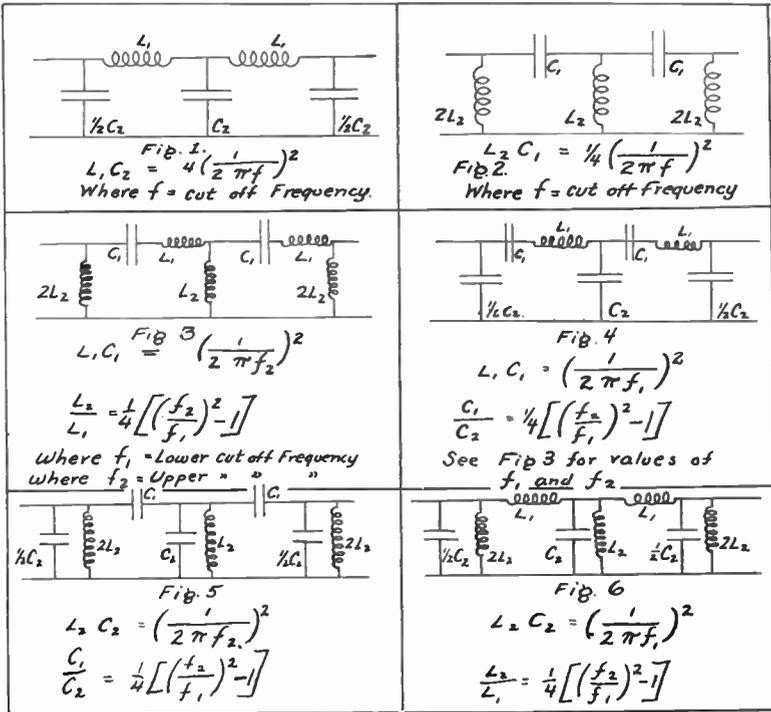
The Electric Wave Filter

by William Woodrow

From a paper read before the Talb Club

THE electric wave filter is without a doubt a development of the loaded telephone line circuit. It has been known for some time that when a telephone line was loaded with inductance coils and with the capacity between the wires, it would conduct certain frequencies much better than others. That is, certain frequencies could be passed over the line without an appreciable loss in current, other than that of the ordinary IR line loss. At the same time other frequencies would show quite a large loss, much greater

the ratio of the square of the impedance of the inductance resistance of the circuit, (X/Z^2). Attenuation is not of these easy terms, it varies much the same as the curve upon which the logarithmic decrement of the oscillation is based. This, of course, complicates things considerably. But the fact remains that if we have a circuit made up of bunched inductances and capacitance, certain frequencies will pass through unattenuated, while others will be attenuated to a point where their presence at the far end of the cir-



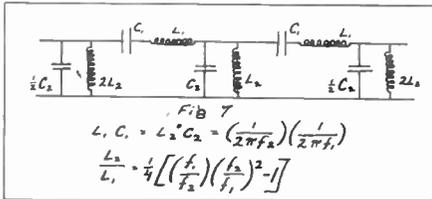
than which could be accounted for in the IR loss of the line. This ability of a line to carry or transmit different frequencies at different degrees of loss is known in telephone work, as the attenuation of the circuit for a given frequency.

This term attenuation must not be confused with either of the other common A.C. terms, Admittance, which is the reciprocal of impedance, ($1/Z$), or with Susceptance, which is

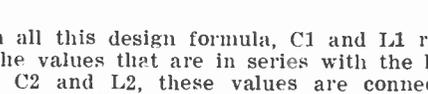
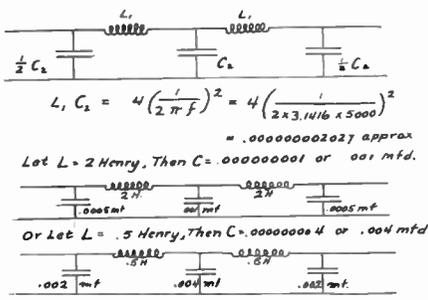
circuit may be negligible. Such a circuit is termed by C. A. Campbell, in his U. S. Patent, No. 1227113, as an Electric Wave Filter. These circuits are very varied in form, and are shown in detail with the design formula in the diagrams that are printed with this paper, and these are, for the most part, self explanatory. It may be well to note, that of the seven methods shown, there are really three different types of filters, more commonly known as Low

Pass Filter, High Pass Filter and the Band Frequency Filter.

The Low Pass Filter is of the type shown in Figure 1, which may be designed to cut off at a given frequency and pass all current below that frequency. Figure 2 shows the design of the High Pass Filter, which can be made to pass all frequencies above a certain point, and cut off all current below a given frequency. The third type, that of the Band Frequency Filter is of the type which transmits all current between two limiting frequencies.



As an example, a filter may be designed to pass a current between one thousand and one thousand five hundred cycles, and effectively cut off current of all other frequencies, that may be present in the circuit. The designs for such filters are shown in the remaining five diagrams, the type to be used will depend upon the band of frequencies to be handled. To pass higher frequencies we find condensers in series with the line, because the condenser passes the high frequency current more readily than the lower frequency, and then inductance coils across the line to by-pass the lower, unwanted current. In the lower frequency band filter, we find the reverse condition, that is, the inductance in series with the line, with capacity and inductance across the line to by-pass the lower and higher frequency unwanted current. In order to show the workability of this design formula here is a solution of a low pass filter designed to cut off at five thousand cycles.



In all this design formula, C1 and L1 refer to the values that are in series with the line, and C2 and L2, these values are connected across the line. Assuming that the design formula is completed we may then pick our values for L and C, which brings us to the point where we either have to build an inductance coil or a condenser to a given value. It will be granted that it is much easier to wind a coil to a given inductance than to construct a condenser to a given capacity. It is, there-

fore, a good plan to pick a suitable condenser of standard size, and then wind the inductance. The formula for the three types of inductance, Closed Iron Core, Open Iron Core and Air Core, may be readily found in detail in the standard handbooks on the subject, so I will not take the space to discuss them at this point. The type best suited to any condition will depend on the type of filter and the frequencies to be handled.

After the values of the inductance and capacity have been found, and the actual coil and condenser designed, the next point in order is to decide upon the number of stages of filter. The greater the number of stages, the greater the degree of attenuation of the unwanted frequencies. The number of stages may be found by trial, which is, perhaps, the easier, that is adding stage after stage, until the unwanted frequency is reduced to a negligible degree. For those who like to use figures, it may be found by the formula here shown. According to Campbell's Filter Patent the propagation of one section of filter is:

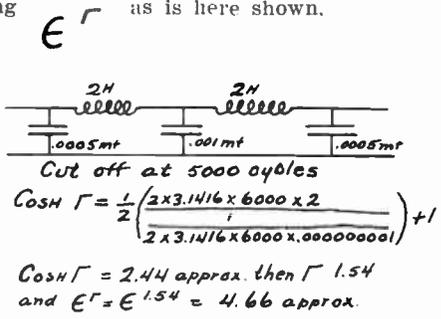
$$\text{COSH } \Gamma = \frac{1}{2} \left(\frac{Z_1}{Z_2} \right) + 1$$

Or taking a low pass filter as an example we have:

$$\text{COSH } \Gamma = \frac{1}{2} \left(\frac{2\pi f L}{2\pi f c} \right) + 1$$

where f is some frequency outside the range of the filter.

The attenuation is then found by solving E^Γ as is here shown.



Which means that at the end of the first stage, a current of 6,000 cycles, would be 1/4.66 of its original value, and at the end of the second stage it would be 1/4.66x4.66 or 1/21.715 of its value, and then in the third stage it is raised to the third power, or 1/101.19, which is approximately 1% of its original value.

This constant gives the loss of current per stage for a frequency of 6,000 cycles, which is outside the filter range, and from this it can be readily seen that the number of stages needed in a given condition can be obtained.

Every Day, in Every Way, C.W. Has Come to Stay and Stay

By F. H. Schnell

Traffic Manager, A.R.R.L.

THOSE of us who saw the light (of the tubes) in the beginning have made the greatest progress in this amateur radio game of ours. Some have been blinded, temporarily, by the flash of a wicked spark, be it sink or otherwise, but time alone has been the deciding factor in the great transformation—spark to C.W. Thus, we may mention with a sort of sorrow for the old spark, that like prohibition, if it cannot remain when it is here, it certainly has small chance of returning even in moderation. The facts are all too evident in our monthly traffic reports, appearing in QST.

It is true, we did preach C.W. without restraint and we believe we did it in all justice to the scientific advantage of the greatest good for the greatest number. That our statements may be born out clearly and that no one will criticise us on the basis of being too partial to C.W. it gives us pleasure to invite you to turn back to the message traffic reports for the past year. Note the percentage of traffic handled on C.W. the first few months; note how it increased slowly at first then rapidly; note it month by month, and last but not least, glance over the figures presented this month. Is or is not the evidence shown, by a careful study of these monthly reports, conclusive? We ask you! Barring financial reasons, is there any good reason for any progressive amateur to operate a spark transmitter? Compare the advantages of C.W. with spark transmitters. Be honest with yourself and give each transmitter its due. Think of the remarkable distances covered by C.W., less QRM, less noise, less power, less trouble from kick-backs and power supply. Those "lesser" mean greater efficiency and progress. We are progressive and we want greater efficiency—why fool around with an ancient spark!

Read the story of the Transatlantic Tests. How many sparks got over? As far as we know, not one! A great many of the transmitters used less than 100 watts. Can a spark do it? If so it has not been demonstrated conclusively.

Our feeling toward a spark transmitter is only a sentimental one, nothing more. As a piece of radio equipment it is a fine ornament for the shelf of antiques. It is cumbersome, noisy, bulky, and what not, by comparison with C.W. Where would we be today if each new transmitter coming into the game since the spring of 1921 were a spark? We would-

n't be! Why there wouldn't be room for one to work once a week even if time periods were allocated to each transmitter. Think of the broadcast listener and his complaints of interference. The Lord knows they are numerous now, in many cases unfounded, but has anyone the stretch of imagination to look back and say what it might have been if all were spark? Would we be in existence? Who can say?

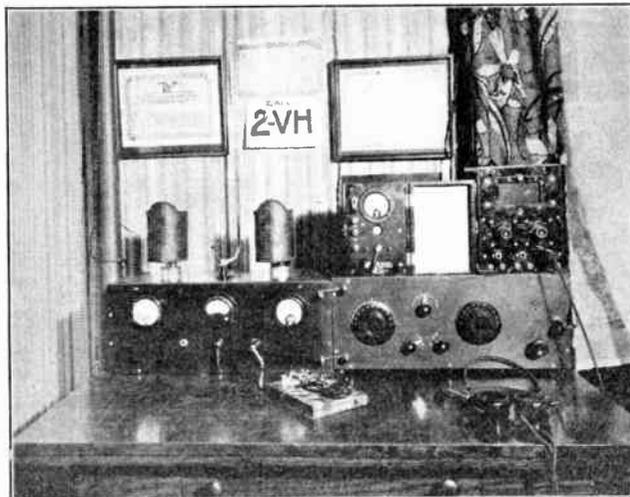
We were mighty proud indeed of some of our old spark sets. There were some as good as human minds and hands could make them and they did mighty good work. It took lots of time and money to equip such a spark station, yet most any C.W. set of today will almost equal their best work not to mention those that will surpass the very best work done by the very best sparks. Do you recall prewar 8AEZ? Every piece of transmitting apparatus was designed and hand-made by M. B. West, and it was a first class outfit. 1AW, 1CK, 1HAA now 1ZE, 2PM, 2RK, 2EL, 2OM, 3KM, 5ZL, 5ZA, 6ZZ, 6DM, 7ZO, 7BK, 8ZW, 8AWP, 8ZR, 8ZY, 8ZL, 9ZN, 9ZJ, 9ZT, 9ZL, and many others were among the very best that we had. Does any one of them hold any kind of a record, excepting QRM, that has not been shadowed to the back ground by dozens of C.W. transmitters? Today things are different in practically every station mentioned. DX records are shattered and blasted into smithereens by the C.W. transmitters employed in these same stations. A glance at Calls Heard will clarify this and A.R.R.L. Headquarters is swamped with work done by C.W. stations that the spark never touched.

Do you remember the "dead spots" we had a couple of years ago? What has been the greatest factor in solving those dead spots? C.W. Do you remember the fading (QSS) tests we had? Perhaps some of you forget them since no report has ever appeared from the Bureau of Standards. It would be a mighty interesting study if that old QSS report could have been pried loose from the Bureau that we might make comparative fading tests with C.W. today.

Hardly a night goes by without transcontinental work by several stations. It is but a short time back that it was done only on rare nights, and a little further back in the days of the spark there was always some doubtful aspect in connection with a report of direct

Concluded on Page 157

Station 2VH, New York City



The Operating Table

One of the stations that is getting out in fine style these cold nights, is 2VH, the station of Paul Haus, located in the west side of the Bronx. 2VH is on the air regularly every night and is handling a great deal of traffic.

On the left hand side of the photo will be seen the transmitting set, using two fifty watt bottles, (with the lamp shades). This is one of the neatest transmitting sets we have seen in some time, the change over switch being located in the center of the transmitting panel, with a plug and jack arrangement for the key. The lead in from the aerial will be seen coming into the center of the transmitting cabinet.

On the right hand side of the photo is the receiving set, in this case a Reinartz Tuner with a detector built right into the same cabinet. On the right hand side of this cabinet, on top, is a Wireless Specialty two stage amplifier, which really amplifies, and next to it will be seen the wave meter.

The layout of the whole station is extremely neat and workmanlike and Mr. Haus is to be complimented on it.

The power supply for the transmitter is a 750 watt Radio Corp transformer, giving about 1500 volts, self rectified. The jack on the right hand side of the transmitting panel, is for the plugging in of a modulation transformer and microphone.

The aerial is a six wire flat top, on twelve foot spreaders and a six wire cage lead in. The counterpoise is an eight wire fan. A tuned ground is also used successfully. The radiation is about four amperes, when the line voltage is at its maximum.

The greatest DX to date is about 1500 miles.

When Sending Be Brief!

Would you be so prodigal without words, if you had to pay for them at the rate of 10 or 12 cents a word?

Remember, a check for a million dollars can be written in a half minute. Learn the value of brevity.

To Question and Answer Editor of Well-Known New York Paper:

Dear Sir:

Please tell me how to hook up a bakelite panel, four binding posts and a variable condenser. Please enclose apparatus.

Lloyd Jacquet, Associate Editor of The Modulator, has recently been appointed to take Mr. Raymond F. Yates position as Radio Editor on that well known New York newspaper, The Evening Mail. That explains why he is so busy these days. Congrats, Jack.

Traffic Notes

BY F. B. OSTMAN, 2OM

For the third consecutive month Northern New Jersey leads the Northern Section, Atlantic Division traffic report with messages handled. This is due to the systematic reporting and the splendid cooperation of every man in the division.

For a long time stations have been shooting at a 1000 messages per month record. It remained for 3XM, the Princeton University station to accomplish this to the tune of 1226 msgs in December all handled on C.W., details of which are given further back in the traffic notes.

air for a month or so having gone to the hospital for an operation. Prescott Smith sm is away at college. L. Clark is building a station of his own.

No report received from Mr. Frye 3NB, Asst. Div. Mgr. for Southern New Jersey.

EASTERN NEW YORK

Dr. E. A. Cyriax, 2DI N. Y. C.

Asst. Division Mgr.

Brooklyn stations again received no mention in the traffic Dept. as no report has been received

DECEMBER

	Stns.	Atlantic Division, Northern Section			Stns.	SPK		Stns.	TOTAL	
		C.W.	M.P.S.	M.P.S.		M.P.S.	M.P.S.		Msgs.	M.P.S.
Northern N. J.	34	3563	105	15	1106	74	49	4669	96	
Southern N. J.	0	0	0	0	0	0	0	0	0	
Eastern N. Y.	33	2144	65	8	262	70	41	2706	66	
Western N. Y.	20	1018	51	8	296	37	28	1314	47	
TOTAL	87	6725	78	31	1964	64	118	8689	74	

C.W. Messages	6725
Spk. Messages	1964
Total Messages	8689

First honors this month for messages handled go to Princeton University 3XM with a total of 1226 messages. Other stations being as follows:

Spark 20M	436	2DI	316	8AXN	134
C.W. 2AJF	325	2GK	205	8NB	226

Again we are pleased to report a gain in traffic figures over last month. Looks as if we ought to hit 10,000 messages with in the next two months of the winter season. Let's try for this mark, 10,000 messages from the Northern Section. Let's have a report from every station and see how far over the top we can go.

NORTHERN NEW JERSEY

R. S. Johnson 2AWL Red Bank, N. J.
Asst. Div. Mgr.

Wintermate, 3CG, requests more cooperation from stations throughout his district. So far reports have only been received from two or three stations. 2CKL being heard regularly by 4OI and has schedules West and South. 2BBB, on regularly Monday and Wednesday 4AM to 7AM. 2AJF on regularly every morning around 6.30 and clears on schedule with 3AWA for Philadelphia traffic. WOW! Over three hundred messages reported from Paterson this month; that use to be a years total. (Milne Keep It Up). 2CJA on with a new sink gap. Will some of these birds never learn? Walter Ostman sw of 2OM will not be heard on the

ed from Maher 2RM. We promise next month a report from the many Brooklyn stations handling traffic as a new Dist. Supt. is to be appointed for Brooklyn. We will forget the past delayed and non reports from Brooklyn. We will start the New Year by getting another Dist. Supt. who will see that the reports come thru. Men give your new traffic manager a hand, send him your reports, no matter how small, and send them in on time.

Hanna 2HW having a hard time getting any cooperation from the fellows in his district and requests fellows interested in relay work in Columbia, Rennsalar, or Washington counties to get in touch with him.

Cooperation from the stations in Eastern New York handling traffic has been splendid, but with such a vast number of stations, the reports from this section should be larger fully more than doubled. Do you realize that only 41 stations reported. Were you one who didn't bother to send your report in on a penny postal? Don't you think it worth while OM? Think it over and let us have yours next month.

WESTERN NEW YORK

A. H. Benzee 8FE Buffalo, N. Y.
Asst. Division Mgr.

All reports from Dist. Supt. and City Managers show a decided increase. This is certainly fine cooperation from Western New York and should put the Atlantic Div. way up on top.

What could be a better way to start the New Year?

Mr. Theron Tappan, 8AVD Waverly, New York has been appointed Supt. 11th N. Y. District.

Mr. Young at Elmira reports very light activity in traffic through his district.

As usual Belden came thru with a fine report for the 16th Dist. 8AXN leads all stations in Western New York with messages handled. His total would probably be much larger but he and 8ASL suffered serious aerial trouble during the past month.

Jamestown, N. Y. with several very good stations seems to be a dead spot for traffic work.

A. J. Potter 8BIP reports a local war in his district since the Radio Club broke up. Two factions fighting each other. There has been little if any cooperation from that section for some time. It is hoped very much the present state of eruption will soon be smoothed over.

No reports from Rome, New York due to transmitters being re-built.

RADIO 3XM

Princeton, New Jersey, Princeton University
Messages Handled Nov. 15 to Dec. 15. Sent
793, Received 433

Total 1226

Here with the data on 3XM as furnished by Mr. Pat Jessup chief op. Mr. Jessup says, "We have seven ops on the job and have worked the set at an average of 18 hours a day. Laying off from 7:30 P. M. to 10:30 to cooperate with the local listeners in and once in a while for meals. We have 3 good ops, one that's fair and 3 bum ones. Using 100 watts ac cw with counterpoise and cage aerial. This meter reads 2 amps on a 3 amp meter shunted with a piece of wire. Neb., Ala. and Georgia have been worked but don't try for long distance. Over 50 msgs were handled in a nite and once handled 76. 9BED reports signals tearing in like a local station and QRming out in St. Louis.

Every time the wind blows east 3XM is reported in England.

Sleep and the ops of 3XM are total strangers, it is rumored old man fatigue cracked a couple on the dome and they are now spending a vacation in the infirmary.

Two keys, three ops were worn out handling this traffic and we understand the aerial even looks worn at the free end.

RADIO COMMUNICATION LAWS

Every amateur should have a copy of the Radio Communication Laws of the United States in his station. This can be had by sending fifteen cents (not in stamps) to the Superintendent of Documents, Government Printing Office, Washington, D. C. We are governed by the present laws and when the Department of Commerce institutes new regulations, the amateur shall be governed thereby.

INTERNATIONAL COMMUNICATION

Much relay traffic is handled between the

American and Canadian amateurs, and in some cases the American call letters have their counterpart in Canadian call letters. If we use the same (de) interval — . . .) confusion will result. After many months we have found that successful communication between American and Canadian amateurs as far as recognizing is concerned, can be carried on by using the following intervals:

American Working American Amateur (Uses the Interval de (— . . .))

American Working Canadian Amateur (Uses the Interval AA (. — . —)).

Canadian Working Canadian Amateur (Uses the Interval V (. . . —)).

Canadian Working American Amateur (Uses the Interval FM (. . . — —)).

2DI



Dr. E. A. Cyriax, 2DI

In the days of the coherer and the magnetic detector, the unlimited wave length and the unrestricted power input, the radio game acquired a disciple in the person of E. A. Cyriax.

In two short years, from 1910 to 1912, he had run the gauntlet of spark coils, doubtful detectors and touchy tuners, and reached the dizzy eminence of the presidency of the East Side Y. M. C. A. Radio Club, besides founding the now defunct Radio Club of Manhattan. It was at the Y. M. C. A. that Mr. Cyriax learned to forget American Morse in favor of Continental. Thereafter the status of the amateur seemed less desirable than that of commercial operator.

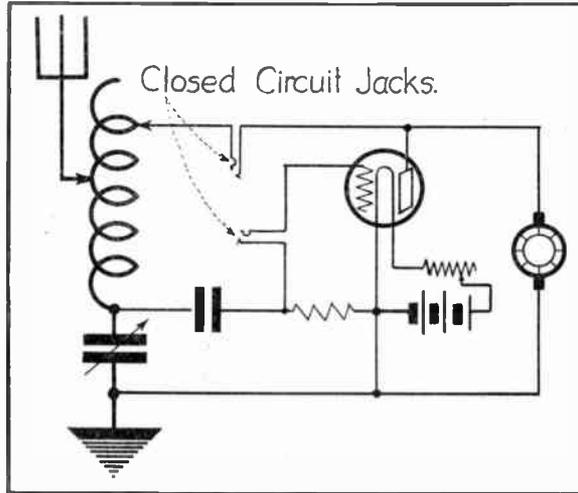
In December 1912, at the advanced age of 18, Mr. Cyriax made his first trip for the Marconi Company, and thereafter his assignments were many and varied, and afforded him opportunity on one occasion to transmit the SOS. His experience in the operation of ship sets extended to Telefunken apparatus, when he went to sea for the old DEBEG Company.

After viewing sundry corners of the world, he turned his face homeward and settled down to the acquisition of an efficient amateur set

Concluded on Page 158

Notes of the Tuning of the C.W. Transmitter

By Lloyd Jacquet, A.M.I.R.E., 2OZ



A closed circuit jack may be used to insert the milliammeter in any part of the circuit which is to be measured.

THE radio amateur operator has at last found the ideal transmitter in the C.W. type of transmitter. It is to date the sharpest transmitter devised, and the decrement of the emitted wave is so slight as to be almost negligible. It is worthy of note that the damping of the transmitter is not due to the apparatus itself, but rather to the deficiencies of the antenna and ground oscillating systems, which have yet to be developed. The C.W. transmitter itself is probably as near perfection as it is possible to have it with the present knowledge and development of the art.

For that reason, the C.W. transmitter is rather difficult to tune. The adjustments are so critical, and must be made so accurately that it is difficult to the uninitiated to get the best from his set from the very beginning. No end of experimenting is necessary before the ampere meter registering radiation will indicate an ampere or more, and before the last tenth of an ampere is squeezed out of the apparatus.

It is therefore of the utmost necessity that the operator be thoroughly familiar with the circuit he is using, and must know the controls and the characteristics of every piece of apparatus.

In analyzing a C.W. or oscillating circuit, we find that there at least six variable "elements." Those elements may be classed as follows: (1) the filament current; (2) the plate voltage; (3) the grid leak resistance; (4) the oscillating circuit resistance; (5) the grid coupling; and (6) the plate coupling. To get the best efficiency out of the transmitting set, it is

necessary to adjust every one of these variables critically and accurately. But it is found that all of these need not be adjusted, and if the last four are found experimentally, very good results will follow. However, it would be impossible to adjust everyone of them critically and simultaneously.

How this regulating of the different variable elements of the circuits can best be made will be better understood when a separate and typical case is considered.

For illustration, the Radiotron UV-203, the popular 5 watt vacuum tube, will be considered. This vacuum tube is of the hard type, and has the following known characteristics: (1) filament voltage, 7.5 volts; (2) filament current, 2.35 amps.; (3) plate voltage, normal, 350 volts; (4) plate current, 45 milliamperes; (5) watts output, normal, 5 watts. The proper grid resistance is given as 5000 ohms. The constants of the oscillating circuit are, of course, fixed.

We have thus far constants and data covering and concerning at least four of the six variables. With this knowledge at hand, we may consider as "fixed" in adjustment, (1) the filament current; (2) the plate voltage; (3) the grid leak resistance. (4) and the oscillating circuit resistance. Then, there are but two more components to be considered, and those are the plate, and grid couplings. If these two values could be assigned even approximate values, the problem would be practically solved for those are the only two variable elements left for consideration.

But this work can be done with great ac-

Concluded on Page 156

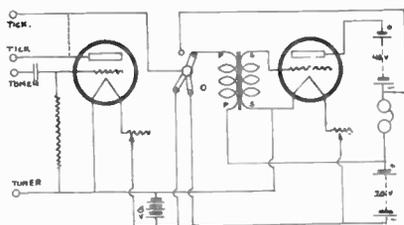
Just Listenin' In

Controlling that One Step Amplifier with a Switch

By M. K. Bretzfelder

Personally I have a grudge against plugs and jacks, I don't know why but I never did like them. Naturally a cam switch or a key switch is expensive and, as I wanted to put a very cheap control on a set with a one step amplifier, I built the following switch which will give excellent results.

First get a switch that can be completely disassembled and which has a knob that will soften up under the influence of heat. If possible get this with a laminated blade having three laminations, otherwise it will be necessary to attach two extra arms.



The two arms are soldered together (so that the contact arms are spread the distance between two switch points), by tinning them both and then heating them in a fire and clasp them in the meanwhile with a pair of pliers.

Now to set up the switch. The double blade is redrilled larger than any bushing that may be in the knob. It is then warmed and forced down on the knob. The screw is then put in place and a small piece of mica slipped on it to insulate it from the rest of the switch, which is set up in the regular manner. The control is now finished and the diagram will explain what is needed better than reams of printed matter.

Spark Coil C.W. Men!

You are all requested to communicate with me in order to form a relay route to help out in the handling of traffic thru New York and New Jersey.

All who wish to join please write Mr. Joffe, 52 West 117 St., New York City, or call radio 2BYO.

The Radio Club of East Harlem has changed its name to Harlem Radio Club in order to apply to the whole of Harlem instead of only to the east part as heretofore.

Newark News, by 2ALY

2BNZ informs us that sometime in January he is going to junk his 50 watt set and put in a 250 watt. MIM.

2BYD does not think that his call attracts enough attention so after this he is going to use nd for a personal sine. We wonder if it means, two byd's a week nothing doing?

It has often been said that it is hard to land a msg in and around Newark, but, unless I am mistaken, you will have no trouble this winter. 2CDR, 2AXH and 2ALY are all going to put in fifty watters this month, 2BNZ will have 250 watt going, 2AHO, 2GF and 2BDG have 100 watt sets working 2BMS, 2CBW, 2KF, and 2WR have 50 watt sets going and we are told that 2BYD will join us and put in a fifty watt bottle.

A pre-war friend of ours, 2AEG, has just returned from the fifth district and has installed a five watt set under the shadow of 2ZC's aerial.

2AHM has a C.W. set that absolutely refuses to work. 2BNZ worked over it for a week, took his own apparatus over there and cannot make the tube draw any current, even when he put 1500 volts on the plate of a U. V. 202.

We have several new stations with us on the air, among whom are, 2CSS, 2CQZ, 10watt C.W., 2AEG and 2CTC, 5 watt C.W., and also 2BWN, 10 watt phone.

2ALY has arranged schedules with several eighth district stations for 7:30 A. M. every morning. Considerable traffic is handled in this way, and very little QRM is experienced.

Have you tried using a frequency trap to eliminate 200 and 360 meter QRM? They work FB, OM, if you use a large size wire on the inductance.

At last we are pleased to announce that we have located a regular correspondent for Newark news. Newark and Brooklyn have always been "dead" spots, so far as getting news was concerned, and we are pleased to announce that both cities will be ably represented in our columns every month from now on. 2ALY, in Newark is too well known to need any introduction to our readers and all that you Newark fellows have to do is to let him know what is going on. He will do the rest. Lloyd Jacquet, of Brooklyn and the N. Y. Evening Mail, is going to handle the Brooklyn end of the game and also act as Associate Editor on the staff of The Modulator.

Now for a good live correspondent up Westchester way. How about it, 2UA? As you know

2OM handles all of Jersey as well as being T. M., but Friend Ted cannot do everything, so it is up to some of you fellows to send him the material. How about a little news from Staten Island once in a while, 2CLF?

The Bronx, Fordham and Upper Manhattan, seem to be busting out in great shape these nites. 2VH is ripping things up with his two fifty watt "fireless cookers" followed closely by 2ACT with a similar outfit.

Friend 2BNL is also using one of these babies, but he is unfortunately located in a very bad "hole." Wilbur also has had trouble owing to the fact that his landlord will not allow him to place his aerial properly. The aerial, at present, is a single wire, placed just below the coping of the roof, in a court. Even at that, though, he sometimes breaks out with DX.

2COA is handling quite a little traffic also on C.W. with a wallop behind it, but 2FZ, the city manager does not seem to be on with any degree of regularity.

There is practically only one spark station left in the Bronx, that is the station belonging to Matty Thury, 2CT. Matty certainly has had "some party" getting this set to work and has recently made up a new rotary gap. We understand from Frank 2FZ that this is one of the wonders of the age, and shows the usual extreme care with which Matty goes about doing a job. The tone of the new gap is very good, it staying into synchronism pretty well, but we understand also that Matty had "some time" getting it to do this, because of the drop in voltage when the transformer was operated and the consequent slowing up of the gap motor.

Another addition to the Bronx, as yet silent, is 2II. Howell had to give up his "lab" on Manhattan, and has been quietly transferring all of his stuff to the basement of his father's place of business on the Concourse, just below Fordham Road. Walter, says that he will not operate a set at this new location, but we are willing to bet that he will have some sort of a squeak box or B battery C.W., before he has been there very long.

What's happened to old friend 2CBA? The Doc used to be on regularly, but he hasn't been seen or heard of for a long time.

2CTQ is the call letter of the station belong to Leo Johnson of the Radio Association of Greater New York. Mr. Johnson has a neat house on Monroe Avenue and one of the rooms on the ground floor has been turned over to radio. Several different types of receivers are in evidence, together with a nifty C.W. and radio phone set. However, what took our eye, upon the last visit, was the big Tesla coil that he had recently acquired at a "rummage sale" for about \$2.00. Mr. Johnson is able to do some great stunts with this coil, but, as is the usual case, the coil's bark is a whole lot worse than its bite.

All amateurs, broadcast listeners and any one else interested in radio who happen to live in the upper section of Manhattan or the West Bronx, are urged to join the Radio Association of Greater New York. This live organization meets every Monday night, at the home of L. M. Cockaday, 1533 Jessup Ave., The Bronx. Everyone is welcome at the meetings and some very interesting talks are given. By joining a club of this sort, it is possible for everyone to become acquainted in the neighbor which will tend toward a better understanding and also help to smooth over any differences which might arise between the broadcast listener and the licensed amateur. Everyone is welcome at the meetings and all that is required from a prospective member is a real interest in radio.

Plans are well advanced by this time for the Third Annual Convention of the Second District, to be held at the Hotel Pennsylvania, March 1st, 2nd and 3rd. This Convention is run, of course, by the Executive Radio Council, which, in turn is composed of delegates from every worth while club in the District. The following is a list of the clubs to date.

Bronxville Radio Club
Yonkers Radio Club
White Plains High Radio Club
North Jersey Radio Association
Bloomfield Radio Club
Hill City Radio Club, (Summit, N. J.)
Radio Club of Irvington, N. J.
Rutherford Radio Club
Ridgewood Radio Club
Westfield Radio Association
Hackensack Radio Club
Nutley Radio Club
Roselle Park Radio Club
Passaic High Radio Club
Radio Club of Hudson County
Hudson City Radio Club
Ridgefield Park Radio Club
Radio Club of Jamaica
Radio Division Hudson River Yacht Club
Radio Association of Greater New York
Hudson Radio Club, (New York City)
Chelsea Radio Association, (New York City)
Down Town Radio Club
City College Radio Club
Radio Club of Harlem
Bronx Radio Club
Talo Club, (New York City)
Bushwick Evening Trade School Radio Club
Vocational School for Boys Radio Club
Nassau Radio League, (Long Island)
Staten Island Radio Club
Baldwin Radio Club
Radio Club of Brooklyn
Stuyvesant Radio Club, (New York City)
Highway Radio Club, (Brooklyn)

Each of these clubs represents a gathering of men who have become seriously interested in radio either as amateurs or as broadcast

listeners. Every radio club is entitled to two delegates to the Council who have full voting privileges, can hold office and generally help in the running of the organization. The Council owns and operates The Modulator, runs its annual Convention, formulates rules governing radio in this section and serves as a general get together place where the difficulties or successes of the radio clubs may be aired. The Council meets the second Tuesday of every month, at the Hotel Pennsylvania, and at the last meeting it was decided to welcome delegates from any club as visitors with the idea that they are to become members. In this way it is possible for a prospective club to attend meetings and see just what the Council is doing.

Roselle Park Radio Club

Through the courtesy of "Bill" Pinter, George Kromm one of the DeForest Company engineers recently came out to Roselle Park and gave a very excellent and valuable talk on "C.W.," the best circuit to use, how to make coils, etc. Kromm spoke before the club on the night when a big social time was being held. Mayor G. E. Moore, ex-Mayor E. C. Dill and a couple of council members who were present, expressed their thanks to Mr. Kromm for explaining things in so simple a way. Though they knew nothing of radio, they were well able to understand what he was talking of. We expect to have Mr. Kromm out here again in the near future. He said he liked the "gang" and liked the reception we gave him.

Paul J. Larson who recently severed his connections with the club, is again taking an interest in our activities. He has graciously consented to have Major Armstrong come out and speak to us sometime in the near future. Thanks "P. J."

O. B. Hansøn who has been operating "WAAM" has given up that job and is now stationed at "WEAF". President of the club, R. H. Horning, 2KK, is now operating "WAAM" for I. R. Nelson Co. "Bob" says he likes the job fine, as every week there is a variety of females at the station. We are wondering if they go there to entertain the radio audience or the operator.

H. C. Luttgens, 2BCC, is trying to persuade Reberger and G. Hagberg, 2CBP, to take an auto trip to the West Coast this Summer. Luttgens is now working "WBS". Nothin' doin', not in that Ford!

Are you wondering why 2CBP isn't on the air lately? He sold his spark-transmitter and is now busy making a "CW" outfit. "Hag" says someone's going to get H-when he gets that new outfit completed.

The club is planning to improve it's headquarters, in many ways. Some new furniture is to be purchased, as well as some new parts for the receiver. We are also planning to build a 50 watt "CW" set, and are looking forward to having it completed by next Fall.

When completed, we will get a special operating license. We are trying to make the organization one of the best in this part of the country.

Our radio dance of last year was so successful that there is a good bit of talk about having a similar affair again this Winter. No doubt we will formulate further plans for this proposed event, in the very near future.

What has happened to 2BTM? Once we heard him working his "CW" set, but no more! We asked Lane what the trouble was and he remarked: "Boys, I won't mention her name, but I've got no time now for radio." When's it comin' off Lane? Luttgens is in the same boat.
by C. A. Reberger.



These wild and wooly nights of amateur transmission has the air fairly vibrating with all sorts of queer sounds. Some are signals and some are not, and among the latter class, we wish to call attention to the fact that the average magnetic rectifier is one of the worst QRMers that was ever invented. Unless the vibrator is adjusted just so, there will be a merry little spark in there all of the time that the battery is charging, and unless the battery leads are disconnected from the receiving set, it will send out a nice little sixty cycle spark, that will make reception in the immediate neighborhood, absolutely impossible. Anyone who uses one of these contraptions, should have a double pole, double throw switch in the battery circuit connected in such a way that when the battery is charging it is entirely disconnected from the set. Even if the tubes are not lighted, the spark will percolate through the set into the outer air, making things very disagreeable for the neighbors. If such a thing is done wilfully, and the station located from which the sound is transmitted it is possible to have the set confiscated and the owner fined for intentional interference. Both amateurs and broadcast listeners will do well to look into this matter very closely.

SECOND DISTRICT CONVENTION

To Be Held at The Hotel Pennsylvania, March, 1st, 2nd, and 3rd, 1923.

The overcrowded conditions attending last year's Convention will be eliminated this year by not allowing the general sight seeing public into the Convention Hall. The Convention is primarily for the Operating Amateur, but his friends are eligible for admittance by securing tickets through either a Radio Club or direct from the Office of the Council. Tickets will be ready for distribution at a later date and if you are interested you may secure them either through your club or through the Council direct. There is no charge for these tickets unless they are presented at the door of the Convention, so do not hesitate to ask for them.

The Convention will be held in exactly the same place as it was held last year, the Roof Garden of the Hotel Pennsylvania. The adjoining Butterfly Room will be used for historical exhibits and a few booths of the radio clubs. Lectures will also be delivered in this same room. There will be about twenty-five exhibitors in the main room, and these will all be real, bona fide manufacturers of radio apparatus. There will be no dealers or jobbers, and only a very few of the best manufacturers are being solicited.

As usual, the last evening will be devoted to the great banquet, the premier event of radio. K. B. Warner will be there and he has promised to wear his Transatlantic High Hat. Entertainment will be furnished that will make it well worth your while to attend. Prominent speakers, will be there to regale you with the latest thing in the way of radio. In fact everyone who is interested in radio will be there from the greatest to the smallest. Don't let this chance slip by. If you were present last year, you will vouch for the fact that it was the biggest radio affair ever attempted. Last year there were about 1100 people present. This year there will probably be many more, but the capacity of the Banquet Hall is strictly limited and it is advisable that you get in your application for tickets early. There will be ten people seated at a table and the price will be \$4.00 per person, and you are guaranteed to get your money's worth. Don't let the women folks stand in the way—come along and bring them with you.

Remember this Convention is in no way connected with any other outfit in the Second District. The Executive Radio Council has run these affairs for three years now and it is up to every one of you to help support this affair and make it the greatest event ever pulled off in the annals of Citizen Radio.

This Convention is held under the auspices of the Executive Radio Council of the Second District. It is strictly an amateur radio affair, and will prove a meeting place for all of the amateurs of this and other Districts. All of the best Radio Clubs and Associations in the Second District stand directly behind the affair. The Convention of 1922 was the biggest and best ever held—let's make this one even more successful.

Bloomfield Radio Club

The Bloomfield (N. J.) Radio Club held its annual election of officers on Wednesday evening, Dec. 20th, 1922. The results were as follows: President, Fred J. McKinney; Vice President, Arthur J. Ball, Jr.; Secretary, Robert R. Blunt; Treasurer, Archie J. Wykes; Recording Secretary, Frederick B. Woodworth.

The following representatives to the executive Radio Council were elected: Fred J. McKinney, for two years; Robert R. Blunt, for one year, and Wilbert C. Roake, as alternate representative.

Mr. McKinney "2EY" was re-elected as chief operator and traffic manager. A competitive examination was held Dec. 16th at the club rooms, for appointments as club operators in charge. The following candidates were successful in passing the examination: A. J. Ball, R. R. Blunt, W. C. Roake, and F. B. Woodworth.

The election of directors for the coming year will be held the first meeting in January.

Radio Association of Greater New York

The Radio Association of Greater New York is once more meeting at the home of Larry Cockaday, 2XK, at 1522 Jessup Avenue, The Bronx. This location is not very far from the eastern end of the 181st Street bridge, in fact it is within easy walking distance. Those of the members residing in the Bronx will find it handy to the University Avenue trolley line, the Jerome Avenue subway and the elevated. It is not much of a walk to any of these transit lines and is easily accessible from any part of the city.

Mr. Cockaday has kindly offered his house for the meetings on account of the fact that most of the members of the Association were located in the West Bronx and there has been a movement on foot for some time to get the club back across the Harlem River again. In the new locality there will be a splendid chance for everyone to come to all of the meetings and as the house is of a good size there will be plenty of room for all concerned.

The Association recently elected A. K. Ransom, 2QK, as delegate to the Executive Radio Council to take the place of E. K. James, who has moved to Flushing, L. I. All of the best known amateurs on the west side of the Bronx are members of this live organization, which is the outgrowth of the old Fordham Radio Club, which club was the original starter and owner of The Modulator. The Club was unable to finance the magazine in the proper way and it was taken over by private ownership and eventually sold out to the Executive Radio Council of the Second District, whose property it now is.

With the new location of the Radio Association of Greater New York it is hoped that the old members will once again turn out to meetings the way they did in the past when the club met on Bailey Avenue. Any of the old members reading this might do well to get in touch again, meetings being held on every Monday night, the same as in the past.

\$1.50 Radio at your Finger Tips

Nine of the men most closely connected with the tremendous development of Radio have combined to give you the result of their experience in the simplest possible manner.

Among them are J. V. Hogan, Ex-President of the Radio Institute; A. N. Goldsmith, of the Radio Corporation of America; M. I. Pupin, Professor at Columbia; Dr. Hausmann, of Brooklyn Polytechnic Institute, and L. A. Hazeltine, of Stevens Institute.

In simple non-technical language they tell you how to receive messages of any wave length, how to select and operate your apparatus—in fact, all the details you need to know.

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Like As—

Like playing craps without the bones
Like hearing sigs without the phones,
Like parting before you've met,
Like a tube without a set;

Like the you without the me,
Like the "T" without the "V,"
Like the light without the lamp,
Like radiation without the 'amp';

Like the antenna without the ground,
Like the blood without the hound,
Like the "QR" without the "M",
Like a Club without any men;

Like the "out" without the "in",
Like signing off before you begin,
Like the MSG without the "sig",
Like the leak without the grid;

Like the crowd without the boob,
Like the vacuum without the tube,
Like the second without the first,
Like a drink without thirst;

Like the dot without the dash,
Like the spark without the crash,
Like new booze without its strength,
So is a wave without a length!

20Z

ALWAYS MENTION THE MODULATOR WHEN ANSWERING ADVERTISERS

153

EAGAN RADIO SCHOOL

EAGAN BUILDING

66 Hudson Street, Hoboken, N. J.

(Near Lackawanna and Hudson Tube Terminals)

TUITION

Payable in Advance

A M A T E U R ' S C O U R S E

Afternoons 4 to 6 o'clock, or
Evenings 7.30 to 9.30 o'clock

Mondays, Tuesdays,
Thursdays and Fridays

	One Month	Four Months
Code and Theory Instruction	\$10	\$35
Code only (3 sessions a week)	8	30
Text Book and Radio Supplies for Course, \$5 (optional).		

We also have a complete Radio Supply Service where all standard makes of Radio Apparatus may be purchased. This line includes the celebrated DeForest instruments. Immediate delivery can be made on all of the better makes of Radio Outfits.

American Radio Exposition

During the American Radio Exposition, recently held at the Grand Central Palace, in New York, most of the gang appeared on the scene. A register was started at the booth of the Council, of the "hams" who were present and it may prove well worth reading. Almost every district was represented and here they are:

Calls Registered at the American Radio Exposition

2II, 2CNA, ex 2FD, 2SK, 2PE, 6BVG, KDMD, KVN, KDBN, KNCA, 2CT, 2MP, ex 9ZE, 2BEA, 2BRC, 2CNB, 2BVL, 3CET, 1ADO, ex 9QT, 2CNO, 3HY, 3YO, KQR, KUXZ, WTUO, KIQZ, 2APD, 2BNL, 3BUR, 2UA, 2COI, 1AJP, 1CJA, 2CLG, 1AMY, 2ACS, 3FD, 2AUZ, 2COJ, 2AB, 2BO, 2CQZ, 2FZ, 2ACT, 2OZ, 2ABM, 2CFR, 2OG, 2BDU, 2CH, 2BJT, 2CFI, 2CHU, 2AWH, 1AWH, 2AIB, 2WB, 3IJ, 2FD, 2CSX, ex NML, 8BUM, 2OM, 2ACU, 1BEA, 2BYO, Jf, 2BYV, 2VH, 2UF, 2APJ, 8AVX, If, 2AVE, 2CDW, 2BCK, 2CFE, 2CHQ, 2RZ, ex 9BBC, 2CUV, 2ADR, 2EY, 5WO, 2BQM, 1OO, 2ALS, rj, 2SK, 2CQJ, 2BLL, 2ADQ, 2ARB, 2IN, 2SQ.

This register was not started until the last few days and is far from complete, there being a great many amateurs present who failed to register, or who missed the book altogether.

DO YOU?

"Radio" is a terrible creed,—
I like it.

It satisfies no normal need,—
I like it.

It makes you thin, it makes you lean,
It takes your hair right off'n your bean,
It's the worse darn stuff I've ever seen,
BUT,—I like it!

The Radio Log.

THAT WIRELESS BOY

A pair of fones snapped good and tight,
The Radiotron burning just right,
He tunes 'em in right through the night,
THAT's him!

The Radio Log.

Hudson Radio Club

To paraphrase Coue "Every day in every way the Hudson Radio Club is growing larger and larger." Total membership is now over fifty and that includes over thirty-five licensed operators.

In addition to growing in size the club is increasing its activities in several directions, particularly in connection with broadcast fans. We believe it's advisable to work with them to foster a better mutual understanding rather than to stand off and yowl at each other like tabbies on a backyard fence.

A trouble shooting squad has been organized to take care of requests for help from broadcast listeners and complaints of interference. Lately the commercial stations around New York seem to be using their low waves quite a lot. Such interference is always blamed on the amateur until somebody happens round who knows the code.

Three recent lectures at the club of more than passing interest have been Mr. Alfred Steinberg's talk on radio "A" and "B" storage batteries, Mr. Kilburne's practical lecture on C.W. transmitters and Mr. Danziger's talk on tuned radio frequency.

In spite of care accidents will happen now and then. Jackson of 2KP forgot that while a C.W. transmitter makes no noise, still 50 watters develop real energy. He held a new wave meter up against his tuning inductance—result, one burned out wave meter.

Another member whose name we will charitably withhold, tried putting his condenser in castor oil to increase the capacity. It didn't work however, because the plates moved and spoiled the experiment!

2ZK is FB with his C.W. set. Mr. Cannon of New Rochelle is an old timer and had a healthy spark set at one time.

2ZS who is back with C.W. is another well known spark man. Hi hum, they're all doing it.

Introducing, 2UA

The Modulator has a new advertising manager this month in the person of R. W. E. Decker, 2UA, who is so well known among amateur circles that he needs no introduction. Decker has taken the place of the man who formerly held the position and it is with real pleasure that we make the announcement to the gang.

"Deck" will need the assistance of every amateur in the district in his new job and it is up to you to see that you back him up. The best way to do this is to patronize the advertisers in this magazine, because the more business they do, the more advertising we will have. Naturally the more advertising in the magazine, the larger it will be, more pictures, more articles and more everything. If you are about to purchase anything in the radio line, look up a copy of The Modulator and see if you cannot get the articles wanted from among its advertisers. Remember The Modulator is a real amateur magazine, and you as real amateurs, MUST do your bit. By patronizing the advertisers you will help more than in any other way. If you make a purchase, be sure to mention the name of the magazine to the dealer. He cannot tell where you saw that he was in business, unless you tell him, it won't cost you anything to mention the Modulator, and it may help matters a great deal.

Now Mr. Advertiser, this is a little talk to you. The circulation of this magazine is mounting rapidly every single day. It has its greatest circulation right here in New York and New Jersey. When you advertise in this magazine, you are almost doing the same thing as advertising in a local newspaper. When you advertise in a paper of any kind, you do not expect every one who comes into your store to mention the fact that he saw your advertisement in the Daily Warhoop. The fellow who buys The Modulator is exactly in the same class as the reader of the newspaper, he is in your store every day. He does not write in for the desired articles—he actually comes into your store and buys what he wants—the chances are that he does not mention the mag-



Mistakes We've All Made. Backed against the fence, (which is part of the counterpoise), when the other op was sending.

RADIO PARTS

AND COMPLETE SETS

W. D. 11 Bakelite Base Socket
35 CENTS

22½ v B Battery - 65 CENTS

Radio Map - 35 CENTS

Federal Phones

\$8.00 type - - - \$4.50

Detector Tubes - - \$2.50

Amplifier Tubes - - \$2.75

R. C. SETS IN STOCK

Radio Distributing & Auto Supply Co.

64 West 66 St. New York City

azine, he has already seen your advertisement and, as he is near the spot, he steps in without waiting to write. Reason it out yourself, why should a New York amateur write in for materials when he can step right in the store and buy direct?

Another thing, the circulation of The Modulator is real class circulation. It goes to the men who are really deeply interested in radio for radio's sake and not for the sake of hearing a few squawks from a broadcasting station. Do not lose sight of the fact that these licensed amateurs are the real backbone of the radio game. They would still be buying every single day, if broadcasting was to stop all of a sudden. Amateur radio was in existence a very long time before broadcasting was ever thought of, and the few radio houses in business made a good thing of it. Naturally broadcasting has brought a great many "strangers" into the game, and a great many of them do not know how to design or make apparatus. Naturally the licensed amateur, KNOWS the good from the bad and will not buy improperly designed materials. Manufacturers who have poor apparatus have found the columns of The Modulator a poor field for advertising, but it is not on account of the lack of circulation, it is simply because the "gang" know what is what and will not purchase "junk." If you have something really worth while, it will pay you and pay you well to advertise it in the Modulator, if it is not so good—save your money and advertise somewhere else. The amateur radio operator, is a queer bird, he knows what he wants and is guided according-

ALWAYS MENTION THE MODULATOR WHEN ANSWERING ADVERTISERS

155

The-Only-Knob-and Dial-Without-a Set-Screw



BAKELITE

4 in.	-	-	-	\$1.50
3 in.	-	-	-	\$1.00

No tools necessary to mount.
10 seconds does it

Tait Knob and Dial Company, Inc.

659 Bergen Ave.

New York City

ly, he does not rush in and buy everything in sight, but waits and makes his plans a long way in advance. If you have the goods and they are right, they will sell, if not, you may do better in one of the so called broadcasting magazines.

The Modulator is for the amateur, is a non commercial outfit, and really covers a field that is strictly limited, but of rich possibilities for the manufacturer or dealer who has something to sell that is worth while.

Continued from Page 148

curacy, if use is made of a milliamperemeter. This instrument should have a scale deflection of at least 0 to 100 milliamperes. Then, by introducing this instrument in various parts of the circuit approximate values of the plate and grid circuits can be found quickly and surely, and the adjustments minutely regulated according to the readings.

From data compiled by Mr. Heising, of Heising Circuit fame, a maximum plate coupling is shown by a reading of 50 m.a., while a reading of from 6.5 to 7.5 m.a. indicates a maximum grid coupling. When the coupling is too loose, the plate current will exceed the 50 m.a. reading, and too tight a coupling will show a reading of less than 50 m.a.

Thus from the readings of the milliamperemeter alone, we can tell whether the coupling has been adjusted properly, and whether it is to be tightened or loosened for maximum results.

In the grid circuit, a falling off in current shows a loose coupling. The grid coupling is perhaps the most critical in the whole circuit. Improper adjustments of this variable element will not only cause a decrease in antenna current, but will affect the character of the emitted wave, and will destroy good modulation, if a phone is used. Therefore, an excessive coupling should be avoided.

In any type of transmitter, it is very desirable to keep the number of variable elements or controls down to a minimum. In fact, it will be found, that the fewer the controls the simpler the operation of the set. It will be found that in a C.W. circuit, the number of variables can be reduced to the adjustments of the filament current, and to the adjusting of a variable condenser. The other controls can be entirely fixed, or adjusted temporarily, and may be termed "semi-variable controls."

The circuit used to illustrate the problem of tuning is the well-known Colpitts circuit, so popular among the operating amateur. The remarks contained in the previous paragraphs, however, will apply to every type of C.W. transmitter. By judicious use of the information given, it should not prove a very difficult matter to get the best out of one's transmitter. Bear in mind that everything should be done in a thorough, engineering way, and that in the C.W. transmitter more than in any other place, there is no place for "guesswork."



VERNIER DIAL
ATTACHMENT

"BROUN"



SINGLE CLOSED JACK
(Made in All Types)



BATTERY
SWITCH

The above Jacks and Battery Switch manufactured by the Radio Improvement Co. and the Vernier Dial Attachment manufactured by us are essential parts for the perfect operation of a Radio Receiving Set.

As manufacturers and manufacturers' representatives we have a complete line of Radio Apparatus, each part of which is backed up by our guarantee.

Many advancements in design and sales features will be found in all of our apparatus.

Write for new Catalogue

BROUN RADIO COMPANY

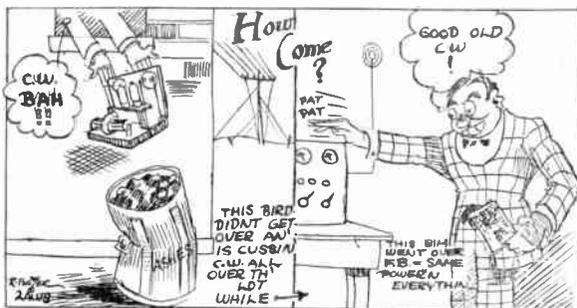
Sales Office, 552 Seventh Avenue, New York City

Continued from Page 144

work from coast to coast. How many sparks actually did it?

The tests at spanning the Pacific Ocean between the Pacific Coast and the Hawaiian Islands of two years ago, made with some of the very best sparks in existence failed. Too, it

amateurs on the coast but also with amateurs far inland. Do the Naval or commercial stations suspend operation while 6ZAC works? Not by a long shot. 6ZAC has logged and worked some spark stations, but he has logged hundreds of C.W. stations and worked many stations who use but one 5 watt tube.



A Matter of Opinion

must be remembered that the Naval and commercial stations ceased operation during the tests. Every effort was concentrated on receiving a spark signal from the mainland—something that was a little more than the spark could be expected to do, yet was hoped for. Its different today! C. J. Dow, 6ZAC with his 50 or 100 watts of C.W. not only works

We realize there may be a few who have something to say in favor of the old spark and we would welcome the views, especially of The Old Man, The Young Squirt, or *S. S. Ostman, 20M.

*Sink Spark.

? MARCH 1, 2 & 3 1923 ?

ALWAYS MENTION THE MODULATOR WHEN ANSWERING ADVERTISERS

RADIO SHOPS

Main Store 65 W. Broadway
111 Chamber St. 64 Cortlandt St.

AMATEURS MEET HERE

If you are building your set
you are welcome to use our
shops at any time

Come in anyway and look our
stock over

SERVICE

is our motto

LEDOX

Radio Battery

The only Battery made with a
TWO YEAR GUARANTEE

Designed especially for

RADIO WORK

6 Volts, 100 Amp. hours \$14.50

6 Volts, 120 Amp. hours \$16.50

Dealers write for proposition

LEDOX RADIO BATTERY CO.

109 Flatbush Avenue
Brooklyn, N. Y.

In The Financial District

*Handy for you men who are
down town all day. Let us
supply your needs in Radio
Parts or Apparatus. Club
members always welcome.*

Broadway Radio Corporation
10 BROADWAY, NEW YORK CITY
Phone 1661 Broad

Continued from Page 147

with which to console himself during the painful process of acquiring the degree of D. D. S.

In 1919 Dr. Cyriax installed a ½ K.W., 500 cycle, Telefunken spark set and in 1920 he was appointed A.R.R.L. District Superintendent of Manhattan and the Bronx.

In 1922 he was appointed Asst., Division Manager of Eastern New York, which position he still holds. Dr. Cyriax is now to be heard in the ether whenever the slender aerial strands are strung within the 1000 mile radius, and his station call, 2DI, is famous as being one of the early old timers.

A 50 watt, 500 cycle, I. C. W. set is now being constructed which will replace the faithful spark; another good spark gone wrong.

A. J. S.

2ZV was heard on phone and C.W. not so long ago?

2CJX steps out on spark, but is very broad. Sharpen the old wave, OM, and you'll break some records.

Caught 2OM on C.W. the other nite. QSA but nothing like the old saw mill. Anybody hear CQ emanating from tt stn?

CAT WHISKERS

Cats that's made for little boys to maul and tease is called Maltease cats.

Some cats is known by their quiet purrs, and these is called Pursian cats.

Cats with very bad tempers is called Angorie cats.

Cats with deep feelings is called Feline cats. Crystal ticklers is cat's whiskers.

Selected from the Radio Log.

We Manufacture 7 Different Styles of

VARIO-COUPERS

To sell from \$1.25 up

All Guaranteed Perfect **JEWELL'S**
Jobbers Dealers - Agents
Write for Discounts

JEWELL RADIO SALES CO.

Phone Rector 1035

90 West Street

WESTINGHOUSE

RADIO BATTERIES

Built by Westinghouse—you know they're right!

Radio "A" Batteries

6-HR-5—6 volts, 54 amp. hrs.	20.00
6-HR-9—6 volts, 108 amp. hrs.	27.75
6-HR-13—6 volts, 162 amp. hrs.	37.20
8-HR-5—8 volts, 54 amp. hrs.	26.90
8-HR-9—8 volts, 108 amp. hrs.	39.80
8-HR-13—8 volts, 162 amp. hrs.	48.50

Radio "B" Batteries

22-M-2—22 volts, 1.2 amp. hrs.	6.75
22-L-2—22 volts, 4.5 amp. hrs.	16.54

Radio "C" Batteries

2-M-2—Single cells	.85
--------------------	-----

Sold by good radio supply stores and Westinghouse Battery Service Stations everywhere.

Metropolitan Battery Service Co.

DISTRIBUTORS

321 West 54th St.

New York

STANDARD PARTS

Always in Stock

RADIO CORP.
PARAGON
RADIO SERVICE
LABORATORY

and many other makes, in short,
everything for your Radio Set

RADIO ACCESSORY PRODUCTS

Dept. A

219 Greenwich St., near Vesey St.
New York City

Our Service Will Suit You

If you want anything in RADIO be sure and see us first. Our Prices are fair and the goods you get are the best obtainable

S & N Radio Supply Co.

2106 Broadway

New York City

SQUIRES Variable Condenser

Patented curved plates permit finer tuning
GEO. R. SQUIRES ENG. CO.
Avenue H and East 35th St.
Mansfield 1283, Brooklyn, N. Y.

Executive Radio Council
120 Liberty Street, N. Y. C.

Enclosed herewith find one dollar and a half (\$1.50) for which please send me The Modulator for one year (12 numbers), commencing with the..

Name

Street

City State.....

Rheumatism Relieved

Dr. Lappner has suffered with rheumatism for years. After a life study and experimenting he discovered a complete relief. Write him about your case and ask for his FREE questionnaire, ALSO FREE MEDICAL ADVICE.

Mt. Clemens Concentrated Salt Baths

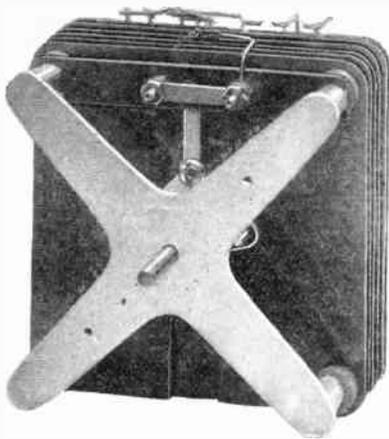
Brought Into Your Own Home

Write to

Carlsbad Anti-Rheumatic Society

201 East 102nd St. New York City

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Patents Pending

TELOS VARIO - Transformer

For tuned radio frequency amplification in any number of stages, over a wave length range of 160-480 meters. Minimizes local oscillations. Panel size 5 inches square and 3 3-8 inches deep.

*Shipped direct on receipt of order.
Give dealers name*

Type TA4 **List \$6.50**
Danziger-Jones, Inc.
 143 Prince Street New York

Authentic BLUE PRINTS

SERIES B	Two Variometers and Variocoupler50
SERIES C	Honey Comb Coil Set with Two Stage Amplifier50
SERIES D	Radio Frequency Hookups.....	.50
SERIES E	Crystal Detector and Two Slide Tuner25
SERIES F	Crystal Detector and Loose Coupler25
SERIES K	Two Variometer & Variocoupler small size print.....	.25
SERIES L	Variometer Crystal Set.....	.25
SERIES J	Single Circuit Receiver.....	.25

All of these are genuine blue prints, the first three being 17 inch by 22 inch, and the others being just half the size.

All of the circuits are proven and are correct in every way and if the sets are built according to the plans will work excellently.

THE MODULATOR

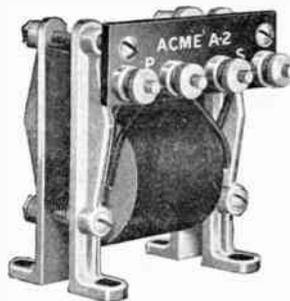
120 Liberty Street New York City, N. Y

The Best Way To Hear The Distant Station Clearly



Radio for Distance

USE
ACME
transformers



Audio for Volume

ACME

for amplification

ACME APPARATUS COMPANY

Cambridge, Mass.

New York Office—1270 Broadway

TRANSFORMER and RADIO ENGINEERS and MANUFACTURERS



Radio Frequency Transformer



Radio Frequency Transformer Mounted



Radio Frequency Transformer Mounting

A Real Radio Frequency Amplifying Transformer

No. 29—For use on 175 to 300 Meters	- - - - -	\$6.60
No. 30—For use on 275 to 600 Meters	- - - - -	5.60
No. 31—For use on 500 to 1000 Meters	- - - - -	6.85
No. 40—R. F. Transformer Mounting	- - - - -	.95

THESE ARE THE TRANSFORMERS

EVERY EXPERIMENTER HAS BEEN WAITING FOR

WRITE FOR BULLETIN No. 119-W

Federal Telephone and Telegraph Company
BUFFALO, N. Y.



WE ARE DISTRIBUTORS OF "GARRETT & CO'S, INC. VIRGINIA DARE VERMOUTH. ~
TO INTRODUCE THIS WONDERFUL NON-ALCOHOLIC DRINK
SPECIAL PRICE \$11.00 PER 12 QUARTS,
WRITE FOR OUR LATEST CATALOGUE
MAILED FREE CONTAINING SPECIAL OFFERS.
ASK ABOUT OUR-VINOBAR- IT IS GREAT!
MONTREAL BOTTLERS CORP. 1110
129 E. 59th ST. NEW YORK CITY

VOLTON

"B" Batteries

The result of fifteen years experience in the manufacture of batteries.

All Standard Sizes Plain and Variable
22½ and 45 Volts

Special batteries made up on order

VOLTON BATTERY CO.

15 Lispenard Street
New York City

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SECOND DISTRICT

THIRD ANNUAL

CONVENTION

HOTEL PENNSYLVANIA

NEW YORK CITY

March 1st, 2nd and 3rd, 1923

Don't miss it this year. Better than ever. Twenty five REAL MANUFACTURERS will be there with the latest and best of Apparatus. All of the affiliated clubs will have booths in the Butterfly Room.

Everybody who is Anybody in Radio
Will be there

One day admission - 25 cents

Three day admission - 50 cents

THE BANQUET

On the last night, Saturday, March 3rd, the Great Banquet will be held in the Hotel Pennsylvania, Banquet Hall. The 1923 Banquet is guaranteed to make 1922's look like a "squeak box" compared to a 250 Watt bottle.

DON'T LET THIS GET BY YOU! BE THERE!!!

Tickets cost \$4.00 per. and you'll surely get your money's worth. Don't wait—Order now from

The Secretary

Executive Radio Council, 2nd Dist.

120 Liberty Street, New York City

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