The RADIO AMATEUR NEWS

Volume 1 SEPTEMBER, 1937 Number 6

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.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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A Ham's Dream of a Modern Transmitter

200 Watt Phone Rig. With Multi-Band Switch

By DON REED, W6LCL

Hi! OM. W6LCL back with an R9 report for you. That's a swell rig you have, even if it is a bit out of date . . . Hi! Hi!

Well, if you insist, I'll tell you what we are using here . . . But first, I want to say that this is the rig I've been planning for several months, and as far as I can make it, it's the answer to a Ham's dream. . . I started out with the idea of using the latest equipment and circuits, with the idea of making the rig as small as practical and at the same time **no crowding.**

First came the Oscillator and doubler-buffer. The 6L6 came out just at the right time, and after spending several months chasing bugs out of circuits we achieved stability. Then after a lot of fussing, and cussing we doped out and built the chassis, incorporating band switching, with two Xtals, covering 160, 75, 20 and 10 meters, with, strange to say, better efficiency at the high frequency end of the spectrum.

The four units of the rig are built on 10"x 12"x3" chassis (Hadley) and each is electrically complete in itself. In the case of the exciter unit, the pictures will show you that the power supply is incorporated, even to a separate filament transformer. Both plate and filament trans's have separate windings for indicator lights. This makes for simplicity and convenience in inter-chassis connections.

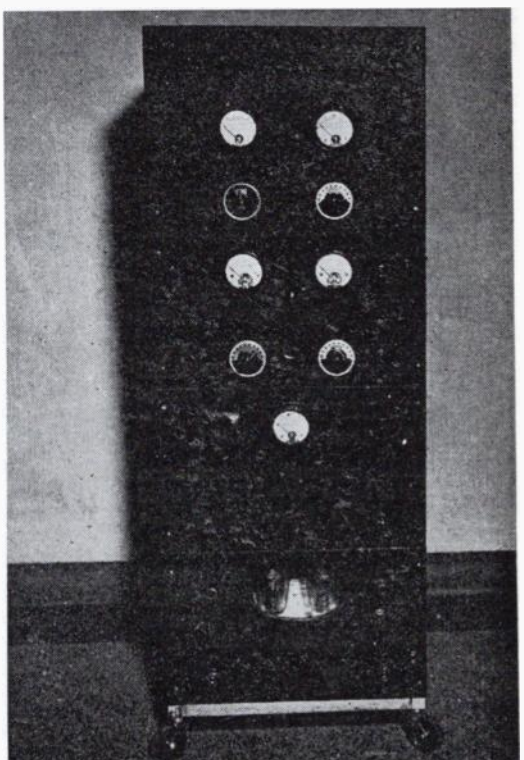
The band switching gag is simple enough. Four coil forms are used, with the prongs removed and machine screw holding the form in place on the chassis. Each coil is tapped once, and the tap is on the plate end of the coil. This allows the link coupling to remain in place at the proper setting when you change bands. No difficulty was encountered over this point except for one thing. The buffer coil band switch insisted in cooking unless the buffer was loaded. With a load, the frying of the switch insulating material ceased. The switches are from one of the early receiver band switches. Two sections are used. The switch is taken apart and mounted on strips of bakelite (See picture). The rotor of the switch is mounted on a bakelite rod, after some surgery to remove a bit of the metal where the two metal sections nearly meet. Take enough out for safe operation. I'd suggest separating the ends at least one eighth inch. The oscillator uses two of the forms, one for 160 and the other for 40 and 20. Doubling to 75 is accomplished on the buffer doubler. To work on 20, the oscillator is on 40, and the doubler puts out on 20. To drive on ten meters, the oscillator doubles from the 40 meter rock to 20, and the buffer doubles to ten driving the final on this frequency. A slight adjustment of the cathode tuning of the crystal stage will peak the output and reduce the RF Xtal current.

How does that sound to you, OM. I'll swtich over for questions. W6LCL by.

W6LCL back. What screen voltage do I use? and Plate Voltage? Well, old timer, thereby hangs a tale, or something. A 6L6 will take a lot of voltage, up to 750 volts, but the screen is very ticklish. My stunt was recommended by John Rhinehartz, at a lecture he gave at the R. C. A. Lab last year. Use an old Bradley ohm stat, and to get the operating range right either series or parallel a carbon fixed resistor. By proper adjustment the tube will reach a point where the operation is stable. Then you can measure the resistance and substitute a fixed resistor, or do as I do, leave the set-up as it is. For peak performance a little touching up now and then will be of assistance on the higher frequencies.

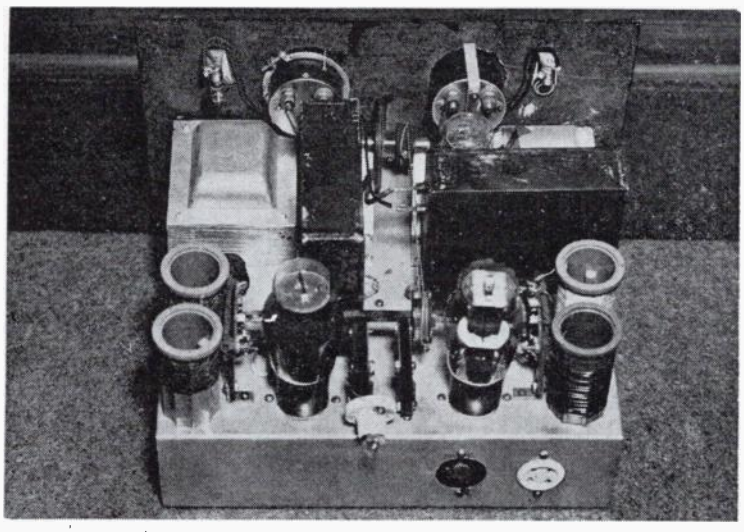
Now, hoping that section if off my chest, we'll go after the balance of the rig.

Starting at the bottom we come first to the high voltage power supply. Here we have another 10x12x3 chassis, with a 1000 volt power



Front view of Transmitter. The overal size is 14"x17"x32" including castors on bottom.

supply. The filament trans runs the 866 jr's and also the filament pilot light. Again a separate winding, well insulated for this duty. Ample filter action comes out of the 200 mill, 20 henry choke input and the 1500 volt 2 mfd. condenser. The plate trans is special wound, and capable of putting out some 500 mills without sweating. Again the special winding for pilot lights, and in this case a lead chases up to the final shelf to run a red light up there. The filament switch on the front of the panel is the key switch for the whole rig. Until this switch is closed, the primary to all the plate trans's is open. The H. V. plate trans can be switched off with its special switch, leaving the rest of the H. V. plate trans's hot, unless they too are switched off. You have no idea how conveniently this feature is unless you have used it.



Exciter Unit Showing Band Switch and Xtals

Next comes the modulator unit. Another chassis, same size. Here we have the modulation input and output trans's, a plate trans, a filament trans, a swinging and smoothing choke, two filter condensers, and the tubes. A 5Z3 is the rectifier, 2 6L6's in class AB as modulators. The transformers are all on top of the chassis, except the swinging choke which is hung underneath. Also, below the chassis is the bias battery, 22½ volts of it. Here we have a good gag, and a fool proof one. We all know that the screen voltage has certain requirements, such as extreme stability. We also must cut the screen voltage off, when the plate voltage is off. To accomplish this action, we get the screen voltage from the speech amp., which, running in class A, has good voltage regulation. A little relay whose contacts are in series with this B plus lead and the screens of the 6L6's is actuated by the B+ taken from the output of the modulator power supply. The relay winding is made for high voltage and is in series with a bleeder resistor to ground, and serves as a bleeder for the power supply. The actual value of this resistor will depend on the winding of the relay.

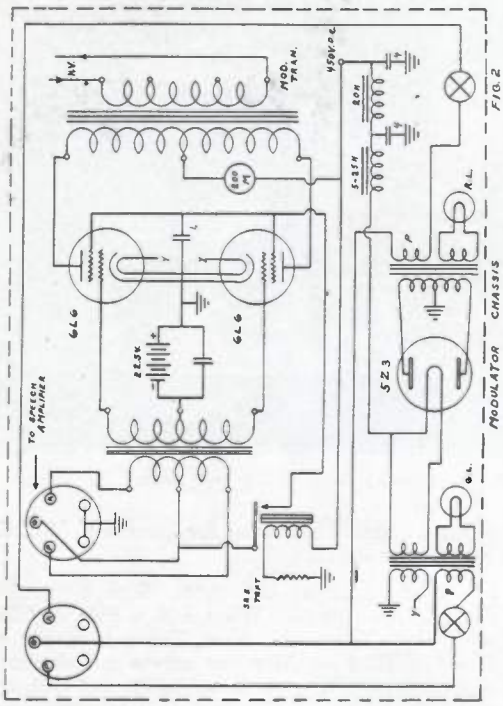
Again, we have the filament and plate primary switches on the chassis and a pilot light to match. Metering is done by a single O-200 mil meter on the panel. A cable from the speech amp. carries the plate voltage from the speech power supply to the modulator input trans and also to the screen relay. Two more wires in the cable carry this voltage back to the driver tubes, and another forms a common ground connection to the speech chassis. This cable plugs in to the back of the modulator chassis. Shall I stand by for questions? W6LCL by. Come in. . .

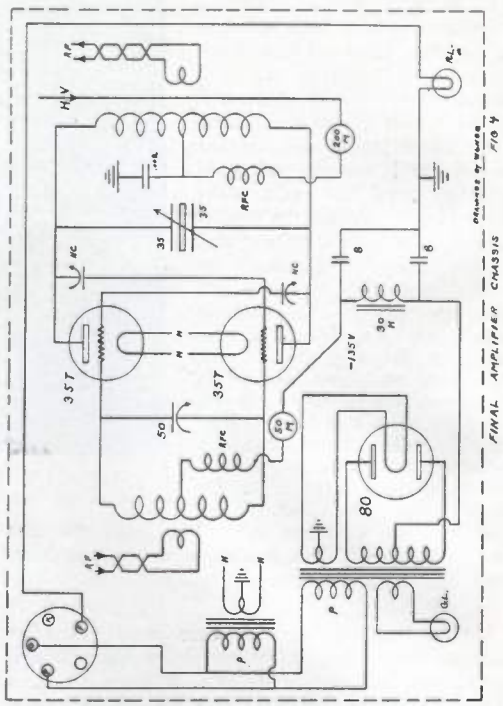
O. K., here we are again. Such a question. I'm really surprised. What will a pair of 6L6's modulate? Listen, my Fran, I'm a ham, not an ENGINEER . . . Operating curves and data say that, properly driven, these tubes will put out about 60 watts. Proceeding on this assumption, I figured I could only run 125 watts with full modulation. As a surprise, W6LFQ dropped in one evening with his new Triplett Modulation indicator. His gadget showed that I was modulating somewhere in the neighborhood of 140% and that was when I thought I was taking it easy. So we boosted the output to 150 watts and cut the gain down 50% and still seem to be doing pretty good. So much for the modulator.—Note +.

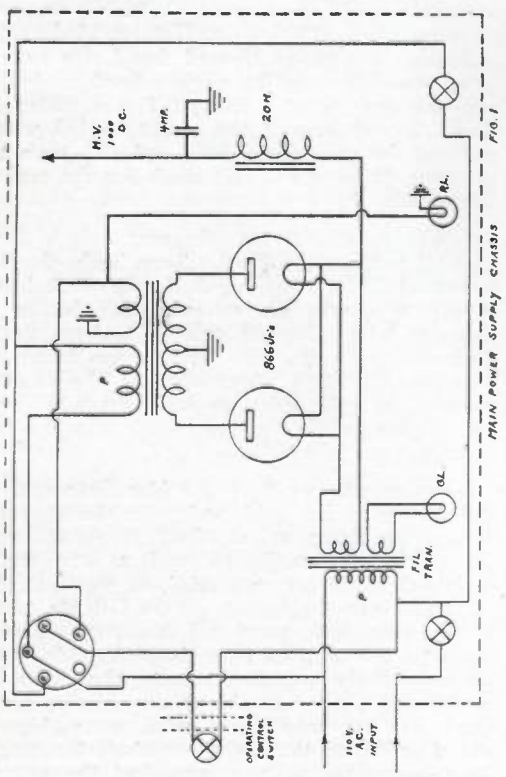
We started out with the next unit in line, so we'll jump to the Final. Same kinda chassis, a pair of 35T's in push-pull do the work here. In my estimation, the sweetest little bottles a ham can have. I could rave on and on about what they will do, but why bother bragging. You already know about them. The chassis contains the grid and plate tank, the tubes and the bias supply trans and rectifying tube and the filament trans above deck.

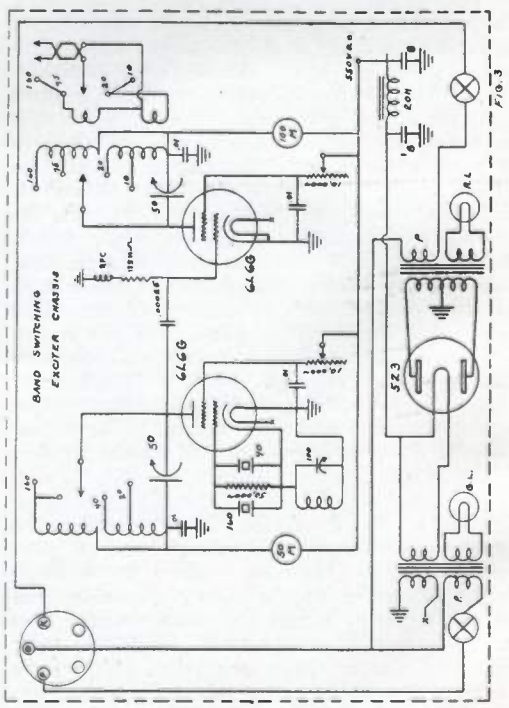
Underneath, we have the bias filter system and bleeder. The grid and plate tuning condensers are hung on stand-off insulators, and the neutralizing condensers and a little trick. 1" round plates are suspended on metal stand-off studs from the bottom of the GR pin jacks in the plate tank stand off insulators. These insulators are mounted from the under side, with the body of the insulator extending thru holes in the chassis. The movable plates of the neut. Cond. are cut from sheet metal, pear shaped, and mounted on the midget stand-off insulators. Once neutralization is accomplished the setting

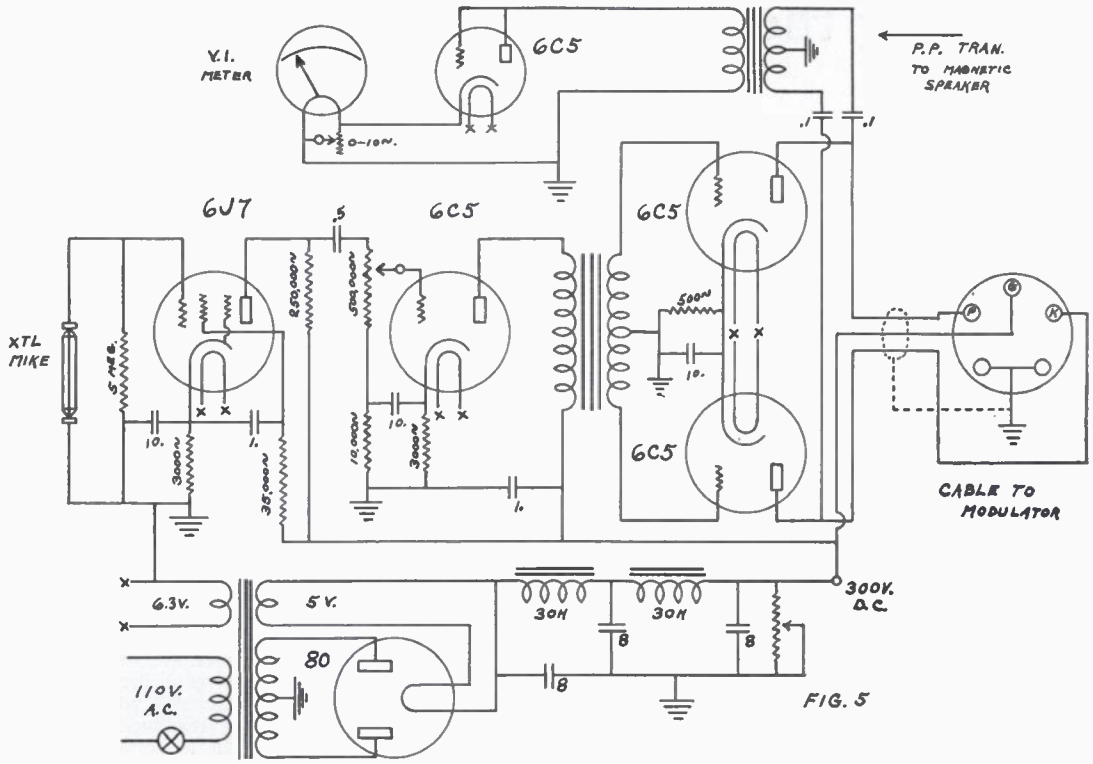
Complete Transmitter Diagrams











Circuit for Speech Amplifier and Volume Indicator

is not touched for all bands, if the tank coils are properly tapped. The rotor of the final tuning condenser is left floating free, giving better breakdown insulation. There we have it. The antenna is link coupled on all bands to a seperate antenna tuning device.

The speech equipment is completely orthodox with the exception of the volumn level indicator. See last months Amateur Radio News for the details of that. The tube lineup is a 6J7 into a 6C5, trans. coupled to 2 6C5's in class A which are drivers for the 6L6 modulators. The mike is a Xtal.

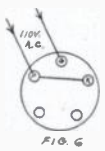
The Rack? Its made of ¾" angle iron, all joints rivited together. The uprights are turned out instead of in, allowing the shelf supports to be rivited flat against the vertical members, and achieving rigity in a sideways plane. The masonite sides give absolute rigidity in the other plane. The sides and front panels are finished in the new cold crackled-laquer, and one ¼ pint can was more than sufficient to cover. Of course it is necesary to fill the surface of the masonite with thinned shellac. We have those composition casters on the bottom which goes for convenience. Bought 'em at the five and dime store.

Well, that was a long winded discourse. Hope you got it all, and if rig pleases you as well as it does me you ought to be plenty tickled. Now it's your turn to talk and we'll switch over.

W6LCL over to the Gang.

Note: W8HJ reports 72% mod. of 200 watts input, and the rig was 5-7 thru Xtal on RME69—Riding down QRM—10:25 p.m. Aug. 4th. The check was made on a oscilloscope built into the receiver. This was not a check by ear but by actual measurement.

INTER-CHASSIS CONNECTIONS



The four chassis are interconnected by a cable carrying 110 volts only. The connections are made by using old 5 prong tube bases. These are shown on the chassis diagram.

Putting the Inverse Feed-Back Circuit to Work

By GLENN WEAVER, Robt. M. Hadley Co.

It is unfortunate that many valuable amateur circuits are avoided by amateurs because of the lack of the proper technical description of practical circuit conditions. More important than knowing the theory behind these circuits is the ability to put them into actual operation. Too often we are willing to let someone else try the circuits first before we are willing to venture with our own units. Such is the fate of the feedback theory described so amply in current articles.

There are many problems connected with the construction of amplifiers to give desired results without feedback. In building amplifiers to have wide frequency response, it is necessary to incorporate parts which are both large in size and costly. It has also been difficult to obtain rising characteristics or peaks at certain audio frequencies without the use of expensive filter circuits. It is of utmost importance that amplifiers be free from distortion, however, without feedback this is possible only by the use of Triode output circuits. Both the Pentode and the Beam type tubes have been noted for the extremely high distortion.

Many other problems have been difficult to solve without the use of feedback. Such problems as phase shift at lower and upper limits, AC hum, tube noises, and instability have been very difficult to solve. The wide use of the new Beam type output tube has brought about an immediate need for some type of circuit correction. The Beam type tubes have extremely high internal impedances, and this characteristic gives the tube what is know as a constant current dynamic characteristic. When the output circuit is loaded with an inductance as in the case of a voice coil, the high internal impedance causes the output circuit to draw much more power at the high frequency. This phenomenon has been the cause of the lack of low frequency response in many of the Beam amplifiers.

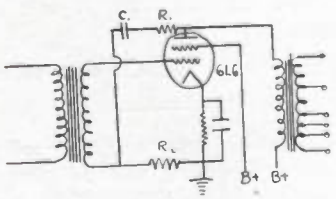


Figure 1

R1 45,000 ohm R2 5000 ohm C1 .25 mmf.

A brief explanation of the feedback circuit will be given in order to make the following discussion clear to the reader. In the ordinary vacuum tube, the voltage in the plate circuit is 180° out of phase with the grid voltage. Thus, in the feedback circuit, when a portion of the output voltage is fed back in series with the input voltage, the net affective grid voltage is reduced by the amount of the feedback voltage. In figure 1, the two resistances R1 and R2 form a bleeder circuit. A portion of the output voltage is fed back thru R1 and C1 in series with

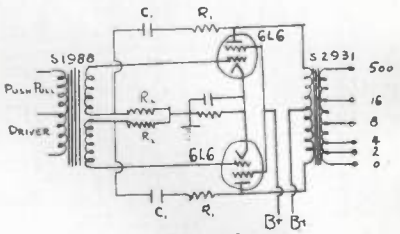


Figure 2

R1 45,000 ohm R2 5000 ohm C1 .25 mmf.

the input grid. The effect of this feedback is shown by the following equation.

$$E_P = \mu E_G + \mu E_P$$

In this equation Ep represents AC output plate voltage. Eg represents the grid input voltage. μ is the voltage gain of the circuit without feedback, and N represents the feedback ratio. In Figure 1, this feedback ratio is equal to

$$\frac{R_2}{R_1+R_2}$$

In solving this equation for the ratio Ep/Eg we find that the gain is equal to

$$\text{gain} = \frac{\mu}{1+\mu N}$$

It is apparent from this formulae that for large feedback ratios the effective gain of the stage is independent of the ampliifcation factor of the tube, and is represented by the equation

$$\text{gain} = \frac{I}{N}$$

This reduction in gain must be compensated by additional driving voltage, however the additional cost is well justified by the results obtained. The other advantages which are brought about by feedback are briefly explained as follows: The new distortion will be represented by the equation.

$$\text{Distortion} = \frac{D}{1+\mu N}$$

where D represents the distortion without feed-

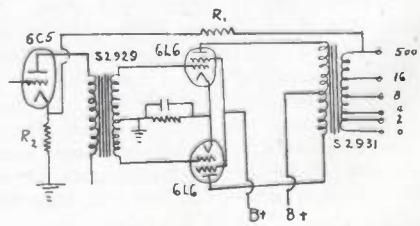


Figure 3

R1 50M to 75M R2 1250 ohm

back. Other objectional features which are removed in the same proportions by feedback are tube noise, AC hum pickup by transformers in the feedback stage, and cross talk. The stability of both gain and amplification are greatly improved, and the amplifier is given a very linear characteristic. It is quite obvious that any resonant peak in the circuit will be leveled off.

Frequency response can be controlled at will by the proper selection of feedback constants. The following circuits will show what can be done in varying frequency response by proper selection of circuit constants. Figure 1, 2, 3, 4 indicate circuits which are used to give extremely uniform frequency characteristic. The circuit constants have been chosen for the 6L6 and 6C5 type tubes, however, the same results may be obtained with other tubes by the proper selection of the circuit constants. Feedback voltages may be taken from either the primary or the secondary of output transformers. When the voltage is taken from the primary of the output transformer, full correction is made for any loss of low frequencies due to the saturation of the output core, but no correction is made for the loss of high frequencies due to the leakage reactance of the output transformer. When the feedback is taken from the secondary of the output transformer, both of these factors are corrected. However, it is only practical to take

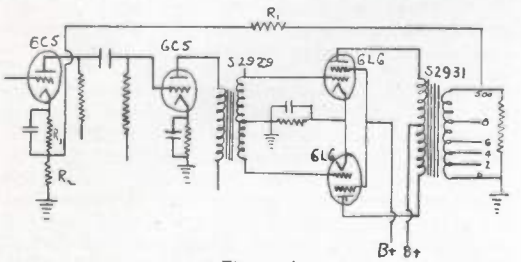


Figure 4

R1 250M ohm R2 300 ohm R3 750 ohm

the voltage from the secondary of the output transformer when sufficient voltage is developed across this winding. In general, a 500 ohm line will deliver sufficient voltage for feedback over two stages.

For single stage feedback, the most common practice is to take the voltage from the plate circuit. Circuit 2 is the same as circuit 1 except for the push pull arrangements. Figure 3 is an example of feedback over two stages. In this circuit, voltage is taken from the 500 ohm output tap and fed back into the Cathode circuit of the 6C5 driver. In this case, the Cathode resistor R2 is used as a portion of the bleeder circuit. This feedback will correct the second harmonic distortion created by the single ended driver, as well as the frequency loss in both the input and output transformers. Figure 4 shows feedback over three stages. In this example, the value of the Cathode resistor is too large to be used as a portion of the bleeder circuit, therefore, it is necessary to incorporate a separate resistor below the Cathode resistor as shown.

It is a very difficult problem to obtain satisfactory feedback operation over more than two stages, because the combined phase shift of three stages will exceed 180° at limits. It is therefore necessary to give two stages a poor frequency response characteristic, and to give the third stage an extremely high fidelity characteristic. The high fidelity stage will have little or no phase shift, and therefore the maximum phase shift will not likely exceed 180°. Figure 5 shows a circuit used as a low or high frequency booster.

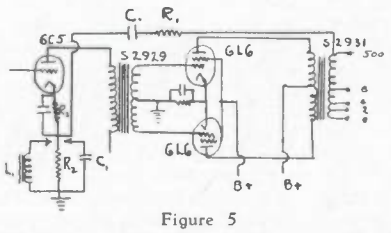


Figure 5

R1 100M ohm R2 2500 ohm var. R3 750 ohm
L1 5H (Hadley No. 300) C1 .01 mmf. (Mica)

As a low booster, the inductance L1 is shunted across the resistor R2 eliminating the feedback of the extremely low frequencies. This will give a rising low frequency characteristic. As a high frequency booster, condenser C1 is shunted across the resistor R2 eliminating the feedback of the high frequency signal. By the proper selection of L1 and C1 it is possible to give the amplifier a "swayback" characteristic, that is a rise at both low and high frequency ends.

The above circuits are practical where it is necessary to build up the frequency response at the limits. However, in radio telephony circuits, it is more desirable that only a narrow band of frequency be passed. This is necessary to minimize QRM in the already crowded amateur band. In figure 6, L1 and C1 are in parallel with the feedback resistor R1. This circuit allows a maximum of feedback to occur at both low frequency and high frequency ends of the audio section passing only the voice frequencies.

NOTE: The constants shown are not necessarily to be considered as fixed. The builder may find it necessary to vary the values to suit his own requirements. Increasing the percentage of feedback improves the performance but it is not practical to too greatly reduce the over-all gain.

Another feedback circuit which is of great interest to amateurs is that in which a small portion of the RF output of the Class C final stage is rectified and fed back into the input of the speech unit. Circuits of this kind may find very wide application. This circuit may be used to reduce distortion and noise affects,

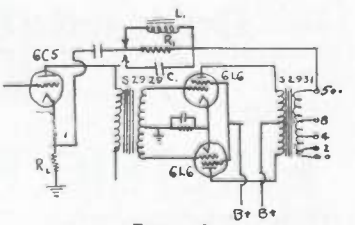


Figure 6

R1 100M ohm (var.) R2 1250 ohm
L1 15 H (Hadley C161) C1 .005 mmf (Mica)

eliminate stray hum pickup, and also to greatly stabilize the over-all circuits. This same circuit may be used where it is necessary to eliminate the low and high frequency end of the spectrum.

There are many precautions which must be observed in the application of feedback circuits, and a few of these will be listed at this point. All wiring in feedback circuits should be kept very short and should be shielded as well as possible, grounding shielding at two or three points along the wire. Warning: It is very likely that the oscillation, should it occur, will be of a very high **in-audible** frequency. However, its presence may be detected by an output meter or oscilloscope. This oscillation if not corrected, will reduce the tone quality and cause such parts as condensers, tubes and transformers to fail. To avoid oscillation, it may be necessary in most cases to shunt the secondary of the input transformer with either a fixed resistance or a capacity. In push pull output stages, it may be necessary to shunt a condenser from plate to plate to avoid oscillation. There will be little question as to whether or not the feedback is connected in proper phase, as the improper phase will immediately show violent oscillation characteristics.

It is impossible in such a small space to completely cover the many possibilities of feedback circuits. It is only hoped that the amateur may realize the unlimited advantages gained by the use of these circuits. Feedback circuits are more than merely a good subject matter for magazine articles, as their application marks one of the greatest steps in the advancement of the radio telephony art.

▼

DX ROUNDUP AT HERMOSA BEACH

The second DX roundup will be in the city auditorium at Hermosa Beach. The first one of these meetings was held at Santa Ana and sponsored by the Orange County Radio Club. The DX men should feel lucky to be able to meet in the brand new auditorium at Hermosa Beach, the council of that city having just granted permission, for it's use.

All hams are invited, but of course it is primarily designed for the boys who go after DX. The program for the evening has not been definitely outlined as yet but will consist of many prominent speakers, such as Charlie Perrine W6CUH, Woody Smith, (ye editor of Radio), W6BCX, Doc Stuart, W6GRL, Herb Becker, W6QD, and several others.

There will be plenty of DX men there, both cw and phone. For example, who hasn't heard of these . . . W6CXW, W6GRX, W6ADP, W6LLQ, W6JBO, W6VB, W6FZY, W6HX, W6GAL, W6ABF, W6HXU, W6FTU, W6DOB, W6MLG, W6LYM, W6GHU, W6BKY, and of course there will be scores of others.

Everyone should have a bang up good time and they should come early and prepare to stay late. There is always the possibility of adjourning to other spots at Hermosa Beach to see what the wild waves are saying.

Herb Becker will probably act as the Chairman or M. C. for the evening besides giving the latest of DX news and various incidences involving DX men throughout the world. Charlie Perrine will give some points on "Efficiency Plus" and possibly enter into some Antenna Discussion. Woody Smith can always be counted on to give an interesting talk. Doc Stuart will try to account for how he works so much DX on both fone and CW.

Everyone can get into the discussions and from all indications will be quite an evening. Remember, all are welcome and the date is Saturday, September 25th. Place . . . is the new city auditorium of Hermosa Beach, located 2 blocks south of Pier Avenue on West Railroad Drive.

Overhauling the Receiving Position

By G. Y., W6PCA

Regardless of what kind of a receiver you have there is nothing like a good over-hauling to put it back into shape again after it has been in service for some time. The modern Superhetrodyne can get out of adjustment without it being noticed by the operator, except possibly by increased interference. It is surprising to see how some receivers can get out of adjustment, especially those with compression type trimmers in the i.f. stages.

First of all the receiver should be thoroughly cleaned out. All dust should be blown out and all switch contacts and condenser wiper contacts should be cleaned with "Carbon Tet." Tubes should be checked and replaced if necessary. Resistance units and condensers should be inspected and tested and all soldered joints will stand the most carefull examination. The next step is to line up the i.f. stages. For this job, a good oscillator with modulator and out-put meter should be used. First tune the calibrated oscillator to the i.f. frequency and connect the out-put to the grid of the first detector or converter tube. Then merely adjust all i. f. circuits for maximum out-put on the out-put meter. If a crystal filter is used, a great deal more care is necessary. It is essential to have the i. f. stages tuned to crystal frequency in order to get the most out of the filter. Attenuation of the test oscillator thru the crystal may be used in determining this frequency. The crystal also may be put in an oscillatory circuit to determine its oscillating frequency. However, as a warning (and don't say we didn't tell you), this method it not advised except, only to approximate the crystal filter frequency because a crystal, as most of you know, in an oscillatory circuit will operate at a different frequency than when the same crystal is used in a filter circuit. There may be as much as 5kc difference.

Having aligned the i. f.'s, the pre-selector stage, the first detector and oscillator circuits should be checked. To do this the out-put of the oscillator should be connected to the antenna terminal of the receiver. The frequency of the oscillator then is set for each band the receiver covers, and adjustments made in the trimmers to obtain the greatest out put. And that is all there is to it unless you want to do a little modernizing and install iron core intermediate frenquency transformers which, we think are well worth the time and money. These units offer tremendous possibilities to the ham and are not hard to put in. With these units it is possible to greatly decouple circuits affording greatly improved selectivity with little sacrifice in sensitivity. The inherent feature of such transformers is the high gain afforded, thus making possible less coupling with proportionally the same out-put as with air core transformers. Of course, this added selectivtiy is not what the SWL or BCL wants, but it sure is the cats pajamas for the ham. With such arrangements it is possible to peak the middle 1,000 cycles of a signal quite sharply, so that interference of signals on adjacent channels is reduced. This is effective in phone work, where frequencies above 1,000 cycles are not necessary to the intelligibility of the voice, although if the same unit were used for aural broadcasting, the quality would be pronounced as "bad" because of the chopping of side-bands. However if you run into difficulties with the XYL about the broadcast reception after you have installed the iron cores it is still possible, with tighter coupling, to get the necessary broad tuning to give her an adequate frequency response.

Another important feature of the receiving position is the antenna. This is too often neglected. Frequently a small antenna is used, which is adequate for local QSO's on the lower frequencies, or a long antenna is used, which has the unfortunate ability to pick up interference from every conceivable type of electrical appliance and automobiles. We have used a doublet for the past three years and would not be with out one in our location. W6EJZ and a couple of the other boys moved out of our town because of the QRM, but we were stuck and could not move, so had to make the best of the situation and the old doublet did the trick, greatly reducing the QRM and giving us better reception on weaker signals. The sensitivity of a receiver is limited only by the inherent noise input in the first tube of the set. Therefore, by tuning the antenna circuit or using one that is designed for a given frequency, the in-put voltage of a weak signal to the grid of the first tube may be increased beyond the input level "rush" to the same grid resulting in greater sensitivity. This, of course improves reception. We tune our doublet with series condensers and plug-in coils wound up and checked against our antenna with a test oscillator for the different frequencies. The feeders are transposed, using standard blocks and has about 400 ohms and is therefore not hard to match to the receiver in-put. The in-put circuit of most receivers runs between 300 and 500 ohms and a twisted pair normally has an impedance of about 70 ohms, therefore, it is necessary to use a matching transformer to obtain the proper match when using a twisted pair. A very good direct match can be obtained by using parallel feeders with from four to six inch spacing. The impedance will vary in proportion to the spacing and the size of the wire used. As an example, six inch spacing with number 12 wire gives about 600 ohms while standard transposing blocks, as we stated above and used by us, give about 400 ohms and can therefore be fed directly to the in-put of most receivers without a matching transformer, and frequency response will be your only problem.

Electrical Instruments

*By ENSIGN B. C. FORD, C. N. M.

We shall endeavor to give you in this article the results of years of observation and notes taken from questions asked by radio servicemen, "hams" and others who find it necessary to use electrical instruments in their work or hobby. Included will be some of the difficulties experienced by them and the result of the misuse of the instruments.

First we shall state that there is a difference between an electrical instrument and a meter, and it is very apparent that many do not know how to differentiate them. For that reason we shall give an excerpt of The Standards Committee of the A.I.E.E. which defines the terms, "meter" and "instruments," as follows:

> "METER—A meter is a device which registers through a totalizing mechanism the integral with respect to time of the electrical quantity to which it responds. (This definition does not prelude the general use of "meter" as a suffix or in compound words to mean "a measuring device.")
>
> INSTRUMENT—An instrument is a device which indicates or records the present value of the quantity under observation." Amplifying the term "instruments," the Standards Committee gives the following: "An indicating instrument is an instrument in which the present value of the quantity under observation is indicated by the position of a pointer relative to a scale."

It has been noted that a great many have trouble in their hobby, radio, by forgetting that the whole basis of electricty and its offspring radio is governed by a very simple formula, OHM'S LAW, familiar in name to all, but actually committed to memory by only a few.

We shall endeavor to keep these notes in plain language and not be too technical is so far as practical, in order that all readers may fully comprehend and profit by them. Let us discuss in general now with reference the electrical instruments as are commonly used by the hams and others. We find that the degree of accuracy is very important and usually in direct proportion to the cost of the instrument, generally speaking they are 2% full scale. By this we mean that the manufacturer of the instrument guarantees his product to be within 2% accuracy, which in the case of an instrument with a scale having fifty divisions on it the error will not exceed one division of the scale. Such an accuracy should be maintained over a period of years in normal use, and to remain within the specified accuracy it is necessary that the manufacturer of the instrument use good material in the construction of the magnet.

Laboratory types of instruments are as a rule 1/10 of 1% specified accuracy, such accuracy is not necessary in the operation of ham equipment, and the cost of such is much more.

Due to the construction of magnetic type instruments they are most accurate between one-half and four-fifths of the scale deflection, the error increases the further to the left the reading are taken. This is because of the initial starting torque necessary, bearing resistance, and also due to the fact that in the AT REST position or zero the moving coil is almost out of the permanent magnet field, therefore the error is rather high on the first one-fifth of the scale. This is one of the reasons manufacturers design their test equipment for several ranges, and by so doing it is possible to cover many ranges and still keep the readings in the upper portion of the scale.

It is very important that you check your instrument to ascertain that the pointer is setting directly over the zero mark on the scale, this will cause an error in reading should the pointer not be properly adjusted, the pointed may be adjusted with a small screw driver by rotating either to the left or right the zero adjuster on the front cover.

Manufacturers of instruments, in shipping them, always label them as DELICATE INSTRUMENTS, therefore it is very important that your instruments are not subject to rough handling or over-loaded as such jars are likely to demagnetize the permanent magnet to a certain extent and the result will be incorrect readings, to say nothing of the condition of the pointer, balance weights, and especially the bottom spring in the case of an overload, we mention the bottom spring because it is the lighter of the two.

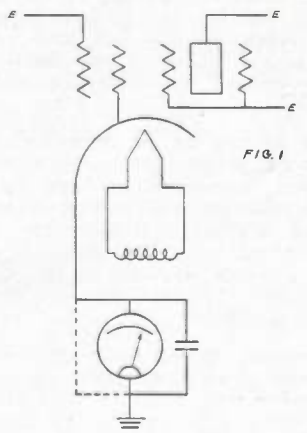


FIG. 1

We doubt very much if any one reading this would attempt to repair his or her wrist watch, yet it is amazing the number of persons who will attempt to repair their electrical instruments, you will note we said attempt. We

*ELECTRIC PRODUCTS SERVICE
1358 So. Grand Ave., Los Angeles

doubt very much if an expert watch maker would even try after the first look inside, for the working portion of your instrument is more delicate than even your wrist watch.

DO NOT ATTEMPT TO OIL the pivots or any portion of your instruments, they are not designed to be oiled. The result will only be a sluggish movement, inaccurate readings, and then a cleaning charge by a service laboratory.

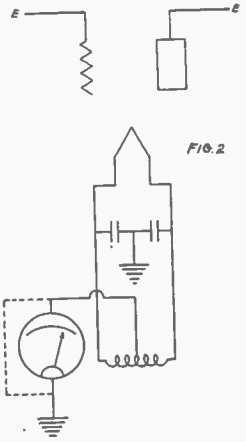


FIG. 2

If your indicating instrument is not operating properly take or send it to a qualified and recognized instrument service laboratory, the cost of repair and service as a rule will be far less to put it back in factory condition.

For the information of those who are interested, there are three main classifications of indicating instruments, for DC use the moving coil type, commonly known as the D'ARSONVAL type, for AC use the iron vanetype, both of these types are 2% full scale accuracy in standard makes. There is also the dynamometer type of instrument which may be used either on AC or DC.

There is now on the open market for those interested on photo electric cell application ten microampere instruments in both the 3" round style and horizontal edgewise at reasonable cost. Single and polyphase wattmeters are also obtainable at nominal cost. This should be good news to those who are interested in equipment of the highest type, and what ham does not dream of a rig that will be the talk of the town.

Alternating current may be read with a direct current instrument by the use of a copper-oxide rectifier unit, however your accuracy will only be within 5%, not 2% full scale. This is due to the construction of the rectifier unit, but an accuracy of 5% as a rule is sufficient for all around use. At this time we wish to caution you that copper-oxide rectifier units are not guaranteed by the manufacturers under any conditions, the reason is, that the slightest overload will instantly ruin them, even handling them with your bare fingers will cause them to drop in value. Manufacturers of these units design them with short flexible leads soldered to them. Do not remove these leads, solder your instrument on the tips of these leads, as the unit can not stand the second application of a soldering iron, this is very important and cannot be too greatly stressed.

Regardless if whether you are using your instrument to measure volts or current your meter is actually measuring current internally. By that we mean the meter is so constructed that when used as a voltmeter it is connected in series with an external high value resistance of pre-computed value. When used as a millammeter or ammeter it is connected in paralled with a pre-computed relatively low value resistance.

With reference to the application of electrical instruments to a transmitter the use of the following rules will result in less expense for such equipment and far more satisfactory results. Install all instruments on the grounded side of circuits. By-pass instruments with a capacity of one-tenth or more, to prevent RF or resonance damaging them. For an example, to obtain the plate reading of a tube in Xmitter, install instrument in filament return circuit, this keeps it at NO VOLTAGE above ground, and either metal or bakelite cases may be used on the instrument even on a steel panel, provided of course that the instrument is calibrated for use in a steel panel.

It may be news to some, that in order to read high voltage plate supply of approximately five hundred volts or more, high voltage meters are not necessary. This may be accomplished by the use of a milliammeter, installed in the circuit as explained in the previous paragraph.

For those who desire to use a meter with a bakelite case on a steel panel, cup shields are available for these instruments. When AC meters are placed in a rig near a transformer they MUST be shielded with a metal shield when bakelite or brass cases are used.

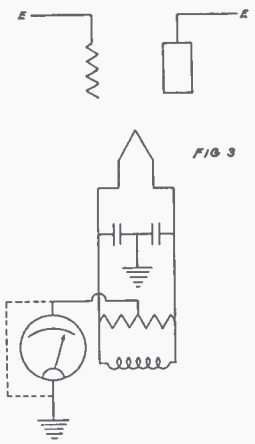


FIG. 3

Should you be troubled with arc-over in RF meter internally, this can be cured by the grounding of the metal ring which holds in the glass to the dial and the movement. REMEMBER there is only one-thirty second of an inch insulation on the zero adjuster of your instrument, which makes it the hottest portion of the

instrument, it is advisable not to touch it when the rig is turned on.

By following these suggestions and using the diagrams showing the only proper method of connecting instruments in transmitting circuits you will find it practical and the expense will not be great, and possible to use an instrument in each stage of the rig, which is the practical and commercial method of determining the correct operation of a transmitter. The use of one meter with a plug in jack and used on each stage is not recommended and it is impossible to keep a rig within specified degree of stability by such tactics, and often results in the receipt of a pink ticket that could have been easily avoided.

▼

W6MDQ, the "Medical Doctor Quack" of Highland Park can usually be heard on 160 with his QST's for the Glendale Club. MDQ should be complimented on his fine service. George has a gift of gab that could floor a pig, so be careful if you happen to work him.

The convention fellows, IKG and BUQ were too busy this month fixing up for a big time and requested us to tell you that instead of some Club News they would show you a grand performance at the Convention. So until we hear from them again, we wish them both good luck.

▼

NEW REGULATIONS

Official Broadcast Station, W6MQS sends this A. R. R. L. Broadcast No. 738.

To all radio amateurs: The Federal Communications Commission has acted on the request of the American Radio Relay League to enlarge and shift the ten meter band radiotelephone allocation to permit work 28500 to 300000 kcs. inclusive retaining 28 to 28.5 mc. exclusively for cw work. The commission ordered rule 376 changed to read as above effective on September 16, 1937. All amateurs should note that telephone work continues under present rulings only in 28/29 mc. until September 16, after which date unless subject of further action the new 28.5/30 mc. band may be used and phone work in 28/28.5 sector becomes illegal.

By G. Y. — W6PCA

In writing about Marconi in last months story we told you about the birth of Amateur Radio. Since that story was published, several of the fellows have asked us about some of the things that took place after that "Blessed Event" that led us up to the lusty child that Amateur Radio is today. Well, that is a long story but nevertheless we have always felt that there were several amateurs that had a hand in the "Bringing Up" of the "Child" that have never been mentioned in any of the very able histories of Amateur Radio that we have had the pleasure of reading so this gives us a good excuse to write about one of these apparently forgotten men as well as giving you some of the contributing factors, so we will pick our story up from where we left off last month.

Radio (or Wireless as it was called then) was on every tongue with the turn of this century and was fast filtering into the inquisitive minds of a few of the so-called experimenters and tinkerers, where it found a very receptive place due to the great fascination that it had. It seemed almost beyond human belief that with the aid of a few "Gadgets" and a bunch of wires stuck up in the air, it was possible to send messages thru the air and receive them with another "Gadget" miles away. The alert minds of the Amateur experimenters reasoned that if this thing could be done commercially, then surely it should be possible for them to duplicate the experiments over shorter distances with home-made "Gadgets" and so the more ambitious set right to work gathering all the data that it was possible to get from the commercial equipment and it wasn't long until they started building, from odds and ends, crude "Gadgets" of their own that would send and receive messages. And when we say "Crude" we mean crude, but somehow they worked and in many cases worked better than the equipment that was in use by the commercial. These were the good old days of the spark coil and coherer.

It was not long before these youthful experimenters discovered that transmissions could be tuned by means of coils, or "Helix" as they were called, so that the signal would have a certain "Wavelength" and also that by means of tuning coils at the receiving end, a number of stations could operate simultaneously without interference with each other—they had something there at that. Thus the art of Radio developed. During the years, 1906 to 1910, the spark coil gave way to the 110 volt A. C. transformer, straight spark gaps became the good old rotary gaps with all its music—Boy, Oh Boy, those good old rotaries ! ! !, and the coherer was replaced by the crystal and electrolytic detectors and so on until miles were being covered by the Amateurs as well as by the commercials.

In 1909, the first radio club was formed in New York City, known as The Junior Wireless Club, Ltd., later growing into the now famous Radio Club of America. The officers of the Junior Wireless Club included W. E. W. (Buster) Stokes, Jr., founder, R. A. Fessenden, George Eltz and Frank King. Such men as George Burchard, E. H. Armstrong, Dr. Hudson, Irving Vermilya and Dr. Goldhorn were listed on the club membership records, which grew to over 100 members by 1912. At this time a list of calls was put into effect. Most of the calls were made up, as we have told you before on these pages, of the operator's initials. Ernest Amy was "EA," George Eltz did not like the sound of "GE" so took the more graceful and rhythmic call combination of "GZ." Louis Gerard Pacent selected "ABC," the letter comation now used, as most of you know, by commercial code stations as a test call signal. Among the membership of this old club, the real motivating force behind the developments was the founder, Buster Stokes, Jr., and he is one of the "Forgotten Men" that we think should have his name hung up in gold letters on the wall of every Ham Shack in the country because it it had not been for young Stokes, Amateur Radio might not be in existence today. In 1910, at the age of 14 years, Buster headed a delegation to Washington and effectively killed a bill that had been introduced by the late Senator Chauncey Depew, which, had it passed, would have prohibited Amateur Radio experimentation for all time.

The old newspaper clipping that we have in our diary reads as follows:

"BOY WARS ON AIR TRUST"
"BUSTER STOKES, 14 YEARS OLD, TALKS TO SENATE COMMITTEE"
"BILL TO CURB AMATEURS IS EARNESTLY DENOUNCED BY HIM"

According to the clippings, Buster sure told the old boys a thing or two that stuck. And that is why we think that Amateur Radio owes a great deal to W. E. D. Stokes and we would like to see his name in print more often. Incidently (the name "Amateur Radio" was coined by members of the Senate Committee who drew up the bill so they gave us a name at any rate even if they did try to put us off the air.

By Ray Harmon, W6GHU

Now maybe we're wrong but it appears to us that conditions have really been tops for all continents here lately—Judging from the reports received and the noted rising of the countries worked lists. As usual Europe is the most sought after continent, although the Asians and the Africans seem to run it a close race. The DJDC contest has ended and has given many new countries to everyone as well as a few choice zones. No reports were received in regards to work on 7mc so the band seems to be devoid of DX of any kind and a listen on 28mc finds little or nothing to get excited about although the band shows signs of opening up for the winter. Due to the given reasons the DX this month seems to be confined to the 14mc band. (As usual).

QST announces a new DX club to be known as the "Century Club" which for qualification requires cards to be shown as evidence of having worked 75 countries, to become a member, then when a fellow can show evidence of having worked 100 countries he is awarded a certificate. It is the hope of all of us that this will prove the answer to how to get the DX cards.

FLASH ! ! ! Yes, we said flash, or haven't you heard? W6QD has found a place to hold the BIG DX MEETING and from the work Herb is putting in on it, it looks like it's going to be a huge success. The date is the LAST SATURDAY in SEPTEMBER at the HERMOSA AUDITORIUM in HERMOSA BEACH. Don't forget, oil your shovels, roll up your pants legs, get the "little woman's" consent and then come down, for it is really going to be a blowout. Herb has committees working on the shebang now and everything is going to be taken care of in gud fashion. There will be noted DX men and Technical men for speakers, also a raffle, entertainment and refreshments, so lets all turn out and make this DX meeting a real event to look forward to.

W6HEW looks like the man-of-the-month-club winner this time with ten new countries, one new zone to his credit and about 20 new So. Africans. Mort has all his antennas up and working in nice style, so that he can cover any continent. For Europe and Oceania he has a "Q," for So. America and Asia a half wave doublet sees service and a pair of half waves in phase, cover Africa. For the guys that yowl about no room for antennas, we might mention that all three of these antennas are situated on a 50x75 foot lot. Morts new countries are: FT4AG, 14410, Chpy-dc; VS7RF, 14360, t9; LY1J, 14040, t9; YM4AA, 13995, chpy dc.; HA4H, 13998, t8; YS2B, 14410, t9; TG1S, 14380, rac; OH5OD, 14410, ndc; SP1OL, 14405, t7; and YR5EV, 13996, t6. From the observed freqs. we would say Mort never looks in the band. All these give HEW 78 countries and 33 zones!

W6KBD seems to be keeping pace with the best of them by adding VS7RF, 14360, t9; FT-4AG, 14410, chpy dc; YS2B, 14410, t9, XZ2DY, 14300, t9; and PZ1AA, 14405 to his list for his 93rd country and 36th zone. Some of our readers (if there are any) will remember Art was going on a trip, well he has to go now. He DROPPED his 35T so he got mad and sold the whole shebang, lock, stock and the barrel, too. He expects to be on his way to a new K7 call shortly. (Don't forget the long underwear).

W6MYS came out of the mess with a nice one by working FP8PX, who is just outside of the Hi freq. edge of the 14mc band, t7. The FP is old F2PX on the island St. Pierre de Miquelon in the gulf of St. Lawrence. MYS uses a 35T final with abt. 150 watts, this one was his 46th country.

W6BAM must have heard something about beam antennas that sounded good, because he junked the old zepp and put up a pair of half waves in phase for Africa. It worked all right for Africa but not so good for the other DX, so he put the old zepp right back with the same old luck and starts rapping off the new ones again. Some of his newer ones are VS3AE, 14350, t9; FY8B, 14415, chpy dc.; TG1S and VS7RF, 14360, t9, to give him his 86th country and 34th zone. BAM says TG1S is on 14380 kc rac and is in Zacapa, Guatamala and will be on until the 17th of September.

W6KJK out Whittier way took down his rotary beam because it kept right on turning after he had it pointed. Bill has replaced it with a new "Q" and claims his sigs are up 3 R points in all continents and for that reason he seems to be on a lot these mornings and has a coupla new ones in CR7AW, 14300, t9 and YR5EV, 13995, t7. These give Bill 55 countries and 28 zones.

W6NYA has certainly been running off with the Europeans and other DX as he seems to have the ole rhombic functioning in the way I would like mine to work. NYA managed to wrk 44 Europeans in the DJDC contest, although only on two nights. Some of Ed's new

ones are CT2BE, 14420, t7; CN8AH, 14410; FY8E, 14420; HA4H, 13995; EI7F, 14120; I1ZZ, 14450 and K6OJG in Guam, 14260. Also add to them three CN8 qso's in one night with CN8AH, CN8MI and CN8MS. Ed uses a T55 final with arnd 200 watts. Now has 63 countries and 32 zones.

W6NIK finds out that high power does pay, as he increased from 15 to 70 watts and works more DX—the best of them are XZ2JB, 14100, I1KN, 13998, PK4MK, 14140 and YR5EV, 13993. Now has 40 countries and going strong.

W6JQX after being second op at W6MTC for a spell has finally come to life with a bong, the bong being ZD5M on 14005 kc, t9, who gave his qth as GOLD COAST COLONY, British West Africa. That is really a honey. He was worked at 8 p.m. local time. Others for JQX, who by the way, is another single 210 user are PK4MK, 14140; YS2B, 14410 and CR-7AW, 14300.

This guy, W8JK seems to have put a curse on some of us as we spend each Saturday and Sunday every week helping some guy put up one of the W8JK beams. Those of them who have the beams report them as being well worth while.

After all these years it has finally happened and of all people, W6QD is it, he is now breaking things up on 20 meter fone. When asked for an alibi, Herb sez, "We fone men gotta stick together," and after all these years too. A sad case.

Still more proof of the pudding in regards to beam antennas—W6NMH put up one of these "8JK" beams, using a 35T final and about 150 watts, Bob managed to stick his sigs into Europe in good fashion. Some of his newer DX, D4CSA, OH5OD, YP5EV, OK1ZB, PA-OEA, LY1J, LY1S and a bunch of G's.

W6KBD says that as long as he is leaving this week-end, he might as well let us have some of his choice DX frequencies of guys that he has been laying for, so here they are: YU7XU, 14310; YU7AY, 14450; YU7TE, 14350; SV1RX, 14290; VS4JS, 14270; VS7RP, 14260; VS7GJ, 14120; FB8AT, 14330 and VQ3FAR, 14410.

▼

Arcturus Develops New 5W4G Tube

New Construction Eliminates Vibration Noises

Arcturus Radio Tube Company, Newark, New Jersey, announces a new 5W4G rectifier for use in A. C. receivers. The electrical characteristics of this new Arcturus 5W4G remain unchanged, but the mechanical construction has been altered after considerable investigation and collaboration with several leading set manufacturers.

This change enables a set manufacturer to utilize any chassis arrangement with respect to the rectifier tube and r. f coils. Exhaustive tests in the laboratories of set manufacturers disclosed a general tendency of 5W4G's, when placed next to an r. f. coil, to cause noise in the receiver when the tube was vibrated ever so slightly. The new Arcturus construction eliminates this noise regardless of vibration or the position of the r. f. coil and results in quiet set operation.

Be sure to use the new Hadley Universal Modulation Transformers

Rugged case with stand-off insulators filled with compound to avoid "talking"

Insulated and impregnated for long life of service.

Designed to offer a wide range of impedance matching for Class B Audio Circuits, with maximum efficiency and excellent response. Capable of handling full secondary currents. Primary and secondary impedance ranges from 2000 to 20000 ohms.

S 2946- 80 Watts Audio Capacity .....$12.50 List
S 2925-150 Watts Audio Capacity .....$20.00 List
S 2597-300 Watts Audio Capacity .....$30.00 List

●

Watch this magazine for information on the new
HADLEY UNIVERSAL CLASS B INPUT TRANSFORMERS

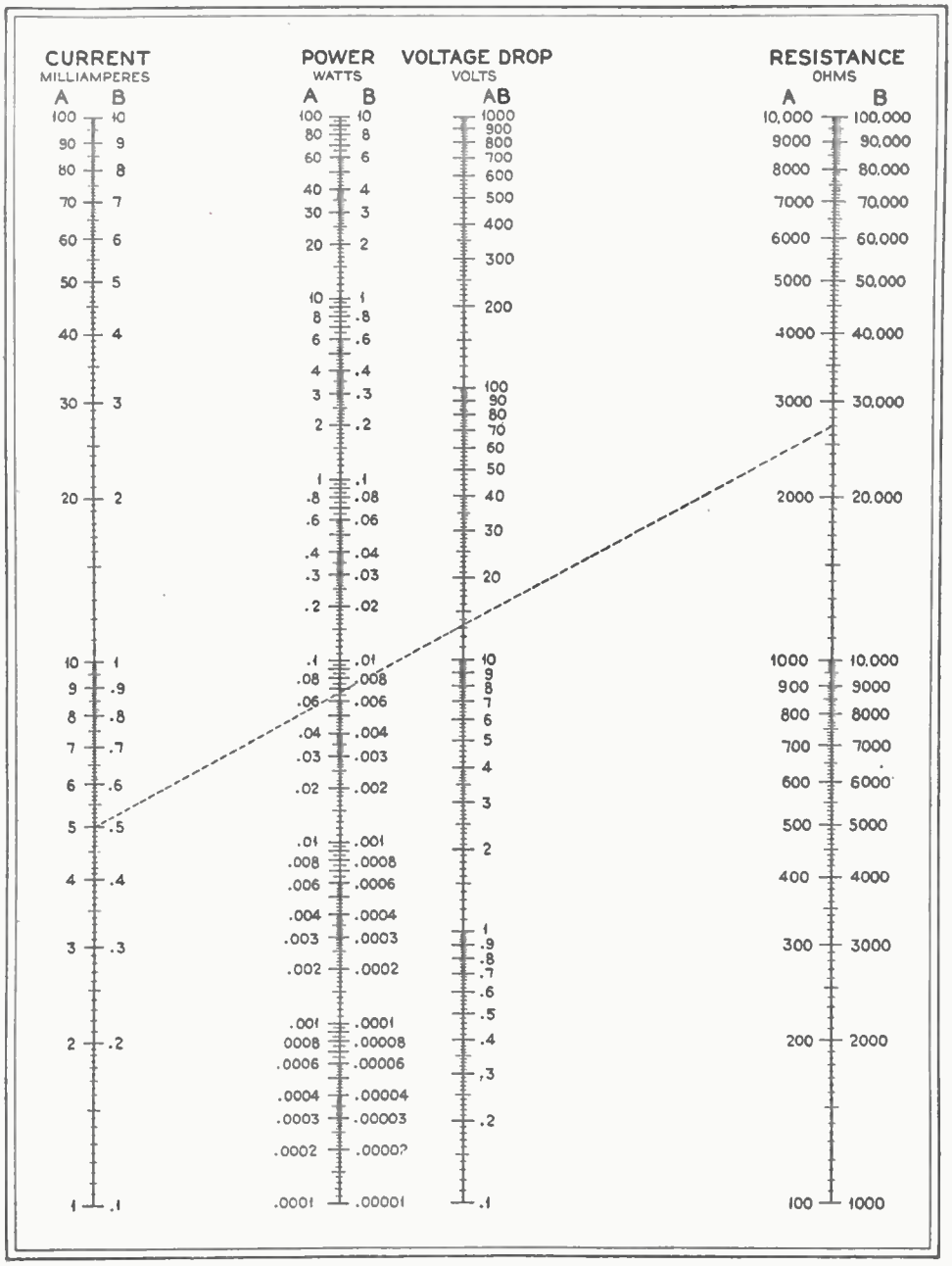
●

ROBERT M. HADLEY COMPANY
711 EAST 61st STREET
LOS ANGELES, CALIF.

Handy Chart

Number 1

By W6PCA



This is the first in a series of handy charts we going to give you from time-to-time, that, we hope, will be useful to you. This chart solves Ohm's Law and also shows the power consumed in the circuit. If any two quantities in a circuit, volts, milliamperes, ohms, or watts are known the other two can be found by drawing a straight line thru the corresponding divisions on the respective scales. For example, in a circuit of 2700 ohms resistance flows 5 ma. Drawing a line (see sample dotted line on chart) from 5 on the ma. scale to 2700 on the ohms scale, the voltage is found to be 13.5 and the power consumed is .067 watts.

THE JUNK BOX

By W6IVG, His Knibbs

I'm just an old box stuck away on a shelf,
Though I'm not very much, I'm proud of myself,
For I contain treasures dear to ham's hearts
For it's from my innards all they create starts.

Those little jim racks and gadgets and things
That thoughts and fond memories to my owner brings
As he paws through my contents, looking for what
He needs to start work on that brain-child he's got.

With treasurers I'm filled to almost the brim
With junk of all kinds, ever ready for him
To use when they're needed and all stores are closed,
Though where it all came from, nobody knows.

His first transmitter, or what's left of it
After he's dug into it bit by bit;
A two tube blooper that's lived out it's days
Alongside of which a microphone lays.

Oodles of screws and nuts and bolts,
A number of tubes that have taken some jolts,
A variometer old but true
It's hardly scratched, almost new.

Transformers and dials and sockets galore,
But I've always got room for one thing more,
And I'm gazing now with eyes longing fraught
At that dandy new Gammatron he's recently bought.

Whenever a new doo-dad comes into the shack
And he prizes it highly—won't take it back,
I know that some day I will claim it as mine
To hold till he needs it, no matter the time.

But when he goes trading, that's when I lose
For he takes from me whatever he chose
But I usually get back (if he has good luck)
Something from some one else's junk box.

But my life's not all rosy, I sure get a bump
When he throws something at me that hits with a thump
After trying the thing and it wouldn't fit;
Boy, he don't care if it breaks, not a bit.

I'll go on collecting till the end of my days,
Accepting all things my owner can raise,
Until the time comes when I go on the rocks
For I'm known round the world as the Ham's Junk Box.

▼

Our good friend V. Morgan, (XYL Mutterer) let us down this month, stating it was vacation time, and after all the trouble of moving, was too tired to do anything at all. It is reported that NOF has to do his own cooking while this vacation gag is on. She will be off her vacation next week and probably we will have her article next month.

SEVENTY MILE QSO

By Don C. Wallace

While W6AM was driving up the Coast on the new Hearst Highway he noticed a large loud speaker on a truck ahead. In passing it, the truck honked Hi and W6AM pulled over to the side of the road.

The owner of the sound truck proved to be W6NTU who had a five meter receiver in the car.

W6AM had the usual 50-watt mobile transmitter in the car, and so from then on, a QSO took place between the 5 meter 50-watt transmitter in W6AM's car and the 5 meter receiver in W6NTU's car.

W6NTU "transmitted" on this large 50-watt amplifier horn. The natives up and down the road were rather astounded and the result was a 70 mile audio QSO.

Mr. and Mrs. Bob. E. Carter, (W6NTU) had as their guest with them Mr. Paul Carter and the three of them took turns talking over the loud speaker.

We found that at certain speeds feed-back took place (most of the transmission was done duplex), and at other speeds there was not feed-back because the sound would not catch up with W6AM.

The best speed for the horn to talk (the horn was behind W6AM) was 60 miles per hour. The best speed for W6AM to talk was 60 miles an hour because then the horn would not cause feed back in W6AM's transmitter. The best speed for W6NTU to talk was 40 miles an hour.

At somewhere around 50 miles an hour a little of both could take place, and that is where we duplexed.

We were hitting a headwind of about 12 to 15 miles an hour, so those of you who are physic sharks can figure out why we had feed-back at certain speeds and not at others.

The range at 40 miles an hour seemed to be satisfactory at as much as ¼ of a mile, for the horn, and of course five miles or more from W6AM's transmitter.

This may be the only 70-mile audio QSO on record.

Later on the same evening, W6AM got on his transmitter at Monterey and picked up W6-NTU who still was visiting amateurs up the Coast (notably the Mayor of Moss Landing, W6DDS).

Later on Frank Quement was raised through W6DDS. Frank was vacationing at Capitola with 160 meter phone portable.

The same evening the 990's panned W6AM for an hour as he drove between Capitola and San Jose. All the 990's were plainly audible in the car all-wave radio, which tunes to the 160 meter band as well as to the 75 and broadcast bands.

It was interesting to note that while driving along the highway, contact was maintained with W6NTU from 20 to 40 miles while driving along.

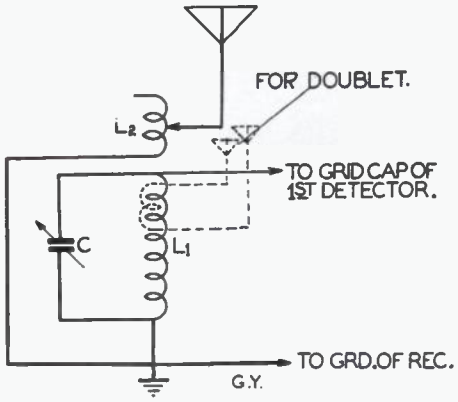
The audio QSO was unusual and the others just interesting sidelights.

HINTS And KINKS

10 METER ADAPTER

By W6PCA

After reading the splendid article on a "5 Meter Superhet" by W6MLA on page 25 of the July issue of this magazine, the thought occured that some of the boys might be interested in adapting their PR-10 Pattersons or other receivers to 10 meters. The circuit shown is taken from an article by W6JYH in March, 1936 issue of QST.



The adapter consists of a grid coil, L-1 wound with 6 turns of No. 14 wire, spaced ¼" between turns; 1½" in diameter, tuned by a midget 100 to 250mmfd condenser (Hammarlund No. MC-250-M). The grid coil is mounted on the condenser. The rotor side is grounded and a short grid lead passes thru a ventilator slot in the side of the receiver cabinet and takes the place of the regular grid connection of the first detector. The antenna is next removed from the receiver and connected to L-2 which consists of 2 or 3 turns coupled to the end of the 10 meter grid coil as shown in the drawing. If a doublet is used, it may be coupled to the grid coil by a turn or two slipped between the windings as shown by the dotted lines.

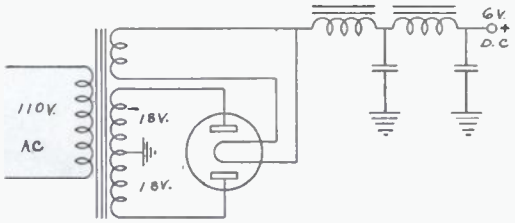
To tune for 10 meters, first tune in the 20 meter band and then set C for maximum noise level and then do the rest of the tuning for stations with the band-spread dial or with the main receiver dial if your receiver is not a PR-10 and still has no band-spread.

▼

Here's another handy gadget from MZX:— An old Raytheon Rectifying Tube (good or burned out) makes a dandy r.f. indicator. Upon trying this suggestion, we found they come in various colors, so if you are partial to colors, keep trying till you get one of the desired color.

Filament Power Supply

From W6III, Loren Walters comes the suggestion for those who have the opportunity to obtain for themselves a broadcast condenser microphone which has been pushed aside by the more modern dynamic or velocity microphone. The condenser even today has a frequency re-



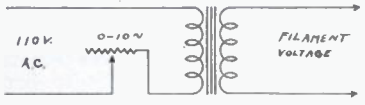
sponse that is hard to beat. Most of these condenser microphones have a pre-amplifier housed in their base which uses 6 volt filament type tubes.

After much fun the six volt filament tubes can be replaced with cathode type metal tubes to work from an A. C. source, but this replacing of tubes in the old pre-amplifier housing and the keeping of A. C. hum induced through the new filament system is not as easily done as it is to tell about it. There is a way out and is the less of two evils and that is the building of a power supply which rectifies and filters the A. C., delivering 6 volts D. C. to the filaments of the original pre-amplifier tubes. The small plate transformer for this power supply has a secondary of 18 volts each side of center, which when rectified and heavily filtered gives the desired 6 volts D. C.

▼

Old Receiver Battery Rheostat

Modern transmitting tubes use heavy wattage consumed in their filaments to maintain a heavy space charge to protect the emiter coating



of the filaments. The Manufacturers stress heavily this point but also state the fact that to high a voltage on the filaments will likewise shorten the life of the tube.

A practice in modern transmitter design the filament transformer for the transmitting tubes in the final is often placed under the chassis very

close to the tube sockets. This is very good indeed, but if the transformer was built a few years ago the manufacturers probably counted that there would be lost several volts in the long filament leads. These old transformers when placed in the new rig near the tubes which they supply with voltage may deliver several volts more than the manufacture recommends for said tube. This can easily be overcome by inserting an old battery rheostat (salvaged from some receiver of questionable vintage) in the 110 A. C. leads to the primary of the filament transformer. The current consumed in the 110 volt primary is small enough in most cases not to cause the old rheostat to heat.

If a volt meter is left across the secondary (connections made at the filament terminals of the tube socket) any variation of line voltage can be adjusted from time to time to deliver correct voltage always to the filaments.

▼

This is W6KTY. If he was to wash his face before this emergency generator picture was taken, it might help to recognize which one was the generator. Any way, Katy or Roy, as he is known in the Southwest section of Los Angeles County, is interested in Emergency Radio. He is a member of the Major Disaster Emergency Council of Los Angeles. The Amateur Emergency Net, is a part of the Communications Committee of the Council; the other units under that Committee being Telegraph, Telephone, Commercial Radio, and Messenger Service. To facilitate Emergency work, the Los Angeles Area, is divided into Fifteen Districts. Each district has its various Committees reporting to the Major Disaster Headquarters at Westlake Park. Concentration Camps for each District have been surveyed, and are ready for immediate construction anytime that they are needed.

Amateur Radio plays an important part in the Emergency set-up, and Three Amateurs have been accepted for each District to handle their Emergency equipment. The fifteen Districts are segregated into three Areas, known as A, B, and C. Thus the southern five Districts are known as Area C, and are under an Area Commander. Each Area has a different frequency. Area A on 1790 KC. "CW." Area B on 1760 and Area C on 1750, while the headquarters Station at Westlake Park, W6KJJ is on 1770 kc. The Mayor of Los Angeles is Chairman of the Council, and everything is under a City Ordinance, which specifies the various Committees, their duties, and who is responsible for each Committee.

In the beginning of any Emergency, especially if regular channels of communication are disrupted, the Amateur, with his Emergency Equipment, is able to step in, and see that there is no delay in inter-communication between the various Concentration points and the Headquarters. It is precisely for this purpose that the Amateurs portion of the Communications Committee was organized.

We hope that in a case of need, the trust that is placed upon them, will be carried out in the efficient and gratifying manner that Amateurs have always shown in times of Emergency and Disaster.

W6KTY is Commander of District 12, and Area Commander of Area C which takes in San Pedro, Wilmington, Athens Hill, Goodyear Tire Plant and the South Gate-Huntington Park Districts.

▼

Mention "The Radio Amateur News" when patronizing advertisers. They make this magazine possible and deserve your support.

Tnx OM

5 METER Activities

By Harold Rider, W6OEF

I wonder how many of you fellows have been working your share of 5 meter DX this summer. If you haven't, here is an idea that seems to be working out very good. During your QSO's on various bands, inquire as to whether the station you are working has a rig on the 5 meter band or not. If he has, fire up your 5 meter rig and have him listen for you. This idea has proved to be very successful and herein lies the secret of many a fine DX QSO. Word has come to me, that this system is going to be tried out up and down the coast for the next two or three weeks. The fellows in the East rather have the edge on us Western boys for working 5 meter DX, and it seems as though this system should work out very good.

As for the report on the 5 meter Field Day, August 15th, 1937. I have been unable to date to get any definite reports as to any extreme DX being worked, although several signals were heard here in Los Angeles which were believed to be from stations operating in the Sierra Neveda Mountain Range. But due to the fact that we are not sure as to the location and identify of these signals, we are unable to give a full report. The activity on the band has tremendously increased within the last month, and the signals from portable mobile stations have been coming in extremely well. Any of you fellows that were on the air, August 15th and did hear or work any of the northern station, please write in as soon as possible to W6OEF, so that we can make the next edition of this magazine.

W6RR of Santa Monica has been burning up the ether, with his new parallel rod transmitter, which uses a pair of HF 100's.

W6EXH of Stockton, Calif. is still very anxious to make direct contact with some of the stations down here in Los Angeles so they will be on the air every Sunday all day and if contact is not made, they plan to arrange a schedule with some one down here on 40 meter C. W. and try in this way to make contact, so lets listen for them. Sooner or later, I believe, direct contact will be made as their are several fellows here with Supers who are listening for them.

They have so far made contact with Mt. Diablo and Fresno, so good luck to you fellows, for we're still listening for you down here.

There is a W7 at Gold Hill, Ore. who has been squirting r.f. in our direction and who is believed to be running considerable power and this station is also very anxious to make contact down this way.

I am going to try and get some dope from a friend of mine who has been experimenting with Antennas and which may be the answer to contacting these northern stations, for as the old saying goes, the station is no better than the Antenna, and it is believed that the DX that is being worked in the east is due largely to the different types of Antennas used, so we hope to have some very interesting information on Antennas in the next edition of this magazine.

C. W. seems to be getting very popular on the 5 meter band here lately and several Portable Mobile C. W. stations at Big Bear, Lake Arrowhead, and distances up to 150 miles have been rolling in here and copied 100%.

Wonder how many have noticed how the San Diego signals have dropped off, they either haven't been coming through or the activity down there has dropped off which we hope hasn't happened, as San Diego has always been very active on 5 meters, and some very fine contacts between San Diego and Los Angeles have been made and if any DX is heard or worked or you have something in a circuit or anything you think would interest the other fellows on the 5 meter, please drop us a line.

W6PCA had a nice day on Mt. Wilson Sunday and worked 15 stations.

W6CHY was heard at Malibu Mt. and he received a nice dinner invitation from W6RR.

Stations worked and heard by W6HDV are as follows:—W6PCA, W6CHY, W6NWT, W6-RR, W6LQN, W6OJL, W6IRR, W6EVE, (San Diego), W6VQ, (Pacific Beach), W6NYW, W6KAK, W6OJB, (Oak Glen), W6OPF, W6-OTF, W6NZN, W6LRA, (San Diego), W6-NOC, W6JMI, (San Diego), and others.

Orange County Amateur Radio Club

By W6LQX

The meeting of Aug. 2nd, found our president, Noral Evans on a vacation. Less Gates, NSA was chosen to direct the meeting and very aptly did so devoting the major portion to a discussion of DX. The visitors present were Melvin Hill, B. Easley, NMH. Dissention broke out in the ranks when BAM lifted the lid off of his mothers wash boiler and served bottled dishwater for refreshments.

Our meeting of the sixteenth found a visitation group from the San Bernardino Club, including AVR, MNX, DGL, IWE, MHW. They announced a five meter treasure hunt to be staged on September 19th at 10:00 A. M., to start at Third and D Streets. All invited—Prizes and Refreshments promised, the club unanimously indicated a desire for a change in the refreshments introduced on the 2nd.

Club Gossip, Highlights and Personalities

JQX played a dirty trick on himself by mounting his tank condenser too close to his T20 with the result that an arc occurred between the getter in the bottle to the condenser causing excessive ventilation in the T20 envelope.

BAM had some tank inductor copper tubing installed on the tin lizzy as oil line to the filter. He was rolling merrily along on his way to getting the QSL cards for the gang when the tubing went open circuit causing the oil to all run out on the pavement. The next day he was on his back putting in new bearings.

NSA put a 35T on ten meter fone and got an R7 from Santa Ana.

LYM must have taken the RI's stenog out as he is flashing a Class A ticket now and has gone rabid fone nerts on twenty.

LXM now is the proud possessor of a first Class Fone Commercial Ticket. He got a heard card from Europe and is now out gunning for a bootlegger.

LHN can't make his 50T double.

BIH has a couple of tens built up as an inverter five meter amplifier with long lines as tuned circuits. If you don't think this is a good trick, just try it sometime.

NYA has been really going to town with low power and beam antennas.

OUT OF THE AIR FROM ABOVE THE HARBOR

THE UNITED RADIO AMATEUR CLUB

By His Knibbs

Pres., A. D. Sayer - W6IVG
Vice Prec., A. Goldschmidt - W6MED
Sec.-Treas., F. Eaton - W6KCX
Act. Mgr., W. Bradford - W6HCF

Meetings every alternate Friday night at Southern California Gas Co.'s Warehouse at the foot of brick hill on Pacific Ave., San Pedro, Calif.

We have secured through the cooperation of our Vice-President, W6MED, Al Goldschmidt, the use of the Southern California Gas Co's. Warehouse at the foot of the brick hill at the north end of Pacific Ave. at the entrance to San Pedro as our meeting place until such time as our regular meeting QRA has been reconditioned.

Perry Livingston has moved to a 5 acre ranch near Minneapolis, Minn. and is off the air at present waiting for his new W9 call. Says he wants to work his old friends in the sixth district soon as he gets back on the air again. He's busy covering the sky overhanging the 5 acres with antenna wires. Imagine having 5 acres to string up antennas in.

Our Secretary, W6KCX missed the last meeting on account of a heavy date. Moral: Never let love interfere with duty.

Al Goodyear, W6ERT just returned from a vacation trip to the high Sierras. From all reports, he had a wonderful trip taking in the east slope of the mountains as he went up, and came back via the coast route. We personally haven't heard from Al yet, but understand from his XYL that their dog "His Knibbs" caused lots of QRM on the way up, and they are looking for a good bug man to fumigate their car.

Al Sayer, W6IVG back on the air again on ten meters broadcasting from his new studio. The ten meter band opened up just in time for him.

Arch Eckdale, W6NDC was heard calling a K5 on ten the other night. Wonder what brand some of these guys use that make them so optimistic.

Will wonders never cease. We heard Cliff Pugh, W6JXF on the air again after several nice quiet years from his station.

Our friend Crystal, W6ANH has invited the club to his house for the next meeting and we are looking forward to a nice visit. However, no one is allowed to wear an overcoat with big pockets.

Our club enjoyed the presence of two of the members of the staff of our magazine at our last meeting. We sure hope you will come and leave your raffle luck home again some time fellows. We're glad to have you.

Another old member made new by attendance at the last meeting after several years absence was Don Bishop, W6EGQ. We sure hope it won't be so long between meetings next time Don.

Lots of the boys are enjoying five meters these days and are momentarily hoping to hang up a 5 meter DX record.

The ten meter band seems to have come back in all it's glory and lots of the local boys are enjoying it while it's good. In fact we in San Pedro really have some QRM to fight now, what with about ten or twelve locals on this band.

Bill Bradford, W6HCF has entered the ARRL Low Power Contest on the 21st and as usual will hang up a big record for the club. He won first prize on the raffle again last meeting. Boy—he sure must have a big stock of T-20 tubes from the Bell Club raffle as well as from our own.

The members of the Los Angeles Emergency Disaster Council getting ready to go back in the harness again on drill nights next month after a vacation from activities during July and August.

Al Sayer, W6IVG invites anyone who wants to see a modern, up to date Amateur Studio to call on him. He claims he has the last word in studios.

We recently sent an order to Bernstein Appleby Co. in Kansas City, together with a copy of this magazine and are looking forward to seeing their ad among it's pages in the near future. The quality of the goods they handle, together with their prompt service even out here to the coast, together with the fact that they carry lots of little items we are unable to find here on the coast, we think should be brought to the attention of all of us.

Elmer Hayes, W6MDX, the Mud Duck, has recently completed an all band portable transmitter capable of being modulated on all fone bands, and of working CW on all bands. His first report on fone was an R-8 from San Diego, so the little motor generator job surely does it's stuff.

This is all for this time. We're off tomorrow on a vacation trip and will be seeing you on this page again next month. 73.

Helix Amateur Radio Club

Kenneth Hallett, W6GNP—President
Cliff Kimball, W6MMV—Vice. Pres.
Henry Haenke, W6NWY—Sec'y.-Treas.
Carl Boltz, W6FTT—House Boy

That gang of clod busters known locally as the National City Radio Club is sponsoring a fb dinner and stuff to be given at the Italian Room of the U. S. Grant Hotel in San Diego on October 2nd. For one buck you will get a swell feed and a crack at the door prize, which is a $35.00 Smillie Rack job. WAZ maps will be given as favors, and there will be plenty of raffle prizes. Speakers will be—6QD, 6CUH, 6DHG. Nuf sed!

Our wk tired business man, 6ANU, arrived home safely this week, none the worse for the trip, and raving about the fb roads in Arizona. Now that he has had a real vacation, he may consider taking up hamming again. Hw abt it Gene?

W6JRM's xyl kicked through wid the monthly allowance, and Howard is back on 10 fone wid a nice shiney new 35T in the final. Now he is trying out all the new receivers on the market. Such optimism!

Barney, 6LYY has been seen out and around looking over some real-estate offers with a view to erecting a new QRA. The lot must be large enough for a diamond beam, naturally. Be sure to have the ham-entrance handy, Barney.

W6MMV, usually fertile field for gossip, is all snowed under rehashing BCL boxes, so not much ham activity from that quarter. Hpe business is good Cliff, and by the way, how about an introduction to Anne of Long Beach, that ham-to-be?

W6NWY, consistently blowing 43 modulators, is trying awfully hard to get on 160 fone. (We don't know why).

It looks as if 6MMV and 6NSY have a lease on two bands, taking up about two hours for a good old fashioned rag-chew the other nite.

W6FTT is rapidly becoming a fixture at one of our better known local broacast stations. How much will it cost for about 15 minutes to call CQ on 1330 kc om?

Dear Ed: Thanks for the suggestion on 6BHF in the last issue. The president of the club didn't even have to suggest to him to wash the dishes at the last meeting!

W6NDD's one ambition is to call CQ on the local police xmitter.

Flash! 6EPW has rented a new QRA at Ocean Beach, which includes a private yacht. 6MMV and 6NWY spent all one day making the craft sea-worthy. There's plenty of antenna space over nice sloppy tideland for lots of get-out.

P. S. A vy nice doublet was put up by the work crew also. A master-piece of electrical efficiency.

Dave Hannah, 6NBJ, is rebuilding some of

his speech equipment, which will take out some of his feed-back, we hope!

Flash! By actual count there are 312 amateurs in San Diego County. Howsabout some of youse guys kickin' in some news of your activities, etc., and come to the meetings once in a while . . . at least. At any rate, SEE some of the dx you've been working! (Or should we say QRM?)

W6OBD is now telling the gang that at last he's got it on W6GCT, for he recently received a QSL from VS1AN . . . and "Hank" is still waiting for his! (Shh! D'ya suppose he'll ever get it?)

W6KW was recently astounded at the turn of events when he contacted XX1A! Only to learn, and directly from the guy over the air for all to hear, that the station was an unlicensed U. S. rig! And KW was almost ready to believe that he had another new country, too. Tsh.

Flash! Flash! We are in receipt of the fact that there are enough ham musicians in San Diego to make up a first rate jam-band. Hws abt a Ham-Symphony?

Flush! Flush! Lewie St. Martin was seen going with some "ape" around town. I think she is a monkey wench.

Best regards from the Keyhole Kommittee.

Our Motto: "All but the news that's fit to print."

THE BELL CLUB

By E. A. Wallace, W6LAK

This seems to have been the vacation month as everybody was away or are away now on vacation. W6NAT just got back from a very nice trip to the middle west and reports a fine trip. He had some car trouble and had to be towed for quite aways, so he just hitched up a few of those large grasshoppers they have around there and used them for power. He says they were sure big enough. He went out rabbit hunting one night and found himself shooting grasshoppers, thinking they were jackrabbits.

W6FMK spent a week in Yosemite Valley and had very good results with his portable rig from there.

W6LFC is on vacation at Hodges, Lake, near San Diego and has a bi-push 6L6G exciter and a 25 watt PA set for modulation and is being heard by many fellows here in Los Angeles on 160 meter phone.

There have been quite a large number of out of District Hams visiting the club of late, too many to list all the calls. In the last month or so nearly every district has been represented and thru them we find that the Bell Club is well known all over the States.

There was a large turn out for the swimming party at Redondo Plunge the other Monday eve. and everyone had a fine time. Jimmie, W6IOA drove down after work from North L. A. to get in on the fun.

W6BWW and XYL had a nice vacation trip to Santa Cruz, San Francisco and Yosemite Valley. He says vacations just don't last long enough.

W6NPQ and family also had a trip to Yosemite Valley and Sequoia Park. This Yosemite place sure seems to be popular with the hams. W6NPQ is building a new 5 meter rig for his car as he wanted more power. The new rig will run about 10 watts to a 6A6 oscillator modulated by a 6A6 Class B.

Has anybody heard W6EJZ on 160 yet? They tell me he is building a new rig and should be on the air by now. How about it Charlie?

There has been a fine crowd out to the Bowling Alleys in Lynwood every Saturday night and all have a good time. W6EJZ claims that with a few months more practice he will probably be able to beat his XYL, Nellie,a few times, but she sure has been pouring it on him lately, better get busy Charlie.

W6OAQ seems to be the most active ham in the club, at the present time, as he heads the list of hams having the most QSO's each week.

We were listening on 160 the other day and was surprised to hear an old station back on 160 calling Louisie, Oh Louisie and signing a call from out Clearwater way. I wonder if W6CXH knows anything about this.

W6FDO, the Scotchman was out on a hill the other Sunday with his 5 meter rig and had Beer on Ice with everything that goes with it and was offering it to all hams who came up there and believe it or not, nobody would take him up on it and he had to bring the beer, etc., back home as there was far too much for him to consume himself.

W6MVM has gone high hat and got himself a Pierce Arrow Sedan. We hope he never gets far from a service station as the car only has a 30 gallon tank.

W6FEX, the little boy with the big bay window, was out to the club just in time to get his name on the bottom of the list with a big O for his number of QSO's for that week.

W6NGQ had his portable on display at the club and gave a good description of the rig which seems to be quite the thing.

We had a very nice visit from W6BUQ of Tempe, Arizona, the Chairman of the Convention Committee, and he gave a very nice account of what we may expect at the Convention, From his talk it sure is going to be one swell Convention, one we cannot afford to miss. The Bell Club is now making arrangements for a special Convention train from L. A. to Tempe. Attend the club and get full particulars.

Ensign Ford of the Calif. Naval Militia, gave a very interesting talk on electrical instruments and their use and care for the Amateurs. It was surely information all hams could use.

W6MXL was out the other meeting and gave a fine talk on his recent trip to Mexico City and points South in Mexico. He surely had a fine and interesting trip. Said he saw several XE hams, but as he talked very little Spanish and they knew less English the visits were rather limited. He says he had to eat a lot of new kinds of food as he could not read the menu and just had to point to something and hope he could eat it, but one dish was too much for him when he found it was fried worms. We have also heard by the grapevine route that there is a new "Junior operator at MXL's" a boy, would like to get the straight dope on this.

After quite a long spell of silence we hear phone.

W6LSO and also George Young were the lucky boys the other night when they both won about 5 times at the raffle. Boy I sure would like to borrow their rabbits foot for a while. Listen for George on the air now as his new call is W6PCA. He says it it the best call ever issued.

W6MNC is again active on the air. We hope to see Bert and his family out to the club more often now.

The ladies seem to be having a lot of fun playing cards, having 4 or 5 tables of 500 every week, the attendance increasing all the time. Mrs. Harkness, XYL of W6BUQ of Tempe, enjoyed cards with us the evening they visited the club and marveled at the number of ladies there and the idea of having entertainment for them. She assured us that there would not be a dull moment at the Convention for the ladies, so come on Gals, lets go.

VALLEY RADIO SOCIETY

Pres. Rudy Jepson, W6KEI
Vice. Pres. Jack Gardiner, W6CKR
Sec'y. R. D. Nagel, W6CAH

The vacations have taken most of the members out of town so there is a general let up in activity. Things are shaping up for a very interesting winter in the Valley Radio Society.

CKR, KEI and CAH are making plans to attend the Stockton Convention.

Rudy's portable 160 Emergency Transmitter is in use at Catalina Island by ASW. Contacts with the Island have been made by DDA. Regular skeds are planned. ASW is on location with one of the major studios.

Maybe the bovs will be back from vacationing for next month—so we'll see you at that time.

▼

United Radio Field Day

At our last club meeting, Friday evening, August 20th, final plans were laid for participation in the ARRL field day contest, it was a toss up whether we would enter or not, but with five or six of the never fail members pledging their support it was agreed upon.

Our good friend and member, 6IZT loaned his 1500 watt AC gas driven generator, which had been overhauled for the occasion by 6HCF, Bill Bradford, (boy what Bill don't know about motors and such) Ray Goody loaned one of the Bretting 14 receivers complete, thanks Ray, that was mighty nice of you. The rest of the equipment was loaned by 6ANH, 6HCF, 6KZU, 6ERT, and 6MED.

On Saturday morning, Aug. 21st, the day of the contest, "Brad" did so much running around that he wore a quarter of an inch of rubber off the tires on his puddle jumper, finally after loading that trailer to the gills he arrived at the oil well derrick, the scene of portable operation.

We all pitched in getting equipment installed, of course, "Brad" climbed to the top of the derrick and tied the antennas, finally the engine on the generator was started and the Bretting switched on, brother you may have heard noise and hash but nothing like what we were hearing, the commutator of that generator must have been coupled direct to the speaker.

We tried everything to filter it out but all to no avail, something wrong with the windings some place, now who has another generator, someone suggested Kenny Noll. 6KZU, so JXF and ERT high tails it over to Lomita to Ken's QRA, lucky he was home and we were back with the much desired juice maker before the gang had the old one off the base board, it was no trick to install the smaller one and with a couple of condensers tied in here and there the receiver was so quiet it was pleasure to listen to it.

We were a little late getting started but from then on it was, CQ low power field day contest, and how the old trusties worked em.

Just a few of the members showed up later in the evening to see mostly what was going on, anyhow there were lots of sandwiches and beer, not to say good coffee.

After 3 a. m., 6HCF and 6ANH were left alone to carry on till ERT and MED returned about 9 a. m. to relieve them.

About eleven, James Homsey and junior op dropped in to say hello, fine fellow is Jim and really takes amateur radio to heart even if he is radio inspector at monitor station.

From 12 o'clock noon on, HCF, ANH and ERT held down the job of operating till it was time to dismantle everything and go home, none of the other members showed up and the trusties had all the work of packing up to do, but its all done with a smile in the good old amateur spirit, all in all, we had a good time and ran up a worth while score, and before we forget, thanks to all the stations we contacted, especially to the stations that plugged for us on 160 fone, thanks, fellows. 73.

It is generally hoped that the Banning House in Wilmington will not be ready for a long time as the difference between good cocoa, made by XYL's instead of the dishwater served by HCF is quite noticeable among the members of the URAC. Thanx are offered Mrs. Sayer and Mrs. Crystal for their cooking efforts.

DX ROUND-UP . . .

SATURDAY, SEPTEMBER 25th

HERMOSA BEACH

Place: New City Auditorium, 2 blocks south of Pier Ave. on West Railroad Drive

— 8 P. M. UNTIL YOU LEAVE —

▼

DX will be cussed and discussed. Both CW and Phone men will be there . . . and how! Speakers include, Herb Becker, W6QD; Charlie Perrine, W6CUH; W. W. Smith, W6BCX; J. N. A. Hawkins, W6AAR, and several others.

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PRIZES THAT YOU CAN REALLY USE

▼

ALL THE DX MEN WILL BE THERE

TEN-METER ACTIVITIES

By Dexter Young, W6MLA

Well gang, this is the start of a new page for the Radio Amateur News and I am going to start off by saying that if any of you get, hear, or have any interesting info regarding ten please send it to me at 5153 Hillcrest Drive, Los Angeles, or phone UN-3760.

Being a columnist (ahem) isnt all it's cracked up to be if said columnist runs out of printable material, Hi. Also a credit line will be given to the source of any and all information received. Whew! thats off my chest, Now lets get started.

When the band has supposedly been dead W4EDD came thru from Coral Gables, Florida, Q5 and R9. Robbie is using 300 watts and a 5 element beam antenna. Guess the beam does it. He has been able to work VK2GU this Summer which is something of a record. I feel safe in saying that Robbie has had the outstanding East Coast signal this Summer. Wonder what kind of a sig he will put thru when the band really opens up?

July 19th was a very queer day on this ten meter band according to my log. Two or three W9 stations were coming in, not very strong, but they were coming in. I hooked W9JBO and I was very surprised to find that he was in Kansas. One of the other W9's was in Colorado. This was early morning. Then about 6:30 in the evening the W9's started coming thru again. I didn't write down all the calls I heard, but I did write down these—W9KCL in Cedar Rapids, Iowa; and our good friend Clint, W9WXT, Dwight, Ill.; W9OFL in Wisconsin and W9WTN in Pueblo, Colo. I called these guys till my face turned every color in the rainbow with nil results. They just were not hearing the W6's. I didn't hear any of the 9's signing over to 6's except the one in Colo.

The next couple of days the skip was very crazy and I might add, short. Heard and worked W6NWL in Salt Lake, Utah. He was coming thru fine and was using p.p. T55's class "BC" grid modulated. His quality was perfect. After we signed, I logged 6IHH in Northern Calif. He was pushing the "R" meter up to 6 and 7.

On the evening of the 23rd, about 9 p.m., 6MGH, portable at Oakland was heard. He had a very peculiar fade on him. The same night, W5FNH was breaking thru, weak but 100% readable. 6GCX near San Diego had a very short skip contact. He worked 6TO at Fresno. Another of the ninth district boys was heard, 9GPO of Pueblo, Colo.

Then for about three days, only the locals came thru, but again this guy W4EDD turns up on the 28th pouring thru an R9 sig.

On the 3rd day of August, there was one dx sig. coming in. But he was working duplex and faded out before he gave a call.

August 5th, was a red-letter day for the 5th district as I think every W5 on ten worked at least two 6th district stations. I hooked 3 of them and one was in New Mexico. Next to Nevada this is about the hardest state to get for WAS. Anyway it was a new state for me.

Two other sigs that I hadn't heard for a long time came in on the 5th also. W4FT weak but there, nevertheless and K6KMP with a f.b. sig. This was in the early evening. Another one of the K6 gang, I see, I heard on the 5th was K6OQE. I don't hear the K6's very well and yet he was urging the needle of the "R" meter up to 7.

CO2LY was a station that I heard once the last of July and again the first few days in August. QRA was Havana. Heard him QSO a W1.

For a few days again the band was void of dx. But on the morning of the 11th, I again heard this guy GCX working a W1. But GCX's W1 wasn't the only dx coming thru. Tuning around I heard a W3, a W2HEM calling TI-2RC. I knew TI2RC's frequency and tuned for him but he was just there and that was all. W4FQ was also coming thru too. It looked like the band was opening up again the way the East Coast was coming in and the next day, Aug. 12th, sort of proved it. The same stations came thru, plus a few more. The shortest skip sig. heard was W8OMY. I worked W3WA in Maryland, which was another new state. Boy, I'll have WAS in no time if this keeps up. Hi. There were plenty of W1's coming in, W1IYE being Q5R9. W1CCZ, the guy back in Cape Cod, Mass., with all the swell equipment which, incidently must of cost a pretty penny—was getting in here but not nearly as well as one would expect from such a swell rig. All districts but the 5th, 7th, 8th and 9th were coming in fine the 12th. I am writing this early this month as I am going to Catalina Island for a vacation and so this column will suffer. In my estimation, Catalina would be a swell QRA to work the VK's and K6's.

W6LOY went over to the Hawaiian Islands, July 25th. Guess he will be home by the time you read this. Last report I heard was that he was at K6MVX's and K6MVV's working back here to the mainland. I am going to try and get hold of Cliff when he comes home and get some "low down" on the K6 gang for you, which I will try to print next month.

W6DYW reports hearing coming in very well, VK2GU, R5 some evenings and much as R9, others. Smitty says he hears about 3 other VK signals and also a few ZL's. For a transmitter, Smitty is using one of these new Bi-push exciters with a Johnson "Q" antenna. He just put a reflector behind his "Q" and now he has a fine beam antenna. Checking it with me he raised his sig a whole 2 "R's" over his old antenna.

Lately, K6MVX has been heard working duplex with VK2GU. Quite a bit of "dx'y duplex." Hi.

K6MVV still carrie's on with his daily QST's but now that the band is open, I am afraid he has bitten off more than he can chew.

Remember, fellows, that I can use all the information you can send to me regarding the activities of your station or any of your friends. Thanks.

The way the band appears now it will be wide open from now on and next month I will try to get this column a little more up to date.

By Bill Driml
W6NAT

Howdy Folks:

I am very glad to bet gack to Los Angeles, and had a grand vacation, a long trip but all in all there is no place like home.

I had quite a few personal chats with the hams back east and I have seen some nice lay-outs.

A number of times I had the pleasure of visiting W9UEV and have enjoyed the chat with Eddie Hansen. He took me down to his room in the basement and I sort of sized up his place and he sure has a Fb. outfit. Altho it was 110° most of the time in Omaha, Eddie had a very comfortable room around 80° all day long.

Now to summerize his transmitting studio. First of all we will take a look at the photo. On the right you see his Rack and panel rig, to the left the operating table with RME 69 receiver. A static crystal mike, D104, telephone, 913 National oscilliscope setting on the receiver next to the 10 inch globe and his speech unit. He also has a field strength meter which is in the building up process.

First of all I will try to describe his rig. The xtal is a 2A5, first buffer RK 23, driving a pair of T-20 push-pull and in turn that is driving a ZT4B in the final stage. All stages are link coupled and the final is link coupled to a 20 meter half wave doublet antenna.

Eddie has seperate power supplies for each stage, including supplys for his speech equipment and modulator stage.

The rig can work all bands by inserting plug in coils in the various stages. He uses a California product coil, which all you fellows know and they are those well built Decker coils.

The voltages run from 250 volts to the Xtal, 500 volts to the RK23, 750 volts to push-pull T-20 and 1000 volts to the ZT4B. The ZT4B is similar to the HF200.

The rack measures 6'x22"x14" with all metal front panels and it is set in the side of the wall which was designed for that purpose, to place the rig.

All of Eddies' transmitting transformers and chokes are Thordarson. Most of the hams back there use this product throughout their xmtrs.

His shack has enough room for a xmtr station, it measure 10 feet by 12 feet, with work benches all around the room and the walls are lined with 3 ply wood neatly painted.

The speech equipment is built in a special metal cabinet and the tube line up is as follows, a 57 pentode, into a 53 mixer tube and into 53 parallel and that drives a pair of 2A3 push pull Class "A," in turn that drives a pair of 801 Class "B" push pull modulators.

Eddie has very Fb. phone xmtr. quality. How I know is, that I happened to run across his freq. on the 20 meter band one evening. And the next morning I went over to his home.

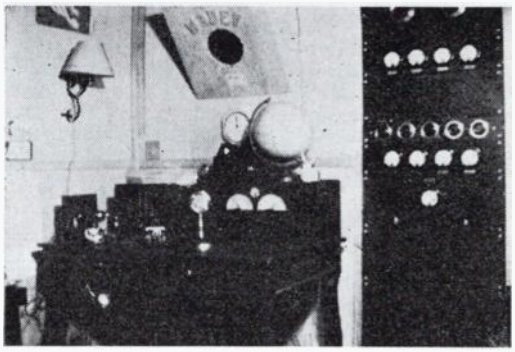
As you can see, he uses a Fb. receiver, and Eddie is also purchasing an RF Pre-selector model DB20 for the extra stage of RF gain.

I have already described part of his antenna system but not the important part. He is running his antenna between two tall houses and the direction is east and west. The 10 meter antenna, which is also a half wave doublet, is running north and south and that antenna is placed in his attic, two stories above the main floor.

W9UEV has been on 20 meters only a short time and has made a few very interesting DX contacts. He likes 10 meters quite well, in fact he cannot wait until the bands open up again. Here's luck to all your CQ's, Eddie.

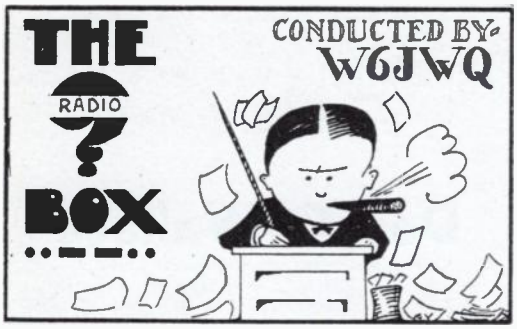
He received his first license in 1921 so by that year you fellows might say he's an old ham. Well he was, besides he still has some of the old relics left. He had a very good spark xmtr. in those wild days. Hi.

While I was getting this dope on paper, Eddie was working on a new power supply. He claims he's not getting enough voltage.



That just about winds up the whole situation of the studio in the 9th district, but Eddie is not only an efficient ham operator but he is also a sportsman, plays tennis, golf, swimming, sail boat and etc. in the summer time, and when the cold weather approaches he plays basketball, bowling and other sports in the winter months.

I have seen a number of xmtrs in that location but I have sincerally enjoyed the visit with Eddie and I wish him all the luck in the world, with all his contacts and experiments. So 73 Eddie and good luck.



Question: Why are the input transformers to a class "B" amplifier or modulator of a step-down ratio instead of being a step-up ratio like the usual input transformer?

Answer: While the grid input of a class "B" amplifier tube is infinite when no signal is impressed upon it, it drops to a very low value with a strong signal when the grids are driven far positive. In order that the reflected impedance to the plate of the driver tube will be suitable to its plate impedance so that proper fidelity and output of the driver will be maintained, it is necessary that the ratio be step-up from the class "B" grids the preceeding plate. The ratio will depend upon the characteristics of both the driver tube and class "B" tubes, being a greater step-down with either higher plate impedance of the driver or lower grid impedance of the output tubes.

Question: What is the principle upon which the variable frequency crystals operate.

Answer: With an AT cut crystal supplied in the holder with a variable air gap, its frequency can be varied over a limited band by varying this gap. Usually this variation may be about 6 kilocycles on an 80 meter crystal which will of course be multiplied proportionately when it is doubled into other bands. A crystal used for this purpose must be an active one to oscillate well with an air gap, and since higher frequency crystals would be very fragile, the 80 meter crystal is most satisfactory.

Question: What is meant by the power factor of a condenser?

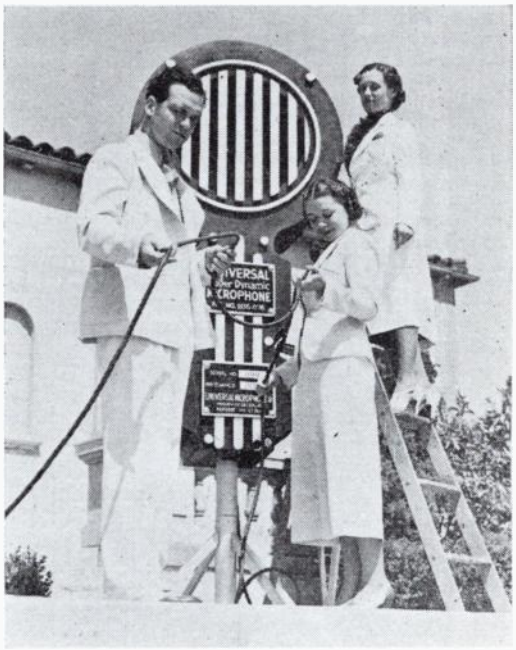
Answer: The power factor of a condenser is determined by the ratio of the resistance of the dielectric to the capacity of the condenser. With a perfect dielectric the current will be 180 degrees out of phase with the voltage while with less perfect dielectrics the phase angle will vary in proportion to the power factor. A mica or high grade paper condenser will have a practically perfect power factor rating while an electrolytic condenser has a poorer one. While this is not serious in a ripple filter circuit, it causes it to be a very poor radio frequency by-pass.

WORLD'S LARGEST MICROPHONE

Inglewood's celebration week, called Centinela Days and held late in August, this year saw the display of "the world's largest microphone," measuring six feet in height. It was made by the Universal Microphone Co. and is a reproduction of their new dynamic microphone.

Although it was used in many of the events, its main use was in the annual bridge tournament where 1500 players participated. The city streets were roped off and tables arranged on the main thoroughfare.

When the section tournament directors wanted to communicate with the chief tournament director to report progress or call for a ruling, Universal's cooperation included the loud speaker system, their dynamic microphones and even the Cal-Fon intercommunicating telephones that were used to 'phone the messages to the chief director from his sections.



Here is Chamber of Commerce Secretary Bob Hartman telling Virginia Long (left and Fern Weeks (right) not to speak too loudly into the gigantic dynamic.

It will now be rotated among many of the Universal jobbers all over the country for display purposes, according to James R. Fouch, president.

It is finished in crackle black finish with chrome fittings the same as the small, regular sized Universal dynamics.

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.

ELECTRIC TURNTABLE and Pick-up for sale cheap. See Bill Driml, W6NAT.

FOR SALE—One new HF100. Never used. First $10.00 takes it. W6MQS.

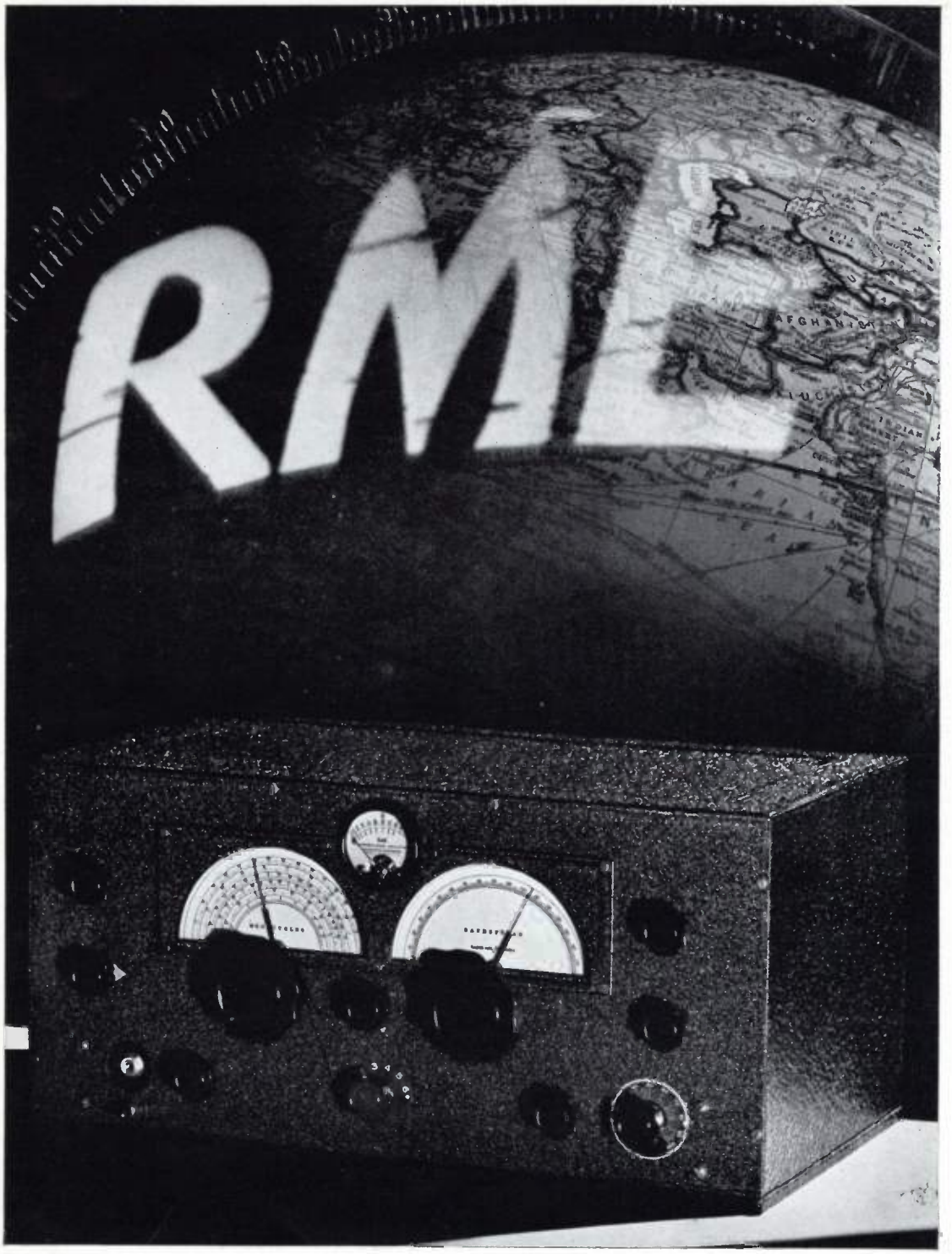
FOR SALE — PR-10, with or without Patterson Preselector. Just checked over at factory. Bargain for cash. W6HMH, 752 Athens Blvd., Los Angeles.

SACRIFICE $250.00—Complete Recording Studio Equipment. Value $1000.00. For further information call 3263 Verdugo Road, Los Angeles, CL-69125.

NEED CASH—Receiver, 4 months out of factory—rack mounting, noise silencer—bargain at $89. W6OYX, Box 1512, Station D, Los Angeles.

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.

FOR SALE—211 and Socket, 350 Mil. Choke, Single Secondary 1250 v. at 300 mil. transformer. W6OTJ, 8472 Mountain View, South Gate.



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All of the above receivers can be purchased on time payments.

CONVENTION TIME

This is the time of year when the air is filled with conventions. To the gang in the Valley and all those who attend the Pacific Division Convention at Stockton, we extend our best wishes.

When in Los Angeles drop into 'Radio Tel'—get acquainted with any of the eight hams on our staff. Ask for a free Log Book, Catalog, and demonstration of our new 25 watt modulator-amplifier. It's just the thing for that low powered fone job. We, too, have that famous Bi-Push transmitter, or exciter—either in kit form or wired 'raring to go.'

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