The RADIO AMATEUR NEWS

Volume I JULY, 1937 Number 4

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The Radio Amateur News

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CONTENTS

.We invite all Radio Amateurs and Radio Clubs to contribute articles to this magazine, although we reserve the right to censure articles unfit for publication. .

.This magazine is printed entirely for the benefit of Radio Amateurs and "the more dope, the better," however this magazine is not responsible for statements made by contributors and do not guarantee any statements or circuits published to be correct; we will endeavor to check the authenticy of same.

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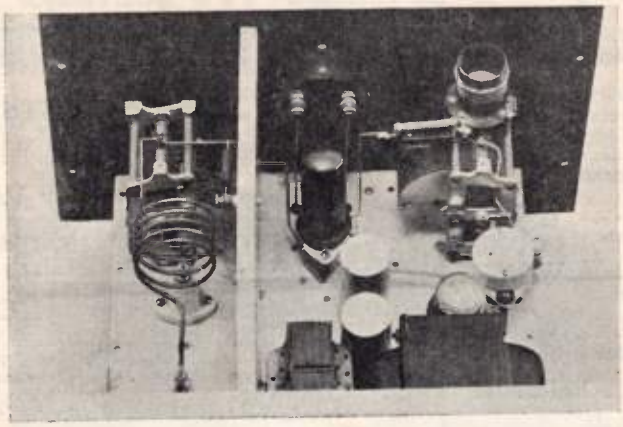
Scoop! Bug-Less 6L6 Tri-Tet

Designed and Used by W6BGH, *Karl Pierson
Written by W6NGQ



A perfected 6L6 Tri-tet crystal oscillator which through induced losses gains 4 or 5 watts in its over all output, and in so doing eliminates 95% of the disadvantages of conventional circuits is described in this article.

Some of the advantages of this simple circuit are as follows:

1. The tube cannot be harmed, for when the crystal is not oscillating the plate current falls.
2. This tri-tet circuit will not go into self oscillation.
3. Higher harmonic output than from simular crystal exciters.
4. Very low crystal current.

The secret is simple for it is nothing more than a shorted turn of wire around the hot end of the cathode coil.

Practical Explanation

In a tri-tet circuit there is a combination of two circuits of operation within the envelope of the tube. The tridoe crystal oscillator is comprised of the grid, cathode and screen; while within the same tube there is also working a buffer-doubler amplifier. Modern high gain tubes operating as an amplifier require but very little grid drive to produce high output. Consequently too much grid exitation is an endebtedness which creates heavy crystal current in the triode section of the tube.

It is found most present day harmonic generating circuits are critical and unstable, breaking over into self oscillation or over all oscillation independent of crystal frequency.

In this exciter unit there is used a large by pass condenser which makes better amplifier operation.

*Chief Engineer, Patterson Radio Co.

The crystal strength is dampened at the oscillator's feed back cathode coil, to a point where the right amount of grid exitation is obtained for the 6L6, which under these favorable conditions give good amplifier operation. The dampening coil holds the crystal current to a very low value; is indicated by the 150 mill lamp in series with the crystal.

Cathode bias makes assurance that when the circuit is thrown out of resonance the crystal current automatically falls, which gives long tube life.

That the exciter will not self oscillate is easily seen by the lamp or the milliameter. Greatest output can be readily found by the grid meter of the following stage and the least crystal current is indicated by the crystal lamp's percentage of illumination.

Karl (like the sailor who went rowing on his day off) to get away from radio, works 20 meter fone DX, dearly loving to buck the QRM in his spare time. The excitation for his rig comes from this circuit in which he uses a 60 meter rock trippling to the 20 meter band. The amateur who, like Karl, uses a 60 meter crystal must be careful that he does not double into 30 meters or use a 4th harmonic and end up on 15 meters. Pink tickets are easy to get when using a 3rd harmonic of the crystals frequency; therefore an absorption or hetrodyne frequency meter or monitoring receiver to tell what frequency the fire in the tank coil represents is advisable.

Summed up, the decided advantage of the circuit is not the gain of 4 watts (or more) but its nearness to foolproof operation in this type of service.

The cathode coil is wound on an old four prong tube base and the shorted turn is made of No. 14 wire well soldered, close coupled

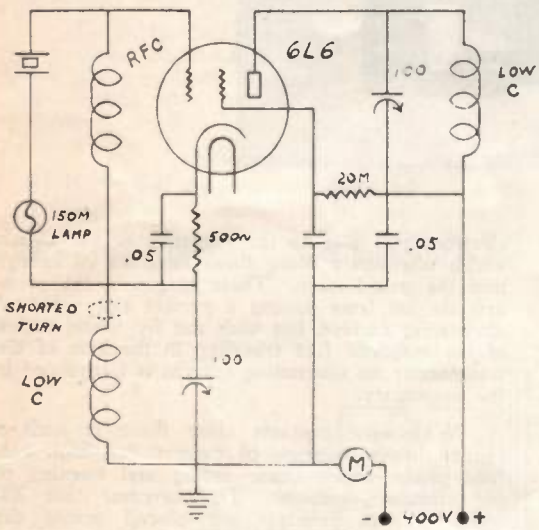
over the hot end of this coil.

Low C should be used in both the cathode and tank coil of the crystal oscillator. About 100 mmf is more than enough condenser capacity for either of these two tuned circuits.

The by pass condenser on the plate voltage lead is .05 or larger.

The milliameter is shown in the B lead where it is nearest ground potential, cutting the chances of voltage going to ground through the meter case.

Details of the coils are left to the reader as they are ordinary low C circuits and can be wound for the band that is to be used on whatever coil forms are on hand.



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Code Practice

Perry Bakus, W6HUX, is again on the air with his code transmissions after an extended vacation in the east. Going east he traveled by train and returned driving. It is a treat to hear Perry give the human interest that involves the traveler of the open road.

▼

HAMFEST

The Annual Hamfest will be held at Two Medicine Lakes, Glacier National Park in Montana.

The date is the third Saturday in July and do they not have the good times!

▼

W6LVX and the Lady

Amateur radio opens locked doors as is proven by the fact that Jimmy received a message for Miss Eleanor Powell, which he delivered in person and was met with a warm welcome.

Photo of W6OJC, who recently passed the examination for Radio Telephone, First Class, according to reports she is the first woman in the U. S. to receive this type of license. Grades in the examination were excellent. We wish Ruby all the luck in the world for this outstanding Radio achievement.

▼

Big Tempe, Ariz. Convention well under way

Committee Arranging Gala Program

The Tempe Convention Committee under the leadership of W6BUQ, reports very satisfactory progress being made for an outstanding Ham get together. Although the date has not been definitely settled, in all probability will be held on the 23rd and 24th of October in Tempe.

This magazine will have complete details in the next issue. Plans are being made by many of the Southern California Radio Clubs to attend.

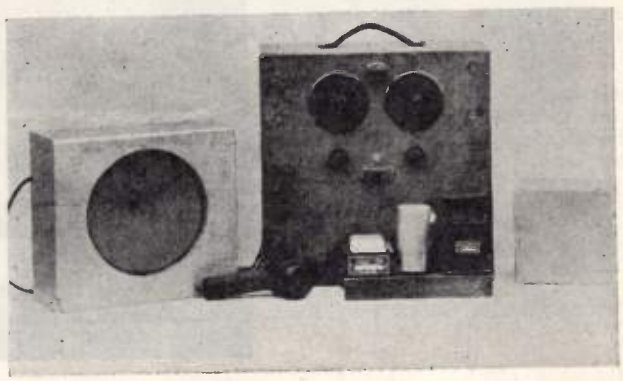
"Bud" Harkins, W6BUQ, has done a very nice job of arranging the program and assures the amateurs of two gala days, crammed with activity.

Mrs. Harkins has the YL problem well in hand and reports the ladies are in for a treat.

Incidentally, this magazine will gladly give any information regarding either Convention, so if there is anything we can do for you, drop us a line.

400 Volt Battery Operated Vibrator Power Supply

By Ellsworth Mechlin, W6NGQ



Portable radio work whether at a low frequencies or at high frequencies has always been an expensive and difficult problem, mainly because high voltage from some reliable source is hard to create, and the old stand by B batteries are expensive. Those who have worked with motor-generators have found that they draw heavy current with poor efficiency; also giving some trouble at higher frequencies to filter the commutator ripple from receiver reception.

W6FIY, Paul Levy who has spent some time working with vibrators wondered why they could not be made to handle more current and voltage than has been heretofore considered practical. The author has been looking for some one who also had this idea and with the combined ideas this nonsynchronous vibrator power supply was built in the laboratory of this magazine.

As W6FIY had connections with the Mission Bell Radio Manufacturing Co. he obtained the plug-in vibrator which is used in mobile police radios. Any good vibrator with good **Heavy** contacts can be used. It did not at first seem possible with points smaller than dimes could handle the voltage and current desired, but no trouble was encountered, in fact after good use and much experimenting the contacts looked as good as when they first were placed in service.

Power Transformers

This item could not be had on the open market so the transformer which steps up the six volts from the storage battery to the desired high voltage of 300 or 400 volts of alternating current, to be taken from the transformers secondary. This transformer must have a 12 volt center tapped primary.

The armature of the vibrator serves as a switch to reverse the sudden pulses of current to the two halves of the transformer primary. The electromagnet sets up the vibration of the switch which alternately place these impulses of energy into the transformer. These surges in the primary are far from having a perfect sine wave of alternating current, but with the fly wheel action of the magnetic flux traveling in the iron of the transformer an alternating current is introduced in the secondary.

When the contacts close there is such a sudden heavy increase of current that high voltage peaks which cause arcing and burning of the vibrator contacts. To overcome this 200 ohm ½ watt resistors are placed across the points, and buffer condensers placed across the secondary output. These buffer paper condensers must have at least a 1000 volt rating and take the peaks off the high voltage improving the wave form. While the resistors and by pass condenser cut down on the arcing of the contacts.

Mr. Crittenden of the transformer works of that name helped in the working out of the problems involved and produced for the market just such a transformer. We had to take into consideration high efficiency as a loss of current when coming from a storage battery can not be overlooked. The secondary was tapped at 300 and 400 volts each side of center, and at his suggestion a static shield was placed between primary and secondary.

Rectification

Rectifying the voltage taken from the transformer was a problem not overly easy to decide upon. After consideration of many rectifier tubes, Raytheon gas filled tubes were chosen as they have no current drain caused by heating of a filament. W6FIY used modern metal Raytheons (2) 'OZ4's in parallel (to handle the current) while the older type BA and BH Raytheons were used in the supply pictured, as most amateurs have good ones laying around the shack.

Filter Used

The filter system used to take all traces of audio frequency cycles created in process of converting the 6 volts of direct current into alternating current, is very ordinary; a tapped choke and two G-H8 mfd. paper condensers were used.

As shielding is very important at the natural frequency of the vibrator a cast iron encased choke was used to ward off any stray pickup. The shield can, which contains the vibrator and its ½ watt resistors should be grounded.

That radio frequencies from the cars ignition system (if used in mobile work) or noises caused by the vibrator makes it important that everything be shielded to give hum free power at the output terminals that audible fluctuations will not be present in a loud speaker.

The R. F. Choke in the primary circuit filter is made of about 20 turns No. 10 enameled wire about ½ inch in diameter to keep R. F. from getting back into the battery and filament circuits.

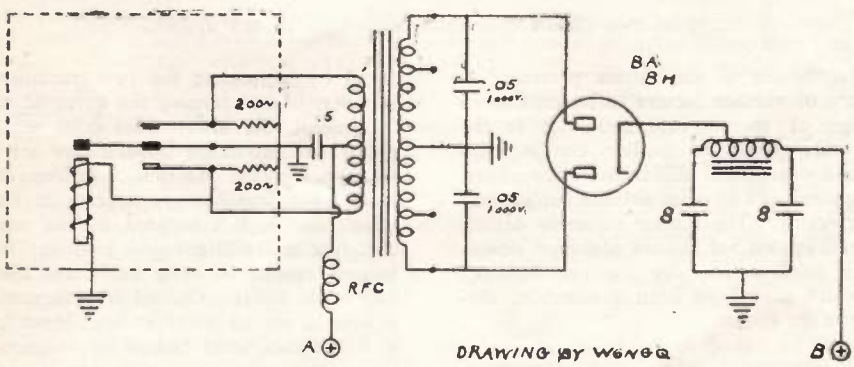
Construction

The shield can was originally for an audio amplifier, but by measuring, it was found to contain just the right amount of room to hold the necessary equipment. The chassis is 1 and a ¼ inches high, 9½ inches long and 4¼ inches wide. The shield which fits down tightly over the chassis is 6 inches high giving room for parts.

From the photo it can be seen there is left room for an extra socket to a second rectifier tube if parallell 'OZ4's are used. The wiring is heavy and lockwashers are used, that when in transportation the supply will not shake apart.

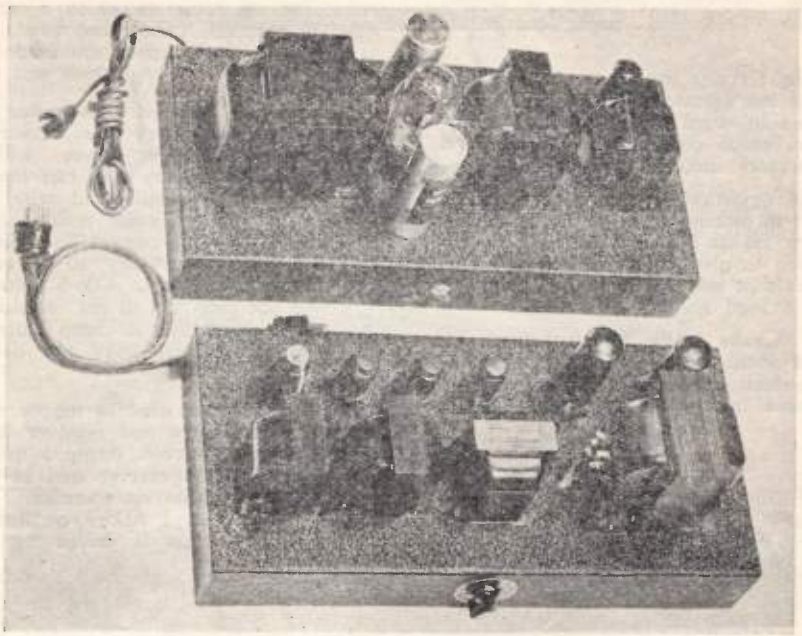
The leads between the vibrator power supply and the storage battery must be very heavy wire and short leads or there will be heavy voltage drop. The readers can figure for themselves that if a small sized wire leading from the battery offers enough resistance to drop the six volts of battery current only one volt across the transformers primary to 5 volts and the ratio of winding is 6 to 400: 5 volts in the primary will not give 400 in the secondary. It must be kept in mind that a cheap battery or an old half charged battery may not deliver 6 volts under load.

With the unit used to supply voltage to the 5 meter transmitter and receiver in the picture the no load 400 volts dropped to 360 volts at 55 mills drain on receive and to 345 volts at 80 or 90 mill drain on transmit. The tube line up of the rig is a 6D5G oscillator modulated by a 6A6 in class B driven by a 76 in the speech.



Speech Amplifier Design and Construction

By *Glenn Weaver, W6DPA — Part II



Typical Two Chassis Construction of a 60 Watt 6L6 Amplifier

The first article of this series presented a brief summary of various factors to be considered in the design of speech equipment. It is the purpose of this article to outline certain constructional and operational difficulties encountered in such equipment and to offer definite suggestions for their correction. The author sincerely desires that these well known but seldom observed principles may be used to improve the operation of equipment which may have been a source of disappointment to its owner.

Of first importance is a correct layout of parts. Mutual inductance and capacities between parts may assume amazingly large circuit constants in high gain equipment. For best results, especially in high gain amplifiers, a separate chassis is used for the power supply. When this is not possible in small portable units, every precaution must be taken to prevent coupling between the low level input transformers and the transformers in the power supply. These power transformers set up large magnetic fields which are picked up by the cores of semi-shielded auto transformers inducing 60 cycle voltages in the windings. The ideal audio transformer is one cased in a heavy-high permeability cast iron case which completely shields the core. When these cannot be used the inductive pickup may be reduced by separating the two transformers as far as possible and turning the cores at right angles. In general, the lower level units such as microphone and interstage transformers are most likely to give trouble. Output transformers and high level input transformers operate at flux densities which are high compared to the small induced a. c. flux and will not give trouble. Power transformers radiate 60 cycle fields, and chokes radiate 120 cycle fields. Output transformers should be placed as far as possible from input transformers to avoid oscillation caused by magnetic feedback. Often this oscillation will occur at very high frequencies and will be hard to detect.

The layout should be arranged so that leads may be as short as possible. This simplifies wiring and avoids trouble due to capactive pickup which is one of the most serious difficulties to be faced.

Correct wiring of an amplifier includes much more than making proper point to point connections. Very serious dissappointment is certain unless certain precautions are taken. Mutual capacities between low level high impedance wiring and filament or high level wiring will cause voltage pickup. This will result in a high hum level or in oscillation. This is corrected by keeping these leads as short as possible and by proper shielding. Even long shielded leads must not be used as no shielding is complete and the high

*Chief Engineer, Robt. M. Hadley Co.

capacity to ground will effect the high frequency response. The most common violation of this rule is on volume control leads. A most serious effect will occur if the double wire to the volume control is passed thru a single shielding. The capacity between the two wires will make the volume control useless at high frequencies and the amplifier will have an objectional rising high frequency response.

A few useful wiring rules are: (a) Keep all leads as short as possible. (b) Shield all low level grid and plate leads. (c) Run twisted filament wiring along the edge of the chassis. (d) Shield high level plate leads. (e) All condensers and resistors should be mounted as near as possible to socket terminals as the connections between these parts and the sockets are likely to couple with other wiring. (f) Condensers and resistors should be mounted in such a manner that the mutual capacities to other wiring shall be as small as possible. (g) Ground connections should be brought as near as possible to a common point on the chassis as eddy currents in the chassis create potential differences which are picked up and simplified by the low level-high gain stages. (h) Grid connections at the sockets should be well separated from other wiring. (i) If two-chassis construction is used, the filament leads in the cable connection should never be used as common ground as there is considerable IR drop along this lead and the potential difference between the two chassis grounds will cause serious hum. (j) Avoid "sweating" shielding over insulated hookup wire. This will cause noisy operation. Solder all shielding at the end.

The above facts should convince one that the layout and wiring of audio frequency equipment requires as much or if not more care than is required in construction of radio frequency equipment. The problems are of a different nature but become very critical mainly because the inductive and capacity efforts vary so greatly over the audible range.

After the amplifier has been properly constructed, it is necessary to make various checks and adjustments before satisfactory results will be obtained. All plate and screen voltages should be immediately checked to be sure that the manufacturers ratings are being followed. For accurate results it will be necessary to use a voltmeter of at least 1000 ohms per volt. Abnormal voltages will cause excessive drain on power supplies and greatly shorten the life of tubes. Most critical are the grid voltages as the grid bias governs the plate currents of the tubes. Underbiased stages are often the cause of distortion. Overbiased stages will be found to have insufficient gain. It is very important to be sure that all ground connections make good contact. When painted chassis or transformers are used, one must check carefully to avoid insulation of grounds by the painted surfaces. A typical example of this condition is the case of a volume control shaft. If the paint happens to insulate the shaft, the volume control will have bad "hand capacity effects." It is well to check the plate current of output stages as any unbalance may greatly harm the characteristics of the output transformer.

To remove hum from an amplifier the following procedure is recommended. Check each possible cause and correct.

1. Excess 120 cycle ripple in the power supply maybe detected and corrected by the addition of more capacity in the filter circuit. It may also be necessary to insert a separate inductance and capacity or resistance and capacity filter in the B plus lead supplying the low level and driver stages.

2. Rotate the input audio transformers to position of least hum. If this varies a 60 cycle hum the source is a power transformer. If the hum is 120 cycle the source is a filter choke.

3. Isolate the hum by progressively grounding the grids of each stages with 1 mfd condensers. If the hum in this stage cannot be traced to a transformer, the cause will likely be due to pickup in the grid wiring. Shield and move the wiring until the trouble is found.

4. Check each stage in the above manner. If hum still remains, try No. 5.

5. High gain tubes in the input stages will require tube shields. Even metal tubes such as 6K7's will require the special grid shields now available.

6. The hum may be in the input lead to the mircophone or pickup. This lead should be completely shielded. If the lead is long it may be necessary to use a balanced input line. If transformer coupling is used, the primary center tap can be grounded. If crystal or other high impedance pickup is used, it may be necessary to use a push pull input stage.

7. If the amplifier is around strong magnetic fields considerable hum may be removed by grounding the chassis to a water pipe or other suitable ground connection.

8. Check to be sure that the cores of all transformers and the back plates of all volume and tone controls are grounded.

9. If ground connections have not been made to a common point try the effect of moving the ground connections in the input stages to various points.

10. There may be insufficient capacity across the various cathode resistors.

11. The output stage may be unbalanced due to a defective tube.

Oscillation in amplifier circuits may be isolated and removed by checking the following:—

(Continued on Page 42)

The Single Wire Fed Antenna Cut To Resonance.

By Lloyd M. Jones, W6DOB

One of the simple, yet efficient, antenna systems in use is the single wire fed antenna system which is very desirable for many reasons. It is simple to construct and adjust. It requires only one lead-in entering the shack. Eliminates the need for spacing insulators in a transmission line. There is nothing new to write about this type antenna system, however we might point out the more important things to check when building and adjusting the antenna.

The results from any type of antenna strung between two pulleys will be proportional to the care in which it is adjusted. Of course it is true that a very poorly adjusted antenna will give surprisingly good results if you happen to live in a good location, but probably most of us would be a little happier if we were sure that our antenna was adjusted as good as possible with the equipment at our disposal. It is the way and means of making these adjustments that we wish to discuss. The means described herein may also apply to any kind of antenna, with slight variations for some types.

Any reasonant radiating system is quite broad, so broad in fact that any antenna from a half wave to many wave lengths long will actually cover the entire 7 mc., 14 mc. and 28 mc. bands without much actual loss in signal strength. However, we naturally want the whole system to be as efficient as possible, so it is best to cut the system for the frequency desired.

In case you have forgotten, an antenna working on its harmonic is actually longer than it would be if it were working on its fundamental wavelength. Therefore it is better to cut your antenna for the frequency you use the most. If you intend to use your eighty meter antenna on twenty meters, notice that an antenna cut for 4000 kcs. actually reasonates at 16,632 kcs., and if cut for 3500 kcs. it will reasonte at 14,553 kcs., which is still a long way out of the twenty meter band, and means that it is impractical to try to use such an antenna on these two bands. However if you happen to operate on the low frequency end of the forty meter band (7000 kcs.) and the high frequency end of the twenty meter band (14,400 kcs.) an antenna cut for 7000 kcs. is ideal, and reasonates at 7000 kcs. and 14,364 kcs.

To determine the proper length for an antenna to be operated on a harmonic frequency use the following:

For a full wave antenna divide 95.4 by the frequency in megacycles.

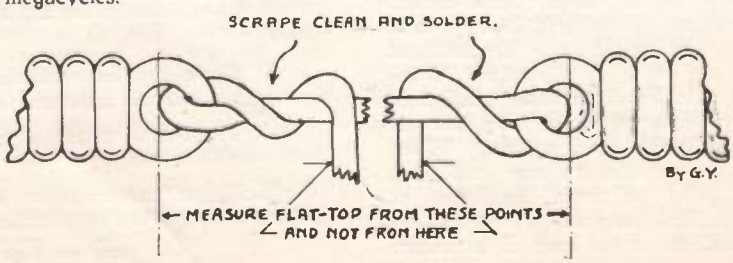
For three half waves divide 1451.4 by the frequency in megacycles.

For four half waves divide 1943.4 by the frequency in megacycles.

For eight half waves divide 3911.4 by the frequency in megacycles.

For example, we wish to cut an antenna four half waves long to reasonate at 14,100 kcs. (14.1 megacycles). We divide 1943.4 by 14.1, or 137.8 feet, or 137 feet 10 inches. Note that the length of this antenna would reasonate at 3392 kcs., far out of the eigthy meter band. The feeder should be tapped on about 1/3 the total length of the antenna from either end.

Now for the method of determining the proper length of the flat top by cutting to reasonance. Build the simple oscillator shown in the diagram. It makes no difference what the power supply is or what kind of tube is used. Anything that will oscillate on the desired frequency is all that is necessary, however in order to cause as little QRM as possible and not annoy the FCC, you had better use well filtered DC. A single 45 volt B battery will be sufficient, or you may use an old receiver tube in a half-wave rectifying circuit with a conventional choke and condenser filter. Put the cathode tap about one third the way up on the coil so that there will be plenty of feedback. The value of grid leak and condenser is not critical, but try to use something near the values specified. If you do not have a milliameter to check reasonance, you can use a single turn coil and flashlight bulb coupled tight enough to give normal brilliancy when the oscillator is on. If you use a milliammeter in the plate circuit, the current will rise when you tune to resonance with the antenna. If you use the flashlight bulb as an indicator, see that it burns at a normal brilliancy over the range to be used. Then with the antenna feeder tapped on, resonance will be indicated by a decided drop in brilliancy. Where the lamp is dimmest is the point of resonance. Without anything coupled to the coil, swing the tuning condenser from maximum to minimum capacity and note that the milliammeter does not have any sharp rises or drops, which would be missleading when making the measurements. If there is, try moving the cathode tap a few turns in either direction, or try a different value of grid condenser. Of course it is permissable for the milliammeter to have a gradual change in current.



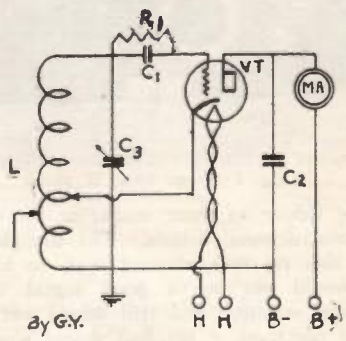
We will assume that the single wire fed antenna is already constructed and ready to use on the regular transmitter. Now take the feeder wire and tap it on about 10% of the total number of turns from the ground end on the test oscillator coil and tune for maximum plate current. You should find one place where the milliammeter shows a sharp rise and fall in current. This indicates resonance with the antenna. Now tune for the peak reading and check the frequency of the oscillator on your receiver to determine whether it is out of the band, in the band, or right where you want it. If you cut your antenna according to the information given, and it is in the clear of surrounding objects, it should be very close to the desired frequency. If it is not, then there is something causing this error and the thing to do is either find the object which is causing the error, this is hard to do, or cut off or add onto the flat top until it does resonate where you want it to. Check the difference in length of an antenna cut for the high frequency end of the desired band and the length for the low frequency end, and then you will have a better idea of about how many inches to add on or cut off. For instance, an antenna cut for 3500 kcs is 133 feet 7 inches and for 4000 kcs is 116 feet 10 inches, a difference in length of 16 feet 9 inches. Whereas 14,000 kcs is 33 feet 5 inches and 14,400 kcs is 32 feet 6 inches, a difference of only 11 inches in length.

When you have completed the adjustment of the flat top to the desired length, you must then consider the proper point at which the feeder is tapped. If you did not have to add to or cut off any wire on the flat top, you can assume that the feeder is alright. However if you did make some changes in the length of the flat top, it is well to take the antenna down, and measure the flat top length to determine the new place for the feeder to tap on. Under normal conditions it is safe to assume that the feeder is working quite satisfactory, however if you have a neon tube, you might check the feeder for standing waves by moving it along the feeder for at least an eighth wavelength and note whether there is any change in brilliancy. The neon should remain the same brilliancy if no standing waves are present. The length of the feeder is not important, but it is good practice to run the feeder directly away from the flat top at right angles for at least a quarter wave or more. Try to avoid sharp bends in the wire. Remember this; the size wire of the feeder should be number 14. If you use any other size the characteristic impedance will be different and cause a noticeable missmatch in impedance between the feeder and antenna. The antenna itself can be of any size wire you wish to use. Always use a good ground with a single wire fed antenna system. Connect the ground to the filament center tap of the final stage, or to the negative high voltage, but use a .1 or .01 mfd mica condenser of about 500 volts rating to isolate any DC or AC voltages that might be present.

As for the radiating pattern of these antennas, they are the same for any other type, and it has been the writers experience that most antennas have lobes which will cover most all directions. If there are some actual dead zones, they are so small that they cannot be readily detected. If you antenna slopes a few degrees, do not expect the lobes as shown in various books to hold true.

To sum up then, try to give the adjustment of your antenna as much attention as you would in adjusting your transmitter. We hardly think you wire up your transmitter, connect the antenna and tune it up and leave it that way. You probably try it out, and make endless adjustments trying to increase its efficiency. Certainly you do not have your tank condensers tuned out of resonance, and that is exactly what is happening to the antenna if it is not CUT to resonance. Why not give the antenna a little attention?

THE TEST OSCILLATOR



R1—10,000 to 50,000 ohms. ½ watt or more.
C1—.0001 to .0005 mfd mica.
C2—.1 to .005 mfd mica.
C3—.0001 (100mmfd) Variable.
VT—Any triode with heater. (27, 56 or 76)
MA—10 to 50 Millamps.

Coil data for different bands wound on 1½" form:
160—70 turns of number 22 enamel.
80—35 turns of number 22 enamel.
40—20 turns of number 16 enamel.
20—11 turns of numbers 16 enamel.
10— 5 turns of number 16 enamel.

The bands of 40, 20 and 10 may have the turns spaced to more or less fill up a regular plug-in coil form.

▼

W6DPT and family, of Compton took a trip to San Francisco, visiting Miss Josephine Stack and parents of Somona. Art thinks some good 5 meter DX could be worked from the tops of the towers of the Golden Gate Bridge (if you could get up there).

▼

LYY—(Angrily over the air)—Where were you for that sked? I supose you expect me to believe that you came straight home from work?

NUR—Sure I did (hic). I just came home like the crow flies.

LYY—So it seems. Stopping frequently for a little corn.

▼

LRI—My husband is the only man who has ever kissed me.

MBN—Are you boasting or are you complaining?

A 6A6 5 Meter Transmitter-Receiver With A Sock.

By G. Y.

The five-meter rig described in this article is the "Hidden Transmitter" used by W6IGO in the recent transmitter hunts at Houghton Park and Griffith Park and the dope is given here in answer to the many requests received

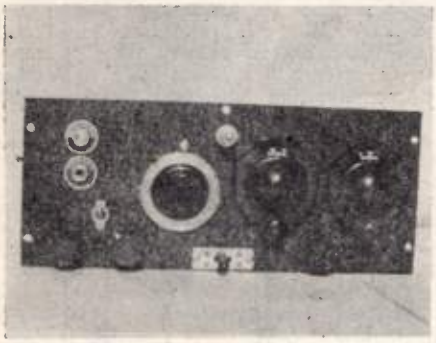


Fig. 2—Front view of panel.

by the Editor of your magazine for the circuit and constructional details. The thought in mind when this rig was planned was, to have a rig that would put out a good signal, a receiver that was sensitive and still would not have excessive radiation, a rig that would work equally as well from a 301 Carter Genemotor in the automobile as it would from an A. C. power supply at the fixed station. All of the above requirements have been realized 100%—especially the signal which as most of you know "has spoken for itself' and made this little rig famous overnight. A lot of credit is due W6MVL who "stood by' and made the test transmissions legal (bootleggers take notice). A good many hours were spent with different makes of transformers and other parts in as many different arrangements before the final results were obtained. Three copies have been made of this rig that have come to our attention—two of which are exact in every detail and they both "perked" right off the bat—the third was constructed from different components and is not so hot, so it might not be a bad idea to follow the parts list given at the end of this article if you contemplate building this rig. The question of a suitable cabinet to house the transmitter-receiver was answered by using a Bud cabinet 14"x7"x 7½" with a hinged cover. The arrangement of the dials and controls is shown in Fig. 2. The power supply cable plugs in on the left-hand side thru the cabinet into a waffer socket in the chassis. A glance at the circuit, Fig. 1 will show that the transmitter and receiver each have a seperate RF circuit with a common audio circuit. This arrangement permits greater sensitivity without excessive radiation from the receiver and also permits the transmitter to be set at any desired frequency in the band with greater output than could be secured with a (Transceiver) arangement. The transmitter has a TNT push-pull oscillator with an isolantite base Raytheon 6A6 tube, cathode biased, mounted in an isolantite socket, raised above the chassis (with the bushings furnished with the socket) high enough so that small feed-thru insulators can be used to connect the lugs on the socket directly down thru to the grid coil, L-1 which is mounted below the chassis as shown in Fig. 3. The grid coil consists of 11 turns of No. 14 wire, ½" in diameter, 1¾" long and center tapped. The plate coil, L-2 consists of 7 turns of No. 10 wire, ⅝" in diameter, 1½" long mounted directly on the left-hand side of C-2. The leads from L-1 and L-2 to the 6A6 should of course be exactly the same length and just as short as it is possible to make them. 2 turns of No. 18 hook-up wire were used for L-4 and 1 turn for L-5.

A separate 4½" volt "C" battery was used for the mike battery, greatly simplifing the wiring of the heaters for A. C.-D. C.—all heaters are wired in parallel. It will be noted that the mike battery is disconnected when the S-R switch is on the receive or off position (all S-R switches are part of Federal 4PDT switch No. 1424W). Otherwise the transmitter circuit is conventional and should not give any trouble if it is kept in mind that the spacing of the turns in L-1 and the value of R-1 both affect the degree of modulation for a given degree of antenna coupling—modulation percentage being greatest at a point where the RF current in the antenna begins to drop slightly on steady carrier.

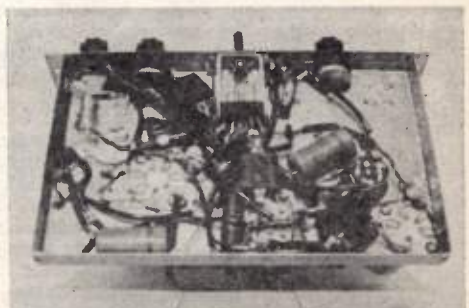


Fig. 3—Bottom view of chassis.

The RF coil, L-3 in the receiver has 8 turns of No. 14 wire, ½" in diameter, spaced approximately the diameter of the wire, with the cathode tap at about ¾ of a turn from the grounded end. The number of turns and the spacing of the grid coil may have to be varied one way or the other in order to get C-3 and C-7 to track, however this is not critical, and should not be hard to do. C-3 and C-7 are both

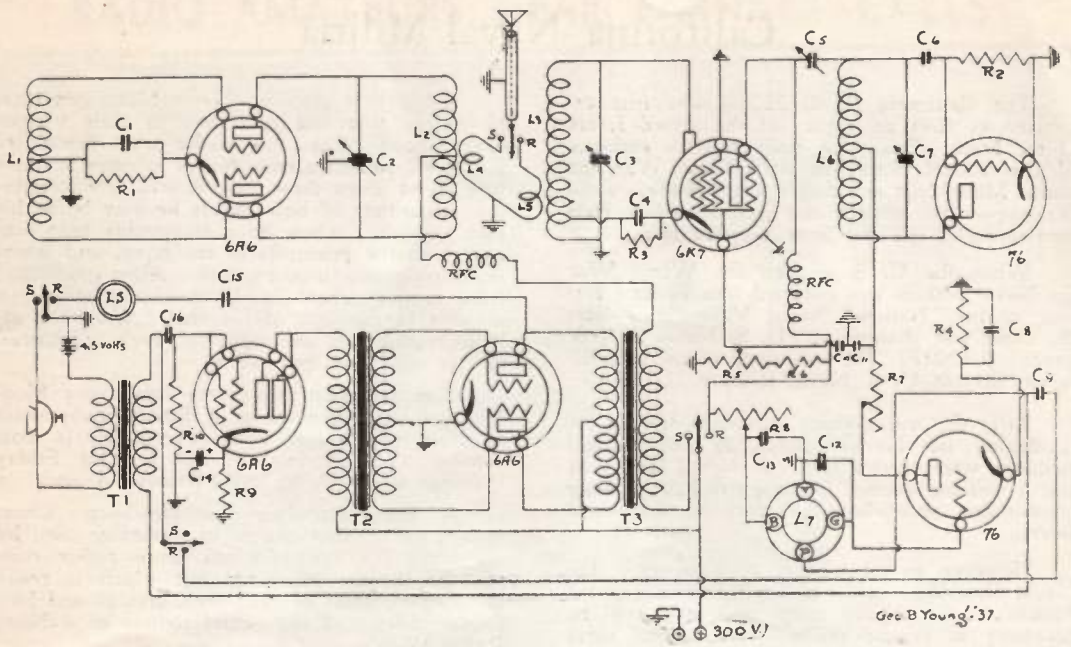


Fig. 1—Diagram.

C-1—.001uufd Aerovox Mica
C-2—MCD-35-SX Hammarlund
C-3, C-7—SUE-15 National
C-4, C-8, C-16—.01uufd Aerovox Mica
C-5—3-30uufd MEX-30 Hammarlund Trimmer
C-6—.00005uufd Aerovox Mica
C-9—.002uufd Aerovox Mica
C-10—.1uufd Aerovox Tubular
C-11, C-12—.001uufd Aerovox Mica
C-13, C-15—.5uufd Aerovox Tubular
C-14—10.uufd, 25 volt Aerovox Electolytic
R-1—400 ohm, 10 watt Ohmite
R-2—1 megohm, 5 watt IRC
R-3—400 ohm, .5 watt Ohmite
R-4—1000 ohm, .5 watt IRC
R-5—50,000 ohm Centrolab Potentiometer No. 72-103
R-6—20,000 ohm, 1 watt IRC
R-7—50,000 ohm Centrolab Audio Control No. 72-117
R-8—250,000 ohm Centrolab Regen. Control No. 72-121
R-9—1000 ohm, 1 watt IRC
R-10—2 megohm, 15 watt IRC
RFCs—Z-1 Ohmite or 15 turns No. 34 DSC wire wound on 3/8" rods
L-4—2 turn link
L-5—1 turn link
L-7—OSR National Interruption Frequency Coil
T-1—Peerless No. 2057
T-2—Thordarson No. 6747
T-3—Thordarson No. 6759

mounted on stand-off insulators and the two corresponding vernier tuning dials should be of bakelite, connected to the condenser shafts thru 1" holes drilled in the cabinet in order to prevent RF noise in C-3 and short circuits in C-7. The RF 6K7 tube mounts horizontally on an aluminum shield as shown in Fig. 4. Either a

Fig. 4—Top view of chassis.

6K7 metal tube or a 6K7G can be used with equally good results, the only difference being that C-3 will tune a little differently but since C-3 tunes rather broadly anyway you can use your own judgment as to which tube you want to use. The RF choke, by-pass condenser C-10 and the coupling condenser C-5 should be mounted directly at the base of the 6K7 socket. The 76 detector is mounted in an isolantite socket on bushings above the chassis and its grid coil is of the same dimensions as the 6K7 coil except that it is center tapped. The advantages of an interruption frequency oscillator answered the question of receiver noise because it allows the detector plate voltage to be set at a point where the tube will still super-regenerate with a low hiss level and the least amount of radiation. In conclusion, it might be pointed out that all ground connections should be tied together and brought to a point that represents the electrical center of the circuit on the chassis and if any amount of portable-mobile work is contemplated, it would be a good idea to put lock-washers under all screws and nuts.

Several antennas were tried in order to find the best one for portable-mobile and it was found that an insulated ¼ wave rod mounted on the

(Continued on Page 39)

California Naval Militia

The Califonria Naval Militia was first organized in 1894 as a part of the armed forces of the State. From that time until the entrance of the United States in the World War the Naval Militia met and drilled every week,—without pay— the officers and men furnished their own uniforms and the State supplied arms.

When the U. S. entered the World War the Naval Militia was inducted into Federal service as the "National Naval Volunteers"—later the name was changed to "U. S. Naval Reserve Force" (USNRF). The outgrowth of the USNRF is our present U. S. Naval Reserve (USNR).

After the war nothing was done toward reorganizing the Naval Militia, as the original members were carried as U. S. Naval Reservists and it was not deemed necessary to have a State organization paralleling the work of a Federal force.

However, as the number of members in the Naval Reserve is only a small fraction of the number in the regular navy, and as it will be necessary to expand the navy to several times its present strength in time of a national emergency, together with the fact that the navy, with the Naval Reserves, will immediately put out to sea a considerable distance as soon as an emergency exists, it was deemed advisable and necessary to have a State Naval force, which will take care of our long coast line at such a time.

Therefore, in 1933 plans were formulated for, and organization of the California Naval Militia begun. A Naval Militia had been authorized under section 2112 of the old political code of the State of California, which had never been repealed, and it was under this code that the present Naval Militia was organized. Then, in 1935 it was deemed necessary to clarify several points along specific lines and the present Military and Veterans' Code of California was enacted—becoming a law July 5, 1935.

Organization was, and is, of necessary a slow and tedious process due mainly to the lack of State funds for such a project. In spite of this handicap, the Naval Militia at the present time numbers several hundred officers and men who devote one or more evenings per week and eighty per cent of whom have purchased their own uniforms—remember this has been without one cent of remuneration, merely the satisfaction of knowing that they are working for something worthwhile and are doing a good job of it. However, it is expected that in the near future the State will appropriate the funds necessary for uniforms, equipment, and drill pay for the men.

The communications department of any force is one of the most important and vital units, as it enables the various units to keep in close contact with each other and to pass vital information back and forth rapidly. In order that this may be accomplished rapidly and efficiently it is essential that certain definite rules of procedure be followed and strictly adhered to.

In the first place all Naval Militiamen must be sailors first and specialists in their various lines second. Thus, no matter what branch of the Naval Militia a man desires to enter he must first spend about three months in a recruit division (regardless of how expert he may be in his own specialty) where he is thoroughly indoctrinated with the principles of the navy, and learns seamanship and infantry drill. After graduating from recruit school he is then assigned to a division in the unit of his choice where he attends regular drill one night per week and special classes one night per week.

Communication classes are held every Monday and Tuesday evenings at district headquarters (a man may attend which ever night is most convenient), and regular drill is held Friday evenings at the U. S. Naval Reserve Armory.

A man attending communication school studies the various phases of procedure used by the Navy, (a system which seems rather complicated to the uninitiated but which is really the simplest form in existence), ciphers and how to use them, and the actual routine of a Navy Radio Watch.

A naval militia radio network is planned which will link up the various units throughout the State and will function for drill one night per week as well as in case of emergency. Through the use of such a net a radioman learns how to put into practice the things he learns in school. We are also planning a mobile section which will operate on 28 and 56 mc.

Applicants for enlistment must be between the ages of 17 and 30 years and pass a rigid physical examination. Applications will be accepted daily at district headquarters, room 443, Chamber of Commerce Building, Los Angeles, (Phone PRospect 6844), between 9:00 A. M. and 5:00 P. M., and at the Naval Reserve Armory, 1965 South Los Angeles Street, Friday evenings from 7:30 to 10:00. All advancements in rating in the Naval Militia are made strictly upon merit and are made just as soon as a man can qualify for such advancement.

Lieutenant (jg) Howard Bogue, CNM,
(W6CFN-W6CVC).

Communication Officer, Southern District,
Calif. Naval Militia.

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Mr. Philo T. Farnsworth, vice-president of Farnsworth Television Incorporated says that in his opinion the amateur will be pushed forward rather than out, by television. "The radio amateur has been a pioneer, in the highest sense of the word," says Mr. Farnsworth, "exploring new fields that have been later taken up by others and like a true pioneer he has pushed forward and it is safe to say that the television engineers and technicians for this new field will come chiefly from the ranks of the amateurs as was the case of radio communication."

RADIO AMATEURS HEAR EARHART CALLS

Photo taken shortley after Karl Pierson, W6BGr1 and Walter McMenamy heard Emelia Earhart. This shows the amateurs keen ability to always be on the job and offering mankind all their possible assistance. We congratulate Karl, Walter and other amateurs in this particular phase of Radio as they go far in strengthening foundation of Amateur Radio in the eyes of the General Public.

By Ray Harmon, W6GHU

Spring gives away to summer. Radio gives away to the great outdoors, other things and stuff. DX has probably dropped off more than any other phase of Ham radio more or less because of the highly erratic conditions and a general lack of DX when conds. are good. . . Sure there are fellows on the air wkg DX, but they are so busy doing it that they never find time to write in about it, so for that reason we are beginning to find ourselves shy on DX material. . . It would be nice of some of you bashful guys would open up and give us some of the dope on your DX. We can't give you dpe that we dont have. Wont some of you mugs break dwn and give us a little dpe next time? We're almost sure that our four readers and the DX editor would be happier people for a change. . .

The only mistake we made in going to the Orange county A. A. meeting in Santa Ana last June 7th was the failure to bring our shovels, but in spite of that mistake we had a swell time. (The first time we ever got all the ice cream we could eat). Mrs. Beckers' son Herb, commonly known as W6QD was master of C. and was helped in the throwing by W6CXW, W6CUH and W6GRX. GRX gave a few of the highlites of the contest and CUH told some of the more interesting details of the DXers back east. CXW was so modest about his score in the DX contest that we were almost sure that he wasn't even the tests. CUH also brought the holes in the plate of a 250T along to show what happens when the plates have 5500 vlts on em, there is a brick on the key, the excitation fails and you're out in the backyd monkeying with the feeders or sumpin. . . Wonder who could have done that?? The Orange lads did a swell job in promoting that meeting and if some smart Radio club follows the idea of 6QD by having a DX get-together like it once every three months they can be assured of a goodly crowd. . (A different club each time).

W7BYW is going to make the world conscious of W6OVC as that is his new mark. He has the 250Ts going now and no holes in the plates either hi, . . .

Seems that down in Orange county KWs??? and DX go hand in hand because there are no less than eight guys down in that sector with pp 250Ts—HK354s or others. . .

W6KBD hasnt left on his journey yet as he is still trying to muster more recruits for the trip. While he has been waiting he managed to get the lil 35T across to PK6HR for his 87th country. The PK is on 14300-t7. .

We gave you warning last month that W6CRI was gonna go to town as soon at the DX started coming thru. He's doing it all right among some of his good ones for the early part of the month are: YL2CG, HA1G, G2TR, PA0CE, PA0QL. G2FX, SP1EB, F8VJ, G6GH, TF3AG, ON4FT, G5JZ, G6DT, G5IU, G6PD and many others. Gene has his own method of forecasting DX for the night and that is by listening for D3FZI who is abt 14430 kc with chirpy de qri. If this D3 is coming thru by 6:30p then cnds. are gud if he doesnt come thru then Gene goes other places. (Maybe hes' got sumpin there, we mean the idea. . .)

From VS6AG comes word that VS6BD is now a silent key as he was killed in a hunting accident recently. Many W's will miss him as his sigs were quite widely known especially on the east coast where he was he was the last continent for many a hopeful DXers' WAC.

W6KIP is finding less and less time to get on the air these days but always manages to get in on the gud uns. He added PK6HR and PK6-XH who he says are probably one and the same station as during a recent qso with PK6HR the fellow mentioned that PK6XH was sleeping at the time. (Aniway two ops gives us twice as much chance to wrk the PK6 stn.) Alex also worked HR7WC who is an stn in Honduras. This HR usually wrks. the edges of the 14mc. band and does qsl.

W6DOB is doing some work on the rig preparing it for his new 1KW air cooled jug. He is another who has grabbed off PK6HR. He also added VP2CD in Antigua who is 14300-t9x. Lloyd added another zone when he found that U9AF is in another zone apart from the U9M—

series of calls. This makes him 35 Zones! That isn't injury enuff but he must get the official country list out and by comparing it and his old logs dating back to '27 he finds he now has 88 countries. Lloyd is still on the hunt for EL2M but ND so far. He even went to the trouble to make his "Q" ant, vertical instead of horizontal to make a try for the guy. Lloyd also adds that a vertical "Q" is all a guy needs to wrk DX instead of a flock of different ants. He says the rpts are the same all over. Which reminds us Lloyd talked 6KIP into getting a "Q" and now Alex spends all his time comparing the "Q" against his other ants. Aniway Alex is still fussing with the "Q" and so doesn't get much chance to get on the air. (Maybe Lloyd had that in mind when he talked Alex into it Hi.)

W6HEW has a portable that would make a mean home rig, the thing uses a 6L6-RK20-150T and is completely run off his car. The input runs arnd 300-400 watts and is capable of 1kw. On a recent trip to the mountains, Mort found that locations really mean something as shown that nothing could be worked on 14mc except Africa and countries in their general direction because the hills were all very steep on all sides except for a Gap between them which enabled the Sigs to get thru to the Africans. Another fact noticed was that the Africans were vy much the loudest DX sigs hrd there. Using the portable with 225 watts to a raggle-taggle vertical hertz surrounded by lots of trees r7 rpts were recevd from ZU6V and FB8AD. Mort plans to go to the top of one of the surrounding peaks where nothing is screened and try the rig on all continents. When this is done there ought to be plenty to tell you.

And about this old log business there is something in it all right, W6KIP started looking back thru his and was astonished to find that he had wkd U9RE on 7mc a couple yrs ago and this makes a new zone for him. Nw he has 35!

Pse excuse the blank space but that when we took time off to look over our logs, but we found it was wasted time.

You have no doubt been wondering where the —ell the prefix XZ was because lots of the local boys were wondering about the calls signing XZ2DY on 14370kc and XZ2EH on the low freq. end of the band. Well don't fret animore lads as XZ2DY was heard telling W6FKZ that XZ is the new prefix for BURMA. Old VU2DY is now XZ2DY.

Is 14mc Fone getting tame because W6AM has now wrked WAC on each of five consecutive nights? We don't think so because it took him a kw and beams to do it. Just WACing on fone is quite an accomplishment to our way of thinking, but to do it five times running on consecutive nights that really sumpin! Nice going OM.

2 years ago in the DX contest there was a real TF3AG on the air and so now when everybody hears a sig on the air signing TF3AG they get the impression that it is the same guy but we regret to tell them it is not as the new guy is a W8 bootlegging the call. How do we know? It just so happened that quite a bunch of us heard him one night when he signed W8—before he realized it and then hastily covered the mistake up and again signed the Fish McGish call TF3AG. Somebody ought to tell him to use his own call for a change.

Don't give up looking for a station in Zone 2 yet because there is a new one there signing VE5RA who is on Resolution Island just off the southern coast of Baffinland. 500 cycle note on 14426kc in the early eves here.

An embryo station is the result of W6MEN's sailing for Jugoslavia. Steve Stambuk, W6MEN swears that upon reaching Jugoslavia that he will put a rig on as soon as possible despite the fact that ham radio is taboo there. He says to look for a Call signing YU7MEN just out of the Hi end of the 14mc band. (Hot Dorgs that's wat we been waiting for).

Wonder what has happend to all the old DX associations that used to be around in ole sunny Calif.? What ever happened to the SBAA the WCA and others? The present club holding up and the only active one left is the "20-40" DX club and judging from their activities they could shoot us a little dope. They must have plenty of it because with guys like 6FZL-FZY-FKZ-ADP on the air they don't come on just to chew the rag all nite with W's. . . How about it you mugs break down will ya, after all there is no point in wkg DX if you are going to make a secret of it.

W6GHU has quit the air for a spell and will not be on again until next yr. Whats more there is not a speck of truth in the rumor that he is now a I. W. W. Its just the yearly vacation. You know, one month work and 11 months vacation. (What a nice Dream that was).

It is definitely settled that summer is actually here and everything but ham radio is gg to be the chief interest but, we know you can't resist wkg the rig once in awhile and when you do if you work any DX pse shoot it in because this is the dead part of the year and DX dpe is scarce so how abt it mugs? Hrs hoping.

▼

This may be an old stunt to some of you but there may be someone who will be glad to know that tubes that have become loose in the base can be repaired by getting some fairly thick "water glass" from the drug store and working it down into the base with a small brush. The tube should then be put into a socket and lighted so that the heat will help set the water glass.

Old, Yet New Fundamentals of Ultra High Frequencies

By PAUL D. LANGRICK, W6PT
President of the Ultra High Frequency Club of Southern California

The measurement of Low Waves of high frequency have changed but little as is shown by the article written for the Radio Journal of August 1925 by Paul D. Langrick. Paul made most of all the early experiments of ultra high frequencies made on the west Coast with vacuum tubes and putting them to the first practical use of transmitting intelligence at these frequencies. At an earlier date low waves were produced in the east with the use of the hertzen spark, but was not used for communications. Paul's first success on such low waves came in the late fall of 1922 and the spring of 1923.

The information which follows gives a better understanding of the higher frequencies by the problems encountered by a pioneer in this field; also giving the details of how an amateur can, with the use of the Lecher Wire system, measure and calibrate his two and one half and five meter absorption wave meter. This information, even though from the past, is still the fundamendal bases of modern work.

At a local ham club in the early fall of 1925, Paul D. Langrick, with a VT 2 or a UX210 with a storage battery for the filament power and 400 to 600 volts of A. C. on the plate of the tube, when asked how low a wave he could produce, hit a frequency of two and a half meters which was measured before the attendance on a lecher wire system. They say the eyes of the boys present became big and round to see the believed impossible produced.

Paul has not been below 22 meters in 14 years.

The following is a cliping from the Los Angeles Evening Herald October 22, 1924, for world wide publication.

"WORLD'S RADIO RECORD"

"Los Angeles gained another honor on October 19, when Paul D. Langrick, Archie Wade, Jr. and Clair Langrick succeeded in actual transmission and reception of radio signals on the extremely short wave length of 5 meters or ten meters have been reached experimentally with transmitters.

Although the distance covered in this transmission was short, the signal strength, covering the low power used, was such as to promise great results in the near future on longer distance communication with these short waves.

Veteran Experimenter

Paul D. Langrick has been a radio experimenter Since 1912, and in 1919 it is claimed, had the first radio phone set in the western part of the United States. In 1921 he was among the first amateurs to transmit on the shorter wave lengths now in common use among amateurs. He now holds amateur call 6ATB, exeperimental call 6XAA, and operates on the U. S. Army call C9F."

Archie Wade was the operator of 6GI immediately after the war and still holds those call letters; also experimental call 6XAH. In 1921 he established a world's record which he still holds, having been heard in all states in the union in the period of 10 minutes, while using a low powered short wave set. He also holds the record for having the most efficient set in the U. S., getting the most miles from a low powered set.

One of the features of these recent wonderful work on the extremely short waves is the fact that the length of the waves are actually measured with a yard stick instead of the usual wavemeter."

The above copied from the said newspaper gives the reader some idea of what was tops for amateur work at the given date.

—Editors Note

The author has always been interested in trying to make Radio sets more simple and with the use of short waves, this mania for simplicity has been realized.

When one has used these extremely short waves, and can see the utter simplicity of the apparatus used, he will never go back to the band of waves from 80 to 200 meters.

The author has tried to use the Loose Coupled Hartley Circuit on these short waves, but has had very poor success with this circuit below 4 meters and only slightly better results at 5 meters. The best way to look at this is to analyze the Hartley Circuit, (it is best to use the series-feed Hartley at these short waves).

Here we have the capacity of the tube, plus the inductance in the grid and plate circuit and also we have the by-pass condenser across the high voltage supply. As we all know, on the higher waves when we change a by-pass condenser it alters the wave length, and all these things are magnified at these short waves. So one can readily see that it is very difficult to use this circuit.

Looking at the diagram in figure 1 we see that the capacity of the tube elements are across the grid and plate inductance. To get down to 5 meters with the Hartley Circuit, after putting in considerable time in the laboratory trying to get good results and good output from this circuit, the author became disgusted with it, and cast around for a more suitable circuit.

I will take you over the same path of reasoning that the author used to attain the results obtained with the new circuit.

First we will take a tube which has three elements have capacity and inductance. Let us see just what this looks like and will do.

Sure something funny about this, looks the plate supply would be shorted across the inductance if the grid leak was in place to supply a negative voltage to the grid.

So we will put in a plate blocking condenser. Now this looks if it would sure work. It looks all right, nothing shorted this time. Now to keep the wave as low as possible we will supply some radio frequency chokes in the grid and plate leads.

All that remains to be done now is to put in a grid leak to supply a negative voltage for the grid, to make the tube oscillate.

Looks fine and is simple, isn't it? Let us analze this circuit. First we have everything in series here, instead of in parallel as in the Hartley. Looks as if we had something doesn't it? Gee! We might get a patent on this and sell it

to the Radio Corporation, but let's go a little farther.

Hum—This looks kind of funny, wonder if you know there is such a thing as plate to filament capacity and grid to filament capacity?

Shucks! It's nothing but a Colpitts circuit, only simplified.

Well, we won't get rich quick, but we have something at that.

Constructional Details

We will start with the radio frequency chokes first as they are very important. First take a piece of board and lay out a circle three quarters of an inch in diameter, and divide the circumference into seven equal parts. Drill out these seven places just large enough to push through seven fair size nails, not wire. Wind on fifty or sixty turns of wire number 22 to 26. Before removing the coil, be sure to sew or tie the coil together where the wires cross. Do this in 3 or 4 places. (Do not dope coil). Make two of these choke coils, one for the grid and one for the plate.

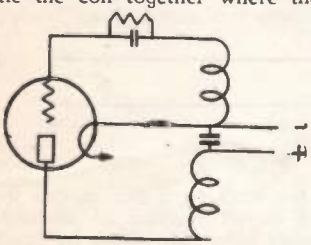


FIG.1

When using a storage battery on the filaments it is not necessary to use choke coils (with a five-watt tube). But when using A. C. on the filament it is best to use choke coils.

Take a broom handle and saw off about four inches to use as a mandrell. Wind on sixteen to twenty turns of number sixteen wire. This wire is stiff enough to back up a little and all you have to do is pull out the mandrell. Tie with string or heavy thread in two or three places. Be sure to leave enough wire on both ends of the choke to use as leads, so it will not be necessary to solder on more wire for leads

Now the hardest work is out of the way. The rest is simply an assembly job.

Description of a 50 watt Set for 5 meters

The set to be described built primarily for laboratory use, but lends itself to energy coupling very nicely.

The grid leak used is a Ward Leonard 10,000 ohm resistance unit. The only reason for using this was that it was the only thing that the author had to use. In fact with a 5-watt R. C. A. grid leak, the tube ran slightly hotter, but had quite a bit more output. So after we have the base board, terminal strip, and grid leak ready, we can begin to assemble our five meter transmitter.

The socket is first fastened down with the center approximately 2½ inches in from the front. Next the terminal strip is fastened across the back of the board, and then the grid leak is put in

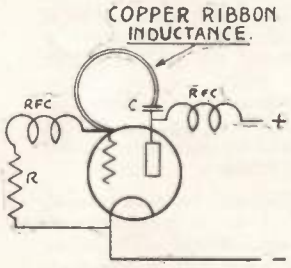


FIG.6

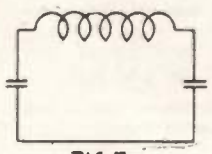


FIG.7

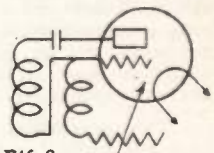


FIG.8

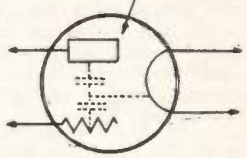


FIG.9

place and fastened down. To wire up the set, it is only necessary to hook the radio frequency chokes to the socket to the corresponding binding posts.

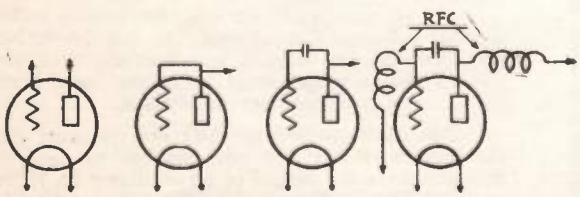


FIG.2 FIG.3 FIG.4 FIG.5

SCHEMATIC DIAGRAMS SHOWING EVOLUTION OF COLPITTS CIRCUIT FOR 5 METERS

There is a clip going from one of the Micadon condensers to the end of the inductance. The inductance on the set is made of ¼ inch edgewise wound copper ribbon and is a complete circle 5½ inches in diameter, with about 3 inches left over and bent straight back and slightly downward, to make a connection to the grid. With this size inductance, the wave length is 6.2 meters. For 5 meters, the inductance should be about four inches in diameter.

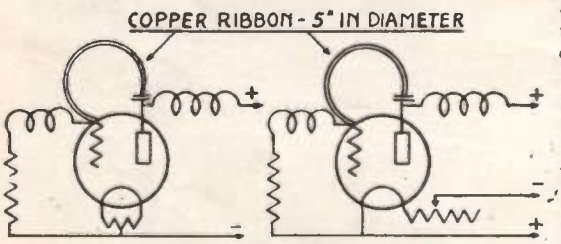
After the measurements have been made it would be best to make the inductance have a ¾ turn with one end bent for the grid as before and the other end cut off where the plate stopping condenser could be soldered on. These inductances are for U. V. 203 A and C 303 A tubes, as there is considerable difference in the internal capacity of these tubes.

One precaution that should be taken is to keep the radio frequency choke at least an inch from the surface of the baseboard. The same baseboard layout could be used with a five watt tube instead of a 50. The only difference being to put the socket on the right side of the baseboard instead of the left. This is so that the radio frequency choke in the grid circuit can connect the grid of the tube to the grid leak.

The inductance described above would not be of the right size for a five watt tube.

The author believes that everyone will agree with him that this is a lot simpler than a set for any of the other wave bands. It is much smaller and does lend itself to Portability.

One thing I forgot to mention, and that was that the radio frequency chokes should be kept as close to the tube socket as possible, as this isolates the elements of the tube and allows you to use a larger inductance for a given wave.



FOR AC FIL. - FIGS.12-13 - FOR DC FIL.

No meters are shown in the the diagram. The only essential one is a filament voltmeter. When anything goes wrong with this circuit, it shorts the plate supply and naturally burns out any meters placed in the plate and grid leads.

The Wave Meter

As this is the most handy piece of apparatus and also good insurance, if you do not want the radio inspector to jump all over you, for showing up where you are not wanted. Remember the band you want to work on is not very wide (when speaking of it in meters) but is very wide when speaking of it as a frequency band. So you had better put a little thought behind this piece of apparatus and not make some flimbsy, delicate thing.

You had better get a good condenser of 125

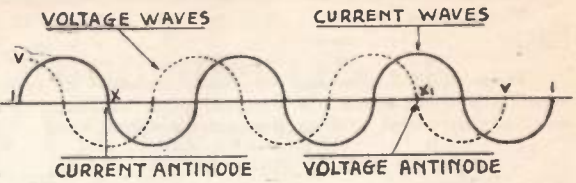


FIG.14

micro mikes (.000125 mfd.) and take out ½ the plates and double space the rest to get a small capacity variable condenser in this case a capacity of .0000312 mfd. If you cannot get this condenser then take a 250 mmf and go through the same process. This will give you a capacity of .0000625 mfd. (The condenser should have a straight line wave or better a straight line frequency curve). A small glow lamp will do for an indicator. Besides keeping the matter of simplicity in mind, it will not cost very much. A good thermo-galvenometer would cost $18.50. While it is a better indicator, it is too easy to burn out, as reasonance at these short waves is very sharp. The author has seen a meter reading

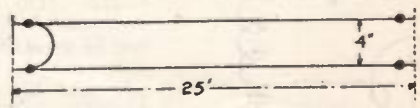


FIG.15

at 80 degrees on the scale, and just moved the condenser handle a merest fraction of an inch, and has had the meter burn out, before he could pull the wavemeter away from the oscillator. (These meters are guaranteed to stand a ½ amp.) so I think it is best to use a small three volt flash light globe as an indicator. The glow lamp can be fastened on the coil by soldering. The pickup coil can be from two to four inches in diameter, depending on the maximum capacity of the condenser and the wave length range to be covered.

If the condenser is put in a wooden box, it should have a small metal shield placed around the condenser and grounded to the rotary plates. This is to shield the plates of the condenser when placed in the magnetic field of the oscillator.

The author sees no reason why a common dial as used in receiving sets of 100 or 180 degrees could not be used. The Calibration curve could be plotted on a piece of science paper and pasted in the cover of the box.

Well we have an oscillator and a wavemeter now, but we won't know what wave we are on so what good are they to us? Well have a little patience and we will see what we can do about it.

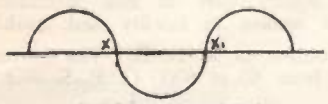
We are now ready for what has proven to be a most interesting experience. It one keeps his eyes open he can learn a lot about the peculiarities of the propogation of the wave form from the antenna and counterpoise system.

You have guessed it. We are going to use that system which any one can use to directly measure the wave length of an oscillator on short waves. The Lecher system of producing Standing waves on parallel wires. An explanation is in order, as to just what the Lecher Wire system is? It is a well known fact that when a rope is

fastened at one end and shaken at just the right rate the waves are reflected back from the end and the rope looks as if it were standing still in certain places (at the places marked X in the figure).

This is what takes place on the Lecher wires when an oscillation induces current into the "pick up" loop on the wires. Only there are two different types of waves reflected back from the end of the wire, one the voltage wave reflected from the end, and the current wave reflected from near the end as in figure 14.

The lines marked I are the current waves and the ones marked V are the voltage waves. The points marked X and XI are the current and voltage antinodes respectively, or the places where the current or voltage operated devices are placed in making measurements. To measure waves in the vicinity of 5 meters, the wires should be about twenty-five feet long, spaced 3 to 4 inches apart. The pickup loop should be the same size or larger than the oscillator inductance.



X TO X_1 = ½ WAVE
FIG. 16

One more thing should be made before we make any measurements and that is a meter stick. A piece of good straight hard wood about 42x 1x¼ inches should be procured, planed and sanded to have a good smooth surface, one end is squared and then cut to exactly 39.9 inches which is 1 meter. It is a very good idea to lay off the meter stick in tenths, or better twentieths. This is to facilitate the measurements of those waves envolving "split" meters. Sounds funny, doesn't it, but most waves come out something like this, 4.69 or 5.33.

The way to measure these waves is to start the oscillator and put the thermo-galvenometer on the wires near the oscillator and take a stick about one foot long and slowly push the meter along the wires. When you have found the first place that the meter reads maximum, take a piece of string around one of the wires at this place. And then slowly proceed towards the ends of the wires until you have found another place where the meter gives a maximum deflection, it is usually about one half that of the first reading. Tie a string here as before. Now measure the distance between these two strings and multiply by two and you have your true wave. The distance between the two strings is one-half. It is best to shunt the terminals of the galvenometer with a piece of number 14 bare copper wire. The results obtained with the shunt on are very much better than when it is left off. In fact you can go from a minimum to maximum and back to a minimum in less than ¼ inch.

This is the best way to measure the short waves.

THE ANNUAL FIELD DAY

By His Knibbs

Hook up the trailer and load in the gear,
Everyone in, we're going away from here
To a place without power, or houses and things
To seek the pleasure that portable operation brings.

There's a hill that looks mighty good,
With a road leading up it and plenty of wood
So let's pile out and raise the towers,
And set up a station that'll last thru the hours.

Next comes the tents, two of them complete,
One for operating gear and one for the eats,
Then a big fire to put the coffee on
The generator set up, everything's done.

We've raised the antenna and hooked on the blooper,
And loaded the shotgun in case there's a snooper.
An Op is assigned, the motor started
And from our homelife, we've all departed.

The next day dawns with a sun that's bright,
We're a tired lot, being up all night
And keeping things going for another QSO
To add to the total, it's fun to watch it grow.

All through the day we pound the key
Trying our best, good hams to be
By staying in place on the Amateur bands
And looking for contacts with foreign lands.

The sun goes down, we break up camp,
And load the stuff for our homeward tramp
Tired but happy, and hoping we've won,
The job's completed, the Field Day's done.

▼

Landlady—If you don't stop blinking my lights you will drive me crazy.

AK—Ha, Ha, your crazy already. I stopped sending with the transmitter an hour ago.

Question: What is the formula for computing power in a linear R. F. stage?

Answer: The exact power output of a linear R. F. output stage cannot readily be calculated, since so many factors enter in. A few generalizations may be made here however. The average unmodulated plate efficiency is about 33 per cent. Therefore the tube must have a dissipation equal to twice the desired carrier power. It must also be capable of handling the peak power which at 100 per cent modulation is 4 times the unmodulated power. The preceeding stage should have an output of approximately one tenth that of the proposed linear stage. A load resistor is used across the grids of the linear stage to stabilize the excitation. It is generally adjusted to dissipate about one third of the excitation. The power output of a linear amplifier is proportional to the square of the grid excitation. The output load should be from 1 to 2 times the plate impedance. Advantages of linear amplifiers is the simplication of modulation requirements. Disadvantages over "C" amplifiers are lowered plate efficiency, more critical adjustments, better regulated grid bias supply required, and (to some) limitation of carrier output without exceeding the legal limit of one kilowatt input.

Question: Why is the ratio of capacity to inductance in a tank circuit important?

Answer: Too high an inductance in relation to capacity reduces the "flywheel" effect of the tuned circuit, this effect being necessary because the tube delivers power to the circuit only a portion of the time. If this action is not present the wave form will not be that of a sine wave and excessive harmonics will be generated. The internal capacity of the tube may become a large proportion of the tank capacity under this condition, and at high frequencies may draw excessive R. F. current. Too high a capacity on the other hand causes high current to flow in the tank circuit with attendant excessive coil heating and lack of efficiency.

Question: Due to line voltage fluctuation I wish to control the filament voltage of my Gammatron HK-154 with a rheostat. What size rheostat is required to give a variation of one volt?

Answer: Since the tube in question draws 6.5 amperes, we divide the voltage by the current according to Ohm's law which gives us 1 divided by 6.5 or .15 ohms. The wattage would be found by multiplying voltage by current or 1 times 6.5 or 6.5 watts. Since a rheostat of this low ohmage would be hard to procure it would be preferable to place the rheostat in the primary of the transformer. The ratio of secondary to primary is 5 (voltage of the tube) to 115 (line voltage) or 1 to 23. Accordingly we may use a rheostat with a resistance of .15 times 23 or 3.45 ohms.

▼

New Universal Microphone

On July 1 the Universal Microphone Co., Inglewood, Calif., placed its new dynamic microphone on the market.

It is self energizing, with no polarizing voltage or button current needed. The instrument is unaffected by heat or moisture and has no hum pickup.

The transformer is double coils on self shielding square core in box lamination, thus giving the utmost in fidelity and quality.

The output is 58 D. B. The frequency response is from 40 to 8000 C. P. S. and is made

in the following impedences: high impedance direct to grid: and is also made in 33 ohms, 50, 200, and 500 ohms.

The new dynamic is fully guaranteed by the factory.

The Universal Microphone Co., Inglewood, Calif., has authorized its jobbers to refund 100 percent on AV velocity and dynamic microphones if the customer is not 100 percent satisfied after five days trial.

James R. Fouch, president of the Universal Microphone Co., Inglewood, Calif., attended the RMA and the National Radio Parts Show in Chicago the middle of June.

▼

IOA, 1st Cannibal—Gosh, I forgot the roast, the missionary is burning.

KTY, 2nd Cannibal—Holy Smoke!

Your Transmitter Deserves the Best!

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DONT "Kill the goose that lays the golden eggs"

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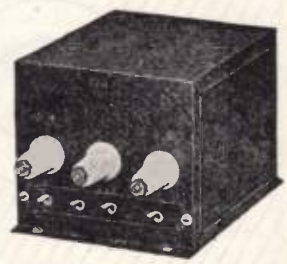

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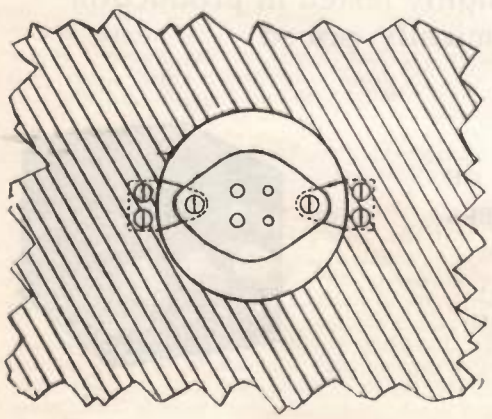
HINTS And KINKS

COOLING 866's

From the station of W6MMU comes this construction detail which works very well in the ventilation of well loaded rectifier tubes. With the mounting of rectifiers as shown, all filament leads are below the chassis to give a neat appearance and the tubes do not stand very high which gives more room.

National Sockets were used; held in the center of a 4 inch diameter holes in the chassis by small pieces of 1/8 inch thick scrap metal. These small girders of iron can be cut out with a hacksaw and the edges rounded on an emery wheel. The dotted portion of these bits of iron in the diagram show how they are clamped under the chassis and also under the isolantite socket. Lockwashers must be placed under the 8-32 nuts or vibration will make the sockets work loose.

As the heated air around the tube is pressed out of the ventilation holes in the sides of the transmitter housing it is helped to move along by the replacement with cool air from the lower compartments which pass up around the base of the tubes.



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Permanent Overmodulation Indicator

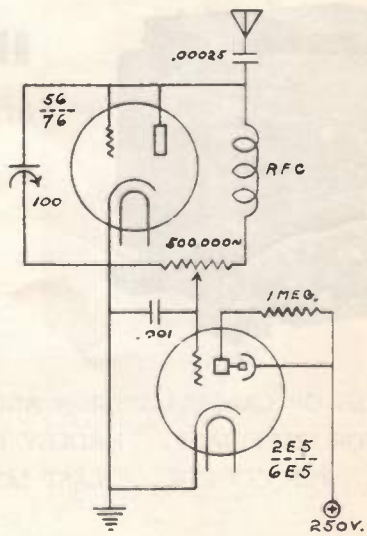
By W6NGQ

Most amateurs have all forms of meters to tell this or that about their rigs but few include in the transmitter any forms of indicators of when there is over modulation.

The parts used in this indicator cost no more than a single meter and bring a modern transmitter up to the requirement of the F. C. C.

The magic eye on front of the transmitter will far from harm its looks and as most transmitters are placed so that the operator can watch the meters it is an easy matter to watch the green eye, and if it winks at you then you are hitting it too hard. The magic eye is, for that matter a far better instrument than the average low cost meter as they can follow any peaks as fast as they take place.

Any old tube with a cathode can be used as the diode rectifier for rectifying the small amount of R. F. picked up by the indicators antenna. This antenna is capacity coupled to



that transmitter antenna by being placed nearest in the case of a high powered rig or a few turns of insulated wire wrapped around the transmitter antenna if low power is used.

If the insulation is permanent there is no need of the variable condenser from plate of rectifier to ground protential of the indicator.

The filament voltage for the magic eye, also the R. F. rectifier can come from the filament source in the transmitter. If 2.5 volt tubes are used in the transmitter a 27 or 56 make a good rectifier and the magic eye should be a 2E5 (Sylvania) or if 6.3 volt tubes are used a 76 rectifier and a 6E5 Indicator make a good combination.

(Kenrad now make a new small magic eye

about half the old tube size, called the 6U5.)

The RF is picked up by the antenna and rectified develops a voltage across the half meg. pot which by adjustment applies the proper neg. voltage to the grid of the 2E5 or 6E5 to about half close the eye. Any flucuation or winking of the green eye will tell when the modulation of the transmitter is driven over the 100% point.

Be sure to by pass to ground the grid of the magic eye or there will be a blurred or hazzy iris caused by stray RF which is being picked up.

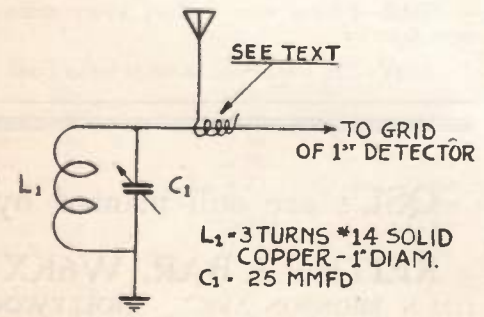
▼

5 METER SUPERHET

By Dexter Young, W6MLA

The other evening on 5, I had a very interesting QSO with Harold Rider, W6OEF. I had just tested my very low power crystal transmitter with him and had very favorable results. Naturally our topic of conversation swung then to crystal rigs and super het receivers. Harold made the remark that "If more fellows used better receivers, namely super hets that it would pay a fellow to put on a crystal or M. O. P. A. job. I told Harold that he had expressed my sentiments exactly. The main reason that I dont' elaborate on the crystal is that with the present type of receiver used, is that I would get better reports by using a modulated oscillator. Harold checked the stability of my crystal by tuning me in on his super reg. detector and beating that against his super het which was tuned to 20 meters. I told Harold that I had found a way of getting a super het down to 5 meters with ease and simplicity. This arangement can be used on any super, commercial or "home brewed" After hearing it explained, Harold asked me to write up an article on it for "The Amateur Radio News."

I do not claim this idea to be original. I am writing this with the hopes that a few of you 10 and 20 meter men will make the best of this idea and come down on 5 meters with crystal rigs and most of all super hets receivers. A



hinderance rather than a benefit to the band because all receivers which are now in use on few of you scattered thru out Southern California could really build this band up. If only one ham puts this idea into effect he would be a 10 and 20 when put down on 5, tune much to sharp to even read the modulated oscillator type of transmitter. So you see fellow's that it will take more than one crystal rig on the band to behoove a person to take the time to put their super het on 5.

The principle of operation is so simple that any beginner can understand it.

A coil and condenser arrangement tuning to 5 is inserted in the 1st detector grid circuit and the band change switch is set for the 10 meter band. One tunes the set just as though you were listening for ten meter sigs. I tried peaking my detector circuit by listening for the noise level to rise to the highest point but this is hard to do as the r. f. circuits develop very little gain on these frequencies. So it is best to tune in some kind of a sig and tune the condenser till the "R" meter reads highest. The 5 meter band will be in the exact spot the ten meter band was as the 2nd harmonic of the high frequency oscillator is used. Numerous ways can be used to couple the antenna but a very simple one is to wind about 3 turns of push-back wire around the lead coming from the grid. The coil in the detector should be as large as possible so that little capacity is used. I had my Breting going on 5 in this manner inside of 10 minutes. (Most of this 10 minutes was taken by waiting for the iron to heat up—hi).

I am hoping that a few fellows down San Diego way will get on 5. I have been on 5 now about 2 years and have yet to work a station near or in San Diego. San Diego is the largest major city that is of good dx and possible to get into on 5 meters, from Los Angeles. I understand that the Helix Club is down that way so how about a few of you guy's betting on the band. If any of you guy's that are down in that direction and are hearing my sigs from the Baldwin Hills in Southwest L. A. I would like you to drop me a card at 5153 Hillcrest Drive, to try and arrange a sked. I think that there was a while back a few stations on down that way so fellows how about coming back on the 5 meter band and give yourself a few DX contacts with L. A. stations.

Incidently an easy way to change and put this new circuit in is to simply yank the present grid cap off and put another grid cap on which is connected to one side of your 5 meter coil condenser.

It seems as tho a ham just can't keep on the ground any more. Photo shows W 6 N G D, Tempe, Arizona, way up on the tower of W6-BUQ.

Maybe it was cool on the ground and he thought he would like to get a silght tan, who knows?

By G. Y.

Along about this time of the year we start thinking about Conventions and, while we haven't heard very much about one we are to have this year, we know that when the time comes, we will all be there with bells and everything. To us, the word "Convention" means anything from one end of the frequency between the ridiculous to the sublime (with a lot of hard work for someone) because anything can happen—and usually does—when a bunch of Radio Hams get together. It was ever thus.

As long as we started out on the subject on conventions, we thought perhaps you might be interested to head about the first Pacific Division Convention, which was held in Modesto, the 7th, 8th and 9th of November, 1924 and believe us it was some convention. Those Northern Boys really did their stuff, although they sure had a lot of help from the Hollywood bunch —W6ST and W6AFG will bear us out in that. There were about 150 present, 95% of which were active hams who could be heard on the air almost any night, so everybody was very anxious to meet the fellows he had QSO'd and see what they looked like—which made this convention outstanding from a personal interest standpoint. Everything from working "Aussies" to the rights and correct duties of an O. R. S. were cussed, discussed and taken apart and put together again more times than our dog has fleas. Frank Flowers, 6ST, now W6ST of Van Nuys, who was president of the Modesto Radio Club at that time, had originated a very novel idea which sure created a sensation at the banquet. He had taken the grids and plates from burned-out transmitting tubes sent in by hams all over the district and melted them all up into a trophy in the form of the "Wouff-Hong." The original value of the tubes that were used in making this "Monument to Deceased Transmitting Tubes" ran around $5000.00. A monument of that kind might not be a bad idea for some of our clubs to do now-a-days. A lot of us have burned-out or broken tubes for which we have fond memories and soft spots in our hearts for and would like to see them laid to rest with some sort of honors.—But to get back to the convention, 6BLB, later W6BLB, 6CJJ and 6ANB, later W6ANB sure showed the gang that they could sing "Where Does My Money Go" followed by a swell skit by the Modesto Club boys. The Southern California Radio Association was there was there in full force and donated the cups for the transmitting and receiving contests. The transmitting contest was won by 6CMD of Fresno with 6AO and 6AWT, our good friend W6AWT, Bartholomew Molinari runners-up. 6DL won the receiving contest with John Deeney, Jr., now W6AFG of Los Angeles —or should we say Hollywood?—second. Interesting talks on "Master-Oscillator Short-Wave Transmitters" by D. B. McGown, a short illustrated talk on superhets by Gerald M. Best and "Antenna Systems" by Gaston B. Asbe constituted the technical part of the meeting.

The fraternal part of Ham Radio was certainly brought out very strongly at the banquet when it was announced that the gang had all chipped in to build a transmitter for a crippled ham, Lester Picker, 6ZH who was there in his wheel-chair. We were very sorry to note some time ago that Lester, is now a silent key and his call has been re-issued—he sure was a swell fellow. The last day of the convention was spent in visiting the shacks of the local hams and seeing the sights and beauties (?) of "Sunny Stanislaus."

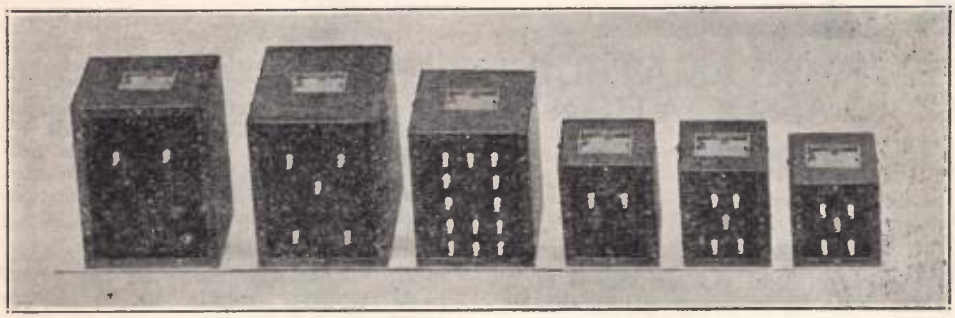
▲

FAR—I have kept a diary every since we were married.

NUY—Oh I see, you mean a scrap book.

SKAGGS SYMMETRICAL AMATEUR TRANSFORMERS

This Complete Line Cased And Compound Filled As Illustrated Below



Transmitting Plate Transformers

Cased and Compound Filled As Illustrated Above

A. C. Volts C. T.	M. A.	D. C. Volts	Price
750—1000—1400	250	300— 400— 500	$4.50
1400—1550—1950	250	500— 600— 750	7.00
1550—1700—2350	300	600— 750—1000	8.00
1700—2350—2950	350	750—1000—1250	14.00
1700—2350—2950	500	750—1000—1250	17.00
2350—2950—3500	300	1000—1250—1500	11.00
2350—3500—4700	350	1000—1500—2000	20.00
2350—3500—4700	500	1000—1500—2000	25.00
2350—3500—4700	750	1000—1500—2000	30.00
2350—4700—7000	500	1000—2000—3000	30.00
2350—4700—7000	750	1000—2000—3000	40.00

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WITH The CLUBS

THE TEMPE AMATEUR RADIO ASSOCIATION

Tempe, Arizona
By W6BUQ

Things have been pretty warm over in Arizona lately but this hasn't curtailed ham activities a bit. With the thermometer hitting around 110 degrees in the shade it sure is swell to sit down at the rig with a glass of suds and chew the rag with somebody.

W6MME who is the lifesaver at the Tempe Beach pool claims that he can work his rig without the filaments turned on. All he does is let the sun strike the tube and it is so hot that no filament current is needed. This is a hot story at any rate.

W6KIA (Killed In Action) is surveying for the State. Some of the boys are rumoring that it won't be long until Howard is hooked up with a ball and chain.

W6LKE (our activities mgr.) and W6NGG (Nine Gorgeous Girls) are up in the mountains at the boy scout camp. They have 75 meter rig on the air up there and have handled hundreds of messages back home to the parents of the boy scouts who are at the camp. They claimed in a recent QSO that the mosquitoes come as large as a nine foot wing spread and that they sound like airplanes doing power dives.

FLASH! ! Our old pal W6MWQ just got married. The ceremony took place back in Dixon, Ill., and from what we can gather the OM will bring his new YF down to Arizona in a few weeks. Lots of luck to you Dick.

The grapevine informs us that W6NUX finally worked a W9 last week. Keep right at it NUX and some day you will be up working some real DX with the rest of us fellows.

W6NGD who is the projectionist at W6BUQ's theatre is back in Illinois for the summer which leaves W6BUQ to do his own projection work. Better hurry back Lewy. Times-a-wastin'.

W6QC is still talking about his two week trip into old Mexico. From what we hear a good time was had by all. What about it Ernie?

Carl Jepsen, W6NLK is on 75 meter fone handling lots of traffic from Camp Jeronimo. He is also going to college in the summer session.

W6OGP (Old Grand Pappy) is still handling tfc with the C. C. C. Camps at 40 W. P. M. More power to you! W6NEL (Naughty Epileptic Lady) and OGP are working on a new 10 meter outfit. NEL can't see these new beam antennas. He says a hunk of clothesline wire is all anyone needs. It all depends upon what you are going to use it for, I say.

There is a certain M. D. here who is liable to have a midnight visit. He has an old fashioned diathermy machine that is liable to come on any time of the day or night. It sure wrecks the ham bands. Just think what a pair of pliers at the right place would do.

W6NKG is not on the air very much. He is having YL trouble. In fact the YL kept him from coming to the last club meeting. You don't know what you missed Holly. It looks like W6NVS is going to get on the air pretty soon. W6MSS went back to Indiana for a vaction.

W6OMD is doing plenty of good work on 40 CW. He has only been on the air for 6 months and it looks like we are going to have a real ham here. W6MAE is also going strong on 40 CW.

W6OJY is having lots of fun on 10 meters with low power. Both ops at W6OJY are working for the Water Users electric company. At the last meeting some tall stories about lightning striking the transmission lines were told.

A code contest was sent out on 80 meters and the object was to increase the speed of the participants. W6OMD and W6NLK did the best. Code lessons will soon be sent out on 160 meters for the benefit of newcomers to our hobby.

Plans for the coming Southwestern Division Convention are well under way and it looks like a real hamfest is in the making. W6BUQ is the chairman and is kept plenty busy making the plans and arangements. According to the lastest dope, there will be more attractions at this convention than there ever was before at any convention. There will be a fast moving program the like of which no one has ever seen before. An extensive entertainment line-up is planned for the XYL's who attend. The official announcement containing the date and cost will be forthcoming very shortly.

If any of Arizona hams have news, please forward it to W6BUQ, Box 245, Tempe, Arizona. We will be glad to hear from you.

Until next month, 73.

OUT OF THE AIR FROM ABOVE THE HARBOR

THE UNITED RADIO AMATEUR CLUB

By His Knibbs

Pete Bertelli, 6CLY using a quart measure to check voltages account his meter went west. Our friend Sandy, 6GST would make a good poker player. He wins the main raffle prize then ducks out without sweeping the floor.

Arch Eckdale, 6NDC is the proud possessor of a new Patterson PR-15 receiver. He's still having trouble with excitation and isn't on the air at the present writing. 6MDX, Elmer Hayes still trying new antennas. He's also going after photography in a big way with a little camera.

6ERT, Al Goodyear and 6IZT, Ed Hughes posted the roads for our field day. Since then the Auto Club has been constantly bothering them to sign a contract. Fred Eaton, 6KCX spent Decoration week end in the mountains and reports having a grand time. Jim Bailey is working most of the time now. We envy you your well equipped shop, Jim.

Bill Bradford, 6HCF sure did a swell job on the Club's transmitter and now that it's done, how's for building an umpteen tube super het receiver to go with it? Vendee Johnson, 6CWK has missed several meetings in a row now and we're wondering if it's a case of YL itis?

6MED, Al Godschmidt still off the air. Has even taken down his five meter antenna, altho we have a hunch the wind helped him. His Knibbs, 6IVG been off the air also due to the falling in of the floor of his shack from dry rot. Maybe now he'll quit carrying such a stock of radio parts in his shack.

Al Goodyear, 6ERT took a penny out of his pocket the other day and Abe Lincoln got up off it and stretched. Must have been there a long time. Al can be heard most any time now on 20 Meters since the Ten meter band has gone dead in Pedro.

Every club member has been working overtime the past couple weeks preparing for the annual field day and your correspondent being right in the middle of it has to cut this short for this time. But we'll make up for it we hope in the next issue.

Special arrangements are being made with Old Doc Hayes of MDX fame for such ham remedies for ill health. They're sure good judging by a hic-cough remedy given to the writer by him recently. When completed we'll pass them on to you in a future issue.

73 for now, we're heading for the field day.

Los Angeles Radio Club

By Bill Parker, W6KSY

The boys sure turned out for the Field Day June 19-20. Our portable location was Elysian Park in Los Angeles, where mosquitos grow bigger than hosses and DX condx are fb. There were five rigs on the air continuously from 4 P. M. Saturday to 7:00 P. M. Sunday Nite. We had one 160 meter fone, 15 watts input wid N. C. 100X receiver, 75 meter fone wid 15 watts input es S. S. receiver, two 40 meter rigs(one rig also worked 20 meters) one at 18 watts and the other had a maximum power of 1KW wid an N. C. 101X receiver, and a 5 meter rig wid 1 watt input es 5 meter receivers. The 160 meter fone rig N. C. 100X receiver es 75 meter worked from motor generator. The 75 meter fone and 5 meter fone worked off of 6v storage battery and the forty and 20 meter rigs es receiver worked on regular 110 v line. By the way all the rigs were really portable.

The total score was 907 points. (The ops were W3OSC, W6HDR, W6JLT, W6OJL, W6OOU, W6GDS, W6ORE, W6ONE, W6LPR, W6MQM, W6IAH, W6GXM, and W6KSY. Needless to say an fb. time was had by all es we have some good motion pictures of the activities. The best DX was VP1NR es VK-3WW. The call used was W6KX.

The new Sargeant of Arms, Matt. Murray, W6OJL is doing very fb in keeping order in the meetings.

From the way Ruby Thompson, W6OJC has been cleaning upon the raffles, it won't be long before she will really be on the air.

We heard that W6JFM got to fooling around with his V8 es now he has 3 speeds in reverse es one forward, hi!

Did u know there was a town by the name of "HAM" in Calif., yea one of the places wid abt 4 houses.

Al Troup, W6GDS reports the YL situation is very good this year.

Glen Weaver from Hadley Transformers was up to one of the meetings es gave some very FB. dope on inverse feedback es its application to ham radio.

Stan Hyde, W6IAH just got his Class "A" wonder if this will bring about another portable rig?

Johnie Heinerman, W6CZU our meetings and papers chairman is back east, es reports California clubs far superior to Eastern ones.

The Glendale Club was our guest, June 2 at which time Mr. Dean Smith of the Telephone Co. gave a very interesting talk and showed Sound Movies. We hope to see es fellows again.

Don't forget we meet every Thursday now in the Elks Temple, Los Angeles.

SAN JOAQUIN VALLEY

What a time! What fun! All you hams that missed the second annual 5 meter field day sponsored by the San Joaquin Valley Radio Club really missed a good time and beautiful scenery among the tall pines at Bass Lake, Saturday and Sunday, June 19 and 20. In order to not miss a good time don't forget to attend the 3rd annual 5 meter field day to be held next year at approximately the same time. The time and place will be announced on the pages of this magazine far enough in advance so that you may make your plans accordingly.

The field day this year was a combination of a 5 meter field day picnic and the last meeting of the San Joaquin Valley Radio Club. This combine was the result of the fact that summer is here in Fresno along with its steam, qrm, lack of ambition and the resultant low level in ham activities.

A special issue of Skip the club pamphlet will appear before the next meeting and it is probable that a special meeting will be held just prior to the big convention in the Stockton on September 4-5-6. The next meeting date will also appear in this magazine.

Everyone was requested to bring his own food, but the club furnished the beer and soda pop. From the way the fellows stood around the beer boxes one may reach the conclusion that beer is the ham's drink instead of soda pop.

The Stockton Club was notified that an attempt would be made to communicate with Stockton on 56 mc. but from all available information there was not a single contact. However, W6JPU was able to contact W6LOO, W6NHY, W6GCF, and W6NTP in Fresno which is approximately 35 miles air-line from Bass Lake. All reports were R9 and three messages were handled.

Saturday several of the hams rode around the lake trying to work one another. Those heard most often were W6KPW, W6JCB, W6JPU, W6MYP and W6BLU. Others instead of working 56 mc. were at the resort at the falls where they enjoyed themselves dancing, skating, or drinking beer. Still others rented boats and rode out on the crystal clear moonlight covered waters of Bass Lake to look at the stars and pines or to fish for those elusive Bass which are numerous in the lake.

Practically all the people present arrived by 11 o'clock Sunday morning. The total attendance was approximately 55 persons, although only 25 names were on the register.

Most of Sunday morning was spent working 56 mc. portable mobile, swimming, fishing, playing ball and cards. It was noticed that the XYL's were doing the card playing and that the OM's were acting very much like monkeys when trying to climb the pines in order to increase the heighth of their antennas.

The first attempt at the hidden transmitter hunt was a failure for none could hear the signal. It was later discovered that the filament of the 31 tube in the hidden transmitter had seen better days. W6HXA loaned his extra transceiver and at 2:10 P. M. the hunt was on. When 2:20 P. M. rolled around, W6JCB and W6MYP crashed through the bushes and located the rig. It seems that during the course of the hunt, W6JPU lost his front car license plate and Mr. Johnny Law gave him a remembrance of the picnic in the form of a ticket to appear before the judge.

Although W6JCB and W6MYP simultaniously discovered the transmitter, W6JPU received the prize for he was driving W6JCB and W6MYP so the three of them flipped a coin and W6JPU won the 200 ohm single button Universal mike and to top that W6JPU also won the 8 ft. telescope antenna for the DX contest. W6MGN and W6BLU tried hard to win the contest but didn't quite do it.

All the entries in the DX contest were stationed at one point and the judges' car traveled. During the course of 1.5 miles the judges car stopped several times and attempted to work each contestant in turn at the same stopping point. Those stations that weren't heard three times were eliminated. In that manner the winner was selected.

After more 56 mc. work, swimming, card and ball playing, and sleeping the happy crowd started to break up and go home. With the repetition that you do not fail to attend the 3rd annual 56 mc. field day picnic next year the San Joaquin Valley Radio of Fresno invites you to attend all its meetings when it starts again in the fall. Speakers for the fall semester have been arranged for, and include Charlie Perrine, W6CUH of L. A., Frank Jones, W6AJF of Berkeley, and Carl Schneider, W6SF of Stockton.

▼

Orange County Amateur Radio Club

By W6LQX

Visitors at our regular meeting May 24th included W6OVC, W6BKY, and Mr. W. H. Caldwell. BKY very graciously gave an advanced release on the doing of the last ARRL board meeting. Mr. Carl Pearson, W6BGH provided the feature attraction with a technical description accompanied bv a demonstration of his PR-15.

June 7th marked a milestone in our clubs history. At this meeting the attendance skyrocketed to a new high far surpassing any previous meeting ever held. We definitely established the merits of a gigantic DX Roundup. All who attended have firmly resolved that these DX Roundups have a place in our club life and await anxiouslv the event of the next one. Herb Decker did an excellent job as toastmaster and kept the ball rolling admirably well. CUH, and CXW along with many others present made the

meeting one that will remain long in the memories of the most rabbid DX Hounds. Antennas, transmitters, operating procedure, and everything that goes into the making of real DX was thoroughly hashed over and exposed. Congratulations on the success of this venture and may we have many such pleasant roundup from time to time in the future.

Our regular meetings in July fall on the 5th and 19th, at eight P. M., YMCA, Santa Ana. Come one, come all.

We want to take this opportunity to thank everyone who worked so untiringly in making our field day outing up in the hills back of Orange a success. The job done by the antenna crew was excellent and those contributing their equipment showed the right spirit. Special mention should be made of W6IBN who was principally responsible for the construction and operation of the FB power supply, that ground away the entire twenty seven hours without a single mishap furnishing those important little watts. The event was accompanied by excellent weather and a barrel of fun for all who took part, not to mention the moths that got into everything, including the neutralizing condensers, coffee and what not. Those who were not present certainly missed a lot.

Club Gossip, Highlights and Personalities

A couple of our lads have discovered to their dismay that there are somethings that one should not do. NSA reports that it is bad practice to lay a book on the key and then go answer the phone, as is evidenced by the way his T200 got down and couldn't get up. LYM must have had his HRO setting on the key from the looks of the screen door affect on his 250th plate after tuning the plate with umpty-ump gillion volts on it.

BXI got absent minded and tried to draw an arc off his 250th's using the back of his hand. We suggest a pencil as being more appropriate for this sort of test as you don't have to wrap it up in bandages afterwards.

MXL is going to take in a little Mexican atmosphere on his vacation. He is the proud owner of one of these by push or push slam jobs that is popular now.

LHN is planning an increase in power.

BVX has been looking sideways at BAM's high voltage transformer for some time and finally decided to go down and get one for himself.

LYM visited the Bell Club and nearly broke up the raffle he got so many of the prizes. Then Papa Faey vists us and retaliates—what next.

▼

THE BELL CLUB

By E. A. Wallace, W6LAK

Seems as tho there is never a dull moment for members of the Bell Club, with picnics, fishing trips, swimming, bowling, and roller skating, besides visiting the other clubs we are all kept pretty busy.

ZL2FE was a recent visitor to the club and was amazed at the large attendance at one club he says no wonder the W6's have lots of QRM. He was visiting with W6KMO and after listening over the bands here, wonders how a ZL signal can ever be brought through all the QRM from so many signals.

W9GMM one of our members who came out here from Iowa last winter has just received his W6 call. It is now W6OTJ and he will be heard on the air on 40 CW.

Ray Gudie gave the club a splendid demonstration and talk on the new Breting 14 Receiver and many hints on how to get the most out of your present receiver which was all much appreciated.

We had a nice large delegation of visitors from the Orange County Radio Club, about 10 in all visited and their President, W6LYM made the most of the visit, walking off with five (5) prizes from the raffle including the first prize. Says he was getting even with the Bell Club for what they did to them the last time Bell visited Santa Ana. Well just to make things interesting and all even about 11 or 12 members of Bell and several of their XYL's again visited Santa Ana and walked off with most of their prizes. W6LAK took first choice, EJZ collected 2 or 3 times, LIZ collected 3 times and several others once each and everybody was satisfied. A very good turn out was had and W6CUH gave a swell talk on final amplifiers.

Another good man gone wrong: On June 1, 1937, W6LWB plunged off the deep end and got married, just couldn't resist the charms of a very pretty young lady.

W5FID was a visitor to the Club and I gues about half the Club has worked him at one time or another.

Don Draper, W6GXM, the SCM of this section gave us some very interesting dope on the ARRL and also the high lights on the coming Field Day of June 19 and 20. He urged all the fellows to get a portable set going and get out and work in the field day contest. A group of fellows are going out, probably to Big Bear Lake, and put a club station on the air. Here's luck to you fellows.

W6EJZ and LAK with their XYL's made a trip to Crystal Lake at the head of San Gabriel Canyon to make plans for the big Bell Club outing to be held July 3, 4 and 5.

The Bell Club is making arrangements to have several pullman cars to go to Tempe, Ariz. to the Convention, the cars to be used for sleeping accomodations while there, and if we get enough fares we can get a very attractive rate. Get in touch with the Club for particulars.

W6BWW, after several years of rebuilding and as much stalling as possible, is finally on the air with a pair of 35T's on 20 C. W. and says this radio game is sure interesting when you get into it.

W6MQS has been appointed assistant to the SCM. He is a good man for the job as Andy is a hard worker as well as a big eater.

W6EJZ sold his 5 Meter transceiver and now is lost without one so will have to build another one, but we wonder with all his time and money going into moving pictures.

It seems as tho W6MVL is the bright boy of the club as he has won the last two contests on scrambled words and questions and answers. Maybe the rest of us had better study our radio.

After building a swell studio on the rear of his house for his radio, W6NPQ, the big swede, is now moving his radio back to the den on the front of the house. Some fellows are never satisfied. He has also taken up 5 Meters and wonders why he can't get as much DX on 5 with his transceiver as he does on 10 with a pair of 801's.

W7CHK has finally settled down at Bellflower, out with the hicks and cows but he has a lot 600 feet long on which to put up antennas. Oh boy are some fellows lucky.

W6CAM was the lucky fellow who won the 35T on the raffle the other week. How does he get that way?

W6HCF brings a visitor with him from San Pedro and has to show off by winning first prize.

Dorothy Williams, the good looking girl, who always used to win 2 or 3 times every meeting night seems to have lost her rabbits foot or elese she isn't living right any more.

Can anyone guess who the pretty girl is who eats 4 or 5 doughnuts every meeting night that she bums from every one else? In case you don't want your doughnut you will see her standing near the table waiting for handouts.

A few of the fellows visited the URAC at San Pedro. Ask EJZ and HDV about the motion pictures they showed there and why can't we have some like them at the Bell Club?

W6NQD has been having lots of fun on 5 meters lately and he and his charming XYL can be found driving around on top of all the high mountains in So. Calif. working 5 meter DX. He has his XYL call CQ so he can get lots of answers.

W6ASZ was found at Crystal Lake with his 5 meter rig. Ask him about his bed for his over night stay there. They really believe in roughing it when they go out camping, anyway they did when they found there were no cabins for rent up there.

Last but not least don't forget the Ladies. We have been having a mighty nice turnout for "500" lately with different ones "luckily" (or should we say scientifically) walking off with the prizes.

We thought Ruby (APL's XYL) was going to need thawing out after her trip to San Francisco but instead she had the sunshine with her and we needed the thawing out down here. She reported a lovely time—better check up on her Roy.

Coralee, XYL of III has been on the sick list but is improving—Hazel, LAK's XYL holding her jaw minus some teeth, she says the dentist did it.

We have had some new faces and some of the old ones back and it sure seems good to have them all. Lets see you all come up and play some cards and have lots of fun while the OM takes in the speeches and what have you downstairs.

NAL, Motor Cop—Hey you, didn't you hear me say "pull over?"

IKG—Why I thought you said "Good afternoon Senator."

NAL—It certainly is a warm day, isn't it, Senator?

LYP—There's the whole theory in a nutshell.

HEE—Queer how well you retain those things in your head.

HVZ—Come on. I'll show you how to milk a cow.

ITH—(from the big city). Perhaps I'd better start on a calf.

GLENDALE

NEWS FROM THE RED AND WHITE
By Heck, W6KBB

The Glendale club did its part in demonstrating its prepardness in time of emergency or disaster when the bunch participated in the ARRL June Field Day. Besides having a lot of fun, the boys ran up a decent score using the call W6NOI-6 on six bands. They were located on San Raphael lookout mountain, which is situated between La Canada and Flintridge.

With the permission of the county fire department, the equipment was located beside the fire lookout. The genial fire lookout ranger number "73," Mr. Knoph, is now an honorary club member.

At the June 23 meeting of the club, Murray Bolen, W6ABR showed some dandy 8 mm. movies which he took of the gang during the contest. His brother, W6UP, is shown prancing back and forth between the ten meter phone transmitter and receiver, which were about 25 feet apart. W6KQ's legs are shown hanging over the lookout platform 30 feet above, where he operated the forty meter transmitter. A close up of the "73" badge of the ranger and many other fine shots were shown, including a group picture of the whole outfit.

Those who took active part in the Field Day were: W6KQ, W6DSP, W6GFK, W6FT, W6 HCN, W6UP, W6ABR, W6NCS, W6JLR and XYL, Ranger "73" (he asks, "What is that dashboard thing with the knobs on it?") W6KBB, Temple Larrabee.

At the same June 23rd meetin, Mr. L. A. Maiers was kind enough to bring some color motion pictures of Yosemite and the Canadian Rockies. This event really topped off a splendid meeting.

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FRATERNITY SIGMA DELTA CHI RADIO

Pres., W6GIG - Vice. Pres., W6JWA
Sec., W6GRH - Treas., W6DUX

In response to several requests we will endeavor to give a short resume or history of the Sigma Delta Chi Radio Fraternity.

The fraternity was founded April 19, 1934 by the following charter members: W6ETJ, W6GKC, W6JGL, W6HEW, W6TH, and W6-LN. The object in view for organizing a new radio fraternity was to create good fellowship among amateurs as well as to provide a time and place to discuss amateur radio and its everyday problems that arise.

The meetings are held on the first and third Thursdays of each month in rotation at the homes of Fraternity members. Due to having no meeting place of their own the Fraternity has necessarily had to limit its membership to twenty. Of these about fourteen are in active attendance.

Election of officers is held semi-annually; the present officers being President Ev. Bell, W6GIG, Vice President Kenneth Hoorn, W6JWA, Secretary Vernon Keays, W6GRH, Treasurer Vearn Warne, W6DUX.

The members are representative from all walks of life but the common band of amateur radio has held all together so closely that of the original six charter members, five are still active, after over three years meeting together. The various tastes run from low power 160 'phone, to high power twenty meter dx. Every band down to five meters has a Sigma Delta Chi representative.

The members usually turn out to conventions en-mass, chartering a private room and appearing together. The A. R. R. L. and many of its policies are ardently supported by the Sigma Delta Chi.

Spot frequency operation on the eighty meter band with low power oscillators is practiced and many enjoyable round tables are had; thus alleviating needless QRM for local contacts.

In closing, we might say that each and every member of the Sigma Delta Chi Radio Fraternity is ready and willing to cooperate in any plan or scheme to provide more services from or enjoyment to amateur radio and amateur radio operators.

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Stockton Amateur Radio Club

W6BBC, Manager, W6NDJ, Asst. Manager, W6DTJ, W6IKG, Lon Hildebrand, Directors, re-elected officers of the Stockton Amateur Radio Club. W6IKG Convention Chairman. W6EXH, W6IJZ and W6NGT on five meter committee to sponsor Field Day covering San Joaquin Valley from San Jose to Los Angeles, August 15th. W6EXH, W6HIP, W6NGT got up 5,000 feet in the High Sierras and worked plenty on ARRL Field Day. W6IJZ, W6FYK and W6NGT worked portable from Dad's Point in Stockton on five, twenty and forty meters on the Field Day.

W6DTJ and W6BEW got rigs going on 2½ meters. W6BBC, W6SF, W6BEW, W6NOU, W6IKG building five meter rigs for Conventon.

W6OAV joined the National Guard and W6JIN is giving him a good workout. W6EDW and W6OAZ arranging programs for Amateurs over KWG and KGDM. W6HLJ visited the SARC from Berkeley. W6KGO now on freighter in Alaska and will be on with portable soon. Harry Austin took Ex and wating for ticket. W6BXB recovered from broken jaw received in Auto Accident. W7CZU just dropped in off Cornelia from Seattle at W6IKG's and going to the shack to work the rig.
C. U. AT CONVENTION SEPTEMBER 4th, 5th and 6th.

VALLEY RADIO SOCIETY

President, Rudy Jepsen, W6KEI
Vice President, Jack Gardiner, W6CKR
Sec. Treas., Bob Nagle, W6CAH

We meet every Friday Nite, rotating our meetings to different members homes. We are always glad to have visitors so drop out and let us make you feel at home. Call W6KEI No. Hollywod 1717 for next meeting place.

Well fellows, just a few of the events engaged in by the VRS, was a field day outing. Leaving Saturday evening the gang started for Iron Mountain which is some 6300 ? elevation. We took plenty of gear in including a gas engine driven 110 AC generator. As it was dark when we got there. The light plant was set up first thing, some 200' cord layed out and the top of the mountain flooded with light. Camp was then established and the rigs set up. The FB7 was set in place and we started going over the bands, it was then about 2 A. M. Sunday morning. Well as this is a true account of the trip will have to say that signals were coming in but not like they should or were expected to. possible due to Iron in the mountain? Hi. Next as we left in much haste we did not test out the ant but took a roll of wire along. Cutting same and putting up ant when we got there. Another hour was then used up trying to get the ant to take it but with very poor results. Being pretty well all in, and sleepy by then, we gave it up for the nite, in fact when checking up found two thirds of the gang had all ready turned in and were asleep. We had plenty of blankets but don't let anyone tell you it don't get cold in Iron Mountain.

Next morning we found the ant which was put up for 160 was two pieces of 66' wire, one for ant and the other counter poise, tied to the bench marker, the other end to a pole we brought along when we called this state of affairs to the attention of the fellows who had charge of putting of the ant they said well we just got too close to the top, and there was nothing else to tie to the balance of the ant wire was still on the real. Well so much for that, can only say, that not enough preparation and two much haste was the cause of our unsuccessful lower frequency work.

56mc however was FB and no trouble was had on that band. The dead spot effect noticed on the lower frequency was not present at all and FB contacts were made.

Visibility in the early mornnig hours before the heat wave sets in is very good, we could look over into the Mohave Desert to the North, and over half of Southern Calif. to the South, L. A. County anyhow, Hi. The contrasts between the cool nite air and the burning down sun the following morning was very noticeable and with no trees or shade we were soon on our way 2 miles down the mountain to Quail Springs where we spent some 5 hours drinking cool spring water and eating the balance of our food stuffs. I did forget to mention that breakfast was had on top of the mountain one of the boys bringing an electric perculator along in which we made some the best coffee anyone ever had. The gas engine generator supplying the power without any trouble at all, guess we will get a complete electric kitchen together for the next trip as fires are not permitted by the U| S. Rangers except in specified camp grounds. We even had to get a permit for the gas engine which has to have a spark arrester type muffler. Well it was a great experience and much was learned from which we will profit on our next venture which we are planning to make to Mt. Gleason in the near fture.

And now back home, we have had an election of officers for the next year as follows, Rudy Sepsen, W6KEI will be president for another year. Jack Cardiner, W6CKR is Vice President, and Bob Nagle, W6CAH is Sec.-Treasurer. So wishing yours and our magazine, The Radio Amateur News the best of continued luck and hoping to meet some of you fellows soon. will sign off for this time.

▼

BELL FIELD DAY

Some of the boys at The Bell Radio Club decided to make the Field Day Contest to take place at "Big Bear Lake." But on the last day we had sad news that the locations we were to have was occupied by other persons. So we decided to run to the top of Mt. Baldy. We finally started Saturday morning around 10 A. M., and started towards Mt. Baldy arriving at Ice House Canyon we were informed that the road to the top was closed due to land slides, so around we turned and decided to go to Crystal Lake. We arrived at Crystal about 2:45 P. M.

W6MQS W6HEW W6GHU

That afternoon quite a lot of time lost looking for a location, finally we spotted what we thought was a good place for the rig and to pitch our tent. After having a time to get HEW's car thru the sand and gravel we manager to get the power plant to where our tent was to be located. We set up the rig, and worked a few minutes with our receiver, we had the whole station set up in very little time.

For our antenna we were quite undecided from what tree to tree's we would place our flat top. Yours truly had to be the monkey, squirm up the pine tree. We had a nice antenna layout about 60' high.

After all the setting up of instruments and antenna's we proceeded to listen over the band at that hour of the day.

First of all I will give you a brief layout of HEW's portable rig. 6L6G xtal oscillator unity coupled to a RK 20, and link coupled to 150T in the final. The rig is housed in a metal cabinet about 21"x15"x13" with two handles, one on each side for moving the rig.

The power was taken from a 900 watt 110 volt A. C. generator attached to HEW's car. He also had 2 100 watt lamp bulbs and a electric heater unit to stabilize the load.

HEW's transmitters is very neatly constructed, very rigged, necessary for portable work, and only weighing around 200 lbs. The cabinet holds the complete transmitter including the High Voltage transformer, chokes, condensers, four 866 rectifier tubes and all the other units that makes the transmitter complete.

First we tried 40 meter, but had very little luck, so to 80 meters we went and had a number of QSO's. 80 meter was run all night and finally around 6:00 A. M. we put the rig down

W6NAT at the controls

on 20 meters and worked ZU6V with a RST 5-7-9x and right after a FB8AD also with a RST 5-5-9x. That sure is the berries of a location for receiving sigs, but our luck was against us for transmitting we were right in a pocket so our chances were slim for many QSO's.

There were four of us fellows working different shifts all thru the night and we managed to get close to 2 hours sleep anyway.

There was one more little trouble with our transmission and that all summed up to the little relay HEW had in his rig. Mort found out afterwards that the relay pole got magnatized and it would not spring back, naturally we had the carrier on most of the time, hi.

After having a very FB breakfast with the Lady Ranger and later packed up our equipment we went on our way towards home sweet home, but all in all the fellows had a grand time.

The party was made up of W6HEW, Mort Miller; W6MQS, Andy Abraham; W6GHU, Ray Harmon and W6NAT, gnats to you Driml.

We are waiting now for the next field day and then we will be able to add more QSO's to our list, and to make sure of our next location we will scout around ahead of time so there won't be a minute lost. So this ends the little story and a FB good time.

The Breting shown in photograph, completely battery operated was loaned to the Bell Radio Club by the Breting Radio Manufacturing Co.

▼

THE OLD OIL DERRICK

By His Knibbs

Picture in your mind a beautiful California Saturday in June, about noontime with the sunshine beaming down out of an absolutely clear sky. In the center of a small valley, like a forgotten sentinel, stands a tall, lonely, weather-beaten oil derrick, it's guys swinging gently in the summer breeze.

Where once there sounded the shouts of laboring men, the clanking of machinery, the roar of steam and the noisy rumble of trucks as men burrowed in the earth for her hidden treasure, there is now a dead silence except for now and then the sound of a calf lowing for it's mother, or a meadowlark calling it's mate.

Suddenly from up the little valley comes a procession of cars and trailers bearing a lot of ham gear and a bunch of happy hams, who stop as if by signal alongside the old derrick, which looks on from it's 135 foot height as all manner of equipment is moved from the cars into the drill shed at it's base.

The hams are heard to remark on the swell location, vertical antennas, close proximaty to water, unnecessary tents and the roomy interior of the drill house. First the Commissary department is set up with a large folding table, a bench for the two portable gasoline stoves, a portable ice box for the Eastside and San Pedro Pop and various tubs, pails and dishes. Next a ham is sent to a nearby farmhouse for water while another is dispatched to town to get ice.

While this is being done, another group sets up a large table with a bench alongside it

W6HCF and W6IVG (his Knibbs)

on which is placed the two transmitters, and RME-69 and a Sky Buddy receiver, modulator,

key and microphone, while another member of the group climbs the old tower to it's very top, carrying with him a 132 foot antenna which he fastens there, making a vertical antenna, straight up the center of the tower.

By the time four o'clock comes around, everything is in readiness for the big contest, an operator is assigned, and at 4:00 o'clock the first CQ emanates from the bottom of the old tower, and the United Amateur's Club Portable Field Day transmitter is on the air.

The old oil derrick, having seen men laboring at it's feet in the past, wonders at the smooth efficiency, the quickness and ease with which this station has been set up and stands with awe

Some of the Gang

as other stations from all over the United States are worked, one after the other, in this spot which only a few hours before was a picture of absolute desolation.

As darkness approaches, the base of the derrick is lighted up with four 25 watt globes whose power is supplied by a 350 watt gasoline driven generator which likewise supplies the 20 watt input to the CW transmitter containing a 6A6 crystal Oscillator and an 807 final amplifier, and to the two receivers as well as the 18 watts input to the 160 meter 'fone rig consisting of a 6A6 crystal oscillator, with a pair of 801's in parallel in the final, modulated by 46's class B, a 46 driver and a 56 speech.

The first disappointment came with the refusal of the 'fone transmitter to work, but it was finally taken to one of the ham's laboratory where it was made to do it's stuff. Next it was found that the big vertical antenna wasn't radiating properly on the higher frequencies, and after raising seven more different types of aerials, the contacts commenced to come in.

Ed Hughes, W6IZT of Hughes and Wehrman furnished the liquid refreshments which was dispensed by Al Goodyear, W6ERT, head of the Commissary Dept. The RME-69 was loaned for the occasion by W6MDX, Elmer Hayes. Bill Bradford, W6HCF was the official pole climber and antenna hanger upper.

The club owes everything to the splendid co-operation and earnest help of every member and, although bad luck held the early scoring down, the final windup was better than last year. No attempt was made to provide sleeping quarters as there was always enough fresh members on hand to take the place of any who wished to go home for a rest. Needless to say, there was few who deserted the ranks during the night to hit the hay, and those who did, found the excited condition of their minds too great to allow any sleep, and soon drifted back to be hard at it again.

All bands, including five meters, portable mobile were worked, with the scoring on each band tabulated for reference during future field days.

The club wishes to extend it's thanks to stations W6NWG of Oceanside, and W6JRW and W6EOP of San Diego for their direct co-operation which resulted in many contacts which otherwise would probably not have been made.

The final score showed a grand total of 951 points, consisting of 83 stations worked, 26 of them being portable, and summarized by districts as follows: W-1—1 Port.: W-3—1 Port.: W-4—1 Port.: W-6—52 Stat., 22 Port.: W-7—2 Stat., 1 Port.: W9—1 Stat..: VE-2 Stat.

The last contact was made at 6:58 P. M. Sunday with W6JEZ, the first one having been with W6GRT.

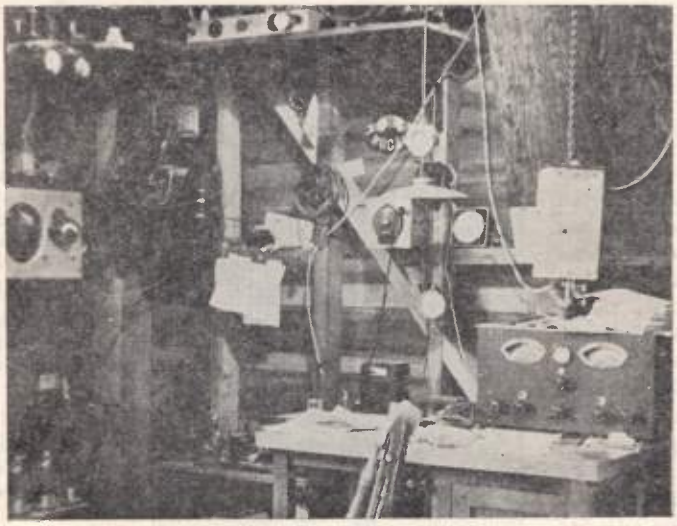
After signing clear, everyone packed up leaving the old derrick empty and forlorn, it's weatherbeaten boards seeming to be begging them to stay and not leave them to their solitude.

With a tooting of horns the carrivan was on it's way back to home, families and rest and another field day was written in the log with memories of a happy outing and another page added to Amateur history.

As the last car drives away carrying it's cargo of tired but happy hams, the old oil derrick proudly raises it's head to the setting sun and watches with sorrow as the car disappears up the valley, taking with it these boys who labored day and night bringing the entire world to it's feet. It is proud to have been the headquarters of the United Radio Amateurs Club for the duration of the grueling contest and as the sun slowly sets over the hills and shadows creep across the little valley, the old derrick settles back into oblivion taking with it fond memories of a happy crowd, music, talking and laughter, and the deep silence again settles over the valley as night falls.

AMATEUR RADIO STATION W6CAH

By Jack Gardiner, W6CKR



The call 6CAH has been in use by its present owner R. D. Nagle since before most of us pressed a key. Starting in the early 1920's it was used on the cw bands exclusively until 1932 Bob being a confirmed key squeezer he was much set against fone, until the 5 meter fone rage in the early 1930's. After building a 5 meter fone rig and getting on the air things began to change. After the 5 meter rig came a 160 meter fone, and after that it was 75 then 20 meter, and as the swl cards started to pile up in the desk the dust piled up on the key. Altho the key still reposes upon the operating desk it is only used now to get a report thru a badly QRMed channel.

To get on with the dope about the present station. The tube lineup is a 6L6 xtal oscilator drawing a Taylor T55 to 140 watts input as a class C amplifier modulated by a single 212D. In process of construction is a class B linear stage using a W. E. 251A which will be excited by the modulated T55. Unlike the most of us, 6CAH did not go on the air with a carbon mike. Starting in with the best at the time, Bob is still using a condenser microphone which station. The tube lineup is a 6L6 xtal oscillator ac operated speech. The receiver is a rebuilt PR 10 which we believe will be replaced shortly by one of more modern design. The antenna is a 75 meter doublet. W6CAH operates exclusively on the 75 meter band, but with the completion of the linear stage and a directional antenna, Bob will probably be heard on the higher frequencies.

Well we guess that will just about wind up this discourse on W6CAH. We will try and describe another VRS station next month.

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5 METER Activities

By W6OEF

Well here we are again fellows and is this 5 meter band getting hot? Stations up to 800-1200 miles are being heard. A series of transmissions and reception tests are being carried on to determine how the signals travel and so far the greatest distance results have been from England and believe it or not signals from the United States have been reported there quite consistently at the period of full moon. W2JCY is now conducting a series of 15 minute test transmissions on 58.15 megacycles every Saturday morning at 10:30 A. M., E. S. T., every Saturday evening at 11:30 P. M., E. S. T., every Sunday at 1 A. M., E. S. T. and at 9 A. M., E. S. T. Transmissions are on I. C. W. and telephoney and are conducted especially for Millandby at Pullheli, North Wales and a group of British listeners. Signals from G5BY and G6DH have been heard by W2JCY on Sunday morning and he is now trying to establish two way contact. I might mention at this time that the signals from W2JCY have been reported heard from a listener at Whitley Bay, England and his receiver was a 2 tube, 5 meter transceiver.

W7AQJ of Vancouver, Washington has been reported as heard here in a rapid fade by W6-OPK and W6NYW of Burbank, and on his Peaks was putting a 5-6 signal.

With the tubes in the field day transmitters hardly cold yet I have been unable to get much dope on the 5 meter situation with the exception of the Brubank Radio Club. They were situated on a hill back of Burbank and had a nice spot for 5 meters. Among the operators who were on duty were W6GJP, W6CMN, W6KQO, W6OPK and W6MZL. Mr. Snyder acted as cook and done a very nice job of it. The antenna used was a ½ wave rod which was swung from a 40 ft pole. The rig was a 76-42-42 transceiver and among some of the places worked was Long Beach, Costa Mesa, Huntington Beach, and Malibu with reports of q5r8. The lighting equipment to run the rigs was a 500 watt 110v. A. C. gas engine driven generator which was furnished through the courtesy of the Lighting Plant Sales Co. of Glendale and was a very nice looking job. Food supplies were furnished by the Bankee Market of Burbank and I believe by the looks of the log that the Burbank Club will be able to give a good account of themselves. We hope to have some reports in by the next issue of this magazine from the other clubs which took part in the field day activities.

The dope on getting your supers down to the 5 meter band by W6MLA who has been using this system on his Breting 12 is in Hints and Kinks Department of this issue so how about a few of you guy's getting on the band.

6A6 5 Meter Transmitter Receiver

(Continued from Page 13)

rear bumper, end-fed by a concentric feeder made up out of No. 22W Sterling "Silver-Sheath" ignition wire pulled thru No. 1303S Sterling shielded loom gave the best results, the loom being grounded at the transmitter and at several places along the line and also at the bumper.

Sterling wire and loom is inexpensive and can be secured from any Auto Lite Ignition service station. The Sterling Company also makes a high tension spark plug wire, No. 7H, that has the same metalized lacquer covering on it that materially cuts down QRM from the ignition. We have seen a couple of rigs that have been wired up with Sterling silver colored wire and they sure looked swell.

▼

This photograph illustrates the comparative sizes between Etched Foil Dry Electrolytic Capacitors and equivalent plain foil types. Cornell-Dubilier's line of Electrolytics include the type KR metal container and JR silver carboard container etched foil series in a complete capacity

range from four to sixteen microfarads, including the popular multiples, rated at 200 to 525 volts. Despite the new type condensers' extreme compactness, these small units are triply sealed, insuring protection from humiditv and abnormal temperatures. Furthermore, the excellent electrical characteristics of these compact condensers are on par with equivalent plain foil types. Power factor and leakage losses are negligible.

▼

A red light (110 volt variety) conspicuously mounted near or inside a transmitter and connected directly across the primary of a "lethal" transformer, may be used to call any ham's attention to the fact the soup is on and that he had better keep his mitts out of it.

By Bill Driml
W6NAT

Well fellows, guess who is on the front page for this month? That's right, you guessed it. None other than the S. E. R. A. Bell Radio Club President. What do you think of this good looking fellow?

Now to get a little personal with Charley's past experiences as an active radio amateur before we go into his rig. We will go back a few years and see what his accomplishments were.

Charley has been a ham for 9 years and has been in office 8 years, 10 months and mind you he missed only 2 meetings, which was no fault of his.

Charley held office of the A. R. R. C. (Amateurs Radio Research Club) for 3 consecutive terms as Treasurer and served under four different presidents. Late Everett Trout, W6FJ, B. E. Sandham, W6VO, K. V. R. Lansing, W6QX, Charles Nichols, W6ASM. On March 4, 1932 Charley was elected president of the S. E. R. A. or better known as the Bell Club, and has been in office since.

Now that's off my chest let's tear apart Charley's rig and see what makes it tick. First of all he has a rack and panel job 5'10"x24"x28" with a solid piece of panel in front and its crackled finish.

The base boards can be taken out from the back of the rack for repairs or remodeling.

The xtal is a 53 capacity coupled to 801 first buffer capacity coupled to 503 A, second buffer, link coupled to final of 303A.

He has separate power supplies for all stages except 2nd buffer and final.

Voltages ranging from 350 to 2000 volt on the plates. For xtal oscillator 350 volts and 600 for the 801. The power supplies consists of 2 mfd. 1000 volt condenser a 15 hen. 200 ma. choke and 2 mfd. 1000 volts out. High voltage supply is a choke input then 1 mfd. 3000 volt condenser and 15 hen choke with 2 mfds. 2000 volt condenser out.

All by pass condensers neatly arranged flat on the base board with all the common ground leads running to one ground lead. Charley explained the reason for that layout is to find the condenser that is any given trouble with less time to find.

He also has spare tubes for his complete rig in case any of the tubes go west during operation. Even a spare 211G for the final. He can quickly change this tube for the final stage by prying loose the leads that were soldered to the socket terminals. On these leads he has clips soldered.

The antenna system is a "Collins Coupled" matched impendance antenna coupling, with a flat top of 132', height about 40'. Also a counter poise which runs 20' high with the length of 132' for 160 meter fone work.

The final tank coil is ribbon wound 7" dia. with 9 turns of ¼" ribbon, tuned by a 100 mmfd. condenser.

His receiver is a P. R. 10, with an additional stage of R. F., with a "Miller Pre Selector." Charley tells me he wouldn't part with that receiver for love or money. Hi.

Charley put the rig on to demonstrate to me that it really works. Some how or the other he could not get it working and by looking around, found to his embarrassment an 866 gone west. Just think the poor little thing died of old age, after 5 years of hard watts. So we

replaced the old one and then the rig really fired up the R. F.

The layout of Charley's rig is very neat and is standing in the corner of a spare bedroom. I still say some fellows are lucky they can have their rigs in a spare room. hi.

EJZ has worked a number of countrys and has quite a large assortment of QSL Cards. Such as VS, J, VK, XU, VO, AC, and many, many others.

Say fellows I'm not kidding one bit but each and every one of you should at least see his famous collections of QSL's. By the way they are tacked all over his studio walls.

Charley is busy building another rig for 160 meters only. The tube line up is a 6L6 xtal link coupled to T-20 link coupled to pair of T-20's push pull final, with input of 90 watts.

Separate supply for all stages. Speech equipment is a double button Universal B. B. mike into a 57 pentode push pull 56 into push pull 46 class "B" modulators, with a seperate power supply.

To monitors his signals he has built a unit in a crackled finished metal cabinet. About 9"x 5"x4" with a 56 as a rectifier and O-1 millameter as described in the Radio Handbook.

Well fellows that tearing EJZ apart so what do you think of his rig? I hope Charley has many DX contacts with his transmissions and receives many more wonderful QSL's.

Next month we are going to tackle W6LYM, President of the Orange County Radio Club, after that we are going right down the line of All Club Prexy's.

▼

At the recent Radios Part Trade Show, held in Chicago, visitors witnessed a spectacular demonstration. A miniature of the "humidity test" used by Bruno Laboratories in the manufacture of "velotron" microphones was rigged up. The object was to prove that there is a microphone which would function perfectly under ad-

verse humidity conditons. A compressed air tank and a jar of heated water made up the "fog" generator, while a glass tank stored the moisture. A "velotron" microphone, which was hooked up to an amplifier, was inverted in the "soup." The clarity and fidelity of response, even under these abnormal conditions, proved conclusively the stability of static-velocity microphones.

Mutterings of an XYL

By V. MORGAN (XYL of W6NOF)

When it was suggested in the last issue that you Y. L.'s and X. Y. L.'s send in your pet peeves the results were astounding. If you women think you have problems, perhaps it may surprise you to know a few hams sent in their complaints also.

One young Y. L. writes in that her boy friend asked her to his home for dinner and when she arrived a, "Hi ya sugar!" came floating down from the roof top. Looking up she gasped. He was endeavoring to hold some wire, hammer down screw-eyes and get the pole in position to raise, all the while tettering back and forth on the slanted roof just managing to keep his balance.

Love is not only blind but brainless. At his suggestion to assist she felt she must show the good old help-mate spirit. (a ham doesn't need a helper—just a keeper).

As she climbed the ladder, a premonition of disaster was undoubtedly the reason for that clanking noise in her knees and that squeamish feeling in the pit of her stomach.

"Just hold these two guy wires, dear, while I lift the pole," said he oblivious to his girl friend's greenish palor.

How was she to know that a forty foot wood pole would suddenly go limp in the middle? She was still faithfully hanging on to the guy-wires as she sailed through the air, with no signs of ease.

Well my dear young lady, if that didn't cure you the next time antenna work is suggested aquire a tricky case of appendicitis and quickly but quietly collapse in a corner. Keep one eye on the labor so as to have an amazing recovery as soon as the work is completed.

But here is a ham's question. This W6 wrote: "I have been having a tough time getting a date with a certain young lady as she thoroughly dislikes hams. Finally I succeeded. We went to a show and afterwards we took a drive up into the hills. Stopping where we could see the lights of the entire city I was confronted wtih quite a problem. I looked at the young lady leaning back admiring the stars, and at the cars suspiciously quite all around us, and then down at my five meter rig neatly clamped on to the dash. I made up my mind. Now was the time to prove to her how interesting ham radio can be. I turned on the switch and started calling C. Q. Before the evening was over she turned out to be an ardent Ham enthusiast. Now if you had been in my place what would you have done?"—so you want me to answer that question? Well, W6, I would have done the same thing you did, only I would have told the truth about it!

P. S. Don't forget, this is a corner for pet peeves so send them in to Mutterings of an X. Y. L. in care of this magazine.

Ham Advertising Department

This department is maintained for the amateur, however commercial ads of same nature printed at double rate. Material not pertaining to radio accepted but placed separately. Rates, 20 words for 25c, additional words 3c each. Closing date 15th of month. This magazine does not guarantee quality of merchandise and used material should be so described. Send money and copy to W6CL, 1315 East 58th. Place, Los Angeles. We reserve the right to reject part or all of any ad. Money refunded if ad not accepted.

FOR SALE—Two pairs of 20 and 40 meter coils for FBXA or FB7. Band spread type—W6LIZ, 2053 West 65th Street, Los Angeles, Calif.

WANTED—Tenor Banjo or Tenor Guitar (broken head or cracked box OK.)

FOR SWAP — Westinghouse Watt Hour Meter and double Button Universal Microphone. Write W6NGQ 617 West 80th Street, Los Angeles.

SACRIFICE COMPLETE EQUIPMENT of late W6QF. Xmitters, Parts, Meters, Tubes, etc. All must go for cash. W6UP, 526 LaLoma Road, Glendale, Calif., Phone Douglas 4234.

FOR SALE—Pair 50T's, $16.00. W6LWB, 2985 Randolph Street, Huntington Park, Calif.

EXPERT STOVE REPAIR SHOP on wheels. Service at your home. Repairing and welding. Springs, catches, parts for all stoves. E. W. Spratt, 6917 Santa Fe Avenue, LAfayette 2809.

AMPLIFIER DESIGN

(Continued from Page 9)

(1) Cores of transformers may not be grounded.

(2) High gain tubes in input stages or grids on metal tubes may require shielding.

(3) There may be magnetic coupling between input and output transformers if cores are not at right angles.

(4) Grid leads may be unshielded or they may be too long.

(5) Condensers and resistors or wiring from the sockets to these parts may be coupling with parts due to capactive feedback. Shorten leads and move parts.

(6) Input connections to the microphone may require additional shielding.

(7) The tendency to oscillate may be greatly increased if any of the input transformers have high frequency peaks. These peaks may be greatly reduced by loading the secondaries of these input transformers with a fixed resistance of between a quarter and a half megohm. This reflects a definite reactance into the primary, leaving off the high frequency peaks.

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