The RADIO AMATEUR NEWS

Volume I OCTOBER, 1937 Number 7

15c PER COPY

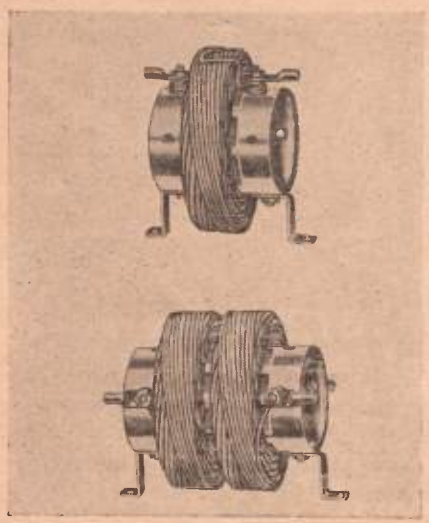
Radio Interference

By the J. W. Miller Co., Los Angeles

STATIC AND INTERFERENCE

Old timers can remember when the big "bugaboo' of radio reception was "static." However, fortunate indeed is the amateur of today who has only static to interfere with his DX reception. In all metropolitan areas and, yes, even in small towns, man-made interference is of such great intensity that static is pushed into the background.

Static may be defined as natural electrical phenomena which occur at radio frequencies or which are capable of modulating radio waves. Man-made interference consists of radio waves generated in various types of electrical equipment having intermittant contacts and oscillatory equipment, such as X-ray, radio therapy, etc. These radio waves are radiated from both the equipment itself and the power supply lines to



the equipment which act as antennae. That these radiations are capable of traveling great distances is well known, as witness the recent case where the Federal Communications Commission found a serious heterodyne beat on a commercial station in a Southern State to be caused by a high power short wave diathermy machine in New York.

When we consider that the intermittant contact type of equipment produces radio waves of similar characteristics to those generated by the late, but unlamented, spark transmitter, we can appreciate the seriousness of this condition.

The sad part of the whole man-made interference situation is that it is all unnecessary. In almost every instance the installations of a suitable filter network will prevent radiation from all types of electrical equipment.

HOW INTERFERENCE ENTERS THE RECEIVER

Interference may enter a radio receiver through the antenna-ground circuit and, in the case of receivers operated from power lines—AC or DC—, through the power supply wiring in the receiver. Doublet type antennae are effective in reducing localized interference which is picked up along the lead-in but not when the noise field extends to the antenna proper. The latter type of interference can only be eliminated at its source. The use of a suitable line filter in the power line at the receiver will effectively prevent interference from entering through this channel.

The function of an interference filter is to localize the generated waves to the immediate vicinity of the equipment producing them and to prevent their being carried along, and radiated from, the supply lines. In some instances a condenser of suitable capacity and voltage rating may be successfully used, although in most cases it is necessary to use a filter consisting of both inductance and capacity.

INTERFERENCE FILTER REQUIREMENTS

The condensers used in a filter are conventional and need only meet the requirements as to capacity and voltage rating and be of non-inductive construction. The successful operation of the filter depends upon the proper construction of the inductance or filter choke used.

The fundamental requirements of a satisfactory filter choke are:

1. It must have a low distributed capacity.

2. It must be capable of handling the maximum current required by the device with which it is to be used.

3. It must have low resistance to the line current in order to avoid excessive power losses and voltage drop.

4. It should be as small in physical size as is practical consistent with the current rating of the choke.

Requirement No. 1 means that jumble-wound or layer-wound choke cannot be used if it is to be effective at high frequencies. From a standpoint of low distributed capacity, the single layer solenoid is the ideal type of winding. Where high current capacities are required, the physical size of a single layer solenoid becomes prohibitively large and this large size results in excessive DC resistance.

ADVANTAGES OF DUO-LATERAL WOUND CHOKES

The duo-lateral or honeycomb type of winding is ideally suited for filter chokes, since it meets the requirements for low distributed capacity and compact size. However, until recently there was no machinery available for winding this type of coil with wire sizes larger than approximately No. 22 B & S gauge. After several years of experimental work on winding machines and wire, there has now been placed on the market duo-lateral wound line filter chokes wound with wire sizes ranging up to

and including No. 1 B & S gauge—over .3 inch in diameter!—and capable of handling currents up to 125 amperes with a maximum voltage drop of only 2 volts.

The duo-lateral type of winding has a much lower distributed capacity than either the layer-wound or jumble-wound types, and while this distributed capacity is somewhat higher than that of a single layer solenoid, for a given inductance and current capacity the duo-lateral type winding requires less space and wire— thus reducing the resistance of the choke—than a single layer solenoid.

Since its advent on the market the duo-lateral wound choke has been rapidly displacing all other types of winding used in interference filters.

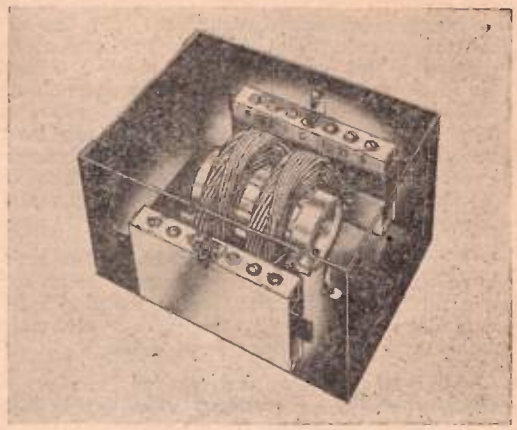
BASIC INTERFERENCE FILTER CIRCUITS

The interference frequency (or frequencies) produced by a given type of equipment often vary with each different installation, even when identical equipment is installed. This is due in part to the variations in capacity and inductance of the radiating supply lines.

Figure No. 1 shows the more commonly used filter circuits. Upon examination we see that all of the circuits are basically similar in that they use a choke offering high impedance together with a condenser having low impedance to the interference frequency. Thus any interference generated at the source is shunted to ground and prevented from being radiated along the supply line. The distributed capacity of the choke acts as a shunt circuit and by-passes a certain amount of the interference around the choke and into the line. The ground line, designated by the letter "X" in Figure No. 1, is of utmost importance and in most cases should be connected directly to the frame of the device producing the interference. In the event that the ground wire offers any appreciable impedance to the interference frequency, it will act as an antenna with resultant radiation of the interference frequency.

The circuits shown in Figure No. 1 "a and c" are not always effective due to the impedance of the common ground line. The circuit of Figure No. 1 "b and d" are more commonly used.

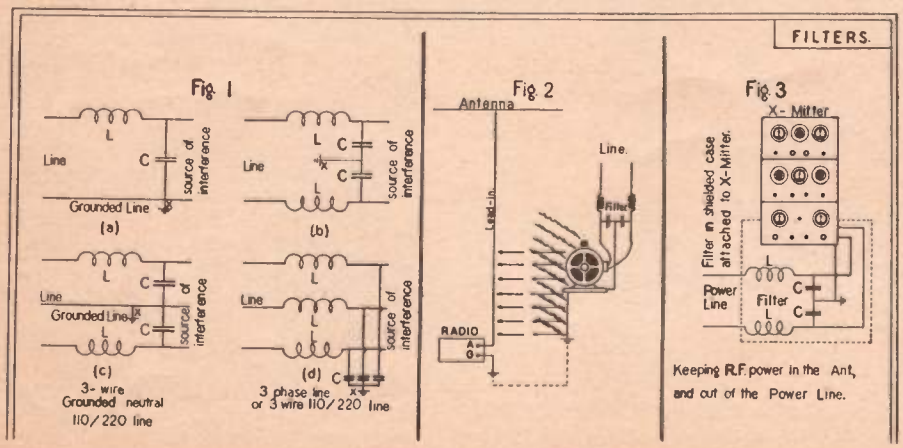
The installation of a filter results in localizing the interference within the device in which is produced, and in Figure No. 2 we see how radiation from the frame and ground wire of



a device in which a line filter in installed can still result in interference to near-by radio receivers. Except in extreme cases and where the impedance of the ground wire is high, this radiation is effective only in the immediate vicinity of the machine. This radiation may sometimes be reduced by shielding of the wire from frame to ground and shielding the device itself.

FILTER NEEDED FOR TRANSMITTERS

Many Radio Amateurs have found that the installation of a line filter in the supply line of the transmitter not only prevented radiation from the house wiring—to the annoyance of the near-by radio listener—and RF feed-back, but also resulted in an increase in power radiated from the antenna by as much as 20%. The filter should be installed where the power leads enter the transmitter and the ground connection made directly to the frame of the power transformer. Choose filter chokes having a suitable current carrying capacity and use condensers to provide an inductance-capacity ratio of not less than



5000 to 1 at the lowest operating frequency. Avoid using a coil and condenser which will be resonant at the operating frequency.

ULTIMATE ELIMINATION OF RADIO INTERFERENCE

Many cities now have or are adopting ordinances requiring that devices producing radio interference be provided with suitable filters. However, there is as yet little standarization in filter design and the installation of filters is still more or less haphazard. Within the near future there will no doubt be standard interference ordinances and standard definitions of the degrees of interference and the effectiveness of filter installations.

Practically all of the electrical utilities companies and large equipment manufacturers are more than willing to cooperate in reducing radio interference. Incidentally, the utilities are often blamed when they are not at fault.

Most of the manufacturers of interference producing equipment are now supplying built-in filters and it is entirely possible that all manufacturers of such equipment will be required by ordinance to produce their equipment in such a manner that radio interference will not be generated.

We may look forward to the day when all radio interference producing devices are either replaced or provided with adequate filters. When that day comes we may once again really enjoy DX reception. Except for "old man static!"

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Complete Program Planned for the Ladies

Mrs. Dwight E. Harkins, XYL of W6BUQ in charge of program

Mrs Harkins is extending an invitation to all XYL's, YL's and OW's to attend the Convention. Under her leadership they will be royally entertained.

A large card party and tea will be in order for Saturday afternoon. At this party a large assortment of prizes will be given.

Special arrangements have been made for the ladies to attend the "Midnight Follies" at the State Theatre, Saturday evening after the barbecue.

Sunday morning a de luxe tour and sightseeing trip of many beautiful Arizona sights is planned.

A grand good time is promised to all. In mailing in reservations, Mrs. Harkins requests that the ladies indicate what kind of card or table game they prefer to play at Saturday afternoon's party. This will help greatly in the advance preparations.

Don't fail to attend! Registration fee is the same as for the OM, and all ladies will be entitlde to the same chances on the reservation prize and door prizes.

5 METER Activities

By Ray Stevenson—W6HDV

Signals on 5 meters lately have been ragged due to the fade on dx stations over 25 miles distant.

An interesting observation was made the other evening during a qso between W6BIH in Costa Mesa and W6VQ at Pacific Beach, San Diego.

At times, W6VQ's signals were R8-9 with some fading, at one time his signals faded entirely out, but he was still being copied by W6-BIH, but not at all in L. A. W6BIH also faded in and out several times. Then later both stations were heard with plenty of volume.

There has been several bootleggers on the band of late, but they are rather difficult to locate due to the lack of cooperation of licensed Amateurs. Heard one Ham say over the air that he didn't like the situation but, he didn't care as long as his call wasn't used.

Regardless of whose call is being used, the harm is being done, and if the Hams don't get together and do something about it, the chances are the 5 meter band will soon be over-run with friends of the present bootlegger, who is so confident of getting away with his operations.

Lets have a real hidden Xmtr hunt with a bootleg station as our objective. We can look for whole-hearted cooperation from W6MQS, W6NQD, and W6ERT and W6IVG, who have been successful in Xmtr hunts, I am sure, Hi!

We can count on active co-operation from our good friend and SCM, Don Draper, who has always tried in the past to organize an active fight against illegal operations on any band.

W6BIH in Costa Mesa has been using an effective system, for sometime. He always calls CQ on 1CW, and as most of the bootleggers do not know the code, it is a simple matter to eliminate them, as far as Merv is concerned. And Merv can certainly handle a mean bug. I have had several nice qso's with him and he has what might be called a commercial fist. But, being a commercial op, that is only natural!

W6RR is still waiting for his Class B modulation equipment. His present layout puts out a very consistant signal, and he works San Diego and way points nicely.

W6OTF in Altadana has another fb signal that is heard consistantly, especially when he sends CQ DX on his 1CW—What do you raise, Allen?

The same goes for W6NYW, Jack and his XYL, Gertrude. Jack's signal has been heard, while I was traveling portable-mobile in L. A., Lynwood, Bell, Downey, Norwalk and Artesia and the Beaches.

Jack has a parallel rod osc. using 2 T-20's speech 56-56, two 2A5's driving a 212D modulator Class A. Some trouble has been experienced in getting this rig to load the Antenna. If the coupling between the Antenna and Plate Rods is coupled as tight as it should be the Plate mills drop off and the circuit seems to stop oscillating. A pair of 45's was used before the T20's were put in and the 45's worked fine. If any of you fellows have ever experienced this trouble and have any ideas which might be tried, please drop a line to W6NYW at 917 W. Kenneth Road, Burbank, Calif., and he will appreciate it very much.

While I was mobile on Wolf's Peak, which is Northwest of Hollywood, elevation 1655 feet, I had a qso with W6FDO, who was about to enter the 4 star Theatre to see "Firefly," when Lew Ayres came up to look over his property, upon which I had trespassed. He came over to my car, so I asked him to say hello to FDO, which he did, and FDO still believes he was being taken for a ride as he expressed. However such was the case and Mr. Ayres said that Amateurs could come up there for portable-mobile work, until he moved in sometime in December. And DX really comes in up there.

It is too long a list to include all the stations worked this month, but most all points have been worked from San Fernando Valley to San Diego. And west of Redlands.

W6NNP in San Gabriel has been putting out a good signal to Lookout Mt. Also W6MYT in Hollydale.

Ran into W6MKS on the road the other day, and he showed me his portable-mobile equipment. Made my Transceiver look sick, but he had holes bored in his brand new coupe for concentric feed while I have neither the new coupe nor the holes, but my little 30'-33' Transceiver does get out and also brings 'em in!

W6MKS has a swell rig, and puts out a mean signal.

Last night, October 14th, at Wolf's Peak I had a sked with W6BIH, who in turn had a sked with W6EE who was portable-Mobile at Big Bear Lake on a vacation trip from Berkeley. Through the cooperation of W6BIH I had a qso with W6EE as did W6RR. But we were overshadowed by the fact that W6EE worked W6OIN in San Diego. Very nice going fellows.

Regarding my above comments on bootleggers, I had a most enlightening conversation with a certain club member who explained many things to me. Through him I can assure the Amateurs that the bootleg situation is going to be cleared up to the satisfaction of all concerned. I really believe what this man has told me regarding this club and I for one am willing to help them learn the code which seems to be the stumbling block. So lets give them a fair chance to make their word good. Anytime a fellow needs help to become a ham, I'm sure the hams policy is to do all they can to help. I have been assured that no licensed call will be used by any member of this club and soon all will go off the air until licensed. So lets give the fellows that really want a ticket a break, but still go after the ones who continue to use issued calls and who do not intend to get a ticket.

At Wolf's Peak, Sunday, October 10th, I heard W6MKS on 1CW, at San Diego, but conditions were very poor and it was impossible to contact him, as he was never more than qso 4 r 5 and seldom that good. But conditions were better October 14th and I heard W6OIN and W6JMI very good, but due to qrm I did not give them a call.

W6BIH worked W6AVT who was portable-mobile in Oxnard on the way to Los Angeles from Stockton. Very good work due to mountains between them. Distance of approximately 100 miles.

A qso was made and a message relayed from Rincon Mt. to Soledad Mt. to Wolf's Peak to Long Beach taking three hours in transit. Total distance around 335 miles.

The station of origin was W6CHY and the message was delivered in Long Beach by W6KUA.

▼

The irate BCL roared at the Amateur: "If I didn't know you, and somebody described you to me, I wouldn't believe it."

And the world is still eargerly awaiting the publication of a good magazine to put under the leg of the card table. Wonder how we stack up?

Chewing on one end of the rag: "There is the whole theory in a nutshell."

Other end of the rag: "Queer how well you retain those things in your head."

Landlady—If you don't turn off that radio and stop the noise listening for DX you will drive me crazy.

Fried Ham—Hi, Hi, you're crazy already. I turned off the receiver an hour ago.

Hamsandwich: "Was her father surprised when you said you wanted to marry her?"

Hamberger: "Was he surprised? "Why, the gun almost fell out of his hands!"

SCM in restaurant: "Waiter, these veal chops don't look so tender to me."

Waiter: "Sir, I used to be a butcher and I can tell you that less than a month ago these chops were chasing a cow."

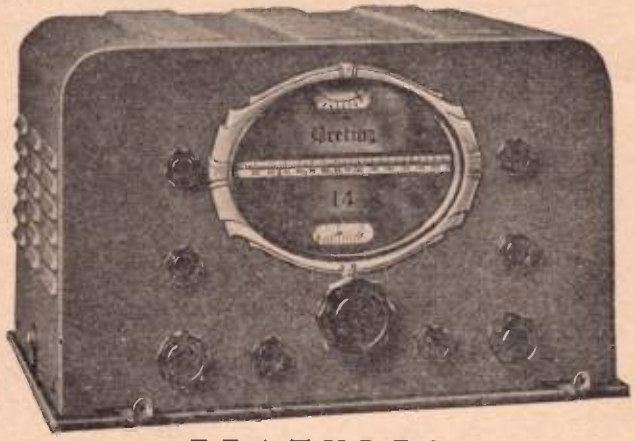
SCM: "That might be; but not for milk.

The New Breting "14" . . .

COMMUNICATIONS RECEIVER

"Precision Built"

"The Amateur's Choice for 1937"



FEATURES

1 Band Switch
2 Individual Coils
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8 New type Band Spread Dial
9 Continuous Band Spread
10 Large clear vision Dial
11 Accurate Calibration
12 Low Frequency Drift
13 Noise Silencing Circuit
14 Metal & Glass Tubes for Highest Efficiency
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16 Calibrated "R" Meter
17 Really Hi-Fidelity Audio
18 Efficient Crystal Circuit
19 Superior 10 Meter Operation
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FREQUENCY COVERAGE: 34,000 to 550 Kilocycles in five bands as follows:

34,000 KC to 14,500 KC
15,500 KC to 6,800 KC
7,000 KC to 3,500 KC
3,500 KC to 1,600 KC
1,600 KC to 500 KC

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2117 VENICE BOULEVARD LOS ANGELES

By Ray Harmon, W6GHU

What a month, what a month! ! ! Yes, it's good ole September that we are referring to. Just pick the continent you want and there it is every day, either morning or night. In the mornings: Europe, Africa, Asia and Oceania. At night add South America to the list. Another new Asian country is heard from and a goodle one too, that is, F18AC in French Indo China on 14260 kc, t9. For those of you that have worked him the full QRA is; R. Lebon, P. O. Box 13, Hanoi, French Indo-China. That isn't all by any means—there are new ones from all continents. In Europe, YU7XX is one of the most sought after there, and in Oceania, VR5CD is a goodly one. Their freqs. are respectively 14425 and 14300. This business of making WAC is such a cinch now that anyone on 14 mc. that hasn't done it yet is apt to be sneered at by the local boys. Ten meters has gone hogwild and nearly all the DXers will be found down there when they get tired chasing some of the good stuff on 14 mc. On the 12th of September, W6NYA down in Anaheim set the ten meter band on fire by working 22 different Europeans from 8 a.m. to 1 p.m. He must have really had a field day because we heard K5AY and LU6AX also calling him on one of his QRZ's. NYA still uses the Diamond and a T55 to produce his sig.

That ole forgotten DXer, W6EXQ, has come back to life in a big way. We hear Ralph plugging away every night and he has come out of the mess with some really good ones. Some of the best are: W1OXAB the station of the McGregor Arctic expedition who was at Etah, Greenland when Ralph worked him. Fre. is 14300, t9, this one is in the hard zone 40. One that tickled Ralph greatly was finally working an "eyetalian" and I1KN on 14300, t9 was the boy. EXQ also finished his "R9 WAC" with ZS1D. Some juicy ones EXQ has heard but can't raise are YU7XX and ST2LR. ST2LR is in Egyptian Sudan and on 14300, t9. Ralph now has 94 countries and 34 zones.

And as we once said, Ten has definitely opened up and to help prove it W6BAM kicks thru with a nice one worked on ten and that is SV1RX on about 28,500 kc, t9. This makes BAMS 37th country and 20th zone on ten and gives him 35 zones in all. BAM also added FT4AG, 14410 kc, t9, K6TE in Wake Island, 14075, t7, and VQ3FAR, 14145 kc, t9 and now the ole total hangs on 90 countries and 35 zones and with an old 66' zepp for an antenna.

And a word about SV1RX, he hangs out on 14245 kc, t9 and says to send crds via SVIKE — C. Tavaniotis, 17-a, Bucharest St., Athens, Greece. While VQ3FAR is now coming thru every morning and consistently r7 on 14145 kc, t9. He may be QSLed thru the RSGB or Direct to J. A. Farrer, care of T. C. G. M. Ltd., Sekenke via Kinyangiri, Tankanyika Territory.

W6HEW is still doing all right for himself and has worked 67 different ZS, ZT and ZU stns, also a bunch more new countries. Adding VS2AK who was worked on fone, FY8E, 14415 chpy dc, FI8AC, 14260, t9; VQ3FAR, 14145, t9 and VP7NS, 14030, t9. These give Mort his 83rd country and 34th zone. HEW is grid modulating his 150 T's on fone and has all continents except Europe now.

W6CUH is now settled at Hermosa Beach and is working his head off to get his buffer on the air because he heard a new country and besides that he is getting the fever again. Charley wants it definitely known that he is not on fone! hi. Says maybe he will toss up a 1000 foot long Vee beam for Europe and a simple Fuch for the rest. (What we want to see is the tossing of the 10,000 ft. vee).

W6KIP is giving us the Double Cross, hadn't heard Alex on the air for ages so we figured that he must be out hunting for that qra with enough room for a Diamond for Europe, but instead Alex has been doing some DXing in the Wee small hours and now has 106 countries and 36 zones—some of the newer ones are: VQ3FAR, 14145, t9; VR1AM, 7100; VR2FR, S. E. Lowend 14 mc.; SV1RX, 14245, t9; VR4AB, Solomon Isles; VK4KC, Papua, first W6 PAPUA qso.

W6DOB bought a new NC101X receiver and has rebuilt it to suit his own desires and says its a whiz on ten meters. DOB who is so fond of a vertical "Q" antenna, decided on some changes and so made it a 3/2 wave antenna but sez results not so hot so is changing back to the ole half wave.

And here is something we would like to know and that is, who are the monkies signing the calls YP3AA on 14030, t7, FU1YL, 14175 rac and BS2U on 14460? Looks like some of the eastern lads with a misplaced sense of humor.

A W7 thought he had a secret on a good one in zone 23 but he told antr W7 about it and now it is not a secret—any way if you look on 7028 kc you might find UT3CN who is supposed to be near the Tibetian border line in zone 23. (Almost forgot we had a 7 mc. band).

W6KBD finally got started and dropped us a post card from Portland, Ore. Sez he was up to 7AMX but the guy wasn't home. Sez the rest of the town hams don't know anything about the 20 meter band. For the fellows who want to drop Art a line, address him care of General Delivery, Ketchigan, Alaska.

For the bunch that were giving us the knock about the Cut at the top of the column, go ahead and laff, next month we will have some you might want.

Where was the DX at the DX meeting? From the gang that was at the meeting the Europeans must have figured they were being Boycotted. As W6HEW put it, "What a night to be home shagging DX." We will say one thing we have never seen a finer bunch of prizes aniwhere before.

W6CEM of the 20-40 club is now back on the air fairly regular and has added a bunch of new countries. Among them: VU2DP near the fone band and hi edge; K6TE, 14075; YV5AN, 14120, t9; HS1BJ, 14100, t9; and YS2B on 14410, t8 and he now has 30 zones.

W6GNZ also of the 20-40 Club is back on the air again with a new setup using a 35t driving pp baby Gammatrons to 700 watts, also a new NC101X receiver. Says he worked HR4AF on ten meters for his 70th country and now has 30 zones.

Guess who the boy is that uses 210's and has 104 countries, that was so anxious to work YS2B that he cranked his E. C. oscillator 40 kc. outa the band and then got tagged by Grand Island for it?

W6FAL of the ole WCA gang is on the air with SE pp HF100's and doing ok.

And speaking of the WCA gang who was the bright boy who pulled the wrong switches and just about send CXW's 150T's up in a blaze. (Glory?)

We were quite surprised to note the sudden rise in the countries worked list on some of the local DXers. Some of them who had only 70 or 80, a month or two ago are now listed as having a snug 100 countries. (Jealousy?)

Not an awful lot of Dpe this time but all of you please try to have your dpe in by the 22nd of the month and also with the Frequencies and QRS's of all DX worked.

▼

HAVE YOU HEARD . . .

By W6MDQ

About the ham that looks for something good . . . for nothing . . . usually gets something that is good . . . for nothing.

W6DDS has turned into being a monitor station, to help out the "new hams."

W6EJZ has a monitor station of his own, W6NAT.

W6JWY telling about his new empire building radio towers—wow!

The DX Amateur program over "KMTR" each and every Saturday night at 12:00. Listen in, you Hams.

W6PAP calling CQ—80 meter fundamental frequency on 160 meter fone.

W6LZE is working his way thru college—being a pearl diver.

W6MQZ is going in for commercial fishing in a row boat in the big drink—Good luck, Tom.

W6LZV, Johnny is rebuilding new rig—a pair of 01A's in the final—gave up and borrowed W6NUY's rig to get back on 160 meter fone.

▼

HAVE YOU HEARD? . . . .

G. A. Lebun - W6MDQ

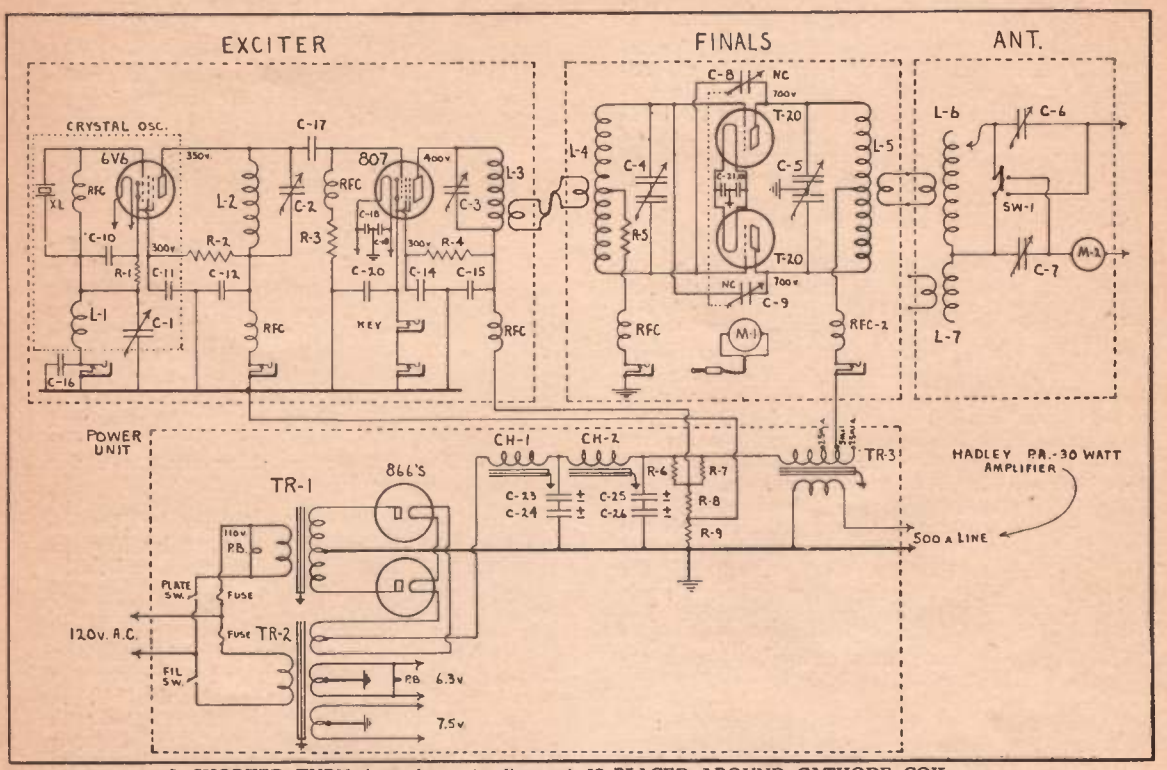
Larry Adams has been promoted to the post of chief recording engineer at Associated Cinema Studios, Hollywood transcription firm, and Fred Bowen has rejoined the technical dept.

▼

KFI, Los Angeles, used its new pack transmitter in Sept. for the Western amateur golf tournament. The play by play description was broadcast via the pack, picked up at the clubhouse on a receiver, and sent to KFI via land

lines. The transmitter, designed by Harrison Holliway, KFI, KECA general manager, was dedicated at the soap box derby in Aug., later used on the rear of a fast moving Hollywood fire engine, and put into service for the third time at the golf tournament.

New Transmitter Kit



A SHORTED TURN (not shown in diagram) IS PLACED AROUND CATHODE COIL

The dream of every amateur is that someday he may own a Transmitter completely assembled in a large heavy rack, constructed to have a fine commercial appearance. This dream is seldom realized as the most common practice among amateurs is to lay out and build only one section of a Transmitter at a time. In obtaining a neat commercial appearance it is necessary that the complete lay-out of the Transmitter be pre-determined in order that there may unity in lay-out throughout the complete transmitter.

The manufacturers of radio parts have always been anxious to offer whatever aid possible to the Amateur in order to enable him to obtain the utmost of satisfaction from the various products which we will use from time to time. In order to better supply the demands of the amateur trade, the ROBERT M. HADLEY COMPANY of Los Angeles, now offers their new complete Transmitter Kit.

In the lay-out of this Transmitter much thought and attention has been given to the problem of size, cost, appearance, lay-out, and circuit operation. From the start it was thought wise to build the Transmitter as far as possible around low voltage power supplies in order to keep the cost of parts at a minimum. The Transmitter has been laid out to completely fill a standard 43¾" rack. There are five panel sections including antenna coupler, final amplifier, exciter unit, power supply and the 30 watt 6L6 Hadley modulator unit.

A brief discussion of the circuits is as follows: The exciter unit consists of a 6V6 tube operating in a revised tri-tet circuit similar to that described in the "Radio Amateur News" in an article written by Karl Pierson. This circuit differs from the standard tri-tet circuit in that a single shorted turn is closely coupled to the hot end of the cathode coil. The loading effect of this coil tends to stabilize the operation of the 6V6 tube, removing any tendency toward self oscillation. The output of this oscillator was found to be quite stable when doubling, tripling and even quadrupling the frequency of the crystal. The 807 tube was chosen as a buffer doubler because of the high output obtainable and because this tube does not require neutralization in this circuit. The usual difficulties, such as self-oscillation which often occurs with the 807 have been overcome by heavy plate and screen bypass condensers. The Taylor T20 tubes were chosen for the final stage mainly because these tubes have the highest rated output of any of the tubes operating at low plate potentials.

The power supply has been designed along conventional circuits, however, parts have been chosen with conservative ratings to give the fine regulation desired for this transmitter.

The antenna coupling system used in this Transmitter is of the tried and proven type already popular among amateurs. This unit con-

sists of a large link coupled loading coil together with two condensers arranged for series or parallel connection. With this coupling unit it is possible to match almost any antenna in common use. In adjusting and tuning the Transmitter, one notes the ease with which the adjustments may be made. The coils and condensers have been so chosen that there is no difficulty in obtaining definite reasonate peaks on any band. A very fine control in the amount of power drawn from the final tank coil is obtained by the adjustment of the link between the plate tank coil and the antenna coupler coil.

The modulator unit is the new Hadley 30 watt 6L6 Amplifier which couples into the 500 ohm in-put of the modulation transformer TR-3. This modulator has been carefully engineered to have a very flat characteristic with extremely low distortion. The fine characteristics are obtained by the incorporation of quality parts throughout the circuit and also by the aid of two-stage feed-back coupling from the secondary of the output transformer, and feeding back into the cathode circuit of the driver stage.

The Transmitter has been on the air but a very short time, however, the results obtained have been more than satisfactory. During the test period satisfactory phone contacts were made with points in South Africa and Australia. Reports on the East coast have been consistently QSA5-R9 with excellent tone quality beinb reported at all times.

It will be interesting to note that the new Hadley Transmitter may be used as an excellent driver for higher powered Transmitter stages. The 30 watt Amplifier should give sufficient driving power for a Class "B" audio system capable of delivering 400 watts of audio, while the two T20 tubes should be capable of driving most Class "C" stages operating within amateur limitations. It is thus seen that none of the initial investment in this Transmitter would be lost should one desire to increase power at some later date. Circulars are available from this company describing this transmitter and containing information regarding higher power.

▼

NEW AMATEUR ORGANIZATION

A new Amateur Organization was founded last month in the San Francisco area. This new group is non-partisan and non-political in nature, opposes no other recognized amateur organization and seeks the co-operation of all amateur factions so that they can be united for a common purpose.

Application cards for membership were distributed at the Stockton Convention and they received a large number of the most active c.w. and phone amateurs in Northern California.

Anyone interested in this Organization can obtain literature, application blanks, etc., simply by writing Mr. Evans, W6OAO, 1129 Park Avenue, Alameda California.

Who's Who and What's What on the PR-15

By C. W. Weinberg

There have been numerous rumors along the grape-vine that something is destined to happen in connection with the PR-15. Most of the stories have been somewhat confusing and contradictory so a litle snooping has been done and the following information gathered which we believe to be reasonably accurate.

There IS something brewing and here's the dope. Increasing demand for sets has taxed the production facilities to the limit under the present operating conditions, consequently, it has been found necessary to divorce the PR-15 from the BCL sets also being produced and organize a separate division independent of other incumbrances. This permits large scale production plus a high degree of precision and uniformity, thru the concentrated effort of the entire staff of this division being devoted to the production of this one model alone.

This division is to be known as Pierson-DeLane, Inc., and will be operated by Karl E. Pierson (W6BGH), W. B. Delaplain, and L. E. Abbott. Karl E. Pierson is the originator and designer of the PR-15 and is present Chief Engineer of the Patterson Radio Company. He will act as Chief Designing Engineer and Production Manager of the new division and will personally final check every receiver produced. W. B. ("Del") Delaplain, who has been connected with the motion picture industry as a sound engineer for a number of years and is widely known in that field, will act as General Manager. Mr. L. E. Abbott, who is a man of quite some means will act as Financial Advisor. Last but not least comes the original CW man (at least his initials are C. W.) Charlie Weinberg, who will still be in charge of sales.

When all this transpires we know the latchstring will be out to the boys every day—yea, often far into the night! Here's to bigger and better PR-15's and speedy service.

We understand that their slogan is to be: "All orders filled within twenty-four hours of receipt of the order."—even if they have to stay up all night to do it!

▼

Frowsy OM on the night he was not looking for DX: "This beer won't cause any damage to my ears, will it?"

Husky Bartender: "Not if you've got the money to pay for it!"

Operator in charge to assistant in monitoring station: "Poor old Perkins has completely lost his hearing. I'm afraid he'll lose his job."

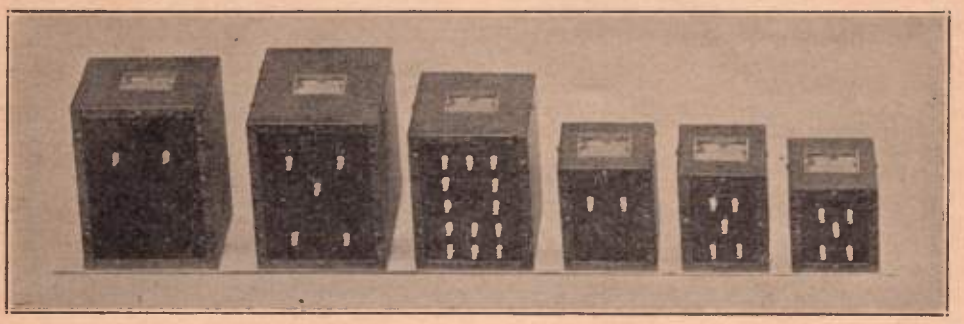
Assistant: "Oh, no. Haven't you heard He's been transferred to the interference complaint department."

Judge: "Are you Married or Single?"

Brass Pounder: "I really don't know, your honor. I've had amnesia twice."

SKAGGS SYMMETRICAL AMATEUR TRANSFORMERS

This Complete Line Cased And Compound Filled As Illustrated Below



Transmitting Plate Transformers

Cased and Compound Filled As Illustrated Above

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

Transmitting Chokes

Cased and Compound Filled As Illustrated Above

M. A.	Swinging Chokes 60/12 Henries	Smoothing Chokes 20 Henries	Smoothing Chokes 30 Henries	Modulation Chokes 50 Henries	Volts Insulation
100	$4.00	$5.00	$6.00	$8.00	2500
150	4.50	6.00	7.50	9.00	2500
200	5.00	7.00	9.00	10.00	2500
250	6.00	9.00	12.00	14.00	5000
300	6.75	10.00	13.50	16.00	5000
350	7.00	11.00	15.00	18.00	5000
500	9.00	13.00	19.00	24.00	10,000
750	12.00	16.00	23.00	35.00	10,000

Above prices subject to change without notice

Transformers Built To Order — Transformers Rewound

SKAGGS TRANSFORMER CO.

5894 South Broadway — Los Angeles, Calif.

Phone ADams 7652

San Diego Hamfest

By The Keyhole Kommittee

As all of you fellows probably know by now, the San Diego Hamfest came off in good style as arranged and right on scedule. Unknown to the gang (and probably just as well, too!) the festivities were taken in by several style as arranged and right on schedule. Un members of the KEYHOLE KOMMITTEE in order that you fellows would be able to read the real dirt on the occasion, unbiased and untainted by any trace of political coercion.

Johnnie Griggs, 6KW, with his able assistants, 6OBD, 6MMV, and Louie St. Martin, working very hard, put this affair on in commendable style. The affair was held at the P. S. Grant Hotel, in the Plata Real at 8:00 P. M. on October 2.

According to our accurate census there were 153 in attendance, including om"s, flatfeet, xyl's, and yl's, swl's and bcl's, all of whom enjoyed a dinner as good as Ma cooks at home. No one will have the nerve to stand up and say he is used to better.

At the last minute we were sorry to learn that 6CUH would be unable to attend, but his place was ably filled by 6AAR, Bud Hawkins, who gave us a lot of dope on his 1931 experiences with line-voltage regulation. He also emphasized the point that not all the impossible things are impossible, that statements of scientists should be taken with a grain of salt, and that most good ideas come out of the basement workshop. This doesn't mean that you fellows should try to dope out a way to key the transmitter with the key across the line!

W6QD, Herb Becker, analysed thoroughly the DX meeting and also gave a few very humorous experiences in DX work, including one with a British ham in particular. Does your xyl know you're so chummy with Ginger Rogers, Herb? The KEYHOLE KOMMITTEE would like to get one of those autographed photos, too, om.

Mr. W. F. Chappman, Electrical Engineer with the San Diego Consolidated Gas & Electric Company (plug!) gave a very interesting talk on how to get better line voltage regulation under Rule No. P6 of the State Railroad Commission. (See your local power distributor for details).

Others on the speakers' stand who were introduced to the gang were 6GG, Charlie Blalack, Div. Director of the Southwest Division, 6FQU, . D. Stephens, R. M., 6EOP, Harry Ambler, SCM, and Lee Sheridan, 6OBD, who introduced Mr. Chappman.

We were also quite honored in having the entire staff of both the Radio Amateur News (plug!) and 73's with us. Hy'ya gang!

We were asked by the arrangements Committee to apologize for the fumble-fingered error in not introducing K6NWE, W7MC,, W5GBA, and some other out-of-district visitors, but there was so little time, and so much to do, that someone slipped up on this one. We think so too!

The Grand Door Prize, a Smillie Super Stream-lined Cabi-Rack (a new departure in what the well-dressed xmitter will wear this season, was won by Bill McKinley, S. D. City Electrician who won enough raffle prizes to build the works inside. All he needed after the raffle was an A. C. outlet to plug into. Congratulations, Bill! (I didn't get any, myself!)

The high point of the evening was the drawing for the consolation prize. The winning ticket was held by that paragon of manly beauty, that runner up to Clark Gable, that butter-fingered bungler of the airways, Cliff Kimball, 6MMV, who was presented with an 852, which he promtply smashed against the mike-stand while attempting to describe how big a rig he was going to build around it! Well, we know now that Cliff hasn't lost all those fisherman's charasteristics which he so ably displayed at the last field-day!

There were 32 raffle prizes (27 after Bill McKinley got his share of them) and there was quite a scramble for the goods, 6BZR's xyl coming out of the jam with three. We notice Dick wasn't far behind when she went up to pick them out!

After all this rioting and general melee, the floor was cleared, the om's grabbed the yl's and xyl's and proceeded to oscillate in a lively manner to the music of a very able dance orchestra.

The only fault we have to find with the accommodations is that the cocktail bar was smaller than the dining room, so that we could very seldom get within CQing distance of it. However, a vy fb evening was had by all of us, rag-chewing, and chinfesting until the usual wee hours.

Best 73's to all of you, and we'll see you at the Tempe Convention.

Memories of Stockton

Here are a few photos showing some of the activities at the Stockton Convention. As the facial expressions show—a good time was had by all. Perhaps these scenes will bring memories of those three thrill packed days.

On the top row, left shows a couple of energetic 5-meter hunt hounds. Center top gives a glimpse of the Reno Squad reposing in the sun while a group of Amateurs are probably discussing antennas or sumpin' in the background. Then at top right, we have W6BAA giving a little story about Charlie (his dummy) for the ventriloquist act that captured the crowd a few minutes later.

On the left again, the middle picture shows the XYL's going for a boat ride down the famous San Joaquin River. Middle picture shows part of the gang waiting for the Official Photographer. Aha—at the right, middle section, we have Budlong slipping Bane and Becker a little friendly advice (we hope).

Bottom Row, left to right, shows some more important discussions—a group of ardent five meter boys discussing possibilities of where the hidden transmitter might be—and winding up the group of photos again shows the XYL's enjoying that smooth river ride.

By G. Y. — W6PCA

We had one of the most interesting Old Timer visits that we have had for many moons the other afternoon with Ralph Short, W6DH and A. T. Kempfer, W6LB. Believe us when those two old ship's ops get started spinning yarns—well you just sit there with your mouth open and the first thing you know it is midnight and they are just getting warmed up.

If there should happen to be any of you good people that do not know Ralph you sure have missed something, and who ever it was that hung the handle of "The Ham Radio Philosopher" on him sure hit the nail on the head. He has been on the air continuously ever since 1907 with the exception of the war period. His first call was CR, then RS and when the license law went into effect in 1912 he drew 6KO. After the war, he was given 6DH which he has held ever since and he says it sure fits him because he has been in "The Dog House" ever since.

Incidentally, CR was the first station that we ever had a QSO with way back in 1909. We were both using 1" spark coils in those days—powered with old discarded automobile dry cells. Our Condensers and insulators were made out of beer bottles and pickle jars and what have you. We only lived nine blocks apart so it was easy to run back and forth on our bikes if we were not sure what the other fellow had sent.

Ralph was the instigator of the first Radio Club in Pasadena and in as much as he has written about it in his "Family Album" in the April, 1937 issue of "73" we are going to quote from his article and let him tell you about it in his own inimitable style—so here's Ralph:

Quote . . .

. . . "The first actually organized and active amateur radio club in this "neck of the woods" was organized and officed by some of the very first amateurs (most of whom were pioneer hams even before the U. S. Government had seriously considered the existance of such) and even before the A. R. R. L. was organized."

"This club was formed and functioned as the "Pasadena Radio Club" and held its meetings in a small rented cottage at North Marengo and Peru Streets in Pasadena twice each month at the first; and weekly later on, with every member paying monthly dues, which went for clubhouse expenses, etc. Each member was required to have some kind of an active station on the air. Of course, there were no government licenses or calls issued at that time, however, so everyone just decided on some call letter combination he liked best and used it for his call: his initials in many cases."

"The first officers of this club were(as near as this writer can recall): George Young, (now a member of the Bell Club) President; Stewart Rhorig, (now understood to be with RCA in the east), Treasurer; Kieth LaBarr(W6-KX), was Secretary, and Yours Truly, (ex-6KO), was Vice President (and later president.)"

" . . . Following is a partial list of the membership of this first So. Calif. Amateur Club, according to the best memory and records of this writer: George Young, Herbert Hall, Stewart Rohrig, John Lyon, Keith LaBarr, Harry Stoermer (who incidentally had the two highest antenna "sticks" in So. Calif. at that time, the poles being 150 feet high and about 1000 feet apart); Charles Eidemiller, Bert Harper, the writer, and quite a number of others, all of whom ye scribe just cannot recall by name at this time. . . " End of quote.

We can add to the above that Ralph was the best President that the old club ever had, in fact we have never known him to be behind anything that was not for the betterment of Ham Radio or the amateur fraternity as a whole.

In 1912, Ralph got his Commercial 1st Class and, like a lot of the "Good Old Timer's" (and not a few of the newer fellows) went to sea as "sparks" on the old lumber schooner "Yosemite" out of San Pedro. From there he went as 1st op on the "Great Northern," "Sonoma," "Agwi Smith" and several others. The "Agwi Smith" was at that time the largest and finest oil tanker afloat. She was equipped with the old "Independent Wireless" arc set—how we all used to cuss those old "Arcs"—and how!

It was on the "Sonoma" en route from Australia that W6DH had his most exciting experience as a radio op. The 3rd mate got too much owl juice a few miles out of Pago-Pago (Tutuilla to you Hollywood fellows) and still was basking in the after glow of a beautiful hang-over when the ship reached the now famous Howland Group of Islands and probably mistook one of the unchartered coral reefs for a beer garden or something, anyway he sure cracked the ship up on one of them in great shape. Ralph had left the 2nd op on duty and had gone to bed in an upper bunk next to the transmitting room and was, no doubt, peacefully dreaming about one of the pretty Pago YL's he had left behind when all of a sudden he found himself

(continued on page 36)

Tempe Invites you to attend the 1937 Convention Sat. and Sun., Oct. 23-24

Part of the Tempe gang responsible for the Southwestern Division Convention. As this picture was taken just a few days ago, it was not possible to round up the entire committee for photographing—Ed. Standing, left to right Herbert Ash, W6NGG; Carl Jepsen, W6NLK; Howard Ash, W6KIA; Hollis Moomaw, W6NKG; Robert Hilburn, W6OGP. Kneeling, left to right, Richard Wilhelm, W6MWQ; Lewis Wilhelm W6NGD; Dwight E. Harkins, General Chairman, W6BUQ; Eugene Burkhard, W6NUX

HERE ARE A FEW HIGHLIGHTS OF THE PROGRAM:

Convention Starts at 8:00 a. m., Sat. Oct. 23

Big Barbecue Saturday evening

Banquet Sunday evening at 5:30 p. m.

Registration fee $3.00, which includes all events, barbecue, banquet, and door prizes. No extras to pay for!

The speakers will include the biggest names in the amateur radio world today—J.N.A. Hawkins and Chas Perrine will both speak on antennas. Many new antennas will be erected for inspection. This will be the most comprehensive discussion on antennas ever presented at any convention.

Herb Becker, W6QD, will be in charge of a super Special DX meeting and you can rely upon Herb to present many surprises at this meeting.

LOTS OF BIG PRIZES

Special Prizes for the ladies

Complete program for YL's and XYL's, under the capable supervision of Mrs. Harkins, W6BUQ's XYL.

A special reservation prize, a new Breting receiver, will be offered. Those who mail in their reservations so that they arrive before October 22 will have a chance on the FB receiver. Mail your reservation to W6BUQ Box 245, Tempe, Arizona.

The Ham Side of Sound Apparatus

By James L. Fouch, Test Technician
Universal Microphone Co., Ltd.

Let's discuss some problems of interest to the ham who focuses his attention upon the audio frequencies. Let's take into consideration the little gadget that most fone hams rap themselves about to speak more abbreviations than the government can invent, and whose Irish name is spoken in all languages. Whether the mike is round, square, or oval doesn't seem to make much difference; so, you'll just have to look on the name plate to find out what type of microphone you've been using. With each type having its own individual characteristics, distinctly different input circuits are required. Circuit requirements of one type may be just the reverse of another type of microphone.

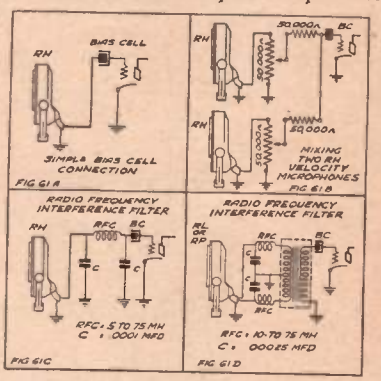
The velocity microphone, sometimes called the ribbon microphone because of the narrow metallic ribbon used as a "diaphram," has distinct features in that it picks up sound at about 120 degrees at the face with pick up almost nil at the sides. The back of the mike picks up slightly less than the front with a limited response so is never used. The operator should not speak closer than one foot from this type of microphone, as standing waves are set up by the high frequencies of the voice. These do not register the required effect in the movement of the ribbon and their reproduction is nil. The velocity microphone can be worked nicely in Duplex since the dead sides of the mike can be placed toward your speaker or strong sound reflecting areas; thus eliminating troublesome acoustic feedback.

VELOCITY MICROPHONE INPUT CIRCUITS

In the past, most microphone impedances have been in the range from 50 to 500 ohms. To-day the high impedance or direct to grid types are the most popular and the handling of these circuits is quite different. Especially designed transformers had to be used in the case of the microphone. The two transformers used in the RH microphone have been so wired that they are in a hum bucking phase relationship. The two secondaries being placed in series so as to reduce the loss of the distributed capacity effect to about one fourth. This makes the reactance of the microphone more like a pure inductance and may be operated direct to the grid of the input tube without the use of any polarizing or coupling device; not even a grid leak. Figure 61-A tells the story.

The bias cell eliminates the use of a bias resistor and the need of a heavy bypass condenser for the bothersome hum in the input. One or two stages of pre-amplification are usually necessary with all of the modern microphones except the good old carbon type. There is a wide range of tubes that do the trick nicely, such as ; 6J7, 6C6, etc. Connect these in pentode for extremely high gain, and in triode for stability and medium gain. Shielded cable should be used absolutely on all high impedance microphones and grounded to the modulator chassis.

Mixing two velocity microphones of the high impedance type may be accomplished as shown in figure 61-B. Two inexpensive potenitometers



and resistors of the values shown will handle the situation satisfactorily.

R. F. FEEDBACK IN THE MIKE CIRCUIT

With the microphone working so close to the transmitter as in the case of the ham station, R. F. feedback through the mike circuit is inevitable. A small R. F. choke should be placed in the line as shown in figures 61-C, for high impedance mikes; and 61-D, for 200 and 500 ohm line type microphones. The value of the choke can be anywhere from 5 to 75 MH depending upon the frequency of the induced R.F. The bypass condensers should be of the small mica variety of .0001 to .00025 MFD depending upon the circuit.

CRYSTAL MICROPHONE INPUT CIRCUIT

Although crystal microphones are made in two distinct types their circuit requirements are very nearly the same. The diaphragm types for the most part are of greater output than the cell type microphone. The reactance of the crystal microphone is just the opposite to the velocity mike. As a capacitance; the crystal mike has a frequency response that is not changed by the ordinary lengths of cable used, although it is a high impedance device. The added capacity of the cable only attenuates the output a slight amount, acting as a uniform loss over the frequency range of the microphone.

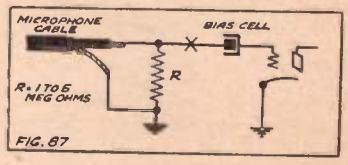


Figure 87 shows the proper method of connecting a crystal mike to the input of the preamplifier on your modulator. The grid leak "R" should be about five megohms for good bass response while a leak of less than one megohm cuts the bass as is some times desired in com-

munications" type of sound equipment. At the point "X" in figure 87, an R. F. choke should be inserted when R. F. feedback is encountered. The bias cell is used the same as in the velocity microphone circuits. Be sure to use the grid leak as the crystal mike does not have the D. C. continuity of the velocity mike. Incidently never test a crystal microphone for continuity as the D.C. voltage of the test meter will damage the crystal unit.

Small sections of unshielded cable will often pick up unwanted R.F. and hum. Check over your cable periodically to see if the wear and tear has damaged the shield in any way. A generous shielding of all splices in your mike line is adviseable.

Crystal Handi mikes are excellent for use on portable and mobile transmitters since they are especially designed as "close talkers" with an "off and on" switch. And speaking of these portable rigs calls to mind a problem in the ultra-high frequency transmitters. In work, such as, five and ten meters, precautions must be taken with the length of cable used on the mike. Especially when its length approaches a quarter wave length of the frequencies being transmitted. A fall-off in output amounts to as much as fifty percent in some cases. The remedy for this loss is a short, heavy gauge, ground wire direct to the chassis of the transmitter from the microphone proper. This also kills the effect of the body capacity of the operator when he holds the mike stand.

In discussing the two types of microphones, the cost to the amateur was considered and found to be in a class slightly above the cheap double button carbon mikes. The difference, we might say, in quality and up keep, is well worth investigating. Service costs on these two types cannot be compared with the cost of repacking every year or so on the carbon type along with cost of batteries, etc. Being self-energizing puts everything in their favor where light-weight and low up keep are concerned.

Of course this article does not contain all new dope for some of you fellows but it never hurts to brush up a bit before starting in on that new rig, just to be sure.

▼

Ample Accommodations for Everyone atteding the Southwest Convention

Upon arriving in Tempe your first thought will be "Where will I stay?" The Convention committee is preparing a complete list of housing facilities that will be available. There will be room for everyone, and the prices will be as low as $1.00 per nite for nice quarters. There is a galaxy of auto courts available for htose who bring the family. You can make your trip an economical one as well as a pleasurable one.

QRN . . .

"The stork has a particularly long bill," observes a naturalist. Every young man who's a father knows that.

A man with good eyesight was found learning the Braille system—we think he must be a ham—but they say he's a Scotchman and is studying so he can do his reading with out running up a light bill.

It has been asked of late why the electric signals on street corners have three colors of lights for stop and go. The answer given was that the yellow light was added to give some of our power saving Scotch hams time to start their cars.

One voice heard traveling over the air asked of an other voice heard returning over the air: "Do horrible things come and sit on your bed when you're recovering from a convention or ham binge?" and the voice came back over the air, "Yeah, my wife's relatives."

Bachelor in QSO: "You say you have a baby six weeks old at your QRA since last time we contacted. Can it talk yet?"
Proud Father: "Oh no, not yet."
Bachelor returning: "Boy, eh?"

At Club meeting, Ham said to Ham: "How did your nose come to be so red?"
Over departing shoulder: "It's just blushing with modesty for keeping out of other people's business."

The beef was being chewed about so and so who went in heavy for phonograph modulation. One member of the group said, "Oh, don't mind him, he's a true music lover, Why if he heard a soprano in the bath room he'd put his ear to the keyhole."

Clerk: "I'd like to sell you this new Handbook."
Ham: "No sale. I know more than any Handbook printed!"
Clerk: "I admit that. But I thought you'd get a thrill going through it and picking out all the errors."

Jimmy, the amateur of the troop reported to the Scout Master: "Yes I did my good turn for the day at 7:15 this morning."
Scout Master: "Was that not pretty early in the morning for you? What did you do?
Jimmy: "It was easy, I saw old Mr. Brown going for the 7:15 train and I knew he was late so I turned our dog loose and B.C.L. got to the station in time."

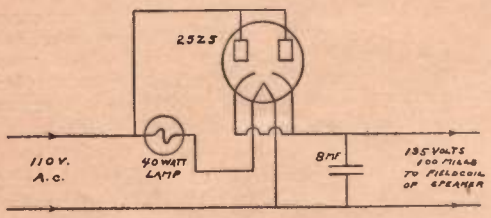
"Funny, ain't it, Paw," said the jr. op, "that everyone in our house is an animal?"
OM: "What do you mean?"
"Why, Mother's a dear, and baby's a little Lamb, I'm a Kid. I can't think what you are Paw!"
OM: "I'm the goat, my son."

HINTS And KINKS

FIELD SUPPLY FOR DYNAMIC SPEAKER

Often it is desirable to use an extra dynamic loudspeaker some distance from the audio output of a receiver or a small public address system.

The circuit diagram gives one of the easiest ways of obtaining field voltage for the loud speaker at this remote spot.

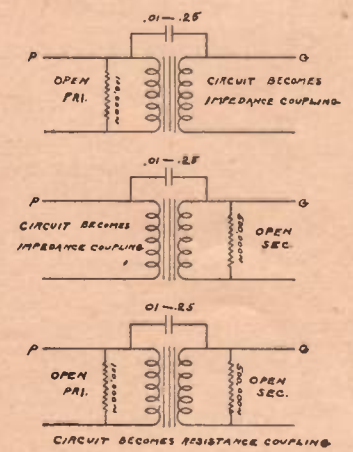


The voltage supplied to the speaker can be juggled up or down somewhat by the use of different capacity of filter condensers; an 8 MF filter condenser in the above circuit gives about 135 volts.

▼

EMERGENCY REPAIRS TO BURNT OUT AUDIO TRANSFORMERS

If an audio transformer goes west and one has a sked and no time to replace said transformer an emergency repair can be made by



changing from transformer coupling to impedance of resistance coupling.

Often this repair will be so good it may be permanent.

If the primary is open a resistor no smaller than 50,000 ohms up to 100,000 ohms is placed across the primary—or if the secondary is open a resistor in the neighborhood of 500,000 ohms is shunted across the open secondary winding, in either case the circuit becomes impedance coupled.

When both primary and secondary are open and resistors replace the windings the circuit is resistance coupled.

The resistor replacing the secondary winding should always be about four times the ohms value of the primary replacing resistor.

The value of the coupling condenser between the plate and the grid of the two tubes being coupled can be anything from .01 mf. to .25 mf. only changing the high and low response of the amplifier.

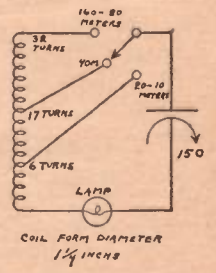
▼

ABSORPTION TYPE WAVE METER
By W6LCL

Don uses a very small but efficient wave meter housed in half of an old Brownie camera case and with a switch of three taps measures amateur bands from 10 to 160 meters with assurance that the signal he has on the air is in such and such a band.

The coil form is 1 and ¼ inches in diameter with a taped winding in series with a small lamp and a veriable condenser of 150 mmf.

A large dial is permanently set on the condenser shaft and the meter is then ready for calibration.



When the switch arm is contacting the tap with all the turns the 160 and 75 meter bands are found at opposite ends of the dial.

When the switch arm is on the center tap 40 meters is found near the center of the dial.

When the switch contacts the lest turns 20 and 10 meters are found at opposite ends of the dial.

When the coil of the meter is brought near the R.F. field of the transmitter and the meter condenser is tuned to frequency the lamp will light and calibration is an easy and accurate as tuning is sharp.

▼

CRYSTAL OSCILLATOR POWER SUPPLY

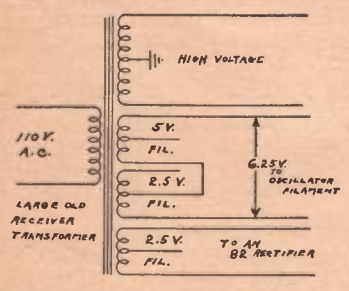
By H. Bradley

Many amateur transmitters today do not have a seperate oscillator power supply because all the money went into the final and the oscillator gets along on plate voltage borrowed from the buffer.

This can easily be overcome by using an old, large receiver transformer that can be found in almost any junk box.

The high voltage winding is used as is with condenser input to get the most voltage from the power supply.

As most modern crystal oscillators use tubes with 6.3 volt filament, this voltage is obtained by using the old 5 volt rectifier winding and adding half of an unused 2.5 volt winding to make the 6.25 volts.



When adding the two windings together a volt meter should be used to make sure that the voltage increases and the two windings do not buck each other.

Filament voltage for a rectifier must also come from this supply and as there is only a 2.5 volt winding left for use an 82 full wave rectifier tube is used.

Young DX'er: "Fine—you get me out of this mess an I'm your friend for life."

Her Papa: "Don't think for a minute you're going to marry my daughter!"

METER KIT CIRCUIT

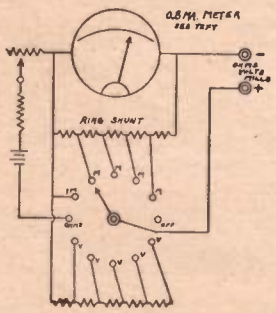
By E. M. Croft, Electric Products Service

The basic volt-ohm-milliampere circuit shown was designed to assist those who prefer to fabricate their own test unit.

This circuit incorporates the use of a ring shunt. It helps to protect the meter as it is constantly in the circuit, and any varying resistance in the selector switch will not effect the calibration accuracy of the milliampere ranges. Actually it is one form of a voltage divider. The reason this is true is because the small amount of resistance introduced is in series with the voltage and not the current alone.

The electrical instrument shown is a 1.0 milliampere meter which has been recalibrated to approximately 0.8 milliampere. This permits the ring shunt to remain across the meter at all times. By applying the ring shunt in this manner the electrical instrument is brought back to its original calibration of 1.0 milliampere.

Many experience difficutly in determining the amount of resistance and batteries necessary for use on a direct reading ohm scale on a 1.0 milliampere meter. Note the center scale reading of ohms ,this will indicate the amount of resistance required and based at 1,000 ohms per volt the result will be the batteries required for



a full scale deflection of the pointer. For example if 4500 ohms is the center of the ohm scale then 4500 ohms and 4.5 volts will be the proper amount of resistance and voltage required. The zero adjustment potentiometer should be approximately one-fourth of the resistance .used The total resistance for an ohm-meter should be more than the exact ohms, to control the variation of the battery potential. In the case of 4500 ohms it is recommended that a fixed resistor of 4000 ohms be used with a 750 ohm potentiometer.

The voltage ranges desired are determined generally by the scale used. The resistors necessary may then be computed on the basis of 1,000 ohms per volt which will give us the ohms resistance necessary for the first range. For example if 10-50-100-500 volts are the ranges desired, the 10 volt range is 10x1,000 or 10,000 ohms. The secondary is determined by subtracting the first from the second range, i.e., 50 minus 10 volts equals 40, then 40x1,000 equals 40,000 ohms for the 50 volt range. For the 100 volt range (50x1,000 equals 50,000 ohms) and for 500 volts (400x1,000 equals 400,000 ohms).

YL (shopping): "Where can I get some covering for my settee?"

Floor Walker: "Next aisle and to your left for the Lingerie department, Miss."

WITH The CLUBS

VALLEY RADIO SOCIETY

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

Well here is the dirt for this month, we kind of let things ride last time as we were all on vacations or up in Stockton, but guess we can't use the same excuse again, so will try and get down to business. W6EIU is still rebuilding, everytime he gets the rig nearly completed some new development is shown to the radio world and he has to start all over again to incorporate same in rig, result he has been off air for year and a half.

W6DDA may sell his Bretting (old model) now that he has NC-101X and then again he may not.

W6CAH has many improvements on 56 MXC Mobil rig and will write up dope and pictures on same soon for the Radio Amateur News.

W6LS is building new ham rig in Commercial Rack and it sure is a honey, High power and how.

W6LNM is sure quiet of late, just what is The Low Down Stockey OM.

W6GWS by the way has loaned out his FB7X to the gang over on Catalina Island. When he gets it back says he will sell it.

W6JDB buys 25 foot sail boat or should we say yacht, pronounced (yashect). When do we go sailing, Lenord OM, we promise to clean up everything we don't heave over the side. So how about it?

W6JJH is going to be a papa for the first time, good luck to the Mrs., the Junior operator and you, Floyd.

W6IBS was going to bring moving pictures to the last club meeting, but failed to get hold of them. The gang were sure disappointed—maybe nextime, Al.

W6HDC takes trip to San Francisco and says something about tearing out rear end of Buick, to the tune of $63.00. There goes the new rig, Pete.

W6MYJ gives swell talk to gang on high frequency treament of flies, some 1000,000 were treated, then you count them and look for the ones with red eyes, after which you put a thermo couple into them to see how hot they got. Some fun. In all seriousness, Doc, it was a swell talk, hope you will give us another soon.

W6CKR, W6KEI still resting up from trip to Stockton at which Convention they had a grand time, and have dates all set for Reno next year.

In closing, does anyone know when the change, if any takes place in the 10 meter band. We have heard more than 25 stations in the high frequency end on the 18 and 19th of Sept. and no noticable decrease in the stations operating in the 28 to 29 kc end, so what is a poor ham going to do who has just spent $4.37 for a xtal in the high frequency end 29940 and already swapped off the old 40 meter rack. So help me.

▼

Helix Amateur Radio Club

San Diego County, California

Kenny Hallett, W6GNP—President
Cliff Kimball, W6MMV—Vice President
Henry Haenke, W6NWY—Sec'y-Treas.
Carl Boltz, W6FTT—Serg-at-Arms

W6BWI, Harry Morse, had a weeks vacation up around Santa Mario last week, visiting 6ASK. Coming back thru L. A. he acquired a new Breting receiver. Nw he is the first and only San Diego ham to own the new Breting job. He says its sure fb. Its no good, Harry, unless you can make it pick up 6GNP on a sked!

W6JRM, after squeezing the ow for the new T55, had the nerve to do it again for a new PR-15. He sure is learning how to do it! Howard says the new job is swell, but it takes an Engineering course in one of our leading universities to learn how to steer the blamed thing.

W6BHF, Ray Dobler's Radio Repair Service (Plug!) is sure picking up. We hear he just invested in a brand-new super deluxe—stream-lined service truck. Hws for some stock in your plant, Ray?

Wow! Oscar Erickson, 6NDD, put up a 160 meter doublet and raised his sig strength up north pull-enty! He had only about 240 acres to do it in, too.

The Radio Amateur News

"The Magazine With All the News For All the Amateurs"

Subscription Rate

Single Copy 15c
Per Year (12 copies) 1.00
Club Rates on Request

Volume I October, 1937 Number 7

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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.

"THE RADIO AMATEUR NEWS" is published by W6CL, Bert F. Ayers, 1315 East 58th Place, Los Angeles

Printed in the U. S. A. by the Ayers Printing Company
Los Angeles, California

W6MMV, Cliff Kimball, (the rat!) has been trying out all kinds of modulators. He has finally settled on a pr of 211's Haywire. The rig now looks worse than 6GNP, is possible!

W6EPW and W6NWY have a private W. A. S. and W. A. C. contest on, with 6MMV holding stokes. The contest of the ages—a pr of T20's at 6EPW vs. a pr of 10's' at 6NWY. W6EPW now has one state and one continent. 6NWY refuses to report.

Bid Baird, 6APC, is back in San Diego, we hear. Gld to see you back, ob, es hpe u get on the air rite sn!

W9JBH has been visiting at 6NWY. He's down here looking for one of those California KW's he's been hearing so much about to see how they work. He won't find one down in this part of the state. (No?)

W6BZR tried to run out on the gang by getting himself a new QTH without letting anybody in on it. However, the Kommittee always nails it's man, so for the information of all the creditors, the address is 4724 Orchard Avenue, Ocean Beach.

The Helix Club had a very successful meeting September 16. Lots of prizes, and nobody won what he wanted.

W6NWY has a new rig on the air. Its a 6C5 xtal-6L6-6L6-pr of 10's paralell in final on 20 cw. 250 watts input, and the 10's run cold as 6NP's heart!

Hear Ye! Hear Ye! Don't forget the San Diego Hamfest at the U. S. Grant Hotel, Oct. 2nd. W6KW has done everything short of arranging for patrols to round up the fellows in order to get everybody there.

W6KW and assistants are editing a local ham paper, out the first of every month. This is what the gang here has been waiting for, for a long time. Best of luck, Johnny!

W6FTT has just gone radical and bought for himself an NC 100 while all the rest of the hams hereabouts are buying PR-15's. Incidentally, he is now smoking Bull Durham. What you need is a course from Prof. W6JRM, Carl.

Flash! Our local gossip for the month. W6EPW's dad was pinched for speeding one day last week, and let himself in for a lot of riding from Vern. A couple of days late W6-EPW got pinched for speeding by the same cop, and has to appear at court at the same time as his dad! Same Day, same Cop, same Place, same Name! (Now who gets the riding? You guess!)

The above stuff and nonsence donated by those marvels of efficient journalism, those sheeps in wolf's underwear, those diggers in the trash heaps of their betters, — THE KEYHOLE KOMMITTEE.

Ed Note: The above is strictly uncensored and all blame rests with the Keyhole Kommittee not the author nor the magazine.

OUT OF THE AIR FROM ABOVE THE HARBOR

THE UNITED RADIO AMATEUR CLUB

By His Knibbs

Pres., Al Goldschmidt - W6MED
Sec'y.-Treas., Ed Hughes - W6IZT
Vice Pres., Dope Zervantis - W6DIS
Act. Mgr., Al Goodyear - W6ERT

Notice our new line up of officers who took over their respective posts at the last meeting. With such a gang we should go places and do things.

6KCX, Fred Eaton is sure going to town on the air since being relieved of his secretarial duties. Since the ten meter band has come out of it's hibernation, the local boys are sure working them. To hear Arch Eckdale, 6NDC tell about the contacts he made on ten last Sunday, it sounds like a meeting of the DX Club eating alphabet soup.

We welcome to the San Pedro air a new ham, W6OXY who was brought up, so we understand, in the confines of a railroad telegraph office. How's about coming down some meeting night, Luke and meeting the boys in person. We'll be more than glad to see you and make your acquaintance.

6IVG, His Knibbs and 6MDX, The Mud Duck are in the market for a super-charger. On their recent vacation to the high Sierras, their portable operation was pratically a failure due to the lack of power in the gasoline engine driving the portable generator on account of the high altitude. They report having a good time, and did work a few with MDX's battery operated rig.

6ERT reports everything going along fine and is able to sandwich in a few contacts in between his work. 6HCF, Bill Bradford went to town in fine shape in the low power field day contest and the club extends congratulations and thanks for the splendid manner in which he handled the event.

6KZU is expected back on ten meters any time and we are looking forward to hearing him again. It is our understanding that our friend Sandy has a big head, though what caused it, whether taking on a wife, or a new arrival, we have been unable to ascertain.

The writer parked on Palos Verdes hills last week to work some five meter portable mobile but found the band full of ten meter harmonics with very few five meter signals exceeding these harmonics in strength. We'll probably have to cure these harmonics some time in the near future if we are going to use the five meter band with our present equipment.

We would like to remind Dope, 6DIS that buying the diamond ring is like taking out the first shovelful of dirt when starting to dig a tunnel to China.

Orange County Amateur Radio Club

By W6LQX

The visitors to our meeting of August 13 included W5CUE, W6LER, W6BIH, W6BPM, W6KLF, and W6CIG. The general chairman of the Federation Committee gave a short talk and invited the gang to a picnic to be held at Recreation Park in Long Beach on September 5th. The date of the next big DX roundup was announced and we are all looking forward to it with eagerness as the second step in a promising project of which we are proud of having been the initial instigators. LYM gave a swell plug for Eimac in a very interesting talk on his visit to their manufacturing plant.

Our president was absent from the meeting of Sept. 13th, having gone up into the cold north to stalk game. Vice President, W6JMA presided in his absence. W6KJK was visiting this meeting. NSA read a letter from our ex-member NGO who is now in Japan, and passed around some snaps of the layout that were included. NGN was also present, visiting after an absence due to his being in the Navy now.

Meetings next month fall on the 11th and 25th of October—YMCA Building, Santa Ana, 8:00 P.M. Visitors more than welcome.

Club Gossip, Highlights and Personalities

Rebuilding seems to be the byword this season. IBN is just completing a new home. MQF is just about to move into his new place and BXI has recently moved into a new home. LYM rebuilt his home and a very fb shack this season also. NSA has rebuilt everything in his place over about umpty ump times and we are waiting for him to get out and start looking the quarters over with a sideways glance.

Yours truly has finally managed to get on the air after scouring all the five and tens in a fifty mile radius for the last two years, and after about three days of actual operating, promptly tore up again.

LHN was grinding a rock into the eighty band and after several scrubbings and checkings didn't seem to be making enough progress so he sat down and ground for fifteen minutes solid without checking, feeling sure that that ought to move him in. Alas, when he did finally check it, he was far past and rapidly approaching the forty band—too bad, OM, better luck next time. His favorite check for arc in the final tank is to take a twelve inch screw driver and hang onto the shaft while he stands on the cement floor.

We are still standing around waiting for that big beam of BAM's to go up. The story now is that he is waiting for the walnuts to be picked before he starts to whack the trees up and make room for it to rotate.

LDJ had the feeders running out of the window sill about three inches apart minus any pretext of insulation and came very nearly to setting the joint on fire. He builds his tank coils so that you have to tip toe around the shack to keep the middle of the coil from swinging over into the next stage.

LWH is very jubilant these days as he has finally succeeded in getting his WAD (worked all districts).

JMA shoved some five meter coils into his 35T final and gave the neutralizing a flip and is now on five with some real power.

LXM is plannnig on putting grid modulation plus controlled carrier on his collins job just to show the boys what can be done if you hold a commercial first.

CIG let his ticket run out so he is QRT very definitely now.

▼

San Francisco Radio Club

The San Francisco Radio Club has reverted to its orignial name; "Associated Radio Amateurs," as it was called in recent years, will no longer be indicative of the San Francisco fraternity.

Meetings are held every other Friday at the Coffee Cup Restaurant, 19th Avenue and Geary Street, with a dinner preceding the meeting at 7:30 P. M.

The club now has a membership of 93, which includes some of the oldest amateurs in the United States, from the standpoint of years of activity on the air.

The club in unique in its make-up; no dues are charged, nor are there fees of any kind. Members assemble for an a-la-carte dinner, or come to the meeting rooms after the dinner hour. After a round-table chat during the time in which dinner is served, the chairman calls the meeting to order and presents such matters of business as are of timely importance. Then follows the technical discussion, directed by Mr. Clayton F. Bane, W6WB, who is in charge of technical activities. Usually two or three prominent speakers address the meeting and information of a highly valuable nature is often disclosed. The technical discussion consumes a period of from one to two hours. Then the meeting is thrown open for a general discussion, each member given the opportunity to present technical problems in need of solution. The unusually high caliber of the membership makes it possible to furnish the members with some of the most authoritative information. This is because the club meetings are attended by such men as Frank C. Jones Wm. Eitel and J. McCullough of Eimac, Clark Spar of Heintz and Kaufman, Clayton F. Bane of Techard, radio engineers from the various governmental agencies, engineers from the Pacific Tel. and Tel. Co., and a host of members who are engaged in almost every branch of the radio engineering and technical fields. There is hardly a prominent amateur in San Francisco who does not attend the meetings.

It was recently decreed that the San Francisco Radio Club, Inc., "is, and hereafter shall be, entirely non-partisan." The club therefore has no affiliation with any amateur organization. In order to prevent a recurrence of club and amateur politics, the membership voted the aforementioned resolution. Only two members opposed the wide-sweeping action. The club, therefore, is independent to take action on matters of vital interest to the amateur without benefit of affiliaton with other sources.

The present chairman of the club is Mr. George B. McElwain, who is with the engineering staff of the National Broadcasting Co. The secretary is Mr. Jerry Valentine of the Western Union Tel. Co.

Because the club is so often visited by out-of-town amateurs, and because many inquiries have been received in regard to the meeting dates, the following schedule of meetings is biven here: Sept. 10th, Sept. 24th, Oct. 8th, Oct. 22nd, Nov. 5th, Nov. 19th, Dec. 3rd, Dec. 17, Dec. 31st.

Communicatoins can be addressed to: The Secretary, San Francisco Radio Club, Inc., Coffee Cup Restaurant, 19th Ave. and Geary Street, San Francisco, Calif.

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SAN JOAQUIN VALLEY RADIO CLUB

The next meeting of the club will be held on SATURDAY night, October 9th, 8:00 P. M., at the Hotel Fresno, in order to accommodate our guest speakers, W6ZA of Berkeley and W6DMY of Palo Alto. W6ZA will speak on Emergency Communication and emergency portable equipment. He will bring with him some of the equipment in use by the SARO of Oakland, complete with gas engine generator, which he will demonstrate. W6DMY has for some years been connected in research work at Stanford Unversity with Dr. F. E. Terman, but with W6ZA is now connected with the PT & T. He will speak on the ins and outs of correct modulation and give a demonstration of the practical application of the oscilloscope in a ham shack. Both of these men are active hams and will answer your questions so you can understand 'e'm. Talk it up and let's have a big turnout for the first meeting of the fall semester.

At the last club meeting, W6MYP was elected Vice Pres. to suceed W6NDB, who was transferred to Denver, where he is operating as a portable on 20 CW and has had QSO's with several of the local members. W6MYP will be in charge of the program committee for the balance of the current year.

W6LPE, our SCM, is the proud papa of a second offspring as well as a new Super Skyrider, which he is using on 10.

The club again operated a booth at the Fresno District Fair, with 6HYG's rig on 160 phone. The rig was a single HF100 final, modulated by four tens in PP-parallel and ran only 130 watts. The ant. was a 160 m. Jones! The noise level from the adjoining commercial exhibits was terrific but the rig got out of town in fine shape.

6BVZ has just returned from S. F. with Radiotelegraph 2nd. and Radiotelephone 1st. tickets and has been doing some operating for KMJ.

Winston Bull, 6KAU, late of Fowler and Bakersfield, is now in Sacramento and connected with KFBK of the McClatchy chain.

The newest call in Fresno seems to be 6PCS, Jerry Fries, who is operating on low power on 160 phone, and who has just acquired a new Breting 14.

6KUT, the local DX king has just moved to new QRA and has his HK-354's running cool at an even KW. The big trouble is that the neighbors can't understand why the lights blink at 6 a. m. and 7 p. m. Sometimes a pole-peg keyed in the primary will cause that phenomenon. Hi.

Carson Norhnberg of Madera, 6MKO has put aside ham radio and returned to Occidental College to resume his studies, leaving ham activities in Madera to Fred Massetti, 6NVZ who has a fb new radio shop and store.

At the last club meeting it was voted to abandon the publication of SKIP and hereafter club notes and notices will appear only in Radio Amateur News which will be sent free to club members. Please send contributions for the club column either to 6LPE or to MHZ, or they may be placed in the contribution boxes at the local radio stores as heretofore.

5 meters seems to be the particular dish of 6JPU. After winning every contest on that band at the club 5 meter picnic and field day, he built a new rig which won the honors at the Pacific Div. Convention at Stockton.

Johnny Bautts, 6JCB has gone to S. F. where he is now connected with Offenbach Electric.

Don Miller, 6AHL has at last been smoked out of the hills and is now with the San Joaquin Power at Sanger.

Reno Rosellini, 6LJE (the ole loser") has returned from Santa Cruz to Fresno State College to take up his position as first-string end on the college football squad. Very active on 20 m. cw.

Lew Barker, 6MVU may be seen touring around town with one of those snappy Harvey 5-10 transmitters in his car.

Claude Bowman, 6NJF has just returned from Chicago and points west making the round trip in ten days on a special train. He took a complete 10 meter station in the club car, with rather disappointing results. When the train left Oakland, each car generator had been carefully filtered by the Santa Fe, but at Barstow the So. Calif. contingent was tied onto the train with NO filters. ! ! !** - ?

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THE BELL CLUB

By E. A. Wallace, W6LAK

W6EJZ is a busy boy these days with little C. W. some phone operation and that small motion picture camera. When the pictures President Feay and those of W6JWQ and W6HDV were shown on the Club screen the whole club forgot about ham radio. Almost forgot to mention how good Charlie is getting at bowling and those wonderful raffles he dug up for the last two picnics which ended the Clubs summer outings.

Three new calls among the members, Goldbeck now has the call W6PAP and W6PDB belongs to Ken Moore and Sandy's call is W6-PDY and W6PCA went to George.

W6OAQ has been very active on the air for when the number of QSO's for the week are placed on the black board each week, OAQ's comes up too often with 47 or more QSO's for the week previous.

W6MOS has not been heard from very much of late and W6KTY hits all bands below 56Mc.

W6CAM has had a little trouble with the ripple in the carrier he emits, tis said he is changing from a rip saw to cross cut.

W6NAT is doing all OK and then some on the air, but Bill's luck to-date this year has slipped some for One Convention and several Hamfests and no big prize yet. Guess you only live partly right these days.

W6FDO has gone to the dogs, don't mean the cigar but the way he takes to 5 meters.

W6NGQ kind of floats around on air, so to speak, for he received an SWL's card giving a good report and details of a QSO and the SWL was in Romney, West Virginia, on 160 meter fone.

W6JOJ and family have been making the club often of late with Jr. op.

W6HCF from down Wilmington way left C.W. long enough to give 160 meters a spin, but says too small time for him. Hope he goes back on C.W. soon.

W6IGO has gone commercial (see him for parts) gets on the air once in a while.

W6IOA is rebuilding, not that they needed it or anything.

W6CXH are also mixed up in this rebuilding deal, and stuff and things.

W6LAK that handsome boy and lovely girl have forsaken 160 for 20 phone and are they going to town.

W6MVL, papa and son keep the light meter going round and round at there QRA.

W6JWQ does a little haming once in a while, he has not been the same since that trip to the islands last summer with a very far away look in his eye, you can guess how bad it is with him when the club has not been the same since seeing those motion pictures he took.

W6CNJ is warming up a 35T on 20 meters and he is man enough to say there are a few large bugs in the receiver he built which he must exterminate.

W6III bought a gun and on the target range he has gone boom, boom, to the tune of real money; has a good rig but don't like to see the filaments aglow.

W6FEX has been slipping in more ways than one—need more be said?

W6DYW must be the man with the key for his large number of weekly QSO's are right up there among them.

W6CL believe it or not, is on the air and sounds good, ain't that the heighth of somethin or other, bet he can't leave it alone for long with out rebuilding it and being off the air another six months.

W6KEO has been heard on the air—only hear say.

W6LSO an other high man in weekly QSOs.

W6DPT again on a vacation. How do you do it, Art?

W6HDV certainly has some heavy dates with his camera and that 5 meter rig.

W6HFU is a cream puff around this time of year but just wait for the spring and watch his meter go round.

W6LSN must have a transmitter for he lists plenty of QSO's.

W6KMO has power on 20 meters and brings it up onto 160 band now and then and gets out fine around town on five meters when transmitting on 20 and don't do bad on 20 when calling CQ, 10 meters. Its great to have power.

W6OEF is a man among men for he often stays home to work his rig—or get a little sleep while his wife comes to club to play cards. And all us handsome men around.

W6GHU what a personality—tells the boss what to do and how long to stay there and then is heart sick because it has been three weeks since he worked a new country.

W6MQS has a new QRA and seems to think it great: also went after a deer and the big bad bear made him run—like to have seen that.

W6HEW the man with the nice big guns in his rig and is pointing them at the DX boys.

W6WT got away from Sheriff transmitters long enough to turn on his amateur transmitter for a while here recently—is the world coming to an end or something?

W6OTJ will be liked when he gets on the air more often so some of us can work him.

W6MDQ got away from that 160 rig long enough to travel all the way from Highland Park to Bell for a meeting—first time he has been off the air that long in ages.

THE TEMPE AMATEUR RADIO ASSOCIATION

By W6BUQ

WKIA is saving his dough to go to the University of Arizona in January.

Back at the old grind again, W6MME is teaching school. I wonder how many new hams he is going to develop.

W6MWQ just opened up a radio service shop and should be a success.

W6NUX is working the boys right and left, and his ambition is to work every station in the sixth district. His new rig is working FB.

W6QC got himself elected president of the Phoenix Club, and held office exactly one hour, which was the length of time it took him to argue himself out of the job.

It looks like W6NKG will resume activities shortly, much to everyone's surprise.

Our club 'family man,' W6OMD, has his hands full, what with the junior operators, Telephone Company, and ham radio to keep him busy. He is still waiting for the card from the ZL he worked.

W6OJY is tearing up the 40 meter band, and worked W6NGD when the latter was up in the mountains with a QRP portable outfit.

W6LKE skipped the last meetings of the Temple Club only to show up at the Phoenix Club meeting. That's a fine thing for the activities manager to be doing.

The pride of Arizona, W6KFC, went over to Long Beach to attend the big picnic and reports a big time was had by all.

The C. C. C. contingent, W6OGP and W6OGI, are plenty active and are ready to shoot the works on the convention.

Here's a Winchell item: A blessed event is expected by W6NEL and his XYL. Here's hoping for a junior op.

Between work and college, W6NLK doesn't have much time for ham radio, but it won't be long until he's going strong again.

W6BUQ returned from a bang-up trip to Los Angeles, and reports many surprises (big ones) in store for those who attend the convention October 23 and 24.

●

Talking Pictures to be Made at Convention

Among the novel features to be presented at the Southwestern Division Convention will be a demonstratoin of taking professional type talking pictures on amateur built equipment. Many of you have seen the big studios in action, but none of you have seen home made equipment doing the same thing.

The camera was built by W6BUQ, and besides being in action at the Convention, it will be on display for your own inspection.

THE OLD TIMER'S DIARY

(continued from page 22)

out in the middle of the floor all in a heap—in rushed the 2nd op and said in a very scared voice but not forgetting the courtesy due an officer; "Sir, I think we hit something." "Are you telling me?" said Ralph and made a dash for the transmitter, pulling on his pants as he went, to get all set to send out that SOS when the skipper gave the word. The transmitter being an old Arc set, it was not kept hot so it was necessary to signal the engine room to turn on the juice. Well Ralph gave the signal, but no juice. This was a habit a lot of engine rooms had and has been the cause of many a good ships op leaving the sea. Again the signal was given and still nothing doing so the 2nd op was sent below to find out what the trouble was. In the mean time everybody was dashing here and there trying to find out what had happened and the officers were trying to tell them that everything was all OK but still no juice. Finally, after what seemed an hour the 2nd op returned all covered with grease and reported that he had fallen down stairs and couldn't remember if he had found out or not. Well if you know Ralph like we do, you can just about guess what happened and what was said—Ralph is a printer and writer of no mean caliber and sure can "modulate" the English language, (both phases) in terms that leave nothing misunderstood—anyway the juice was on in two seconds after he had gone below and in less than thirty minutes every radio station from Pago, Honolulu and even San Francisco was standing by ready to send aid or relay messages but he did not get to send the SOS after all. The damage was patched up with some cement that was in a shipment aboard the ship and backed off the reef under its own power. DH had gotten in touch with NPU and a tug was sent out under forced draft to meet them and convoy the ship back to Pago for further repairs. We can't tell the story like Ralph can but we have done our best. In closing we might suggest that if any of the Radio Clubs want a good evenings entertainment just get W6DH and W6LB together and get them started telling about their old ship days and we will guarantee results—no fooling.

●

Out of the night: "I'm almost fast asleep."

She: "That's good, because you're plenty slow when awake."

Caller: "Is Mr. Jones in?"

Boy: "He just went to lunch with his XYL."

Caller: "Well, when he gets back tell him his other XYL called."

XYL: "Young man, can you explain how these empty bottles got into your shack?"

OM: "I'm sure that I don't know, ma'am. I've never bought an empty bottle in my life."

"Liza, didja weah them flowahs ah sent ya?"

"Ah didn't weah nothin' else but, Black Boy."

"Lawd, gal, whea didja pin 'm?"

THE "PR-15" HAS "GONE TO TOWN"

15 Tubes

●

12 Inch DYNAMIC SPEAKER

LIST PRICE
$182.50

●

Amateur Net Price
$109.50
F.O.B.
Los Angeles

The Only 100% AUTOMATIC Noise Silencer

Crystal Filter Series and Parallel
(No Loss—Band Pass Type)

Five Bands (7½ to 550 Meters)

No decrease in signal strength when using Crystal Filter and Noise Silencer

COME TO OUR BOOTH AT THE TEMPE CONVENTION AND SEE AN ACTUAL INCREASE IN SIGNAL STRENGTH WHEN THE CRYSTAL FILTER IS CUT IN — ALSO HEAR PHONE WITH THE FILTER IN

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COAST ELECTRIC COMPANY	SAN DIEGO
KINNEY BROS.	SAN DIEGO

● ASK YOUR NEAREST JOBBER ●

By Bill Driml
W6NAT

llard — W6RR

I ·nd and found a very fb. Ham ·ica this time. I got Ballard, so I de- ·tion, and I be-

we t his ham th y you com- re the on would be, low we find it a g side of his garage.

Very t and comfortable little station, but it sure p t the punch.

The shack is 7 feet by 7 feet with Xmtr on left side ana ble in front of the room with receivers and 5 meter Xmtr on a little

shelf above the table. The antenna switches are on the right hand side of the room, and they are very handy to reach from the operating table.

First we will glance over the large rig. It is a very fb rack and panel affair, about 6 ft.- by 28x12 inches.

The R. F. section consists of a Jones exciter unit link coupled to an RK20, and then link coupled to an HK354 final amplifier.

He runs close to 600 watts input on 20 meters C.W. and he uses 10 and 40 meters also on the same rig. For each stage there are separate power supplies, and for the final stage he uses a bridge rectifier of four 866's.

His RK20 has 1200 volts on the plate and the 354 has 3000 volts on the plate.

The receiver 6RR has built is a Super-Het with regenerative first R. F. stage, first detector and high frequency oscillator, into two I.F. stages, the second detector is a 41 with a special cathode coil for the beat frequency C.W. oscillator with a regenerative variable control across the cathode coil, and he has two audio stages for loud speaker operation.

Now here is a Receiver! Mr. Ballard played the receiver for me that evening, and for a home built job, it runs rings around some of the commercial receivers I have heard.

W6RR has a main feature attraction and that is his antenna pole construction and the way they are built in a very good foundation.

He has 3 poles 58 feet high with two 40 meter off center fed Hertz. One antenna points north and south and the other east and west

The base of one of the antenna poles is constructed right thru the roof of the garage and down through the cement floor. The bottom section of the pole is a 4x4 and extends 20 feet high, then there are two 20 foot 2"x2" clamped on each side of the 4x4 which makes the center section and the top section is a single 2x2. All sections are bolted together for easy installation of the antenna poles.

6RR applies the same construction for the one on the west side, but the 4x4 extends thru the roof of his home and it is used for part of the frame work of his house.

Mr. Ballard's home had been especially designed for that purpose, as a matter of fact he built his garage around the center of the antenna pole.

For his southern pole he has the same construction except for the 4x4 and that is a piece of redwood buried about 6 ft. in depth and that is located on a vacant lot.

This is a very ideal antenna assembly for any ham to build, with plenty of guy wires it will hold up under any condition, rain or shine.

For the 5 meter antenna he has a matched impedance half wave vertical with a 600 ohm feed line.

The 5 meter antenna is assembled on top of the pole which runs thru the roof of the garage. So much for his antenna layout.

The five meter rig is mounted on the wall with angles and is layed out on a black baseboard.

The filament transformer for the HF100's is mounted right under the base board for very short leads. The rig line up is a parallel rod xmtr with a pair of HF100's in push pull. For the gird tank he has two 2¼" diameter copper tubes with specified length for 5 meters and for the plate tank rods there are two ½" copper

tubes also cut for 5 meters. The grid tank is run vertical against the tubes and the plate is horizontally mounted with stand-off insulators spaced 4" apart.

This layout makes a beautiful job with copper tubes against the HF100's, the black base and the white stand-off insulators.

For the 5 meter receiver there is a 6C6 tuned R. F. stage, 37 detector, a 76 quenching circuit and a 42 audio. This receiver is built very compact into a small metal cabinet.

The speech equipment is a single button carbon mike into a 56 driving a pair of 2A5 parallel Class "A" modulators.

He can use I.C.W. or phone on his rig. W6RR always calls CQ with the I.C.W. for this reason, he claims he only talks to licensed hams. Catch?

At the present time 6RR uses only 400 volts to the plates of the HF100's, and in the near future he will raise the voltage to 1200 volts.

That naturally requires more audio to modulate the rig, so he has in mind to purchase a pair of TZ-20's and run them as push pull Class "B" modulators.

6RR has enough spare time to build all his equipment, including both 5 meter and low frequency receivers and the F.B. Xmtrs.

One of Mr. Ballard's first receivers was in 1906 and in 1908 his first Xmtr and he has been in radio since that time. His original call was 6BN.

Well, fellows, I believe this gives you a little idea what a Dentist can do between jerks of a few teeth and drilling processes. Ouch!

So with my best and sincere wishes to Mr. Ballard, W6RR, I will QRT until the next when I will drop over to you and you.

▼

W6AM—WAC 20 METER PHONE
IN ONE DAY — TUES., SEPT. 28, 1937

7:45 A. M.—ZS6AM ..... South Africa, Africa
7:40 A. M.—VS2AK ..... Malay, Asia
7:58 A. M.—KA1ME ..... Philippines, Oceania
8:18 P. M.—LU4BH .... Argentina, South America
8:30 P. M.—CE1AG ..... Chile, South America
8:45 P. M.—CE1AJ ..... Chile, South America
8:55 P. M.—W9MBQ .... U.S.A., North America

(Two visiting Chicago Amateurs, W9IPS and W9VVL wanted to talk to Chicago, so they talked for an hour to their friends there).

9:50 P. M.—D4SNP ..... Germany, Europe
(CW and Phone both)

10:22 P. M.—G6FS ..... Great Britain, Europe
(His first W6 Phone contact)

10:35 P. M.—G6LK ..... Great Britain, Europe

All the above conversations were clear on both ends with no repeats on either end necessary.

We only know of one other Southern California 6 who has ever worked all continents on 20 meter phone in one day. W6AM is able to do it once in a while, simply by following the procedure above.

An Antenna - - and How!

By DON REED, W6LCL

So—The old sky wire won't load up, Huh? And you want something that will help poke a husky signal into South America? Well, why not put up one that will work either South America or Europe and the Aussies also?

While you're at it, why not eliminate the use of mast's and give the neighbors a break and at the same time grab off a swell angle of radiation. Sure, just as easy as that!

How? Well, that's where the fun starts.

In the first place, the dingus we are going to put up is two vertical half waves, and at the flip of a switch, either in phase with broadside radiation, or out of Phase, with end-fire directivity. The actual pattern is a figure eight in either position. The set-up works, and how, and besides the theoretical 3 DB gain in the desired direction we gain a lot because of the angle of radiation.

Now don't get the idea that I think I originated this brand of signal squirting. Nell's Bell's, NO! I first heard of it from Johnny Hawkins, W6AAR, who you perhaps know better by the signature of Jayennay. Maybe it was his own idea and maybe not, but the same dope was given in a well known Antenna Handbook later. The only original part is the structural arrangements and perhaps a clarified explanation of how to measure the lengths and spacing, and why. The why of it had me bluffed for a while, but we finally dug it out . . . (def. WE—me—myself and I). As we said before, our aim is to put up two vertical half waves, and the spacing is also one half wave. Wanting to work some DX indicates twenty meters or mebby ten, so let's call it twenty to get our toes dug in, so to speak.

First, let's hash over a little theory. Some of us will remember that like a customer, the antennas can't be wrong, at least at the far end. That's as far as our wire goes, so the current in the wire stops there, like it or not. Now,

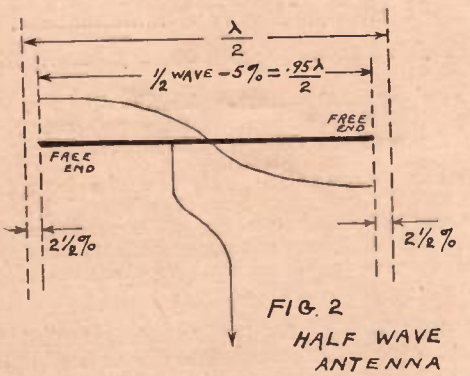


FIG. 2
HALF WAVE ANTENNA

supposing this wire is a single wire off center fed affair. If it is just one half wave, as a lot of them are, it should have been cut to Xtal Frequency by use of a certain well known formula. In the first place, we must translate the electrical distance a single wave at Xtal Frequency will travel along a piece of wire into feet and inches, taking into consideration that at each end of the antenna there occurres a peculiar phenomena known as "Radiant Shortening." This shortening is 2½% at each free end, so after dividing the frequency in MC into the constant of 492, we must subtract 5% from the result, for our half wave with both ends free No. 2. In the case of an end fed half wave such as a Zepp, we only have one free end, so we only subtract 2½%. No. 3. Now just for the sake of argument suppose we want to use a full wave instead of a half wave radiator. Now we have a different story. The far half wave

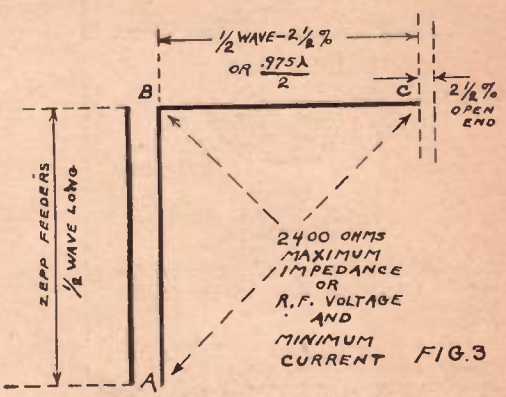


FIG. 3

still needs clipping to the 2½% tune, but the near half wave is attached to the near end of the far half wave and to the feeders at the near end. Therefore, as there are no free ends on it there is none of this "radiant Shortening" we've been spouting about, and therefore we use the whole half wave.

Sure, my friend, I know we have all put up Zepp feeders and a full wave flat top, and didn't have to fuss with a lot of hooey like this, and they worked swell. Of course we have and will probably do it again with the same results. The reason is simple enough when you stop to think. Suppose the flat top was longer than these figures call for. The zero impedance point still occurrs at the exact point indicated by the above figures, and the left-over section is merely added to the length of the attached feeder, throwing the feeder off the balance it should have to perform its cancelling out of radiation. This won't stop the antennas from radiating, but it might be the answer to that screwy RF feedback that you had on that pet frequency of yours. Ever think of that? A mere matter of a few spurious voltage bumps wandering around the shack instead of bouncing off the antenna and adding another R to your signal. But with a system where each part reacts on the rest the story is not so free and easy. Accuracy is necessary to obtain definite results. And in this bird roost we want some very special results. Think that over. Now

TEN-METER ACTIVITIES

By Dexter Young, W6MLA

Well here we are with another whole month rolled by. And every month the band gets better and better.

But fellows, I didn't get but two or three reports and even these came from personal friends so I am kind of disappointed with youse guys.

Fellows I hate to write all I do, all I hear, so please lets have the dope on anything you do and what you hear.

Well to start off with, W6NBN says that one of these fine days he is going to bless ten with his baritone modulated carrier. "Pete" plans to use the well known 6L6 tube in the final with low power. He has had very good luck on 20 C.W. with a single 6L6 G in the final. Input abt. 30 watts. He worked about 3 or 4 VK's. Get him to tell you some day the trouble he had neutralizing the tube.

Another guy who finally got on ten, but in the worse way is W6NAM. "Andy" has a 6L6 to start with as Xtal osc. with a 40 meter rock doubling to 20. Then he drove a 210 buffer and he Modulated this stage. This 210 was driving a 35T doubler to ten. What a combination!

Andy also has a patented way of wrecking perfectly good oscillator tubes. His 6L6 runs pretty hot so one day he wet his finger and touched the glass. Andy said all he heard was an "UMP" as the air was sucked into the tube when the glass cracked!

W6NPX had quite a bit of trouble on ten just lately. Fred and Al couldn't get their Osc. to work, all efforts failing. Finally found screen grid resistor open. Fred has a swell 160 transmitter. Uses a T55 final, modulated with a 212E, one of these 14 in. high Western Electric tubes. He will use a T55 final on ten also and uses the same modulator. For an antenna Fred has 2 half-waves in phase, vertical Power will be about 200 watts.

I just learned that Fred blew up his new 20 meter rock. Cost $6.50 too. Tough luck, Fred.

At last! A report. The only report I did-not dig for this month. Please tell me the least thing you do, no matter how large or small.

Well anyway, W6NMI reports he worked T12FG. "Ed," incidently uses p. p. Eimac 35T's in the final with 500 watts input. Antenna system is a full wave Zepp.

Also, W6LXK, a close friend of Ed's told me that he was midly considering getting on ten. "Hack" probably will use a pair of 801's in the final.

Well as we predicted last month, K6MVV has dis-continued his daily QST's. The band was so hot that Ken and Steve, (K6MVX) had too many stations coming in for complete, 100% accuracy, in reporting their R strength.

After a long absence the East Coast is again hearing and working the Europeans. And We heard G5KH here one Sunday working W6-ITH. Also heard 6NLS and 6AM calling him.

AN OLD, OLD STORY

By His Knibbs - W6IVG

John was a dyed in the wool radio bug,
A Ham if there ever was one:
He spent all his time, in his pockets he dug
And his money all went into his fun.

One day while walking down the street
On the way to the radio store,
He met a YL that was awful neat
And decided to see her some more.

So instead of retiring to his shack next night
To rag chew with some other ham,
He took this dame to a big prize fight
For she was an arena fan.

And he took her out most every day,
Their relationship got closer and closer;
While his gear, piece by piece he sold to pay
For an up to date, shiny roadster.

The great day came when he made her his wfie,
Forgotten were his pals of the airlanes
As he headed his ship into a newer life
Of hardship and struggles and pains.

But then with the thrills of the honeymoon passed,
And homelife began to pall,
Spirits of past QSO's round him massed
Urging him once more to fall.

So he slipped away and re-took the exam
One day when the wife wasn't looking,
And soon once again he'd become a Ham
And had a new rig in the cooking.

As soon as his wife heard he'd been bitten once more,
She crabbed in definite terms,
For she was afraid in his hobby he'd store
More love than he held for her.

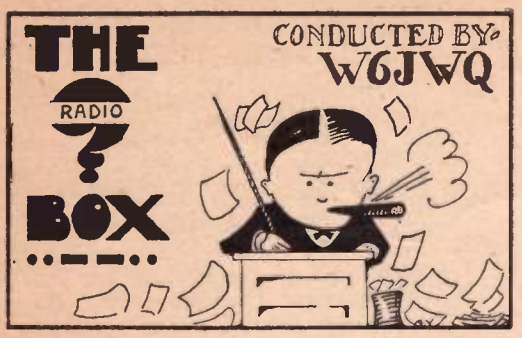
But by countless pretenses and juggling the truth
He got a rig on the air,
And after working an old friend in Duluth
Knew he was welcomed there.

And now it's a fight when the sun gets low
And the evening meal is done,
Whether it'll be haming or a picture show
That'll give Johnny his evenings' fun.

Then his wife he started to teach the code;
She wasn't much interested
But after she'd walked the long, long road
Admitted the time well invested.

Now Johnny and his wife still do fight,
Though not on the mode of their pleasure;
It's more of a case of who first gets the mike
And the chance to operate their treasure.

And so an old story repeats itself,
It's happening ever anon,
Once bitten, you can't go back on the shelf
But must radio on and on.



Question: Please give some data on supplying grid bias on class "C" amplifiers, giving the different methods and computation of resistor values. What change is there when two tubes are used, either in parallel or push pull.

Answer: There are three common methods of obtaining bias used either alone or in combination. A fixed voltage from batteries or power supply, a resistor in the grid return circuit which generates a voltage from the rectified grid exicitation current, or a resistor between cathode and B negative creating voltage from the plate current flowing through it may be used.

Batteries or a well regulated power supply are possibly the best, their main disadvantage being expense and bulk. A grid leak is the simplest method, its disadvantage being that there is no bias when excitation fails, with consequent danger to the tubes. Considerable excitation power is also dissipated in the resistor. Cathode bias gives protection to tubes without excitation, but whatever bias is generated is subtracted from the plate voltage and considerable power is wasted. It is ordinarilly used only in conjunction with grid leak bias to supply just enough bias for tube protectoin.

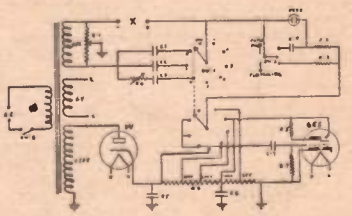
The resistance value for cathode bias is computed by dividing the desired voltage by the plate current (including any screen current). A grid leak resistance is found by dividing the bias voltage by the grid current. Proper grid current is generally specified by the tube manufacturer. In case the proper bias voltage is not known for a particular plate voltage it may be found by dividing the plate voltage by the amplification factor and multiplying by approximately 2½.

For two tubes operated together no change is needed with a fixed voltage supply. For the other two methods the resistance would be halved since double current would flow.

Example: 2000 volts plate voltage is to be used on two 100 TH tubes in push pull. What resistances should be used, it being desired to use a protective cathode resistor? Manufacturer's operating data specifies 150 plate mills per tube with 45 mills grid current and 140 volts bias. These currents are doubled with the two tubes. Suppose we choose to obtain one fourth of the bias through the cathode resistor. We then have 35 volts divided by 300 mills or about 116 ohms. The remaining 105 volts divided by 90 mills grid current gives us approximately 1166 ohms for the grid resistor.

Question: Please give a circuit for a condenser tester using a magic eye tube.

Answer: Below is a similar circuit to one used in a very successful commercial tester. Being a bridge circuit it is not dependent on line voltage or frequency for accurate capacity measurements. It also tests leakage, shorts, open circuits, and power factor of electrolytic condensers. If an 0-50 scale is put on the power factor adjuster R6 it will read the approximate power factor in percent on a 60 cycle line. Capacities from .00001 to 70 mfd. may be tested with a high degree of accuracy if good parts are used and a scale is carefully calibrated. While the scale may be figured out mathematically, it will perhaps be easier to mark it by taking readings of known condensers. The center of the scale will read the exact value of the three calibration condensers C1, 2 and3, and these should be carefully selected. Since they are multiples in capacity, a single scale will suffice for the three ranges which are .00001 to .007, .001 to .7, and .1 to 70. Capacity is found by adjusting the bridge control to maximum opening of the 6E5 tube, with a secondary adjustment of R6 for electrolytics. The switch S2 is controlled by R6 and is turned to the extreme left for paper and mica condensers. Leakage is tested by setting the switch to a voltage tap to suit the particular condenser. With a satisfactory condenser the neon lamp will go out.



PARTS LIST

R-1 10,000 ohm wire wound linear potentiometer.
R-2 125,000 ohms.
R-3 30,000 ohms.
R-4 20,000 ohm voltage divider with adjustable taps.
R-5 1 megohm.
R-6 750 ohm wire wound rheostat.
R-7 6 megohms.
C-1 2 mfd.
C-2 .02 mfd.
C-3 .0002 mfd.
C-4 ½ mfd.
C-5 4 mfd.
C-6 4 mfd.
C-7 .01 mfd.
Sw-1 2 gang inductance switch.
Sw-2 Spdt. switch to attach to variable control.
Sw-3 Spst. line switch.
Power transformer with windings as given.
Neon lamp (¼w. without internal resistor).

Ham Advertising Department

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

FOR SALE—Double current airplane generator, 450v-250 mils. 9v-3¾ amps. Ball Bearings. First $15.00. W6NWY — Henry E. Haenke, 4030 39th Street, San Diego, Calif.

FOR SALE—Complete 100 watt transmitter, $35.00 cash. Receiver and power, $15.00. W6BFE, Tustin, Calif.

PR-10—$37.50. Excellent condition—Also 250 watt CW or Phone Transmitter, including power supplies. Amperex 211G in final. All transmitting coils and condensers, Morrill filter, 1 kw power transformer for final, separate power supplies for all stages. Contact W6IGO for further details, 703 North Ave. 54, Los Angeles, Calif.

FOR SALE—Development model of modern ten tube Commercial Communications Super. Band switching 1500 to 30,000 kc. 2 rf pre-selector stages on all bands, iron cored if transformers, Bliley crystal filter, BFO and amplified AVC and tuning meter. Mechanical band spread, calibrated dual-ratio airplane dial, using 4-6D6's, 2-76's 6C6, 6B7, 42 and 5Z3. Needs 'scope realignment, otherwise perfect. Complete with tubes and Jensen speaker. Price $45 cash—J.N.A. Hawkins, W6AAR, ROchester 6532.

NEED CASH—RME-69 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—$10 takes Peake 2½-5-10 Meter Super Het. Complete with tubes and coils for 5-10—No Power Supply. W6CL—1315 E. 58th Place—JE-3405.

FOR SALE—National Receiver with 4 sets coils and power pack, tubes—complete, $20.—763 N. Gower. Hollywood—HE-2567.

FOR SALE—Several Weston Model 301 Meters 6L6 Modulator and Power Supplies. Universal Dynamic Mike. 2000v 1 mfd. Filter, 1000v 1 mfd. Filter—W6III—310 No. Rural Drive, Monterey Park, Phone Alhambra 1902.

WANTED—Class "B" input es output Transformer to match a pair of 212D. Modulators. See or write Ralph Mercer, 43C West 52nd, No. Long Beach.

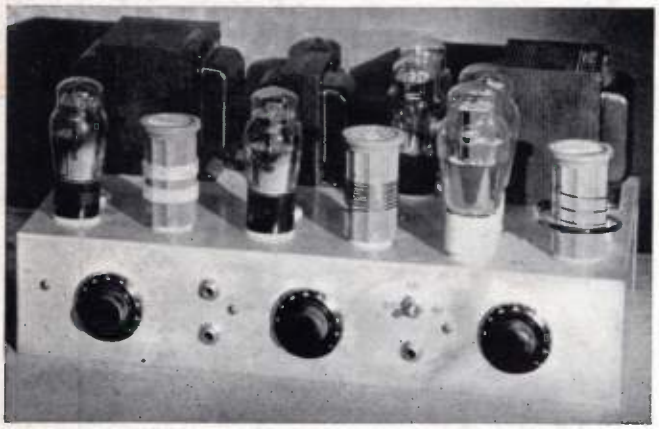
Steadily growing **in demand, in prestige,** and **recognized performance,** the RME-69 has lived up to the reputation we had predicted it would reach. We give all due credit to the Radio Amateur who has put the RME-69 where it is today—an outstanding job in the hands of critical users.

We are now offering several Model-Variations to suit a number of particular requirements. Look over our latest folder, available at your nearest jobber, and obtain assistance in your selection. An RME-69 will be found on display.

Details will be sent upon request

RADIO MFG. ENGINEERS, Inc. **306 First Ave., Peoria, Ill.**

WAC on 10 Meters



Low power goes a long way on 10, much farther than on any other band, and so . . . with this in mind we are suggesting the popular Bi-Push. The 10 meter band is hot and will be getting hotter. Get going! ! !

The Bi-Push exciter and power supply kits include all tubes, punched chassis, and all of the parts are of nationally known lines.

BI-PUSH AND POWER SUPPLY	**KIT**	**$41.75**
BI-PUSH (RF PORTION ONLY)	**KIT**	**$23.75**
POWER SUPPLY ONLY	**KIT**	**$18.75**

. . . . and now the "10-20" FINAL

A push-pull final for use with 35T's or 100TH's . . . 250 watts to 1000 watts.

•

Modern and symmetrical . . . most of parts 'beneath the deck.'

•

Power amplifier for the Bi-Push.

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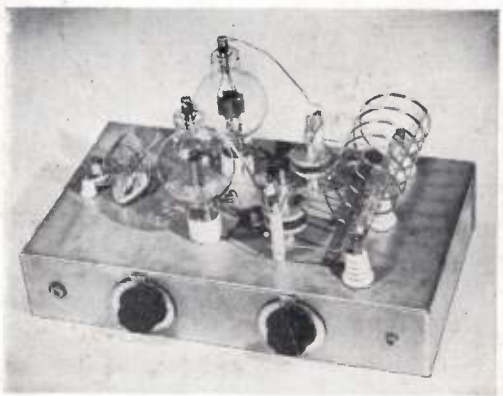
Linear amplifier for the modulated Bi-Push.

•

The "10-20" is described completely in November Radio.



SPECIAL KIT PRICE (less tubes) $32.50

With coils for 10 and 20 Meters

•

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To the gang at the Convention in Tempe . . . we extend our best wishes. We invite you to see the above Bi-Push and "10-20" Final in operation . . . 'on the air' . . . at Tempe. Or, drop in the store and ask any of our 9 hams for a practical demonstration. Log books are free . . . of course. As for the mail order department . . . just try it, it's a whizz.

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•

RADIO TELEVISION SUPPLY COMPANY

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that we have that out of the system, and can determine how long we want the radiators, lets see how to build 'em.

No. 4. Starting with a section of 1" iron pipe, galvanized preferred, we drive the next section in, which is ¾". Into the end of the ¾" section we drive a section of ½" pipe. Of course the ends must be prepared by a little reaming of the larger pipe and a little filing of the smaller section. The fit will be tight, and a heavy sledge hammer will be the proper tool to smack 'em with. Do the smacking at the end of the 1" section, and when the dust settles you can cut it off and have an un-buckled end for the insulating rod to slip into.

The next section is made of ⅜" pipe, into which is fitted a chunk of ¼" and that is all of the pipe. A ¼" rod comes next, with a 3/16" hole drilled about an inch into one end. In this hole we poke a piece of 3/16" rod, and drill a ⅛" hole in the end of this rod to take the last section, which is ⅛" rod. (Boy Howdy. Am I glad that's over).

Assemble the two pipe sections and the rod section separately, for convenience. A sleeve of some sort will be necessary to take up the slack between the ½" and ⅜" sections. I made mine by bending a piece of sheet copper around the ⅜" pipe. The copper sheet was just thick enough to take up the slack. The sleeve was then slipped into the ½" pipe, with a little left out. This edge was peened over to form a flange so that the whole thing didn't get lost in the fuss of driving the two sections together.

After satisfying yourself by measuring the whole assembly that it is long enough, the three sections are assembled, and by using a blow-torch they are soldered together. Don't try your soldering iron. Even the best of 'em will fall down on this job. A coat of aluminum paint isn't necessary but it looks good.

Insulation is necessary, at the bottom end, so scout around and get a 1" bath towel rod. They are usually about 24" to 30" long. With a glass cutter make a good mark around the middle, and break it off there. The break will probably not be clean, but it don't matter much, as this end can be inserted in the bottom of the antenna. To keep the thing from going too far, fit a plug that is to be driven in to the pipe so that it goes in only under a lot of urging with the sledge.

Just as close to the end as you can, drill a hole and tap it for a machine screw. The size is not important, so long as it will hold on well. I used a ¼" 20 screw and it was long enough to accomodate a nut and washer and still be used as a set screw for the glass rod. After setting the screw down on the rod, the nut was used to tighten down on the connecting feeder. Now we seem to be ready for the job of getting them in the air.

Three guy wires are all that is necessary, and the proper place for that is at the joint of the ¾" and ½" pipe. Three strain insulators are tied separately as close to the pipe as possible. The small eggs are OK for this job. If you are fussy you can use another set close to the first ones. Break up the rest of the guy wires so that they won't resonte, and add a turn buckle in each guy. You might call these vernier adjusters, because they can do a lot in straightening the works up.

On the roof of the house is the scene of our next action. According to our figures, the spacing will be somewhere around 34 feet. Be sure this spacing is a full half wave at operating frequency if you want the set-up to perform correctly. That means 492 divided by the frequency in megacycles with nothing off for cash.

Make a saddle of wood that will straddle the peak of the roof, and fix it so it won't skid. Bore or chisel a shallow hole in the top member for the glass rod to park in. Spot the anchorage for the guys and tie on a sizable chunk of wire. If you're lucky enough to have a friend at this stage of the game, rally him around. Push the bottom end against the non-slipping saddle, get back about where the guys are tied and lift gently. DON'T GET IN A RUSH. You might throw a marcel in the antenna that will cause a lot of work removing it.

When the antenna is vertical tie the guys on. A carpenters level comes in mighty handy as it is necessary to have the top of the two verticals the same spacing as the bottom. Tighten up the guy wires but leave one loose joint till the level says the antenna is darned near right Then make the final adjustments with the turnbuckles. Incidently, in case you don't know it, these can be had at the F. W. Woolworth stores at a dime per throw and are plenty strong for this use. It's a good idea to grease them very well in case you might want to make future changes or adjustments, as the thread is not rust proof.

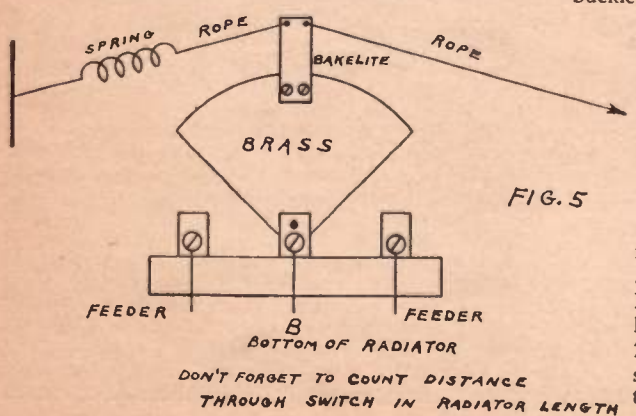


FIG. 5

Now, as the antenna is in the air, comes connecting the feeders. 2" spacing seems to work OK, and swell spacers are made by getting a bunch of porcelain cleats such as are used for house wiring of the knob and tube system. These can also be obtained at the same dime store, at a 2 for 5c price. The connections are clearly shown in the sketch, No. 5. Remember that the extra chunk of wire that

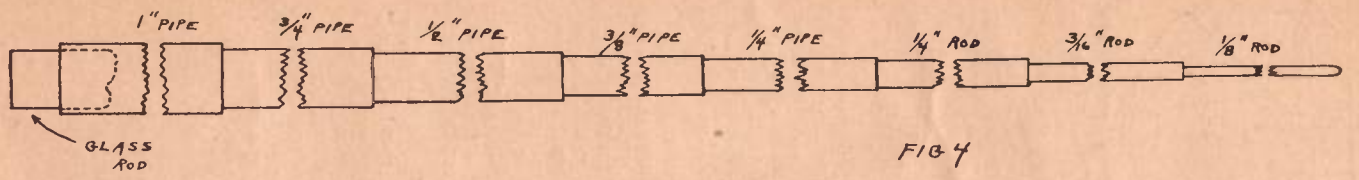


FIG 4

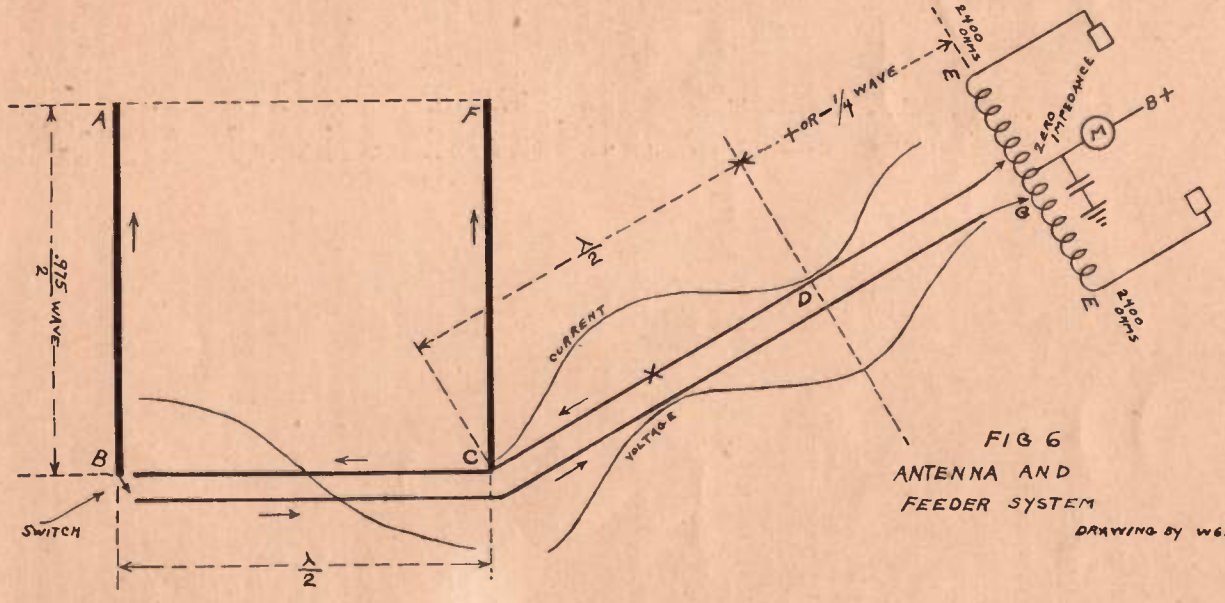


FIG 6
ANTENNA AND
FEEDER SYSTEM
DRAWING BY W6NQQ

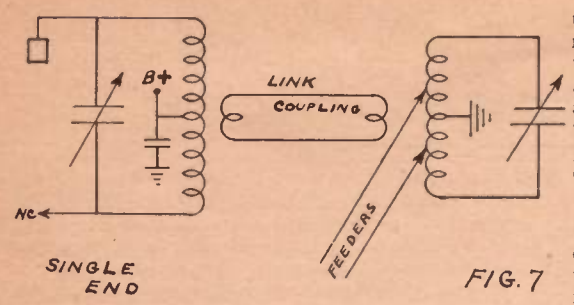


FIG. 7

connect from the feeders and switch to the antenna proper is also part of the antenna, and it's necessary to subtract this amount from the antenna length. This sounds fussy, but is worth the extra work involved to obtain perfect resonance.

The feeders can be spaced with the same cleats, held in place by wedges instead of the usual chunk of tie wire.

Now for some more high brow theory. No. 6 As a zepp feeder is a resonant circuit it naturally follows that the impedance varies through-out its length. Starting at one end, which we will assume is attached to the nearest antenna, which, we hope is maximum impedance, or if you wish, we will say maximum voltage, and also minimum current. C. Now, somewhere down the feeder, at a point that is, according to our original figures, just a full half wave (no free ends, so no discount) will occur another point of maximum voltage, and/or impedance. D. Some one once told me that this impedance was around 2400 ohms, but I can't argue about that because I have no way of proving or disproving the figures. At any rate it is the maximum, and with no great effort we can prove that just half way between these two points there is a point of maximum current. X. Now, if you want to argue about it, get out your R. F. meter and check up. It won't be hard to see whether your current is highest at the measured center. You can do it with a small flash light bulb and some wire with clips on the ends. A few checks will show you whether your figures are right or not. The same check can be made on the cross feeders.

Now lets take a look at the final plate tank. We will suppose you have a push-pull final. Again we find that the maximum RF voltage is right at the plate of the tubes. E. So we can assume it is the same 2400 ohms impedance. At the center of the tank, where the B plus is fed in, we usually find that we have a by-pass condenser to ground. There is no question about this. We have zero impedance, and zero RF voltage at this point. If you like lots of RF floating around the shack you can hook the end of the feeders (D) at the spot we left 'em right on the ends of the tank (E) and the signal will be a honey, but for fone work, so will the RF feed back. Even if everything is perfectly grounded and you don't have any feed back, you probably will have to build a fence around the mike to keep from burning the end off the visitors nose, when they try to crawl into it.

The solution to this problem is to add a little less or a little more than a quarter wave to your feeders and, starting near the center, make test taps (G) on successive turns toward the plate end of the tank till the proper load is shown on the final plate meter. Technically speaking, this matches the impedance of the less-than-quarter-wave feeders to the same impedance point on the plate tank coil, by the same principal used in the more simple auto-transformer.

Of course, if you have a single ended finel, it would be better to use a coupling circuit, either, direct or link coupled. If you really want to take the RF out of the shack the low impedance couplnig is best, and this is easiest accomplished by parallel tuning of the antenna tank, with the feeders attached near the center of the antenna tank coil.

Now, to get back to our signal flinger. We have two vertical radiators, each resonant at a half wave at operating frequency. These are connected to the Xmitter by resonant feeders of a total of one full ½ wave plus we will say 3/16 of a wave. Highest voltage and lowest current will occur at points A.B.C.D.E. and F. Because of the structure of the feeder, a momentary value at any given point such as point D, for instance, will be the same on each feeder, and therefore will not cause radiation, as the current will be in the opposite phase, or direction.

By use of the S.P.D.T. switch mentioned at the start of this argument, we are enabled to connect one of the radiators on to either feeder. When both radiators are connected to the same feeder we find that the radiation is stronger in line with the two radiators, and much weaker at right angles to them. In the reverse position, with the radiators on opposite feeders, the reverse is true, and quite noticeable increase in signal strength will be noticed in a broadside direction.

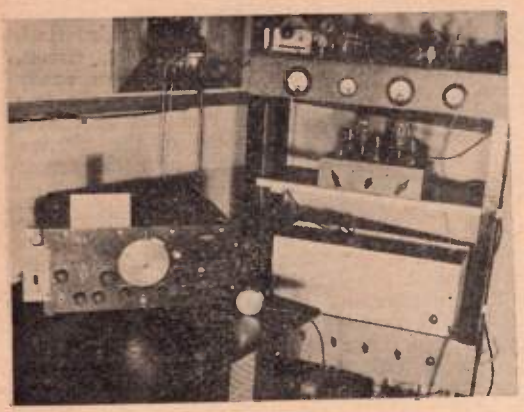
To illustrate the advantage of a vertical vs. a horizontal antenna, or radiator, make this experiment. Get a doughnut. (Don't ask me for mine, on account of because its all et up.) Next borrow a pencil. Now stick the pencil half way through the doughnut, and, holding it in a horizontal position, imagine the doughnut as your field pattern. You will note that at least half of your doughnut of field strength is either headed for the ground or towards the stars. All attempts at being funny aside, this is an actual fact. Fully half of the radiation from a single half wave radiator is wasted in directions we are not interested in.

Now reverse the pencil, (but hold on to the doughnut). Notice that the radiation is in all directions, except up and down. Now, the picture is different, and if you take the trouble to prove it to your own satisfaction you will note that your DX will last longer and your reports will be better.

It is pretty hard to measure the increase in signal strength at a DX point, but I can say that considering the power input at my station I have been able to consistently equal the reports given to stations running three to five times the power I do. And I'm not talking about QSO's with W's and VE's. I refer to G's and such. And the beautiful part of this array is that it is all on my own roof, with no clumsy poles with a lot of guy wires cluttering up the scenery.

130-Watt Crystal Controlled 5-Meter Transmitter

By DON C. CRYSTAL—W6ANH



The operating corner

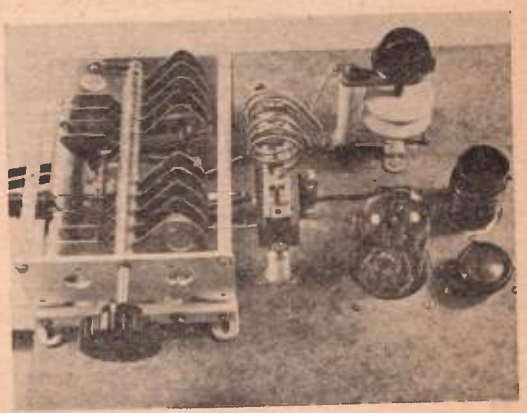
Being interested in the 56-mc. band, and desiring to build a transmitter of better design than the usual modulated oscillator low power type of transmitter, I proceeded to rebiuld and adapt my regular 20 and 10 meter rig for use on 5 meters. After much experimenting with different types of tubes as ultra high frequency amplifiers and doublers I finally decided on the following tube lineup of the transmitter.

A 6L6 tri-tet oscillator, incorporating two new features that are not commonly used in tri-tet circuits; namely, a shorted turn on the cathode end of the cathode coil, and a fixed tune cathode circuit. The shorted turn on the cathode coil loads the grid circuit which has several advantages; no spurious oscillations, low crystal current, more harmonic output and stability of the oscillator circuit. The number of turns on the cathode coil were determined by trial until satisfactory performance was obtained.

To obtain sufficient output of the 6L6-G doubler to drive the succeeding stage, a circuit of the regenerative type was found necessary. The only trouble likely to be encountered is in the neutralizing condenser, which has to be of an extremely low minimum capacity. Considerable attention should be given to adjustment of the screen voltage to obtain optimum output.

Exciter unit and Final

Considerable difficulties were encountered in attempting to double from 28 to 56 mc. due largely to two factors: Insulation troubles; which were plenty; and selecting a tube that would operate satisfactorily at this frequency. Isolantite insulation was finally selected and used for both tuning and neutralizing condensers. The TZ20 tube was decided upon on account of the extremely high amplification factor and the capability of producing high output as a doubler with very little bias. The circuit of this doubler is also of the regenerative type to obtain maximum output.

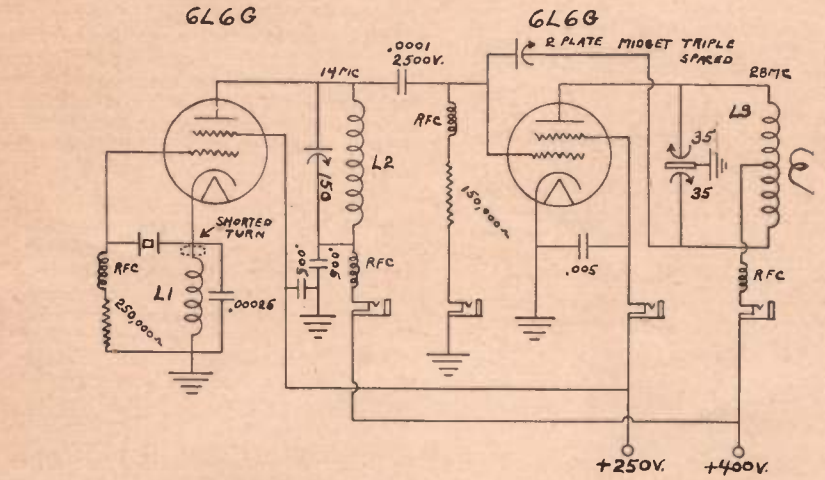


Close up of 35T Final Amplifier—Note sub mounting of tube to insure short symetrical leads.

Link coupling was used to obtain efficient coupling between stages in preference to a shunt feed choke. Grid chokes are very hard to properly design to eliminate rf losses which are extremely high at these frequencies.

The final amplifier presented quite a problem. To make the 35-T operate efficiently with respectble output, considerable amount of care was required in the design. Short and symetrical leads, good insulation and careful neutralization must be practiced.

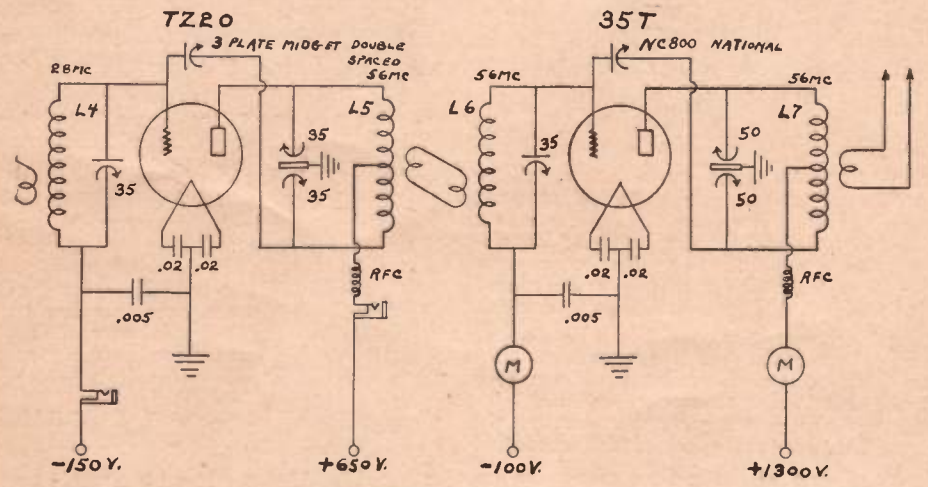
The rig is modulated by a conventional Class B unit which consists of an American Electrostatic mike into a 57 to a 56 to 45's PP driving TZ20's Class B with 800 volts on the plates.



L1–7 TURNS
3/4 INCH I.D.

L2–6 TURNS
1¼ INCH FORM

L3–12 TURNS
1 INCH I.D.



L4–4 TURNS
1½ INCH FORM

L5–6 TURNS
1 INCH I.D.

L6–2½ TURNS
1¼ INCH FORM

L7–6 TURNS
1 INCH I.D.

DRAWING BY W6NGQ