JULY, 1950

CQ

The Radio Amateurs' Journal

IN THIS ISSUE

- Results—1949 World-Wide DX Contest
- An Under-the-Dash Mobile for 75 Meters
- A Modulator for the Medium-Power Rig
- A "Shoe-Box" Station for 80 and 40

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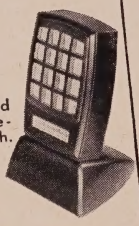
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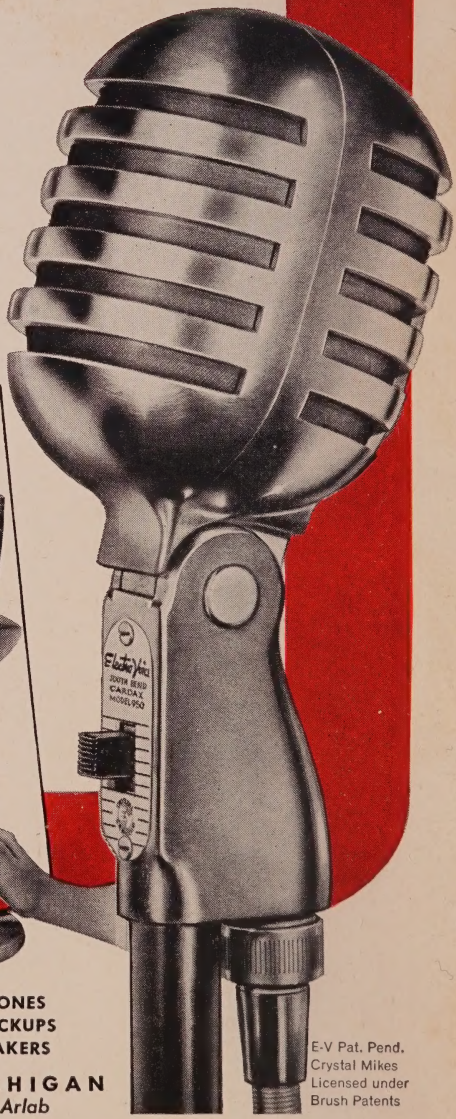


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IN the 12AT7, General Electric and Ken-Rad designers have provided a master key that opens many locks for hams working the higher frequencies.

Developed as a converter and r-f amplifier in FM and TV, the tube comes to you with a solid record of commercial performance. And such a handy miniature to apply! For converter service, to name one of several 12AT7 uses, the twin-triode design enables one section to serve as mixer, the other as oscillator. Moreover, both sections have their own cathodes, giving you full freedom of layout in biasing and coil-tapping.

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As for audio, the 12AT7 is a preferred tube choice as pre-amplifier or regular voltage amplifier. Exceptionally high g_m means that voltage gains of from 55 to 60 are easily realized.

A true miniature, the tube is extremely compact. This fits in with your plans for v-h-f, where compactness is all but a necessity. Your Ken-Rad distributor or dealer will be glad to show you the 12AT7, quote you its low price based on volume production. Inspect this triple-A value today!

K KEN-RAD

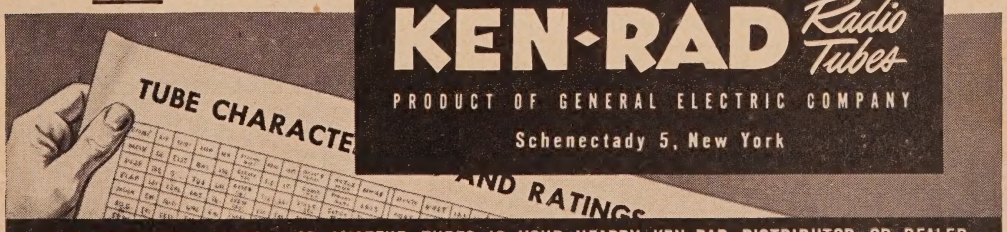
12AT7
9-pin miniature
TWIN TRIODE

CHARACTERISTICS

Heater voltage	12.6 v	or 6.3 v
current	150 ma	300 ma
Max plate voltage		300 v
Max plate dissipation, per section		2.5 w

182-JA28

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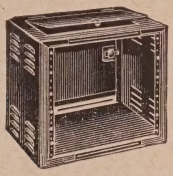
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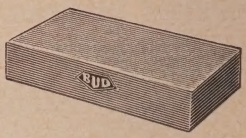
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These cabinet racks have rounded corners and attractive red-lined chrome trim. There is a recessed, hinged door on the top with a snap catch. These racks are made of heavy gauge steel and are of sturdy construction. The five large sizes have a hinged rear door, while the small sizes have a welded panel in the rear.

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"NO SCRATCH" EXTENDED METAL FEET ARE EMBOSSED ON THE BOTTOM TO MINIMIZE MARRING OF A TABLE TOP. Racks are furnished in either black or grey wrinkle finish. Dept. 14¾", width 22". Will fit standard 19" panels.

Catalog No.	Overall Height	Panel Space	Shipping Wt.	Dealer Cost
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CR-1740	12 5/16"	10½"	31 lbs.	11.32
CR-1742	14 1/16"	12¼"	32 lbs.	12.25
CR-1739	15 13/16"	14 "	36 lbs.	13.85
CR-1743	19 5/16"	17½"	40 lbs.	16.77
CR-1727	22 13/16"	21 "	45 lbs.	18.00
CR-1744	28 5/16"	26¼"	50 lbs.	19.20
CR-1728	33 5/16"	31½"	55 lbs.	21.20
CR-1745	36 13/16"	35 "	60 lbs.	21.57

BUD ADD-a-RACK SERIES

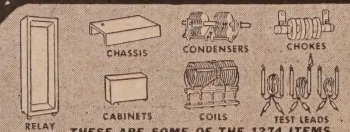
Write for literature on this newest Bud product. Find out how you can get more panel space in less floor area at lower cost.

BUD ALUMINUM CHASSIS

The construction and design of these chassis is exactly the same as our steel chassis. The aluminum chassis are welded on governemnt approved spot welders that are the same as used in the welding of aluminum airplane parts. The gauges in table below are aluminum gauges. As a result, you can depend on BUD Aluminum Chassis to do a perfect job. Etched Aluminum finish.

Catalog No.	Depth	Width	Height	Gauge	Dealer Cost
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AC-403	5"	9½"	2"	18	.81
AC-421	5"	9½"	3"	18	.89
AC-404	5"	10"	3"	18	.99
AC-422	5"	13"	3"	18	.98
AC-405	7"	7"	2"	18	.81
AC-406	7"	9"	2"	18	.90
AC-407	7"	11"	2"	18	.96
AC-408	7"	12"	3"	18	1.14
AC-409	7"	13"	2"	18	1.02
AC-411	7"	15"	3"	16	1.68
AC-423	7"	17"	3"	16	1.43
AC-424	8"	12"	3"	16	1.38
AC-425	8"	17"	2"	16	1.52
AC-412	8"	17"	3"	16	1.77
AC-413	10"	12"	3"	16	1.44
AC-414	10"	14"	3"	16	1.92
AC-415	10"	17"	2"	16	1.80
AC-416	10"	17"	3"	16	2.04
AC-426	11"	17"	2"	14	1.89
AC-417	11"	17"	3"	14	2.40
AC-418	12"	17"	3"	14	2.52
AC-419	13"	17"	2"	14	2.25
AC-420	13"	17"	3"	14	2.67
AC-427	10"	17"	4"	14	2.36
AC-428	13"	17"	4"	14	3.05

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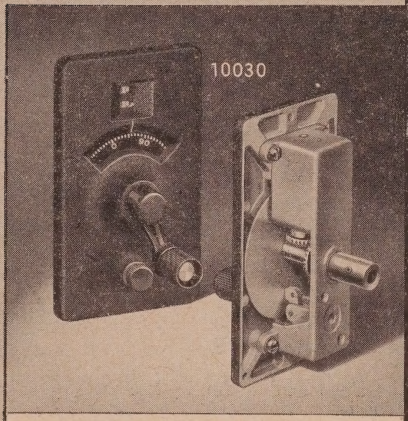
OUR COVER—This s.w.r. curve illustrates what can be done with a single antenna covering a multiplicity of bands, if the approach is correct. Mack Seybold tells us how, starting on page 13 of this issue.

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Application



The No. 10030

INSTRUMENT DIAL

An extremely sturdy instrument type indicator. Control shaft has 1 to 1 ratio. Veeder type counter is direct reading in 99 revolutions and vernier scale permits readings to 1 part in 100 of a single revolution. Has built-in dial lock and ¼" drive shaft coupling. May be used with multi-revolution transmitter controls, etc. or through gear reduction mechanism for control of fractional revolution capacitors, etc. in receivers or laboratory instruments.

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MAIN OFFICE AND FACTORY

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Feenix, Ariz.

Deer Hon. Ed:

Maybe you not believing it, but Scratchi is now big hero in this town, on acct. of something that happened short while ago. One newspaper are saying—"Young radio genius Hashafisti Scratchi, displays exceptional ingenuity in rescuing himself from unusual plight." Another newspaper writing —"Amateur Marconi uses doctor's equipment to call rescuers." That is Hon. Yours Truly they are talking about!

It are all starting when I attending meeting of local young men's club which is being held on ninth floor of local skyscraper one Saturday evening. Along about 10 pm meeting are getting dull, so Scratchi leaving. Noticing light on in an adjacent office, are deciding to do good turn and go into office to turn light off.

As I enter I see table with lots of two-year old magazines on it, so I are thinking it are doctor's or dentist's office. In fact, I am so curious that I poke around a bit more, and enter another door, which show that first guess are right—it are doctor's office. There are so many interesting gadgets around that I decide to spend an hour or so looking things over, so I go into first room and turn out light, so as not to be disturbed.

After playing with microscope and looking over doctor's instruments are noticing bottles on shelf, all marked with chemical symbols not known to Scratchi. First one are having some liquid in which smell like old burnt-out transformers. Second one not having any smell at all, and it are marked "distilled H_2O." Can't imagine what doctor are doing with stuff like that. The stopper on third bottle are kinda hard to get off, but I finally manage to open bottle, and then I take a deep sniff of stuff inside.

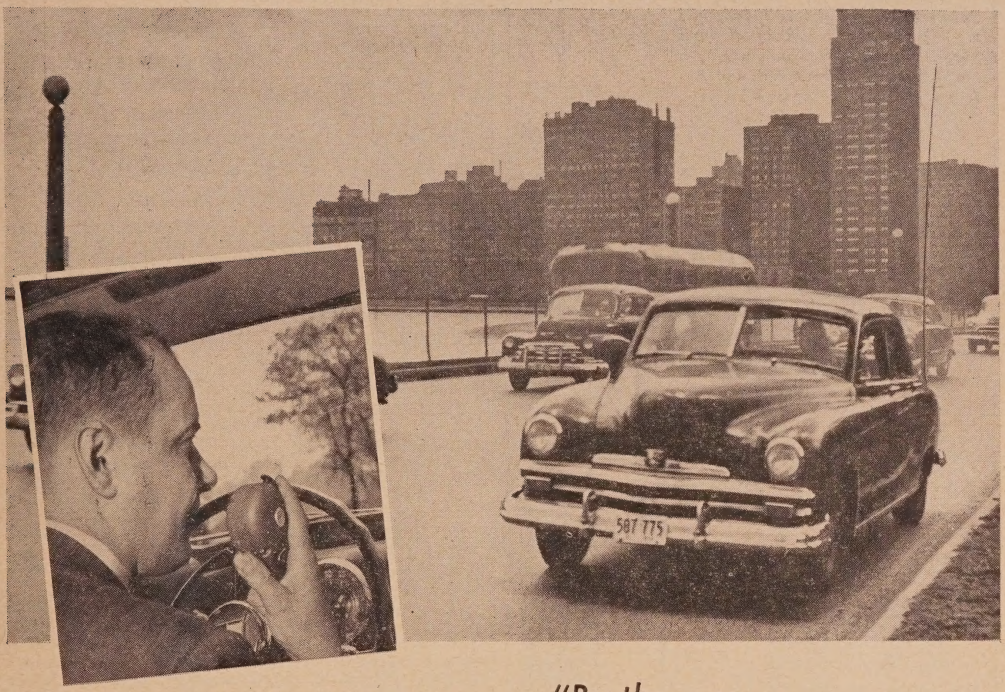
Next thing Scratchi know he are flat on back on floor looking up at pattern on ceiling. Also, something new have been added—large bump on back of head. Room are still smelling funny, and I are finding bottle on floor with all the stuff spilled out. At this point I are somewhat whoozy but I deciding best place for me is out of there. I go to first room and Hon. Tragedy!! door are locked. This seeming most strangely until I look at my watch and find it now 2 AM in the morning. Evidently watchman is coming by and locking door while Scratchi taking siesta on floor in other room.

I are now in l/c predickament. If I calling for help, somebuddy are sure to asking how come Scratchi in doctor's office when he not even sick. After putting Hon. Brain in high gear, are deciding to make up story about be knocked out (big bump on head prove this) by two men and dragged into doc's office and robbed. Scratchi

(*Continued on page 57*)

"SYLVANIA miniatures sure can take it... UR SIGS VY FB HR OM"

Says Ero Erickson, W9HPJ



As an electronic expert in mobile equipment and Secretary-Treasurer of Chicagoland's largest mobile radio club, Mr. Erickson speaks with authority when he praises the durability and fine performance of Sylvania Miniature Tubes.

They're tops, he reports, for amateur mobile radio equipment.

On rigs where space economy is not a deciding factor, many hams prefer Sylvania's larger equivalents, and Sylvania's Ruggedized Tubes.

But, whatever your needs, you'll find Sylvania Tubes in sizes, types and characteristics to serve you best.

"By the way, have you seen this new book?"



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If you haven't yet obtained your copy of "40 Uses of Germanium Diodes," call your distributor today . . . or send $1.00 to Sylvania Electric Products Inc., Dept. R-2707, Emporium, Pa.

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Here's the fast, inexpensive, easy way to improve the efficiency of your mobile rig: Simply install a Master Mobile Center Loaded All-Band Antenna. Sturdy — Handsome — Efficient.

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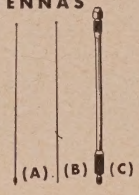
• All antennas available with 20, 40 or 75 meter coil! • Interchangeable coils available for any band; 80 thru 20! • 10 meter operation simply by shorting out coil in use! • Fits any MASTER MOUNT or 3/8" SAE thread! • Rugged construction, handsomely chrome plated! • Length 8', 10"; Weight 28 Oz. • Extra coils for only $2.95!

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MASTER WHIP ANTENNAS

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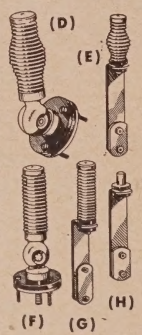
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(E) Model 140 Bumper mt., double tapered. Net $5.95
Model 140X Ex. H. D., for all band ant. . . net $6.95
(F) Model 126 Durable swivel base body mount; straight spring. Net $7.95
(G) Model 138 Bumper mt., straight spring. Net $5.95
(H) Model 142 Insulated; without spring for direct bumper mounting. Used with Series 100 antenna or Ext. 92 . . . . net $2.95



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LOS ANGELES 36, CALIFORNIA

★ ★ Letters ★ ★

A Technical Problem is Presented

Box 25, Oak Hall, Va.

Editor, *CQ:*

I would like to see you publish the following antenna specification so that your amateur and professional readers can pass along their designs and ideas. Possibly the mutual effort will produce an antenna which will benefit the whole fraternity.

1. The antenna shall be omni-directional over the range of 3.5 to 29.7 mc, or, at least, the ham bands in that range.
2. The effective power gain shall be at least equal to that of a half-wave doublet cut to the frequency in use.
3. The antenna shall present an unbalanced non-reactive, low-impedance load to the transmission line.
4. The antenna shall be no more than 100′ long and 50′ wide, and require no more than two supports.
5. Any controls or switches must be at the transmitter, and should be as simple as possible.

Wayne W. Cooper, W8EWC

CQ Clergy

14 Caryl Ave., Yonkers, N. Y.

Editor, *CQ:*

ZL2ABI, a Catholic priest in New Zealand inquires whether there are any other Catholic men of the Cloth operating 28-mc phone who would be interested in a schedule with him. He can be found on 28080 kc when the ZLs are coming through.

David Adlerblum, W2QAI

More on TVI with the Command Set Rigs

Vail Apts., Eatontown, N. J.

Editor, *CQ:*

Since the publication of the article entitled "TVI-Proofing the Command Transmitter" in the March 1950 issue of *CQ*, I have been swamped by letters from readers requesting further information regarding circuit and component parameters for use with the BC-458 and BC-459. The letters are too numerous for me to answer personally, and I felt it necessary to use this means of reaching our readers.

The same procedure in shielding and filtering of the power leads of the BC-457—indicated in the original article—should be followed with the 458 and 459 when they are to be used on 40 meters. The only change necessary is in the design of the antenna filter. On 40 the coils should be wound of #14 enamelled wire, close wound, to an inside diameter of ¾-inch, and should have 8 turns. The coils should be mounted in the shield can in such a manner that no part of the coils is less than ¾-inch from the shield. It is best to dope the coils in a polystyrene cement in order to keep them rigid. The capacitors should have a value of 450 μμf, and should be terminated as close to the molded portion as possible. High-*Q* silvered mica or silvered ceramic condensers having a rating of at least 500 volts will be satisfactory. It is suggested that 52 or 72-ohm coax line be used to feed the antenna for best results.

If the above instructions are followed closely there should be no difficulty in getting a 458 or 459 TVI-proofed on 7 mc.

Samuel J. Lanzalotti

160 Meter Operation

R.R. 2, Box. 363, Palatine, Ill.

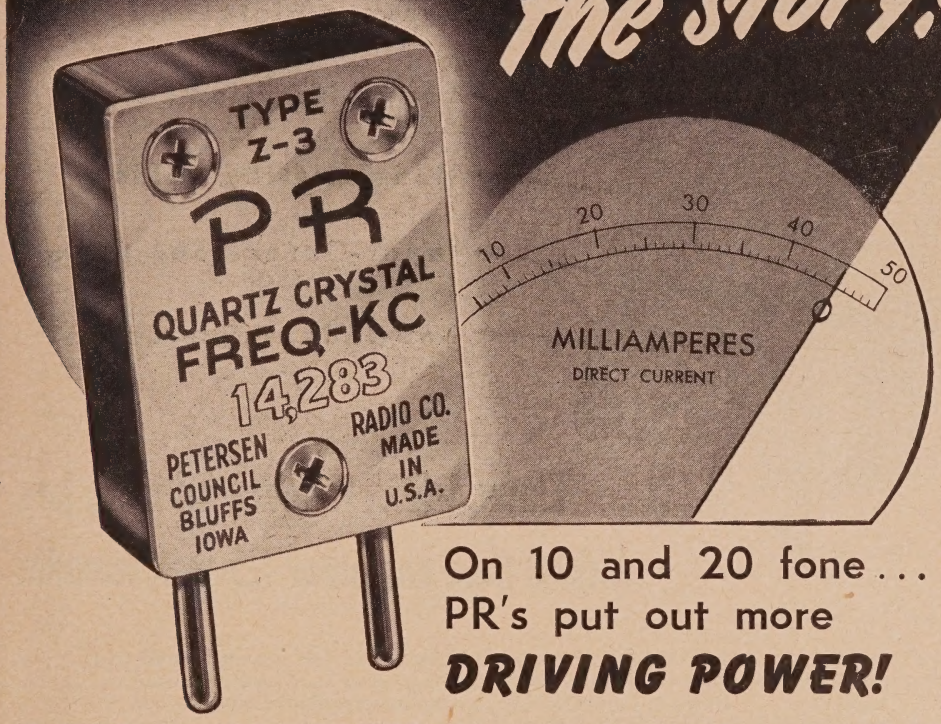
Editor, *CQ:*

Allow us to reaffirm the spirit of Mr. Clark's recent article on "Low Power 160 Phone Operation," particularly the last paragraph.

In 160 we have an ideal low-power auxiliary band

(*Continued on page 61*)

GRID MILS tell the story!



On 10 and 20 fone . . . PR's put out more *DRIVING POWER!*

On the higher frequency fone bands DRIVE is the problem! Adequate grid mils to the final means top efficiency . . . full modulation capability . . . longer life for the big bottles . . . more watts in the antenna. Drive begins with your crystal stage! That's why rugged PR Precision Crystals are designed to deliver high power output under grueling amateur conditions . . . negligible drift over wide temperature range . . . amazing activity . . . sealed against contamination and moisture . . . accurately calibrated. Yes, low cost PRs deliver MORE POWER! Available from your jobber for all bands.

20 METERS, Type Z-3, $3.75 • 40, 80 AND 160 METERS, Type Z-2, $2.75

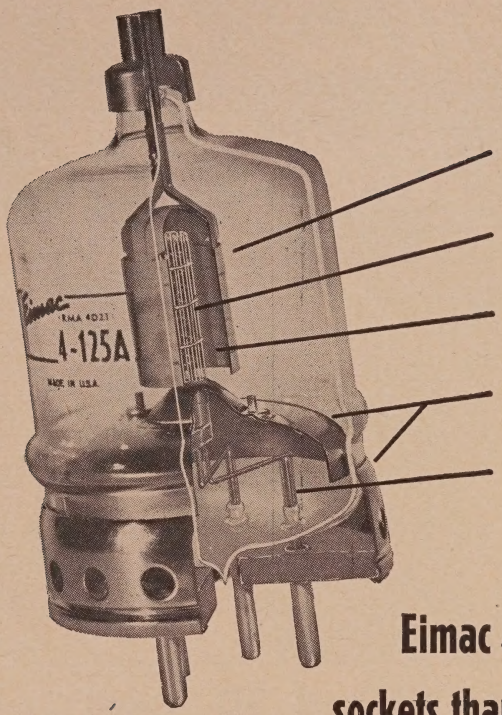
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EDITORIAL

THE ONLY THING which surprised us at the Oral Argument before the FCC on June 2nd on the subject of Docket 9295 was the presentation made by representatives of the National Amateur Radio Council. The presentations made by SARA—substantially an endorsement of the proposed rule changes—and by ARRL—strong objections to the Amateur Extra Class license and Section 12.0, *Basis and Purpose*—were completely in accordance with the well-publicized stands of those groups. The NARC proposal—that the Amateur Extra Grade license be issued only to those amateurs who have been licensed for ten out of the fifteen years previous to the application date—caught us a little off balance. The argument of NARC is best summed up in the following, quoted from their presentation:

"You will note that for an amateur to qualify for the new advanced class of license he shall have held a valid amateur license for a period of but two years. It seems to me that you have gone to great pains to provide him with the knowledge of the wireless code and of the advanced theory. He must be an outstanding code operator with his head full of theories. But what of practical experience? Surely that is an essential qualification for the holder of your very highest grade of operator license.

"Under your presently proposed rules you say that the applicant must have had a two-year opportunity to acquire experience, but you do not in any way require that he have any practical experience at all."

This, then, is the position that the NARC representative set forth with regard to the Extra Class license, quoting a resolution of a "special membership meeting of the National Amateur Radio Council, just held in Indianapolis, Ind., on May 6 and 7. . . ."

The League's position on the Amateur Extra Class license was pretty much what had been expected—an objection on the ground of a lack of demonstration of *need* for the new class, in the following words:

"The League feels that it is illogical to create a new class of license and to outline its examination element before the privileges to be enjoyed under it are known. The present Class A examination is designed to ensure an applicant familiarity with radiotelephone techniques and a proper objective in view of the operating privileges available to those who possess the license.

"In general the elements of the Class A examination appear to be satisfactory for their purpose, but in any event could be revised any time the state of the art so required. The League does not feel, however, that a higher code speed requirement than is normally required for amateur communications, or familiarity with radio control of remote objects, transmission of energy for measurements and observation, and so forth, are pertinent to the qualifications for the advanced amateurs' privileges under this rule.

"Therefore, in the absence of any demonstrated need for an Amateur Extra Class license on the terms indicated by the Commission's proposal herein, and considering the present Class A license and the examination required therefor, it appears quite satisfactory for present purposes. The League recommends that the proposal for Amateur Extra Class license be deleted. . . ."

The only "soft" spots in the ARRL's presentation included a rather lengthy discourse by Q. B. Smith of the ARRL General Counsel's office on ". . . no justification for the requirement that existing licensees be re-examined when licensing requirements have been raised." It is unfortunate that Smith had not had an opportunity to study the proposed rule changes and thus learn that the "re-examination requirement" had been deleted from the proposals by the FCC itself several months ago.

At another point in the proceedings the following discourse took place with regard to the Extra Class examination:

Commissioner Webster: "Then you really have no answer to my question as to what the objection is to the higher qualifications for the highest class, even if we retained it in its present terminology of Class A."

Mr. Smith: "We do not feel that it is a speed that—as I say, it becomes an award of ability, and it has no actual relation to amateur communications. It is a speed . . ."

Commissioner Webster: "You don't use 20 words a minute in amateur communication?"

Mr. Smith: "Some do; but for normal reliable communication, 20 words is not normally used."

The ARRL objection to the proposed Section 12.0, *Basis and Purpose,* was based mainly on General Counsel Segal's observation that the present status of amateur radio in this country, and in the world, to a large extent, has come about in large measure because of the American principle of "turn them loose and see what they can do." Unfortunately the record of the proceedings of the Oral Argument does not show any point at which Mr. Segal indicated how the proposed 12.0 would rescind this principle.

Both NARC and SARA expressed themselves favorably with regard to *Basis and Purpose,* as was to be expected from the previously-stated principles of those groups.

It seems to us that the FCC has now had adequate opportunity to learn the *pros* and *cons* of the entire matter, and that very little would be gained by further delay in settling the fate of the

Presenting the

. . . with performance and control facilities advanced, for the amateur, to the present frontiers of the art.

The new 75A-2 double-conversion superheterodyne is a development and refinement of the now famous 75A-1, basic design features of which have been retained. The sensational stability, calibration accuracy and sensitivity so highly praised by present Collins owners are also retained and enhanced in the 75A-2.

In addition, the 75A-2 provides the greatly improved degree of selectivity that is a must for operation in the amateur bands today.

For your better acquaintance with the 75A-2, here are its new features:

Drum Type Dial with vernier, both actuated simultaneously by the single tuning control. The slide rule dial is calibrated directly in one-tenth megacycles, the vernier dial at one-kilocycle intervals on all bands, except on 11 and 10, where it is two kilocycles. A zero set control is on the front panel. The new Collins type escutcheon is similar to that on the Collins 51J communication receiver.

160 Meter Band Added. Besides the additional coverage, this provides another check-point with WWV at 2.5 mc. Total coverage includes the 160, 80, 40, 20, 15, 11 and 10 meter bands.

Separate CW Noise Limiter Added, really effective on CW. Shunt type, following output of first audio amplifier. Front panel control.

15 Miniature Tubes and rectifier (two more than the 75A-1). The 75A-2 tube line-up: 6AK5 RF amplifier, 6BE6 HF mixer, 12AT7 crystal oscillator, 6BE6 LF mixer, 6BA6 VFO, 6C4 VFO, three 6BA6 IF amplifiers, 6AL5 AVC — detector — audio detector, 6BA6 BFO, 6AL5 noise limiter, 12AX7 AVC amplifier — audio amplifier, 6AL5 CW noise limiter, 6AQ5 power amplifier, and a 5Y3 power rectifier.

Accessories Available are the new Collins 8-R-1 100 KC crystal calibrator and the new Collins 148C-1 NBFM adapter. Controls are provided on the front panel for both of these accessories, and both plug into sockets which have been added on the top of the chassis, inside the cabinet. No wiring or soldering is needed.

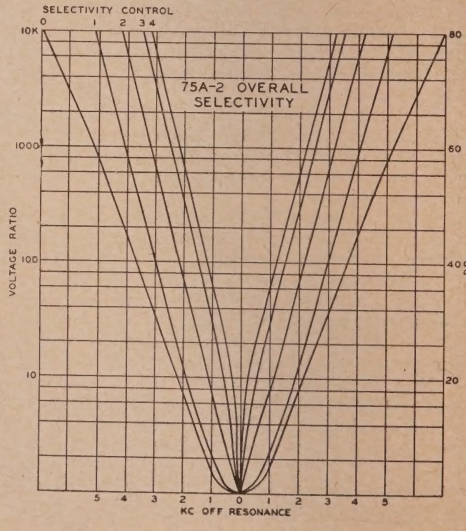
Antenna Trimmer Added, with front panel control. This trimmer corrects the tuning of the r-f stage grid circuit for detuning caused by the antenna; enables you to maintain peak efficiency.

Greatly Improved Selectivity is provided by nine tuned circuits at 455 KC i-f, plus an improved crystal filter. The selectivity of the crystal filter is variable in 5 steps by front panel control. The bandwidth in the broad position is approximately 2.4 KC at 6 db down, and 10.5 KC at 60 db down. In the sharpest position the bandwidth is approximately 200 cycles at 6 db down and 4.6 KC at 60 db down.

When this receiver is tuned the increased skirt selectivity is instantly apparent. There are interference-free holes in the crowded phone bands. High pitched heterodynes are practically eliminated. This leaves the phasing control free for use in eliminating low-pitched heterodynes — an extremely useful feature in both CW and phone operation. The range of the phasing control notch has been extended downward to approximately 200 cps.

Input Impedance is designed to a nominal value of 75 ohms, balanced or unbalanced, the actual value being between 50 and 150 ohms over the entire range of the receiver. This permits advantage to be taken of the low noise pickup of coaxial transmission lines. The popular two-wire moulded transmission lines also may be used. Mounting holes are provided for installing a standard coaxial connector on the rear of the chassis.

BFO injection is designed for optimum reduction of heterodynes between incoming signals — a



new Collins 75A-2



After giving the new 75A-2 a thorough workout, our severest critic, Art Collins WØCXX, said: "It's a hot receiver — I'll buy it." He is shown here with the 32V-2 and (right) the new 75A-2.

noticeable improvement. The stability of the BFO is also improved.

The 70E-12 VFO employs a new Collins permeability tuned two-tube circuit, which assures improved stability unaffected by variations in tubes.

Headphone Terminals have been added at the rear of the chassis for operators who wish to avoid having a cord across the operating desk. The headphone jack on the front panel is retained.

The Net Amateur Price of the 75A-2, complete with tubes, $420.00; 10-inch speaker in matching cabinet, $20.00.

Deliveries to Collins distributors will begin October, 1950.

FOR THE BEST IN AMATEUR EQUIPMENT, IT'S . . .

COLLINS

COLLINS RADIO COMPANY, Cedar Rapids, Iowa

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much-disputed Docket 9295. The Novice and Technician Classes of license, which were not the subject of objection by any party represented at either the Oral Argument of June 2nd or the Informal Engineering Conference of last October, are presently tied up with the rest of Docket 9295, and speedy disposition of the entire matter is the only course whereby these desirable classes of amateur operation can become reality. If the Commission is to commence the issuance of Novice and Technician licenses on January 1st of next year, there is little time to be lost. Examinations must be drafted, the various FCC offices must be familiarized with the new requirements, and the amateur press must begin the preparation of new applicants within the next months.

We have fought for the Novice and Technician licenses, both in these pages and in the councils of regulation, and we do not intend to stand by at this time if there are to be further delays.

The chips are now down! It is up to the Commission to act!

New Products

We attended the Radio Parts Show in Chicago in May, and have come away with the observation that amateur radio is in for some interesting times. We believe that the manufacturers who produce parts and units for amateur use have more new things up their collective sleeve than at any time since the postwar reopening. A new Hallicrafters line of receivers will give a lot of the gang a new slant on what's good in ham gear, and Collins' new receiver—which wasn't on display, but we heard about it—sounds mighty attractive. Roddy, W1SZ, of National, had one of his new HRO-50s with him, and it perpetuates the fine reputation of the "HRO" nameplate in great style. There was a "sleeper" over in one corner, the Hammarlund SP-600 series Super Pro. We don't know when it will become generally available, but it is a nice piece of machinery for any ham station.

On the parts side, National, Millen, Bud, B&W, RCA, GE, and all the rest of the big names in ham gear were on deck, and their displays served to remind us of how important home construction is these days if one is to remain a well-balanced amateur.

Oh, yes, if you like high-fidelity audio around the house, the new Electro-Voice series of PM speakers is really something to write home about.

Drop in to your parts distributor's place the next chance you get and ask him "What's new?" He'll have his answer for you this year as he never has before.

Attention, Ham Clubs!

We call the notice on page 9 of the May 1950 issue of *CQ* to the attention of officers and members of all ham clubs. The complimentary one-year subscription to *CQ*, which is available to all clubs, is awaiting the application of your group. Bring the matter up at the next meeting and get your club secretary (or any other officer, for that matter) to send us the information mentioned in the May issue, and we'll see that your club is placed on the books.

The future of amateur radio rests, to a large extent, on a firm foundation of informed clubs and individual amateurs, and we're trying to do our part in the interest of our hobby.

Keep yourself and your club abreast of the latest in amateur radio. Get that application in now!

—W2BYF

The Social Side

MAINE—The Second Annual Down East Hamfest, held by the Portland Amateur Wireless Association, will be at the Eastland Hotel, Portland, on July 29th. The tickets are to be $3.50 each, and they will provide for everything from prizes to the ice cream at the end of the banquet. The advance sale of tickets is being handled by Manley W. Haskell, W1VV, 15 Hemlock Street, Portland, Maine. He is also the man to contact for further information—or, better yet, ask anyone who was there last year!

ILLINOIS–MISSOURI—The annual St. Louis Hamboree and picnic of the Egyptian Radio Club will be held this year at the club grounds, 700 S. Chouteau Slough Rd., Granite City, Ill., on Tuesday, July 4th. The funds provided by this affair will provide the ERC disaster committee with operating funds throughout the year. Write W9DJG, at 3519 California St., Alton, Ill., for complete details.

ILLINOIS—The annual picnic of the Society Radio Operators will be held at Camp Hoffman, just west of Park Ridge, Ill., on Sunday, July 23, 1950. This is expected to be the largest gathering of amateurs at any picnic in the Chicagoland area. For further information contact the Club Secretary, W9BWM, W. O. Harper, 4037 Eddy Street, Chicago 41.

ILLINOIS—The Hamfesters Radio Club of Chicago announces another typical Hamfester picnic and hamfest to be held this year on August 13th at Frankford Grove, Frankford, Ill., on U. S. Route 45 near its junction with Illinois Route 30. Food and refreshments will be available, along with many novel games. For specific information write to Sol Davis, Secretary, 8731 South Wabash, Chicago, Ill.

ILLINOIS—July 16th. Weldon Springs Picnic, 4 miles east of Clifton, just off state route 10 or U. S. route 51 at Weldon Springs State Park. This is a picnic for all the family. Bring your own basket lunch. Positively no charge! Free soft drinks. Sponsored by Cenois Amateur Radio Club, Central Illinois Radio Club, Clinton Radio Club, Twin-Cities Radio Club, and Sangamon Valley Radio Club. W9KQL can supply further info.

ALBERTA—The fifteenth annual hamfest of the Alberta gang will be held this year at Waterton Park, Alberta, on July 14th, 15th, and 16th. For complete details communicate with Joseph J. Dobry, VE6DR, Cardston Associate Clinic Cardston, Alberta.

Q W H ?

The picture on page 14 of the May issue of *CQ*, which was used to illustrate the article "Design Considerations for Class C Power Amplifiers," has been the subject of considerable comment—most of the fellows want to know what the heck it is and where they can get one! To answer these questions, it is one of W1HRX's babies, and he sells them to all comers as the Millen 90881 Power Amplifier. It comes wired for a pair of 812s, but you can rehash it a bit for practically any of the medium-power triodes. Drop Jim a line for the complete dope.

The Low-Frequency Discone

MACK SEYBOLD, W2RYI*

If you've been looking for an antenna to feed with a flat line on all bands from 20 meters through 6 meters without switches or tricks, here's the answer.

SUMMER IS A WONDERFUL TIME to crawl out of the basement into the sunlight to work on antennas. I was able to make that metamorphosis last summer, so if any of you pale-faced, hollow-eyed brass-pounders and microphone addicts plan to emerge from your winter haunts and enjoy the benefits of the great outdoors in the 1950 antenna season, I'd like to recommend a new and healthy antenna prescription.

The construction work on this new antenna will keep you out in the sun long enough to acquire a healthy tan, and the results of your efforts will be an amazing radiation system that performs the way amateurs have wanted antennas to perform since the days when Maxwell was a mathematician and not Jack Benny's automobile. As a matter of fact, Maxwell predicted what radio waves could do, but he didn't tell how they could do it. He certainly didn't dream up the discone—it took almost a century to get around to that development—but he undoubtedly would be pleased to know that at last there is available a method of coupling a radio signal to the ether in a clean-cut, efficient and fool-proof manner.

The discone is an antenna that has a low angle of radiation, presents a natural impedance match to a 52-ohm line over a 10:1 range of frequencies, and has a symmetrical configuration which minimizes the occurence of standing waves on the outside of a coax feeder. The impedance-matching feature is probably the most remarkable thing about the discone. It certainly should please the amateur who has had difficulty obtaining low standing-wave ratios on transmission lines and antenna-coupler links. Actually, with a discone antenna, coax feeder, and low-pass filter, antenna couplers can be dismantled and forgotten.

Amateur Wizards

Sometimes amateurs have to become magicians with stubs, shorting bars, gamma-matches, T-matches, delta-matches, field-strength indicators, s.w.r.-bridges, grid-dip meters, loading coils, hacksaws, and crowbars to get an antenna system to work well on one frequency. The discone doesn't require any of the cut-and-try magic to make it work perfectly on *any* frequency. From the time the first hole is drilled until the last nut is tightened, the only measuring equipment needed is a ruler, and all that remains to be done after that is to turn on the transmitter.

An article by Joe Boyer, W6UYH, started the amateurs on this discone deal. The July, 1949, *CQ* presented the electrical theory, and it described the construction of high-frequency discones. After reading Joe's article, I was interested in trying the idea at lower frequencies and determining if wire and aluminum angle pieces could be used instead of the sheet metal prescribed for the original discones.

* *c/o Tube Department, Radio Corporation of America, Harrison, N. J.*

I also wanted to have an antenna for 10, 11, and 20 meters that would radiate and present a reasonably constant load to the transmission line in the television spectrum in order to study the effectiveness of low-pass filters for TVI. Some of the television interference tests also required a reduction of r.f. fields in the vicinity of the transmitter, so the symmetrical discone, promising a minimized standing-wave condition on the outside of the coax, looked like the answer to the antenna problem.

Antenna Project

With encouragement from Joe Boyer by correspondence and with the approval of the XYL, I assumed responsibility for the top of the garage, and

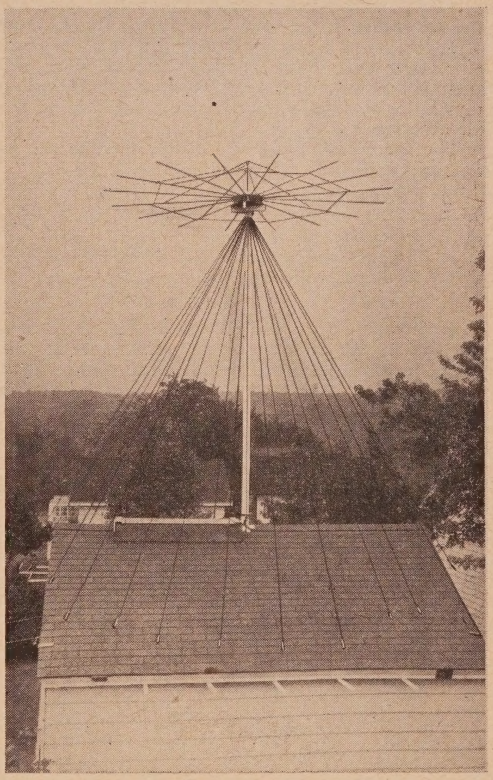


Fig. 1. Side view of the 11-mc discone. The disc is made of angle aluminum, and the cone consists of 28 wires which are fastened to specific points on the garage roof and to outriggers. The 52-ohm coax feeder runs up the mast and terminates at the tip of the cone and the center of the disc assembly.

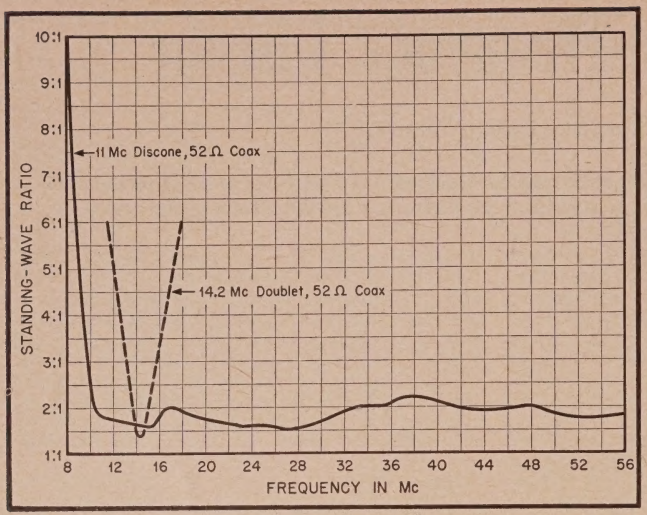


Fig. 2. A plot of standing wave ratio vs. frequency of the l.f. discone when fed with 52-ohm coax line. The broken line is the s.w.r. curve of a conventional 14-mc doublet.

began to work on the new antenna. There was just enough of the unknown and the element of uncertainty in the project "Monstro Discone" to make the adventure in the back yard during the summer of 1949 interesting and exciting. The results, however, were even more exciting, because when the antenna was finished it surprised everyone, including myself, by working perfectly, and it has been on the air ever since.

The specifications for the 11-mc discone are as follows:

Length of cone wires ..	21′
Disc diameter	14′ 6″
Cone-to-disc spacing ...	1′
Cone apex angle	60°
Diameter of cone base ..	21′
Height of cone	18′

This discone is the one shown in *Fig. 1.* It was cut for 11 mc because of an uncertainty in the safety factor required for good results at 14 mc. It is obvious from the s.w.r. curve, *Fig. 2,* that a much smaller safety factor is required.

For 20 meters, a 13.5-mc cut-off frequency should



Fig. 3. The 100-mc discone, as arranged for photographing by the jr. op, Susie. The aluminum disc is 20″ in diameter, and the 60° cone is formed of 48 wires, each 37″ long. This bird cage is permanently installed in the attic and is used mainly for 2-meter work.

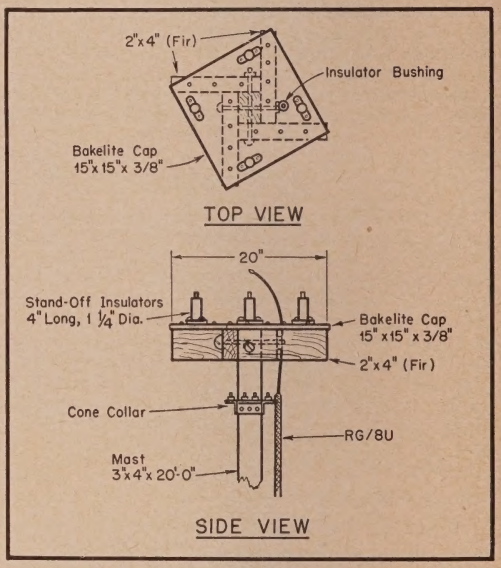


Fig. 4. The insulator assembly. The disc of the discone fits over the bolts in the tops of the standoff insulators. The angle-brass cone collar is fastened to the mast with wood screws.

be adequate, so the dimensions for a 20-meter discone, along with 15- and 11-meter antennas are given in the following table.

Table I

Cutoff frequency	13.5 mc	20.5 mc	26. mc
Length of cone wires	18′	12′	9′ 6″
Disc diameter	12′	7′ 10″	6′ 2″
Cone-to-disc spacing	10″	6″	4″
Diameter of cone	18′	12′	9′ 6″
Height of cone	15′ 7″	10′ 5″	8′ 3″
Amateur bands	20, 15, 11, 10, 6, 2 meters	15, 11, 10, 6, 2 meters	11, 10, 6, 2, 1.5 meters

Joe Boyer's original article covers the discones for 50 mc and upwards, so the dimensions will not be given here. *Fig. 3*, shows a 100-mc model that now hangs from the rafters in the attic at W2RYI. Even though it is an "inside" antenna, it gets identical reports on comparison tests with an outside antenna cut for 2 meters. The "outside" radiator is a vertical, omni-directional antenna having three half-wave sections that are in phase. My 100-mc discone has 48 wires in the cone and an aluminum plate for the disc.

11-mc Discone

Open-mesh design simplifies construction of large discones and offers low wind resistance. One-third of the cone elements in the 11-mc discone are made of #14 Copperweld. The rest of the cone elements are solid copper wire, but they all act as guy wires in addition to their primary function of radiating r.f. power. Since there are 28 of these elements, the mast is held firmly and does not sway in the wind. In the January "hurricane," the wind blew down our television antenna, but the discone mast weathered the gale without a tremor.

The disc assembly is also constructed to offer minimum wind resistance. A sheet-metal disc 14.5 feet in diameter would require extensive reinforcement, strong anchorage, and would exert a tremendous force on the mast in a high wind. The disc must also be insulated from the mast and cone, so any dielectric used to support the disc would have to be capable of withstanding great stress and strain.

By using 16 radials instead of sheet metal for the disc, the electrical properties of a continuous surface are approached, but the wind resistance of the disc is minimized. Strong winds do produce torsion at the center of the disc, and the mast twists a few degrees, but with the base of the mast held firmly in place, the twist distributes itself throughout the length of the mast, and no immediate damage can be done. In time this action might produce longitudinal cracks in the wood, but in the nine months that the 11-mc discone has been in operation, no fissures have been found.

Because of the radial construction of the "disc" and consequent minimized wind resistance, stock stand-off insulations may be used to support the disc assembly. Four porcelain insulators 4″ long and 1¾″ in diameter, are bolted to a bakelite mast cap. The cap (*Fig. 4*) is fastened with wood screws to four short 2 X 4's which are nailed to the top of

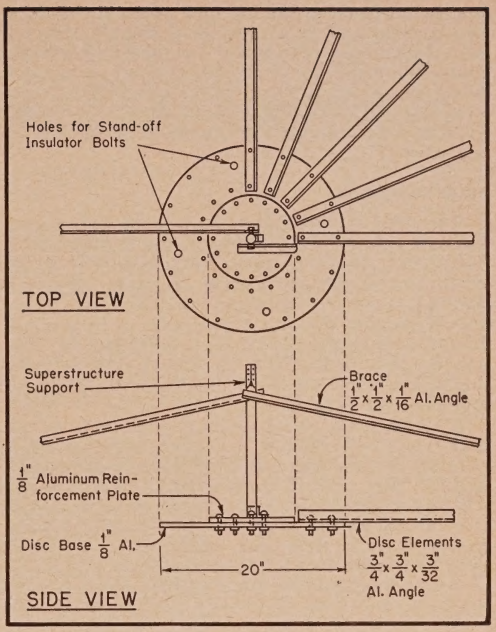


Fig. 5. Views of the center portion of the disc, partially assembled. Five of the 16 disc elements and two of the eight superstructure braces are shown.

the mast. This "insulating" structure makes a firm anchorage for the disc assembly which is bolted to the tops of the four porcelain insulators.

Assembling the Disc

The disc structure can be assembled on the ground. An aluminum plate, ⅛″ thick and about 20″ in diameter, is drilled to take the radials, the insulator bolts, and the superstructure support. The superstructure support is a vertical member seated on top of the disc at the center, and it is held in place by two angle brackets which are bolted to a reinforcement plate (*Fig. 5*). After the aluminum-angle radials have been bolted loosely in place, the horizontal struts are added, then all bolts are tightened. Next, 8 aluminum-angle braces

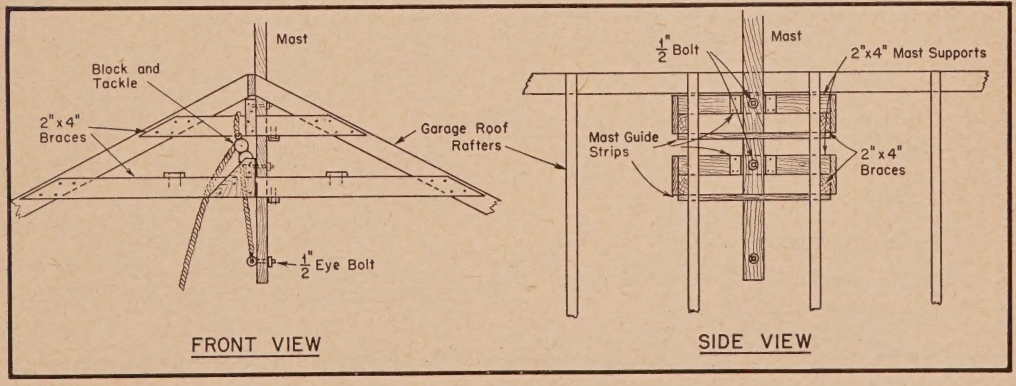


Fig. 6. Mast support inside the garage. The roof firring and shingles are not shown in order to simplify the drawing.

are bolted between the top end of the super-structure support and the midpoints of alternate radials. The intervening radials are connected from their midpoints to the tip of the super-structure support with galvanized-iron guy wires. The entire disc assembly is rigid and light, and can be lifted by one man into position on the insulators at the top of the mast.

Mast and Feeder

The mast is a fir 3 X 4, 20 feet long. It passes through a hole in the center of the garage and is bolted to a structure inside the garage (*Fig. 6*). A block and tackle slung from the same structure makes it possible to raise and lower the mast. At its lowest position, the top of the mast can be reached from a step ladder placed on a roof platform that can be seen in *Fig. 1*. The step ladder is comfortable to work on when mounting the disc and attaching the cone wires.

A collar, made of angle brass, is screwed to the four sides of the mast at a position one foot below the disc. Around the periphery of the collar are 14 bolts (8-32s), each of which secures two cone wires. The collar also has one bolt to secure the lug that is soldered to the outer conductor of the coax feeder. Because the collar is the point at which the transmission line terminates, an extension made of #12 copper wire is soldered to the center conductor of the coax. This extension passes through a ceramic sleeve set in a hole in the bakelite cap, and then goes directly to a bolt in the center of the disc. Details are shown in *Fig. 4*.

Cone Wires

Each of the cone wires is 21 feet long. Each has a strain insulator at one end, the other end having been bolted to the mast collar. The insulator terminates the radiating portion of each cone element, but wire extensions connected to the insulators are used to fasten the cone elements to the garage. Actually, some of the cone elements must be fastened to outriggers in order to establish a perfect conical structure.

The exact position and length of each outrigger, and the tie points on the garage for all the rest of the cone elements, can be obtained from a three-view drawing of the structure. Cut-and-try methods are also possible, but it saves time if the locations of all the tie-points have been determined in advance. *Fig. 7* shows the drawing used to locate the 11-mc discone on the top of our double garage.

Before the cone elements are fastened to the outriggers, the mast is raised and bolted in position. Aluminum foil of the type used by the XYL in the kitchen is cemented to the mast and roof with asphalt caulking compound to make a water-proof joint. Foil is advantageous because it will tear

(*Continued on page 60*)

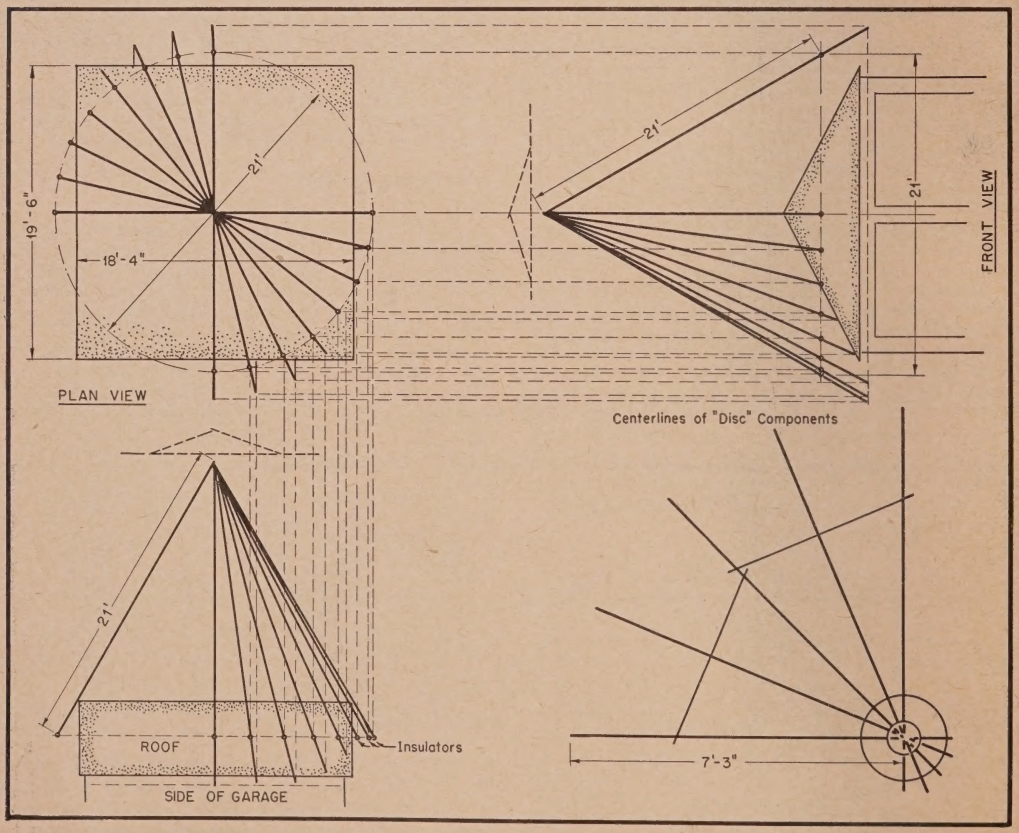


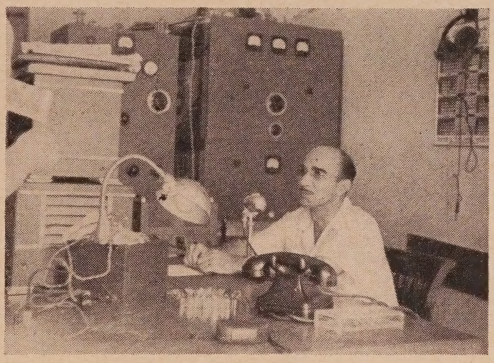
Fig. 7. Projection of the cone elements to establish position of the tie points and outriggers.

Results, CQ's Second World-Wide DX Contest

LARRY LeKASHMAN,W2IOP*

The report on the final results of the biggest DX Contest in amateur history is just too big for a single issue of CQ. Here's the first half of the results—the rest will appear next month.

CQ'S SECOND WORLD WIDE DX CONTEST exceeded the first successful event by a smashing 100% despite severe ionosphere storms during most of the radiophone weekend. In some parts of the world atmospheric disturbances were also raising havoc during the c.w. weekend of competition. Entries were received from over 1000 c.w. stations and from 450 radiophone stations competing. Spot checks of the logs of both c.w. and phone contestants indicate at least an equal number of participating stations that did not submit logs. Thus CQ's DX contest is well on its way to becoming the leading DX activity of the year.



PY2CK led the world with the highest phone score in the contest—224,349 points.

CQ's Second World Wide DX Contest departed radically from previous competitions of this type by permitting entries for single bands, as well as an "open," or "all-band" competition. Experimentally, 80 meters was dropped from the contest. Indications are that most contestants favored the use of the three principal DX bands, although there is continued agitation not to abandon 3.5 mc, since it is useful as a DX band when properly employed. What is done in the forthcoming 1950 event will depend upon the decision of CQ's DX Committee, to meet in session shortly.

A word about the method of listing the scores. Many DX men requested that we give a complete breakdown on all scores, i.e., total number of contacts, countries and zones. We were fully prepared to do this extensive bookkeeping task when we discovered a grievous error of omission on our part. On the special contest log sheets sent out, there were boxes provided for totaling scores. The boxes for total scores had provision for number of contact points, but not for the actual number of contacts (a factor which actually doesn't figure in the score). In instances where the score was submitted for one band only, operators did fill in the line asking for total number of contacts in the recapitulation paragraph. However, wherever a log covered more than one band, to list total QSOs for each band in the final tabulations we would have had to individually count the contacts-per-band in by far the greatest majority of logs submitted. Since we couldn't possibly handle that detail, only the winning *all-band* scores show the number of contacts, as well as all other pertinent data. Next year we'll straighten out the form and each log sheet will have the necessary space. The published summaries will contain zones, countries, and contacts.

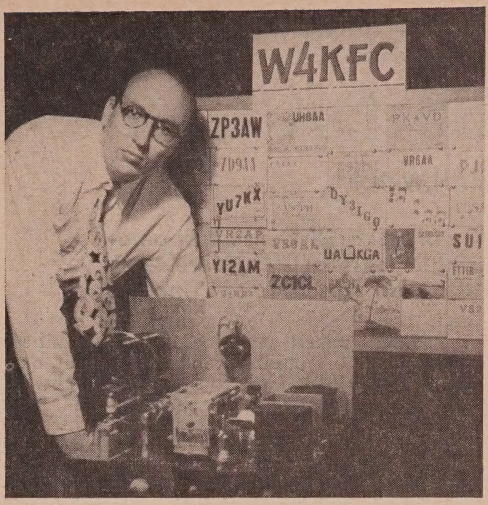
Highest single-operator score reported in the world was that of the well-known Dutch DX man PAØUN using nothing more than 100 watts into a pair of 807's and standard communication gear all the way. For antennas PAØUN used 3-element rotaries on 20 and 10; two half-waves in phase on 40. This sterling performance represents operating techniques gathered through years of operating on all the DX bands.

Second highest score in the world, and leader in the United States is W4KFC. W4KFC is another station where the only fancy operating aid is the operator himself. 700 watts, BC-348, a Gonset Convertor for 10, 2 elements on 10 and 20, and 138′ end feed 40 meter wire comprise his entire setup. Says Vic, "Same XYL as last year, alarm clock—lots of coffee." He raises an interesting point. With 80 out of the test, the east coast boys jam up 40 and ruin the west coast shot at Europe. Higher east coast scores confirm this, and east coast DX men take full advantage of greater activity in Europe than any other continent.

Just less than two thousand points separates W8JIN another experienced DX man, whose final score was 308,180, and who further emphasizes the fact that there is no substitute for experience. An interesting point raised by W8JIN is the controversy about optimum beam height. Raising his 14-mc rotary to 66 feet made a noticeable difference over last year's performance. HRO, PP-250TH, 10-meter 4-element wide spaced rotary and a 7-mc half-wave vertical complete W8JIN's layout.

What would a contest be without ZL1MB whose 304,560 points placed him among the world leaders and far ahead of his nearest national competitor. ZL1MB uses a 277′ Vee beam and 8-section Sterba, plus other assorted wires to help his 100

* *1634 Kent Drive, Hewlett, N. Y.*



W4 KFC ran up the highest c.w. score in the U.S.A., and the 2nd highest c.w. score in the world—310,184.

watts. In cross-checking U.S. logs, ZL1MB's reports were conisstently outstanding on all bands. ON4QF is practically standing on the same spot with his 302,994 points. As ON4QF puts it, "Very beautiful and interesting contest." Mick ran 40 to 60-watts input plus a 360′ long wire, among other antennas. ON4QF reported erratic conditions throughout the contest, although his score doesn't reflect them. Among the other outstanding scores reported were those of:

KH6IJ	292,734	VK2EO	228,200
W3LOE	289,120	W9IU	224,425
KG6DI	281,780	CX3CS	211,420
CE3AG	249,480	OK1HI	202,764
GW3ZV	231,846		

As usual KH6IJ's score is in the top bracket and his 702 contacts represents one of the outstanding performances numerically. Oddly enough, KV4AA had 760 contacts but couldn't get the multiplier necessary for one of the high scores because of the large number of Americans desiring contact. This is true for a number of other outstanding operators including EK1AO with 510 contacts, and KL7PJ with 508.

KG6DI, in setting out for new records, comments on the handicap he faced (and presumably other DX stations) by insufficient savvy on the part of the Ws. He could work stations faster than they were returning, and often a station receiving an S9 report would slow down and repeat everything twice. Conditions, no matter how bad elsewhere, seem to hold up in the Pacific and KG6DI is raring for the next one. His hot band was 10!

W3LOE is more than an outstanding operator, he is an outstanding designer of equipment and his station is unusual in that he uses separate homemade superhets for 10, 20, and 40. They work too . . . as does his kw feeding rotaries and a 2-element colinear fixed beam on 40. CE3AG used a kw into a 304TH final, 75A receiver and 3-element beams plus a doublet.

GW3ZV, another perennial appearing on logs galore, recommends still greater publicity, despite the fact that this year over 100 countries were active. To follow up the suggestion, logs are going to be made available from a central source in each major country and notices will be circulated to all foreign societies and publications several times before the next contest. Behind GW3ZV's signal are PP 807's, homemade super with full break-in, 7-mc Vee beam, rotaries on 20 and 10, long wire on receiver. The electronic key is to avoid fatigue.

CX3CS, operated by the extremely well known DXer CX2AJ, had one of the outstanding S.A. signals, verified by his score. Like many DX entries, his log shows a tremendous preponderance of U.S. contacts, even when conditions favored other continents. W9IU's sterling all-band performance indicated more QSOs on 10 than any other band. VK2EO ran 100 watts into 3-element beams on 20 and 10; 136′ end feed were on 40.

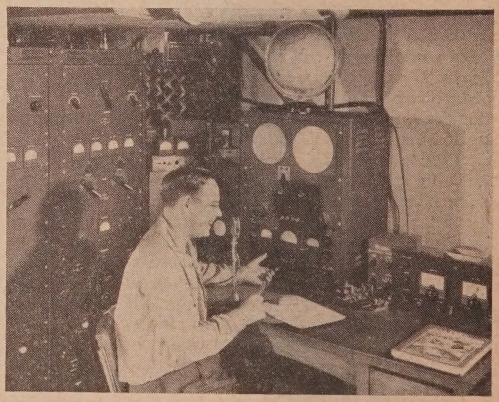
OK1HI's 202,764 points is one of the highest low-power scores, 60 watts input to a single wire did the trick.

The conspiracy against the phone men continues, with the band reflecting some of the year's worst conditions. Scores ran higher than the previous contest only because of greater activity and a DX gang that was evidently prepared for the worst and concentrated on the few paths relatively stable. As HK4AR put it, "A swell contest. Too bad the bands did not cooperate."

No close race developed for top honors among the phone men. PY2CK ran away with his 224,349 points. Aided by favorable propagation conditions and some adroit operating this remarkable score represents 396 contacts in 80 *different* countries. PY2CK operates with a full kw, NC 2-40D, rotaries on 20 and 10, and a preselector.

Europeans stand out with the next highest scores and they really sweated out most of their contacts. G2DPZ with 153,642 points; HB9DS 145,410; OH2NB 132,191; LA7Y 127,684; I1RB 124,026 points. G2DPZ, one of 1948's top men repeated his outstanding performance with 150 watts, HQ-129, R9er, rotaries on 10 and 20, and a half-wave on 40. Again the Europeans made good use of 40-meter phone working as high as 25 countries in four continents on that band.

HB9DS used a maximum input of 57 watts. Kurt's station is one of the most remarkable pieces of home construction ever seen and portions of his station will be described in articles scheduled to appear in *CQ*. His beam is a 4-element rotary continuously adjustable with collapsing elements for 10, 15, and 20. A gang-tuned rig and 14 tube dual conversion superhet have the detail of a fine Swiss



CQ's own Contributing Editor, W3LOE, with his 100% home-built station led phone and c.w. gangs in W3.

watch. And the precision carries into the operating habits. Details on OH2NB's station were not received, but his outstanding signal over the all-but closed Northern path attest to its potency. LA7Y, equally well known as a c.w. operator showed his versatility. His score was made with 50-watts input, AR-88 and a 2-element beam. I1RB ran 100 watts into a dipole on 10 and 20 and turned in a log with some of the nicest catches in the contest.

Highest American score was turned in by W1ATE whose 83,664 points represent 221 QSOs with 60 different countries and 28 zones. Chad used a Collins 32V-1 driving a pair of 250THs at a full kw, Collins 75A-1 receiver; switchless 4-element 20-meter rotary on 20, 8-elements on 10, both 80′ high. Chad, like many other contestants did not know the FCC ban on certain areas had been lifted with result he passed up a number of countries. It is an inequality that just can't be compensated for, unfortunately.

In the phone contest, because of the natural inclination to stick to bands best known, many of the single band scores were higher than the winning all-band entries. It is particularly interesting tc note that in many instances all-band entry winners were beaten on single bands by "specialists."

Miscellaneous

It is the bitter truth, but average power of the U.S. winners was close to a kw. With DX, it is over 100 watts indicating a definite trend to higher power on the part of foreigners. Another noticeable trend among the outstanding DX men is the use of converters on standard communication receivers to get optimum performance on 10 and 20.

KZ5WZ, in a magnanimous gesture, lists W6QD as one of the outstanding signals there. Wally thinks the choice of dates might be improved to find better conditions. MP4BA was a new one for many DXers. GM3AXR, with over 50,000 points, had the highest GM score. Most remarkable is the fact that his 100-watt station is powered entirely by 12 volt d.c. from batteries and gas generator. Battery operated HRO, 420′ longwire EW and 690′ longwire NS did the trick. Those long wires practically put him into U.S. territorial waters.

W6PQT, in voicing his approval of single-band competition for land-bound city dwelling hams, also urges a committee to try and determine optimum weekends for the contest. As one suffering DX man put it, "Make it the one when the XYL is away." W9CIA resolves solemnly, no more medical operations before a DX contest. Wire must be cheap in some towns . . . at Carnegie Tech's Radio Club, W3NKI operated by W2CDW, they have a 500′ long wire. G4CP emphasizes the clean operating by practically everyone, a comment echoed by many entrants. GM3AXR, and others, suggest two periods of 24 hours instead of one period of 48 hours. Like many DX men he finds it difficult to get free for two full days.



HK4AR, winner for Columbia and Zone 9, with a score of 73,932. That Panadaptor must have been a big help in locating the holes in the bands.



F9QU/FM8, whose activity was limited, but who managed to give many of the gang another rare country.

W6ALQ, entering his first DX contest in 19 years, says he learned a certain "new technique" of DX operating. On most logs a patient XYL rates as the number one operating aid! KL7UM, "Well planned contest. Certainly makes all other DX contests seem to be a waste of time." He is for the status quo on rules. W8SDR, not a full fledged competitor, worked a new country and gets a vote of thanks from the contest compilers—along with others like him—who sent in a log for checking. W6OMC, out for new countries only, threw his rig into high gear when a casual check indicated that he was ahead of his half-way mark of last year when he was bearing down. Proof positive that it is going to be a bigger and better contest every year.

G3DO comments that the outstanding signals at his shack during the contest were ZL4HP and ZS6JS. How about some of these phone morsels . . . VQ8AX, XZ2SY, FQ8SN, M1B, VU2BL, FF8PG, ZD2S . . . did you work 'em? CR5UP had the DX men in a tizzy . . . TI2HP, commenting on their very active representation in the contest says the average power in Costa Rica is 800 watts. W5LVD, and lots more, spent their last nickel buying a beer to cry into. He passed up XZ, VQ8 because of the original FCC ban. They didn't know it had been lifted. W4TO, way down Ga. way worked hard to add new ones and came up with nothing better than Zone 3. KZ5WZ used a 10-meter vertical on 40. From CZ, outstanding signals reported were W2ZY, W3LOE, W6GRL, W6TZD, W6OMC, and VE4RO. W2ZY should serve as a case for the despairing DX men. He uses nothing more than a Collins 32V-2 and an indoor dipole for 10 and 20, with the feeders tied

together for 40. F9QU/FM8, reporting on his contest activities, details his station which is keeping Martinique well represented, with a chance to receive QSLs. He is Assistant Port Captain for the French Line Steamship Company, uses 100 watts on 10 and 20, SX25, 20-meter doublet, 10-meter rotary.

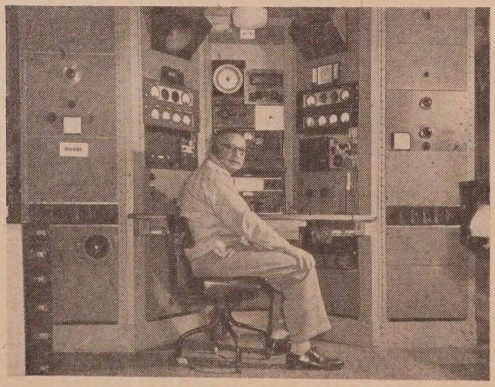
VQ4CUR, operating portable in Zanzibar especially for the contest, is one of this year's heroes. Only 220 v. d.c. was available, so Harry took a complete military installation, battery operated. The trip was made by air and 6 fully charged batteries were available during the test. Harry is a regular Army man, with 27 years in the service and has visited 87 different countries. He'll be back in England this winter and DX men should be sure to say hello and thanks to G2CUR.

How do they do it? For example, VK4RC with a 807 and a 33′ vertical for transmitting and a 14-mc folded dipole for receiving, still managed to tear through for 56,000 points.

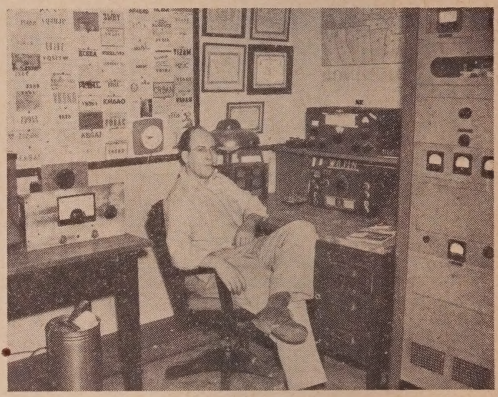
The Winners!

All Band, Single Operator, C. W.

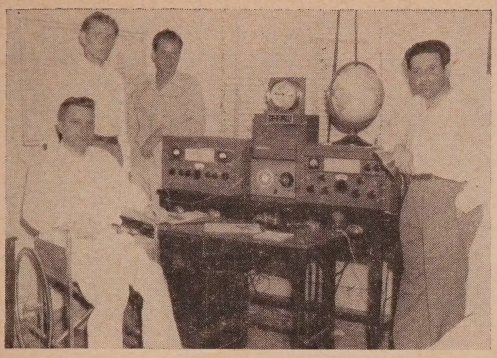
	Station	Total Countries	Total Zones	Total QSOs	Points
Zone 1	KL7PJ	58	41	508	75,735
Zone 3	W6GRL	192	69	354	190,080
	W7IRZ	32	29		11,041
Zone 4	W4KVX	128	68	317	172,466
	W5LVD	203	65	257	107,688
	W8JIN	172	80	417	308,180
	W9IU	129	62		224,425
	WØDAE	117	59		147,136
	VE3IJ	77	43	171	51,960
	VE5QZ	54	39	153	32,922
	VE6AO	37	30		15,544
Zone 5	W1RY	107	56	269	117,034
	W2QCF	105	54	270	128,790
	W3LOE	182	78	384	289,120
	W4KFC	158	74	490	310,184
	VE1EA	43	25		16,660
	VE2NI	63	31		43,052
	VE3AEJ	6	5		198
	W8AZD	80	48	205	75,856
Zone 7	KZ5DE	32	16	370	49,322
	KS4AC	21	18	288	12,207
	HP1BR	38	34	119	13,248
Zone 8	KV4AA	72	41	760	105,203
	KP4JE	26	18	134	15,200
Zone 10	HC2JR	75	49	606	221,960
Zone 11	PY2NX	53	36		72,090
Zone 12	CE3AG	104	61	520	249,480
Zone 13	CX3CS (CX2AJ op)	61	49		211,420
	LU7CD	47	31		55,770
	VP8AI	22	21		16,296
Zone 14	DL7AA	90	50		120,300
	G4CP	97	59	342	147,888
	PAØUN	133	65		343,728
	LA6U	73	33		71,171
	EA1AB	44	18		42,842
	OY3IGO	2	3	22	300
	OZ7EU	68	32	215	42,000
	ON4QF	125	61	612	302,994
	F9BO	81	46		62,992
	SM6ID	47	22		28,221
	GM3AXR	77	47	177	50,344
	GW3ZV	122	50		231,846
	HB9DZ	42	30	152	26,424
	LX1AS	23	14		8,695
	EA6AF	48	20		34,816
	EI9J	49	30	362	66,913
	GC2CNC	48	13		15,311
Zone 15	OE1CD	73	39		36,064
	OK1HI	124	59		202,764
	HA4SA	96	37	284	61,180
	OH5NF	67	29		35,616
	ZB1AJ	28	11		3,042
	I1PL	88	44		119,860
	IS1FIC	18	9		1,080
Zone 20	SVØWH	36	22	88	11,600
	YO3RI	82	37		77,945
	4X4RE	83	38		138,061
Zone 21	AP5B	37	26		15,183
	VU2JP	57	22	133	31,205
Zone 24	CR9AG	78	46	420	153,760
	VS6AE	38	26		16,960
Zone 25	JA2BQ	46	41	223	55,071
Zone 27	KG6DI	88	58	644	281,780
Zone 28	VS2BD	38	23	143	23,058
	PK3LC	80	63		55,913
Zone 29	VK6RU	82	46	231	88,704



Doc Stuart, at W6GRL, ran up the second-highest U.S. phone score.



W8JIN worked 38, count 'em, Zones on 14 mc, to end up with the 3rd highest c.w. score in the world.



The gang at multiple-op HC2JR. L. to r., HC2JR, HC1MK, HC2IH, and HC1AZ.

	Station	Total Countries	Total Zones	Total QSOs	Points
Zone 30	VK2EO	105	58		228,200
Zone 31	KH6IJ	83	56	702	292,734
Zone 32	ZL1MB	86	55		304,560
Zone 33	EK1AO	92	35	510	192,786
	CN8AG	24	11	116	12,110
	FA8DA	74	27		64,337
Zone 34	ST2TC	22	13	86	8,330
Zone 36	OQ5BQ			252	60,900
	VQ2GW	21	17	112	11,096
	FE8AB	78	43	512	173,756
Zone 37	VQ1CUR	30	17	184	23,876
	VQ4HJP	98	54		190,608
Zone 38	ZS5LI	66	41	303	94,160
Zone 39	VQ8AY	19	16		6,020
Zone 40	TF3EA	76	34	333	93,390
	All Band, Single Operator, Phone				
Zone 1	KL7UM	24	14	69	5,472
Zone 3	W6GRL	77	46	155	49,077
	W7HRH	15	15		1,440
	VE7HC	49	28	162	25,333
Zone 4	W4DQH	76	47		14,525
	W5HFQ	29	20	48	6,370
	W8NXF	78	39	108	31,824
	W9EWC	70	44		30,894
	WØGUV	34	25		6,018
	VE3QE	23	13		3,708
	VE4RO	49	41		19,620
Zone 5	W1ATE	94	50	221	83,664
	W2BXA	50	24		27,454
	W3LOE	91	45		47,056
	W4OM	51	26	150	31,878
	W8AVW	12	8		920
	VE1CR	53	30		24,402
Zone 7	TI2HP	71	41	184	40,880
	YS1JR	17	17		3,672
	HP1LA	28	25		17,649
Zone 8	CO7RQ	21	18		8,463
	VP2GG	12	10		1,034
Zone 9	HK4AR	62	39	260	73,932
	YV5AC	53	33		29,068
Zone 10	HC2KJ	47	30	140	28,875
	CP5FA	19	17		4,392
Zone 11	PY2CK	123	58	396	224,349
Zone 12	CE2DY	24	18	91	9,366
Zone 13	LU8CW	53	37	115	25,380
	CX3BH	41	32		12,400
Zone 14	G2DPZ	120	54	338	153,642
	ON4AZ	7	5		156
	GW2UH	24	12	61	3,780
	HB9DS	124	61	333	145,410
	EA4LA	39	22	166	28,121
	F9BO	70	23	115	24,786
	LA7Y	88	49	402	127,684
	SM4KP	64	20		25,192
	CT1FM	36	14		12,600
	DL3DO	87	48		80,730
Zone 15	I1RB	103	45		124,026
	OK2SO	50	25		18,750
	OH2NB	90	46		132,191
	I1RC (Trieste)	32	15		14,006
	ZB1AJ	25	8		2,112
Zone 20	AR8AB	17	10		2,241
	YO3RI	30	9		3,510
	4X4AA	74	37		60,939
Zone 22	VS7GR	21	13		3,638
	AP5B	37	26		15,183
Zone 24	VS6AE	15	11		1,144
Zone 28	VS2BD	20	19		2,196
	PK4DA	23	16	39	9,243
Zone 29	VK6KW	60	40	186	55,200
Zone 30	VK3VQ	26	24		4,750
Zone 31	KH6IJ	52	44	311	89,568
Zone 32	ZL4HP	64	38		96,288
Zone 33	FA8IH	68	37		37,065
	CN8BV	38	18		20,944
Zone 36	VQ2DH	63	37	218	60,300
	FQ8SN	22	17	48	5,304
	CR5UP	70	34	237	64,168
	OQ5BQ	51	22		24,642
Zone 37	VQ4SC	80	44		55,056
	MI3SC	58	33	426	25,791



CE3AG delivered the highest South American c.w. score, with 249,480 points.

	Station	Total Countries	Total Zones	Total QSOs	Points
Zone 38	ZS6TE	67	42	210	63,547
	ZS3G	25	17		20,412

Single Band, Single Operator, C. W.

	Station	Band	Total Countries	Total Zones	Points
Zone 1	KL7RZ	7 mc	6	6	708
	KL7UM	14 mc	52	25	47.047
	KL7PJ	28 mc			9 600
	VE8AS	14 mc	21	15	6,472
Zone 2	VO6X	14 mc	40	19	43,424
Zone 3	W6AM	7 mc	24	20	8,932
	W6PQT	14 mc	74	35	71,504
	W6WJX	28 mc	29	17	9,568
	W7LNG	7 mc	6	6	156
	W7ASG	14 mc	52	28	20,440
	W7IRZ	28 mc	22	20	5 717
	VE7VC	7 mc	15	16	2 852
	VE7KC	14 mc	39	26	16 705
	VE7MS	28 mc	52	27	20,066
Zone 4	W4PN	14 mc	56	27	29,382
	W4CYC	28 mc	42	23	27.105
	W5JC	7 mc	61	28	16,376
	W5KC	14 mc	44	25	14.007
	W5KC	28 mc	31	18	7,742
	W8WZ	7 mc	49	25	26,176
	W8JIN	14 mc	51	23	78,232
	W8BTI	28 mc	42	21	21,546
	W9DUY	7 mc	14	13	1,134
	W9DUY	14 mc	90	39	82,173
	W9LM	28 mc	43	22	23,725
	WØDAE	7 mc	11	11	1.100
	WØDAE	14 mc	66	27	37,293
	WØDAE	28 mc	40	21	23,485
	VE3ACS	7 mc	25	14	6,630
	VE3IJ	14 mc	52	24	24,624
	VE3BTG	28 mc	27	15	6,636
	VE4IJ	28 mc	22	20	2,604
	VE5QZ	7 mc	3	4	63
	VE5QZ	14 mc	36	23	15,930
	VE5QZ	28 mc	15	12	2,025
Zone 5	W1ZL	7 mc	28	14	8,568
	W1JYH	14 mc	66	31	34,823
	W1RY	28 mc	36	19	17,875
	W2AGO	7 mc	42	21	15,876
	W2UFT	14 mc	79	33	71,008
	W2KUW	28 mc	44	22	30,162
	W3LOE	7 mc	40	21	11.346
	W3LOE	14 mc	100	36	75 136
	W3JKO	28 mc	48	24	40,248



G2DPZ rolled up the score of 153,642, to capture 2nd place in the phone division.



I1RB led the Zone 15 phone gang with a score of 124,026.

	Station	Band	Total Countries	Total Zones	Points
	W4BRB	7 mc	49	23	31,392
	W4KFC	14 mc	73	33	66.992
	W4KFC	28 mc	44	21	30,615
	VE1IM	7 mc	8	4	420
	VE1EA	14 mc	32	17	9,163
	VE1KN	28 mc	22	10	2,976
	VE2NI	7 mc	3	3	54
	VE2BW	14 mc	63	31	43,052
	VE2NI	28 mc	22	9	7,409
	W8AZD	14 mc	41	25	15,708
	W8AZD	28 mc	39	23	21,018
Zone 7	KS4AC	7 mc	3	3	132
	KS4AC	14 mc	7	6	1,573
	KS4AC	28 mc	11	9	3,400
	HP1BR	7 mc	4	5	171
	HP1BR	14 mc	23	18	4,100
	HP2RO	28 mc	34	20	32,724
	VP1AA	14 mc	5	6	902
Zone 8	CO2LN	7 mc	5	5	340
	KP4KD	14 mc	37	21	9 222
	KP4JE	28 mc	11	9	3,460
Zone 10	OA4J	14 mc	10	10	5,040
Zone 11	PY2NX	14 mc	21	14	4,305
	PY2NX	28 mc	32	22	37,098
Zone 12	CE3AG	7 mc	13	12	4.650
	CE3AG	14 mc	58	32	73,620
	CE3AG	28 mc	33	17	25,400
Zone 14	DL1YA	7 mc			1,380
	DL3DU	14 mc	60	26	39,130
	DL1FI	28 mc	26	26	24,128
	G4CP	7 mc	24	10	9 458
	G2LB	14 mc	69	34	92,906
	G3DCU	28 mc	44	26	52 570
	PAØCJH	14 mc			720
	LA6PB	7 mc			2,128
	LA6U	14 mc			35,032
	LA6PB	28 mc			3,720
	OZ1W	7 mc			1,554
	OZ7EU	14 mc			15,912
	OZ7EU	28 mc			2,620
	ON4QF	7 mc			8,440
	ON4QF	14 mc			81,969
	ON4QF	28 mc			29.332
	F9BO	7 mc	10	21	4,650
	F8IW	14 mo	35	11	11,316
	F9BO	28 mc			8,888
	SM5IZ	14 mc	55	25	35,760
	GM3AXR	7 mc	16	8	1,176
	GM3AXR	14 mc	48	28	24,244
	GM3CSM	28 mc	22	12	4,896
	GW5SL	7 mc	30	10	6,800

(*Continued on page 50*)

Under-the-Dash Mobile Transmitter for 75-Meter Phone Operation

O. M. LOWERY, W4MMK*

This little rig is the answer to the problem of installing a mobile rig in the family chariot with a minimum of disruption of the normal facilities of the car.

WHEN AUTHORIZATION for mobile operation on the lower frequency bands came into being, the writer felt the desire to utilize this privilege with a minimum outlay of cash and depreciation of the value of the car. At the same time it was desirable to construct a rig (a) compact in size for ease in mounting, (b) using available components, (c) with small battery drain, (d) and capable of complete push-to-talk operation.

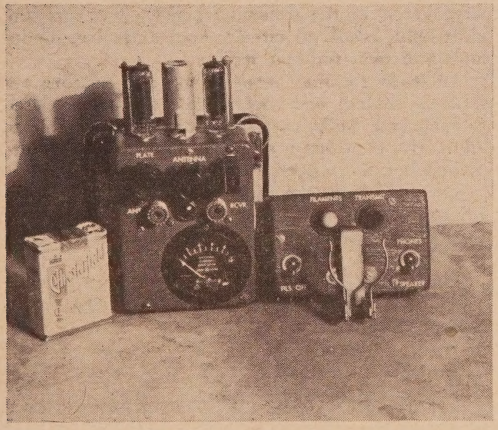
Here are the results of such endeavors. The finished transmitter may be *completely* installed under the dashboard of the family auto, doing away with the necessity of extra space and long control and battery leads, with their resulting headaches.

The rig is enclosed in the familiar BC-442 Antenna Relay Unit of the famous Command Set series. This unit is a natural for the job, with its small size and the added feature of shock mounts. If the builder does not already possess one of these units, he will find them still available on the surplus market at very reasonable prices.

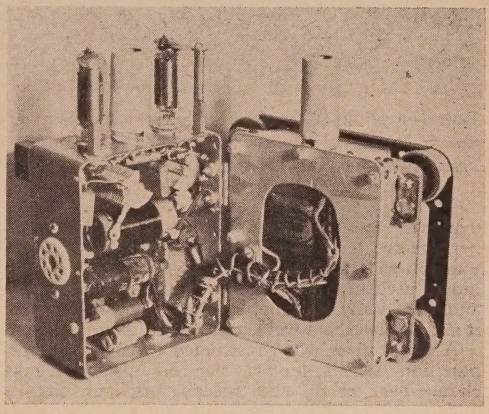
The circuit used is simplicity itself. Because of space limitations no "extras" were included in the design.

The tube line-up is as follows: 6C4, Pierce oscillator; 6AQ5, final r.f. amplifier; 6C4, speech amplifier; and a 6AQ5 modulator. With a 300-volt vibrator power supply, approximately 11 watts are available with the pi-network final tank circuit. This type of antenna coupling network will readily load any of the standard whip antennas. The filament drain is only 1.2 amperes for the four tubes.

* *Box 667, Atmore, Ala.*



The transmitter, its control panel, and a package of cigarettes. The handset clips to the bracket on the control panel.



Inside view of the transmitter. Note the small hinges. An octal socket replaces the original connector. The modulation choke can be seen in the rear section. The tubes, l. to r., are the oscillator, amplifier, and speech amplifier.

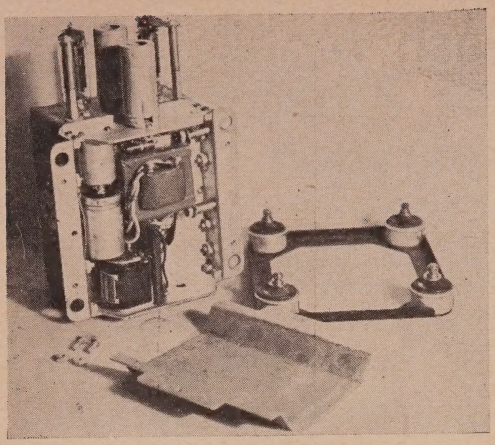
As will be noted, the r.f. antenna current meter supplied with the unit is utilized in indicating the final plate current of the transmitter. The basic movement of this meter is approximately 5 ma, and is shunted with a 0.33-ohm resistor to give a full scale reading of 50 ma. This meter does not have a linear movement; therefore, it requires recalibration of the scale if valid intermediate readings are desired. A 50- or 100-milliampere meter of the same size may be substituted if available.

Construction

Because of space limitations, careful attention must be given to the proper layout of the components. First, all of the original components are removed from the unit except the meter. An octal socket is substituted for the original plug. The mounting of the major components is shown in the photos. No dimensions are given since the final layout will be largely governed by the individual and his available components.

It is necessary to cut out the indentation in the bottom of the unit to provide sufficient space to mount the necessary components. This can be accomplished with relative ease with the aid of a keyhole saw.

The chassis is hinged with two small brass hinges to permit greater accessibility after the rig is per-

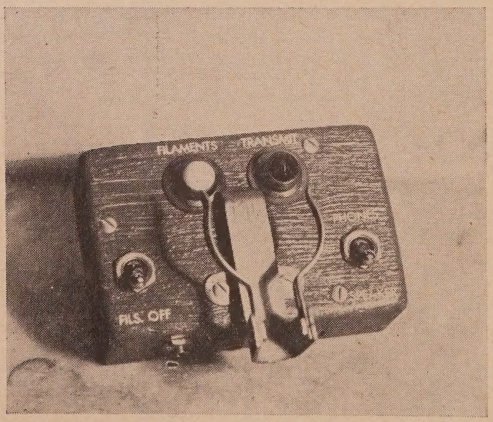


Rear view of the transmitter with the cover plate removed. The modulation choke, input transformer, audio bypass condenser, and the antenna relay are mounted in this section.

manently assembled and wired. This feature also permits greater ease in wiring by making it a one-unit job with no "loose ends" to contend with. The hinges used here were of the "piano hinge" variety and are easily obtainable at the local hardware store. Lockwashers were used on all mounted parts.

A metal plate was constructed to cover the back partition which houses the modulation choke, change-over relay, and speech amplifier circuits. This plate may be constructed of any thin scrap metal as its function here is mainly as a dust cover. Using unduly thick metal will allow insufficient "floating action" of the shock mounts. The plate is held securely by two 6-32 machine screws. The speech amplifier tube socket is mounted in the hole originally used for the vacuum padding condenser clamp. The dial light and antenna connectors fit nicely into the three holes vacated by the original connectors on the front. Coax connectors are provided for both antenna input and receiver antenna output terminals.

The 6AQ5 tubes are securely held in their sockets with tube clamps salvaged from the receiver

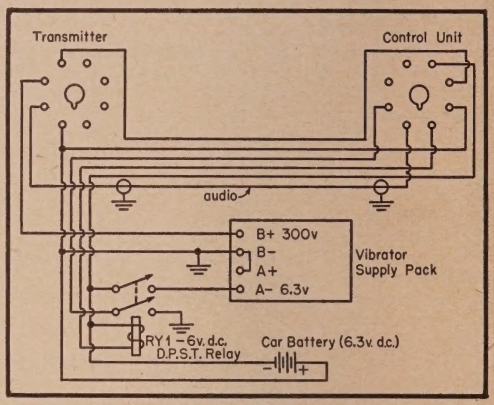


The control panel. The phone and mike jacks can be seen on the underside.

portion of the SCR-522 equipment. This type of clamp allows ample heat dissipation for the tubes and does an fb job of holding the tubes firmly in place. Extension shafts must be fitted to the original tube clamps to permit their use with the larger tubes. These are easily made by cutting off correctly measured sections of threaded metal stand-offs. A midget 6-volt d.c. relay was used for antenna changeover. However, by careful rearrangement of parts, a standard size relay could be substituted.

Condensers C_6, C_7, and the crystal socket were then mounted. These are spaced equally across the front panel. Since both rotors are at ground potential, no difficulty should be encountered here. However, caution should be exercised in all drilling operations on the front panel. This thin metal has a tendency to tear when large holes are being drilled. These condensers were removed temporarily to permit wiring of the osc., p.a., and modulator tube sockets.

A pencil type soldering iron is a great help in



Inter-unit cabling and power wiring.

wiring this rig but is not an absolute necessity. By careful forethought to the order of wiring to follow, many later headaches can be avoided. The circuits were wired in the following order: filaments and pilot light, oscillator circuit, final amplifier, modulator and then the rear section.

All leads running between the two sections are securely cabled, and metal cable clamps are used at each end. Sufficient slack is left in the cable to allow the completed cable to fold naturally into place when the hinged section is closed.

The lead from the output of the speech amplifier to the grid of the modulator tube should be of shielded wire as it is rather long and must run close to r.f. leads in the cable.

The transmitter and control unit were given a coat of grey wrinkle paint before the wiring operation was begun.

Control Unit

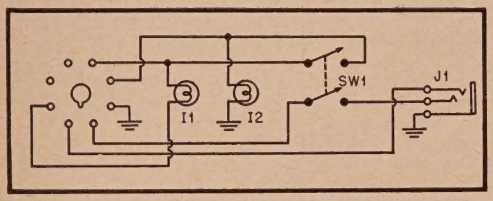
The general layout of the control unit is shown in the photo. An octal socket is mounted in back and jacks for the mike and earphones are mounted on the bottom side. It was desirable here to use either a carbon mike or the familiar TS-13 handset

for complete one-hand operation, with provisions for either phones or speaker. Therefore, a d.p.d.t. switch was installed on the control unit to perform the switch-over operation. This is not shown in the circuit diagram as its circuit connections will vary with different installations.

The microphone mounting clamp shown was supplied with the mike and will accept either the carbon mike or the TS-13 handset with equal ease.

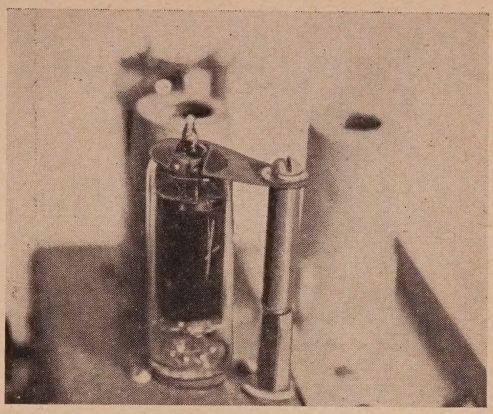
The filament switch must be in its "on" position before the high voltage can be applied. This added feature should pay for itself in added tube life.

By designing the control circuit as conventional as possible, the uses of the control panel can be greatly increased. This control panel may be used with all future mobile rigs regardless of power, location, or frequency. To change transmitters in motion means merely unplugging the control cable from the back of the panel and plugging in the control cable from the other transmitter. To really go all out for comfort, a wafer switch could be installed to throw any one of a number of transmitters to the control panel. This would help eliminate the "cockpit" look of many of our modern mobile installations.



Control unit wiring diagram.

I1, I2—6.3 v. dial lights (special military)
J1—microphone jack
Sw1—DPDT toggle switch



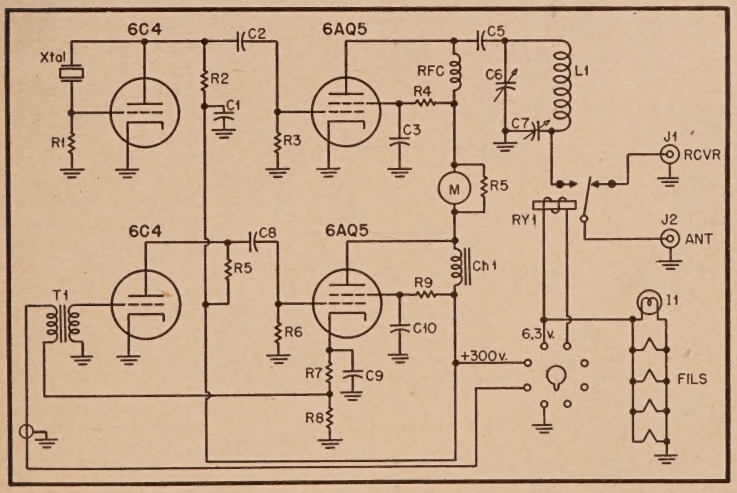
Special tube clamps, burgled from a BC-522, allow ample ventilation.

Mounting

The transmitter here was mounted against the fire wall in a vertical position under the dashboard. Of course, any convenient location will work out fb. Since the speech amplifier puts out plenty of audio, the transmitter may even be mounted in the rear luggage compartment. However, due to its compactness there is plenty of under-the-dash room for mounting purposes in almost all automobiles, regardless of the vintage.

Mounting the rig in the engine compartment is definitely not recommended as more dust and grease pass through here than meet the eye.

Coil dimensions are given for operation in the 75-meter phone band. However, with the correct crystal and corresponding coil, operation may also be obtained on the 40-meter and 20-meter bands with equal success, using straight-through operation. By the substitution of a Tri-tet oscillator, 10-meter operation may be realized by quadrupling from 7 mc, or by driving straight through with a 10-meter crystal. Many other combinations will undoubtedly become apparent to the builder.

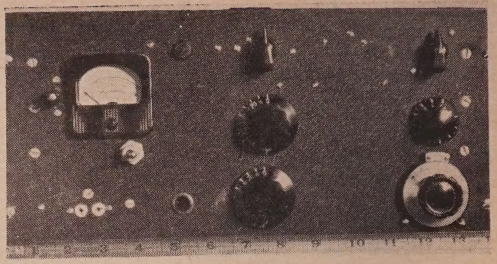


The circuit diagram of the transmitter proper.

C1, C4—.002 μf mica cond.
C2—100 μμf mica cond.
C3, C8—.01 μfd mica cond.
C5—.006 μf mica cond.
C6, C7—100 μμf midget variable cond.
C9—25 μf 25 v. electrolytic cond. midget
C10—.1 μf 400 v. paper cond.
R1—220K ½w.
R2—10K ohms 1w.
R3—50K ohms ½w.
R4, R9—40K ohms 5w w.w.
R5—270K 1w.
R6—50K ohms ½w.
R7—300 ohms 1w.
R8—100 ohms 1w.
L1—3.8 mc—50 turns #22 enamel wire, close spaced
RFC—2.5 mh r.f. choke
Ch1—10 hy 50 ma midget choke
T1—midget microphone trans., 200 ohm to single grid
I1—6.3 v. dial light
Ry1—6 v. dc s.p.d.t. relay
J1, J2—Amphenol coax connectors
Xtal—3.8-4.0 mc
M—plate meter, see text
Rs—meter shunt, 0.33 ohms, see text

The Secret Weapon

HOWARD J. HANSON, W7MRX*



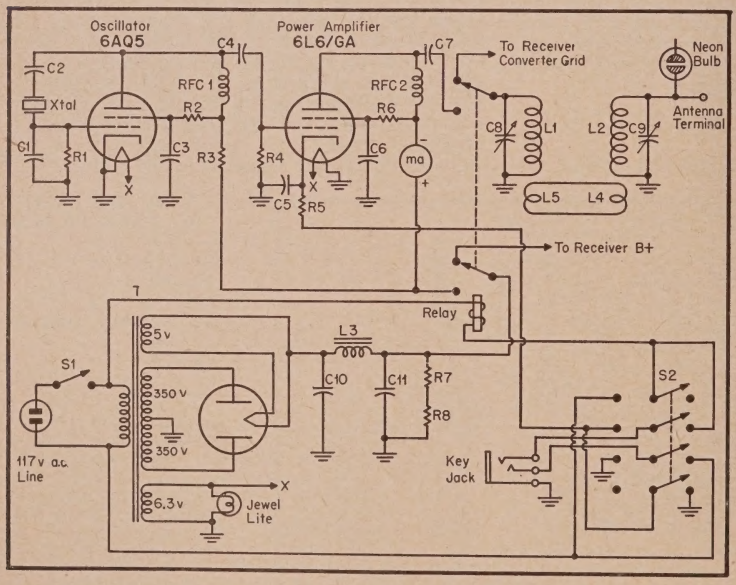
If you've been driven to "undercover" operation, as some of us have, or if you're only looking for a super portable station to cart along on your vacation trip, this cloak-and-dagger special is the job for you.

DO YOU NEED A PORTABLE RIG for trips or field days? Are you one of the small-apartment boys who haven't room for an ordinary station? Or do you like to build small, neat, compact equipment? Well, OM, here's the thing for you. A small, compact c.w. *station*, measuring 7″×7″×14″, containing a 25-watt, two-stage, crystal-controlled transmitter on eighty and forty c.w., and antenna coupler, a five-stage superhet receiver that handles today's crowded bands, and a power supply to take care of all. The whole thing may be tested, lined up, etc. with only a neon bulb, a signal generator (any place in one of the two bands), and a communications receiver, preferably calibrated, with an S-meter. The tracking problem, which is the main difficulty in making a superhet receiver, is non-existent in this case. Interested? Then read on.

Since I occasionally draw assignments away from home, I decided some time ago that I needed a portable rig with enough stuff in the design to enable it to be used effectively, yet with everything (transmitter, receiver, power supply, and antenna coupler) all in one small package that wouldn't take up too much space in the bottom of a footlocker. Crystal control, superheterodyne receiver, and a system for loading into an antenna were considered "musts."

The final product is shown in the photographs. It measures 7″×14″×7″, and is completely self contained except for key, earphones, antenna, and source of 110 volts a.c.

* *Lt., U.S.A. 205th Signal Company, Ft. Lewis, Wash.*



The Transmitter

The transmitter is a two-stage job featuring a Pierce crystal oscillator coupled to a 6L6GA power amplifier at about twenty-five watts input. It will operate on either 80 or 40 meters with the proper crystal. There are no plug-in coils—the oscillator will operate on the crystal frequency without tuning, and the PA plate tunes 80 with the condenser nearly all the way closed, and 40 with the condenser almost completely open. The antenna tuner also tunes both bands with one sweep. Twenty meters could have been added,

Transmitter parts list

C1, C4, C7—100 μμf mica, 600 v.
C2—500 μμf mica, 600 v.
C3, C5, C6—.01 μf paper, 600 v.
C8—140 μμf receiving-type variable
C9—310 μμf receiving-type variable
C10, C11—10 μf, 450 v., electrolytic
R1—51K, ¼w.
R2—27K, 1 w.
R3—13K, 2 w.
R4—47K, ¼ w.
R5—200 ohms, 2 w.
R6-R8—100K, 1 w.
RFC1, RFC2—2.5 mHy r.f. choke
L1—24 turns #16 wire, close wound, 1¼-inch dia. form
L2—23 turns #12 wire, close wound, 1¼-inch dia. form
L3—10 henry, 125-ma filter choke
L4, L5—5 turns light wire, close wound on 1¼-inch dia. form
T—Power transformer, 350 volts each side of center tap, 125 ma, with 5 and 6.3-volt windings. (Merit P-2953)
Relay—Leach Type 1127
MA—0-200 d.c. miliammeter
S1—S.p.s.t. toggle switch
S2—4-pole, two-throw switch, with neutral center position

but would have necessitated either a bandswitch or plug-in coils, so it was considered not worth the trouble. Also, the peculiar design of the receiver makes it essentially a two-band affair, and 80 and 40 were chosen as the two bands on which twenty-five watts would give the best account of itself.

The receiver is a five-stage superhet consisting of a converter, a local oscillator, two i.f. stages, a detector, and an a.f. stage. Several components, including the power supply, are common to both transmitter and receiver, resulting in a saving of space. Miniature tubes are used throughout except for the 6L6 and the 5W4.

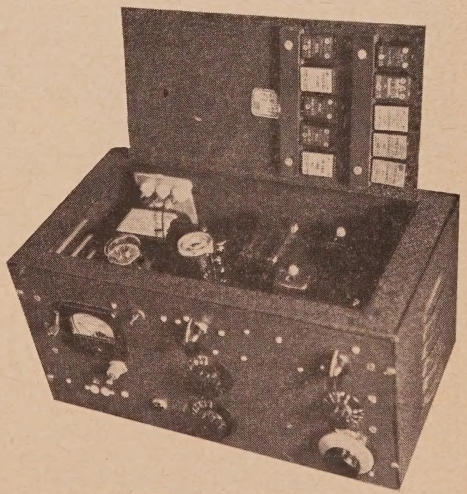
In the original design the d.p.d.t. antenna relay was keyed, and so connected that one pole handled the B supply, switching it from receiver to transmitter when the relay closed. The other pole handled the tuned circuit, switching it from the grid of the receiver converter stage to the plate of the transmitter PA stage where it acted as the plate load. In other words, instead of switching the antenna from transmitter to receiver, this design switches the tuned circuit the antenna and coupler feed into. The relay, a 110-volt unit costing $1.69 will follow a key at fifteen or sixteen words a minute, and provide smooth break-in operation. However, when operating that way, the relay would bang away as I keyed, which didn't bother me, or hinder the operation of the rig, but it did annoy the people on each side of me if it were past bedtime. Therefore, I added a four-pole, double-throw switch, S_2, to the circuit. This leaves the circuit as described in one position, and in the second position energizes the relay, opens the cathode of the final stage, and connects the key for cathode keying. This gives me my choice of ordinary send-receive operation with cathode keying of the PA stage, or break-in.

The Receiver

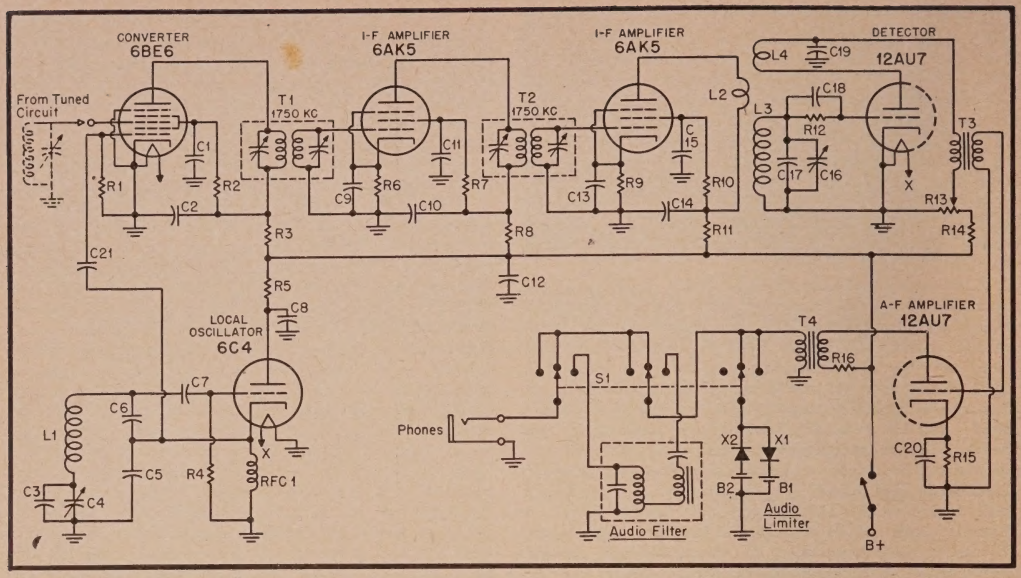
The receiver is designed to tune 3500–4000 kc and 7000–7500 kc, which it does with some slight overlap. To simplify the band changing problem, the intermediate frequency was chosen as 1750 kc, and the local oscillator covers a frequency of 5250–5750 kc. This means that with the local oscillator at 5250 kc, either 3500 kc or 7000 kc will beat with it to produce the required 1750 kc. The antenna tuner and the tuned circuit will eliminate one of the two images, allowing only the other to come through. Thus the local oscillator need not be touched in changing bands, and can be made extremely stable—especially since it's the so-called "Clapp" type. The converter is followed by two i.f. stages with 6AK5 tubes. The i.f. transformers are made by Meissner for 1500 kc, but may be tuned to 1750. The last i.f. stage feeds into a fairly conventional regenerative second detector using half of a 12AU7. The regenerative detector is suitable for either voice or c.w., according to the setting of the regeneration control. It increases the circuit sensitivity and selectivity and adds to circuit simplicity. The instability inherent in most regenerative detectors is eliminated by being operated on a fixed frequency and the use of a high-C tuned circuit. Selectivity is taken care of by the i.f. stages, and the danger of blocking is reduced by use of a lower-than-usual value of grid-leak resistor. The detector works very smoothly. The rest of the receiver is fairly conventional except for the audio limiter and audio filter. A three-pole, three-throw switch leaves them both out in the first position. The second position puts in the audio limiter, cutting all signals down to the same strength and cutting out static crashes and break-in clicks. It's a godsend. The third position of the switch leaves the limiter in, and also inserts an audio filter which peaks around 700 cycles. This is a real help in elimination of QRM, though it does reduce volume considerably.

Construction and Testing

In building this station, I first started with the power supply. None of the transmitter or receiver stages can be checked until the power supply is operating. After the power supply was operating satisfactorily, the transmitting section was started as the easier of the two. When the Pierce oscillator was finished it was checked by applying power to it and looking for the signal in a regular communications receiver. When I tuned it in I also checked the keying for chirp. When satisfied that the oscillator was working, it was coupled to the grid of the 6L6 final. In checking the final, a 3.5-mc crystal was used, and the 6L6 plate was tuned for meter dip. There should be two dips—one with the condenser almost closed, and another slighter one with the condenser nearly open. This indicated that



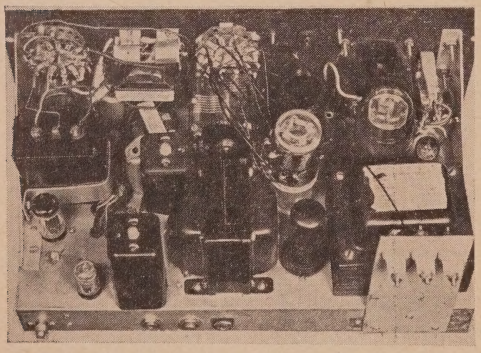
The stunt of securing the spare crystals to the lid of the cabinet ensures that they'll travel with the rig and not end up in the shaving kit.



C1, C2, C8-C15—.01 μf paper, 600 v.
C3, C7, C17, C19—100 μμf mica, 600 v.
C4—80 μμf midget variable
C5, C6, C18—250 μμf mica, 600 v.
C16—0-75 μμf padder
C20—10 μf, 25 v., electrolytic
C21—twisted wires, see text
L1—55 turns #24, close-wound on ½-inch form
L2—10 turns #24, close-wound on ½-inch form
L3—54 turns of wire swiped from small 2.5 mHy r.f. choke, close wound on ½-inch form
L4—16 turns, same wire and form as L3
R1—47K, ¼ w.
R2, R7, R10—25K, ½ w.
R3—7.5K, 1 w.
R4—100K, ¼ w.
R5—39K, 1 w.
R6, R9—200 ohms, 1 w.
R8, R14—10K, 1 w.
R11—12K, 1 w.
R12—500K, ¼ w.
R13—100K, 2 w., variable
R15—820 ohms, 1 w.
R16—15K, 1 w.
T1, T2—1500-kc i.f. transformer (Meissner 16-8091)
T3, T4—Audio interstage transformer (Merit A-2914)
RFC1—2.5 mHy r.f. choke
S1—Three-pole three-position rotary switch
X1, X2—1N34 crystal
B1, B2—1.5-volt "penlite" cell

the plate would tune both bands. A neon bulb lit off the "hot" side of the condenser at both positions. A neon bulb was also used to see that the antenna tuner covered both bands.

In constructing the receiver, the important thing was the local oscillator. It is essential that it cover from 5250–5750 kc, and the less overlap on each end, the more bandspread you have. With the components used, the oscillator covered the correct frequency range, as checked with a well calibrated communications receiver (a freq meter is even better if you can get one). With the local oscillator covering the correct frequency range, I turned the dial to 5250 kc and marked that spot as 3500 kc on band "A," and as 7000 kc on band "B." 5350 kc was marked as 3600 and 7100 kc, etc. The "Clapp" type of oscillator has very little warm-up drift, and it was very easy to make one whose stability compared favorably with the local oscillators in commercial receivers. One thing though—be sure the oscillator parts are fastened solidly so they cannot vibrate. The "Clapp" oscillator is extremely susceptible to mechanical vibration. My most baffling case of instability vanished when I fastened the oscillator coil more solidly on its supports with airplane cement.



In this view the power supply can be seen on the right, the transmitter along the front panel at center and right, and the receiver occupying the left half of the chassis. The tube between the power transformer and the front panel is the transmitter final, while the 5W4 rectifier is between the power transformer and the filter choke. The black box at the left with the three terminals on its lid is the audio filter.

With the local oscillator working correctly it was coupled into the converter tube capacitively. This capacitance consisted of two wires about 1½ inches long, with plastic insulation, which were twisted together. The next step was the tuning of the first i.f. transformer to 1750 kc. The easiest method was to connect one side into the plate of the converter tube as per the diagram, and fasten a wire of about one foot long to one of the two leads from the other side. I next tuned the trusty old communications receiver to 1750 kc. Now, with a fairly strong

(*Continued on page 58*)

Increasing the Versatility of the Collins 32V Transmitter

WILLIAM I. ORR, W6SAI*

Bill Orr bought himself a Collins 32V and found that he couldn't leave it alone. His studies of the modulation and antenna coupling circuits are worthy of the consideration of every lucky owner of a 32V.



ABOUT A YEAR AGO W6SAI was the fortunate purchaser of a Collins 32V transmitter. After years of building transmitters and exciters it was a distinct pleasure to use a well-engineered piece of equipment that was 100% reliable and would not disintegrate from rosin joints and the failure of overloaded components. Being a true experimenter at heart the urge to "tear into" the 32V and "make it better" grew day by day and at length several ideas for greater flexibility of operation of the 32V slowly crystallized and were tried. These were so successful that they are being passed along to you, dear reader, for if you are lucky enough to own a 32V, some of the ideas may well fit into your scheme of things. Even if you do not have a 32V, these adaptations apply equally well to transmitters of like power.

No doubt WØCXX and his able staff will groan in unison, and say, "Here he goes again! Not content with messing up our 75A receiver, he is now bent on ruining our 32V. Thank goodness he doesn't own our 231D transmitter. That is at least acceptable to the U. S. Government just as it is!"

So my apologies to Collins Radio; hang onto your hats—here we go!

Sideband Shaving

During one early morning QSO with W6MJB on eighty-meter phone it was noticed that my 32V produced sidebands that went out into very faint "monkey chatter" for several hundred kilocycles each side of the carrier under 100% modulation. At the same time W6MJB's 32V transmitter produced clean, sharp sidebands at the same modulation level. Investigation showed that reversing the plate caps of the 807 modulators could make the hairy sidebands in either transmitter appear and disappear at will. With the plate caps one way the side bands would be clean. Reversing plate caps would bring out the side bands to intolerable widths. This effect died out within a few miles, to be sure, but it was pretty bad within a mile or so of the transmitter. The correct "phasing" of the plate leads had no apparent relation with the markings put on the leads at the factory which read "Front 807" and "Rear 807."

Putting our respective caps on, we jointly came up with this theory: It is well known that speech waveforms are not symmetrical about the axis, the peaks being greater on one side of the axis than the other side, the amount of nonsymmetry depending upon the individual voice and microphone. The process of "phasing" the 807 modulator plate leads merely set the modulation correctly so that the high peaks modulated upwards, instead of producing negative peak clipping at a relatively low level of modulation. The manufacturer, not knowing what voice or microphone would be used with the transmitter, arbitrarily polarized the 807 plate leads and hoped for the best.

In any event, the correct phasing of the plate leads allowed much heavier modulation with much sharper sidebands!

The next step was to "build out" the modulation transformer to form an elementary low-pass filter. This was easily accomplished by placing a .003 μf, 1250-volt mica condenser from plate to plate of the 807s. The condenser was soldered directly to the two plate caps. Again, a definite and advantageous trimming of the sidebands was noticed. The transmitter could be modulated much heavier than before without sideband splatter. A great improvement was obtained for the price of one condenser and a few moments work!

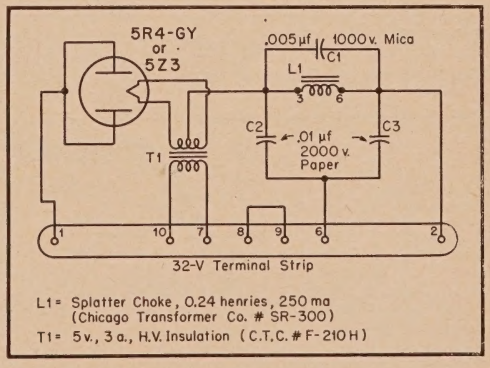


Fig. 1. A speech clipper for the 32V. The only power supply needed—117 volts—is obtained from the rig.

* *555 Crestline Drive, Los Angeles 49, Calif.*

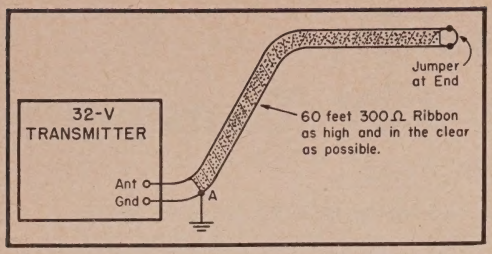


Fig. 2. A high-impedance Marconi antenna for use with the 32V on the 80-meter band.

In order to take full advantage of heavy modulation, a clipping and filtering unit was added to the 32V. This took the form of a small outboard unit bolted to the rear of the 32V cabinet. The unit requires no power from the 32V other than 110 volts, and is easily inserted in the *modulated* plate circuit by breaking the wire jumper between terminals *1* and *2* at the rear control strip of the transmitter. (*Fig. 1*). The filter is designed to start clipping at 2500 cycles and is down 18 db at 5000 cycles. If greater attenuation is desired, two sections of filter may be added. A 5R4GY tube with plates in parallel (or a 5Z3)is used to clip negative peaks. Do not use a mercury vapor tube for the clipper as it will introduce transients generated by the ionization and deionization of the tube as its plate voltage swings about the zero point. The filament transformer should have an insulation rating of at least 2000 volts. A small voltage drop occurs in the filter but this does not affect its operation.

Antenna Filters and Tuners

The 32V is supposed to be used with an external antenna tuner. The "pi" network is merely an impedance matching device, and is not intended to take the place of an external tuner. However, many hams have yielded to temptation and have coupled the transmitter directly to an antenna. Two unfortunate things usually happen:

A. The "pi" network is basically a low-pass filter. It will attenuate the harmonics to a great extent, but any "sub-harmonics" generated in the low level stages may be passed directly to the antenna with little or no attenuation.

B. If a balanced antenna system is used (a doublet, for example) the antenna system will not be balanced to ground, since one feeder will be grounded. This will lower the effectivity of the antenna—r.f. will be all over the shack; in the receiver, the microphone leads and in the light wires. Feedback, TVI and other nasty things will show up.

Item "A" may be effectively squelched by the use of an antenna that will short circuit the sub-harmonic. A folded dipole will do this effectively. On a low frequency band, such as 80 meters where a dipole is almost as large as a city lot, a special antenna may be used.

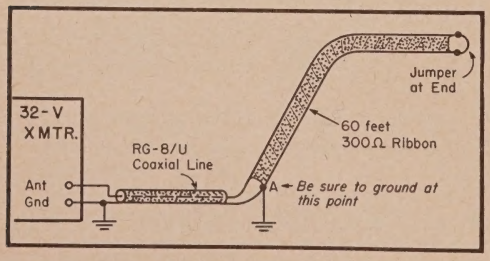


Fig. 3. A remote feed system for the high-impedance Marconi illustrated in Fig. 2.

An 80 Meter Antenna

Occasional operation on 80-meter phone brought reports of a weak sub-harmonic in the 160-meter region. A tentative filter was built but never used, as a new idea grew. The local coverage antenna for this band was simply a 60′ Marconi, working against a water pipe ground. The loan of an impedance bridge and a few hours work showed that the antenna had an impedance of about 12 ohms and that most of the generated power was being lost in the ground resistance. Now why not kill two birds with one stone and design an antenna that would reject the 160-meter sub-harmonic and at the same time raise the impedance of the antenna so that less power would be lost in the ground return? This antenna could simply be a ¼ wave folded antenna, made of 300-ohm ribbon. (*Fig. 2*). The high-impedance point for 160 meters (*A*) happens to be located at the ground terminal of the transmitter thus directing the sub-harmonic to ground in no uncertain terms. At the same time, the impedance of the antenna circuit is raised to about 50 ohms, cutting the ground losses greatly. This value of impedance also allows the antenna to be located some distance from the transmitter as it may be fed with a 52 ohm coaxial line. (*Fig. 3*).

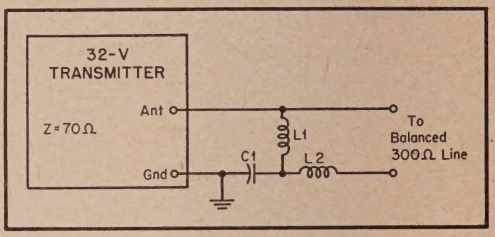


Fig. 4. This balancing network will permit the use of a balanced feed system with the inherently unbalanced output circuit of the 32V. The values of the components are listed in the table.

	3.5 mc	7.0 mc	14.0 mc	21 mc	28 mc
	450 μμf	250 μμf	120 μμf	90 μμf	60 μμf
L_1	8.5 μH	4.2 μH	2.1 μH	1.5 μH	1.0 μH
L_2	8.5 μH	4.2 μH	2.1 μH	1.5 μH	1.0 μH

Note: The output loading condenser on the 32V ("Antenna Loading") setting will correspond closely with the capacity of C_1. Very little loading will be needed at 28 mc, and fairly heavy loading at 3.5 mc. See figures given in instruction manual for a 70-ohm load. The unit should be built in a small metal box with L_1 and L_2 at right angles to each other. C_1 should be a transmitting-type ceramic or air condenser at frequencies above 14 mc.

A System for Feeding Balanced Antennas

Since the output circuit of the 32V is single ended, a balancing network must be provided to feed a symmetrical antenna system. This usually takes the form of an external tuning unit, complete with coils for all bands, or perhaps a coil switching turret. In either case, it is a large item physically and entails additional knob twisting, precisely what the 32V was designed to free the owner from. Hence most 32V owners dispense with the external tuner and make out as best they can by coupling the 32V to the balanced line. At this point they run headlong into Item *"B."*

A simplified balancing network is shown here. It is simpler to build and to use than the aforementioned tuner. The tuning does not interlock with the amplifier plate tuning as is often the case with an antenna tuning unit. It only needs one bandswitch control for all-band operation, and, if one-band operation is desired, the unit may be made quite compact. *Fig. 4* gives the schematic

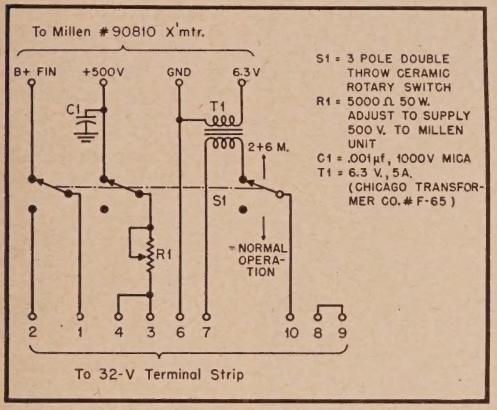


Fig. 5. Operation on 2 and 6 meters.

and components for matching a 70-ohm output impedance of the 32V to a 300-ohm balanced line. A table of components is given for the 3.5, 7.0, 14.0, 21.0 and 28.0 mc bands. These values are close enough for general operation, but if it is desired to effect an exact line balance, 0–1 amp. r.f. ammeters may be placed in each leg of the 300-ohm line and the capacity C_1 varied slightly to balance the load. As with usual systems, the loading is controlled by the "Ant. Loading" control on the transmitter.

Since the input impedance of the unit is $\frac{1}{4}$ of the load impedance, it will be seen that by doubling the inductance values and halving the values of the capacities, the unit will match a 600-ohm line to 150 ohms; to which the 32V will also effect a match. Conversely, halving the inductance and doubling the capacities will match a 150-ohm balanced load to 35 ohms, single ended. This also is an effective load for the 32V at all frequencies. Thus, by interpolation, the table and *Fig. 4* provide information for coupling the 32V to balanced lines of 150, 300 and 600 ohms at all frequencies used by the 32V.

Operation of the 32V on Other Bands

No, you can't operate the 32V on 160 meters or 2 meters by itself, but, with a minimum of extra equipment and by the expedient of using the power supply and modulator of the 32V, operation is

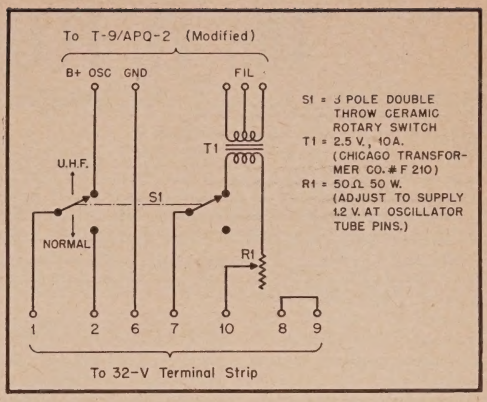


Fig. 6. Operation on 225 and 420 mc.

available on almost any band not within the range of the 32V. Here at W6SAI a (modified) surplus T-9/APQ-2, running at 115 watts input is used for 225 mc and 420 mc, and a Millen #90810 transmitter with an 829-B final is run at 100 watts on 2 and 6 meters, both being powered by the 32V. Plans are being formulated to operate an ARA command transmitter (2.1–3.0 mc) on the 160-meter band.

The basic idea is temporarily to disconnect the r.f. unit of the 32V and use the power supply and modulator to drive the auxiliary equipment. The primary controls of the 32V function as before, the end result is that output is obtained on another band!

Figure 5 shows the wiring connections to the Millen unit for 2 and 6 meters, *Figure 6* shows the connection for the APQ-2 u.h.f. transmitter and *Figure 7* shows a SUGGESTED but yet untried circuit for the use of the ARA command transmitter unit for 160 meters. In all these circuits, plate current of the auxiliary unit is read on the plate circuit meter of the 32V. The units should be run at approximately 200 ma, using the *low voltage* primary tap on the 32V power switch. Unfortunately c.w. operation of these units is not provided, as the 32V keying system is incorporated in the low power stages. However there is nothing to prevent the addition of an external keying circuit. Auxiliary voltages for the

(Continued on page 63)

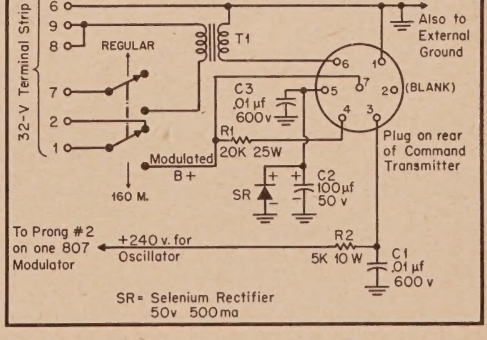


Fig. 7. Proposed circuit for operation of Command transmitter on 160 meters in connection with the 32V.

The YL FCC Commissioner

J. N. BOLAND, W4CC*

WHEN THE LADY HAMS BECOME so numerous as to require their own call book, and when one of the boys even makes a YL WAS, the rest of the gang shouldn't be at all surprised that we have a YL Commissioner sitting on the bench of the FCC. Commissioner Frieda B. Hennock not only looks out for the government end of the business, she also looks much too pretty to be a high-level official. "Madame Commissioner" (she's the first to be so addressed in radio regulation) has behind her a success story that is typically American — one based on her own effort and merit.



Miss Hennock went to work for a law firm when she was eighteen years old with a dual purpose—to earn a living and to gain legal experience. At the same time she went to night school and studied more law. This graduate of the New York public schools had her eye firmly fixed on a legal career. Three years later the Brooklyn Law School in the City of New York awarded her a law degree, and she was climbing up the ladder of accomplishment.

In 1926, when the new jurist was admitted to the New York Bar at the very early age of 21, she was the youngest woman ever to join this select group. The record still stands, emphasizing the solid achievement it represents.

The sight of a lady lawyer, a pretty young blonde, in criminal court was unusual in itself. But when a few court sessions proved both her professional competence and her decided flair for the dramatic, the men in the invaded field sat up and took notice in earnest. She was quickly recognized as an outstanding young lawyer, one from whom bigger things would come.

Although she later turned exclusively to civil law, Miss Hennock still remembers her criminal cases; the criminal was so often a young person. Carried in the back of her mind these years has been a picture of the natural aptitudes of young people being perverted to crime because of poor education and the accompanying lack of opportunity—the driving frustration of poverty and boredom, both mental and physical.

Today, as an FCC Commissioner, she is trying constructively to do her bit to remedy the situation. Realizing that education is the basis of all progress and culture, she is energetically campaigning to awaken educators and others to the possibilities of television as an educational medium for youth and for adults. Her main theme is that commercially controlled TV, if it imitates its brother, broadcasting, will not make significant contributions to education. Rather, she feels, educators must control their own facilities, smaller in comparison with commercial enterprise but widespread geographically. Simultaneously, they must develop educational material to utilize both the best visual teaching methods and top-flight teachers! How would you—and your children—like to learn Shakespeare? Out of a book? Or by watching such outstanding movies as "Henry the Fifth?" How would you, brother ham, like to learn more about electronics under the instruction of the highest authorities in the country, assisted by your eye as well as your ear? Attractive—of course!

Miss Hennock points out that TV can reach a mass market, both youngsters in school and adults at home, with "THE BEST" in teachers and in education. In addition to our millions of boys and girls, "there are some 30 million adults in this country interested in education through correspondence courses and night school attendance. Most of this country's schools are overcrowded and undermanned."

Her great fear is that TV channels will be fixed in a final form with no provision for educational facilities. Her "public service" campaign is to awaken educators to the necessity for unified action—action today, before the color TV hearings and related matters are completed.

Prior to her mid-1948 appointment to the FCC bench, Frieda Hennock was a law partner in the third oldest law firm in the United States—Choate, Mitchell and Ely of New York, who engage in general practice. She has another first here—being the only woman member in the firm's history of nearly 150 years. She has been active in public affairs, having been Assistant Counsel to the New York State Mortgage Commission 1935–39 and more recently a member of the Executive Committee of the FSA's National Health Assembly. Long an advocate of greater feminine participation in politics, she has worked for this; and she has been prominent for many years in national, state and local campaigns as a Democrat.

(*Continued on page 63*)

* *209 East Broad Street, Falls Church, Va.*

A Modulator for the Medium-Power Transmitter

MAURICE P. JOHNSON*

Although intended originally as a companion unit to the general utility transmitter described by the author in February, 1950, CQ, this little speech-amplifier-modulator combination may be just what you've been seeking. If you want to modulate 150 to 200 watts of class C input, get out the tool box and read on.

THE MODUATOR TO BE DESCRIBED HERE was designed to plate modulate the medium power transmitter which was dicsussed in detail in an earlier article, beginning on page ten of the February issue of *CQ*. The r.f. and power supply sections were presented at that time, and mention was made of the fact that a high-level modulator was planned to complete the rig. Considerable interest has been shown in the transmitter, and it is hoped that this material will assist those persons who wanted more information on the modulator.

The completed transmitter now consists of three units, each with standard rack panels of 8¾-inch height. The entire rig will thus fit into a compact table rack cabinet with 26¼" panel space.

Another layout which has proved convenient is to mount the r.f. and power supply sections in one small cabinet, and the modulator in another single section cabinet. This reduces the weight of individual cabinets, which is an advantage if much moving of the equipment is contemplated.

In the original construction, good quality surplus components have been used wherever practical. However, all parts are readily obtained in standard brands, and the entire transmitter can be duplicated for less than $250 at current prices, excluding any supplementary VFO unit.

The entire equipment has been given a thorough operational shakedown for a period of over two months, and has been found to be stable and clean in operation, free from parasitics, and generally reliable. The modulator is hum-free with good clean speech quality, and the entire rig is worthy of duplication where a medium power transmitter is desired.

Circuit

One of the objectives of the original design of the complete transmitter was the use of a single high-voltage plate supply for both the r.f. final and the modulator stages. This naturally requires a supply with good regulation, which is best obtained through the choice of components in the supply with current ratings considerably above the normal demand. This stipulation resulted in the original selection of a plate transformer and filter chokes with conservative ratings of 350 milliamperes.

Although the type 24G tubes in the class C r.f. can handle over 200 watts input, after extensive operation, a good compromise between tube life and heating effects as compared to power output has been reached by running them at an input power of 150 watts. This input is obtained with 1500 volts on the 24G plates, loaded to 100 ma by adjustment of the link coupling to the antenna. With well matched 300-ohm feeders, this amount of loading to a four element wide-spaced ten meter beam has been easily obtained with only very slight coupling between the 3-turn link and the high-Q tank coil.

Thus, with only 100 ma required by the r.f. final (or at maximum safe limits 150 ma) and about 35 ma drained by the power supply bleeder, an adequate current reserve is available in the main power supply to feed the modulator with good regulation.

Careful consideration was given to several types of tubes generally used for modulator service. However, the necessity of operation with a plate voltage of 1500 volts, together with a desire for low current demand, considerably restricted the choice of tubes.

Inasmuch as the 24Gs served very well in the class C stage, their use as class B modulators was investigated. The advantages which lead to their selection originally for the r.f. final, such as small physical size, high-voltage low-current requirement, and availability on surplus at low cost, are again desirable in this application. Using similar tubes for r.f. and modulator also has the advantage of reducing the number of spare types needed.

Reference to tube charts on the 24Gs indicate that they will meet the requirements demanded by the modulator. An audio output of 90 watts is easily secured with 1500 volts on the plates, and this is more than sufficient to 100% modulate the final. This power output is obtained with approximately – 60 volts of grid bias. The zero signal



Transmitter and modulator temporarily set up for tests at W3QEQ.

* *c/o WAAM Engineering Dept., 3725 Malden Av., Baltimore 11, Md.*

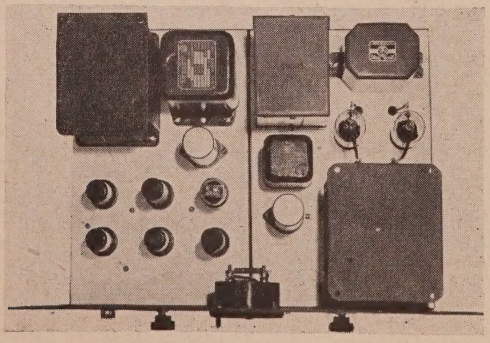
plate current runs just over 20 ma, while the peak signal current is about 95 ma for the pair of tubes in class B.

The plate impedance of the tubes is somewhat higher than more commonly used modulators, but with equal plate voltages on the r.f. and the modulator stages, a turns ratio (secondary to ½ primary) of 1.4 to 1 in the modulation transformer will permit 100% modulation. A type S-21 universal modulation transformer made by UTC, rated at 115 watts of audio, will provide this turns ratio. The actual impedance offered to the modulators is slightly lower than called for on the tube charts, but this is not objectionable since its main effect is only to reduce bass response somewhat, which is beneficial in speech communications work.

A switching arrangement is provided in the plate supply circuit to allow c.w. and AM operation, as well as a convenient way of tuning the class C final with the modulator removed from the circuit. A two deck rotary switch was made from a 90-degree indexing assembly and two ceramic switch wafers, such as the Centralab XX type. One switch section is in series with the plate supply to the modulator tubes, removing plate voltage when the switch is in the c.w. position. At the same time, the other switch section produces a short across the modulation transformer secondary whenever the modulator is inoperative. The switch must be wired so that one deck is open circuited when the other completes its circuit.

The class B modulator and speech amplifier are built as two units, on identical 8 by 12 inch aluminum chasses, which are mounted side by side to a common rack panel. In order to make the modulator section complete in itself, the driver transformer, filament transformer, and a bias supply are included on the same chassis as the class B tubes and modulation transformer.

Approximately – 60 volts of bias will hold the standby current at 20 ma, and the grid current is only a few milliamperes with peak signal. Therefore, a simple bias supply using a selenium rectifier in a half-wave circuit serves satisfactorily. A small 6.3-volt filament transformer is backconnected to the filament transformer supplying the 24Gs, thus providing about 100 volts to the selenium rectifier. The rectifier and filter choke are in the positive leg of the supply which is then grounded. This allows the use of a dual filter can with common negative lead for the filter. The can must be insulated from the chassis, and an insulating sleeve can be slipped over the can to guard against shock. A low resistance bleeder produces



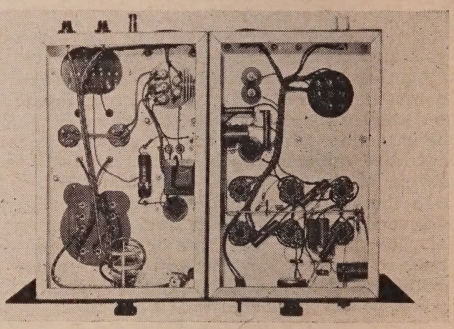
This shows the general layout of the audio deck.

a constant heavy drain on the bias pack to give good regulation. The filter choke resistance to d.c. should not exceed 700 ohms in order that adequate voltage will be developed across the bleeder to permit adjusting the bias for the desired standby current.

The speech amplifier makes use of only three stages, but does provide a reserve of gain in raising the output of a crystal mike to the power needed to drive the 24Gs through a transformer with a stepdown ratio of 2.4 to 1. The speech amplifier is complete in itself with the exception of the output transformer, and includes its own power supply.

The circuit is standard, and has been featured in the *Radio Handbook*. A 6SJ7 is used as a high gain amplifier, with the gain control located in the output of this stage. A pair of 6SJ7s act as high gain phase-inverter amplifiers to drive a pair of 6V6s in the output stage. Degeneration improves the regulation as well as reducing distortion. This circuit makes a very stable and reliable speech amplifier with a hum level considerably lower than several other hookups which have been tested.

The power supply is conventional, using a pi-section filter with large value capacitors to remove



Wiring and general layout of the underside.

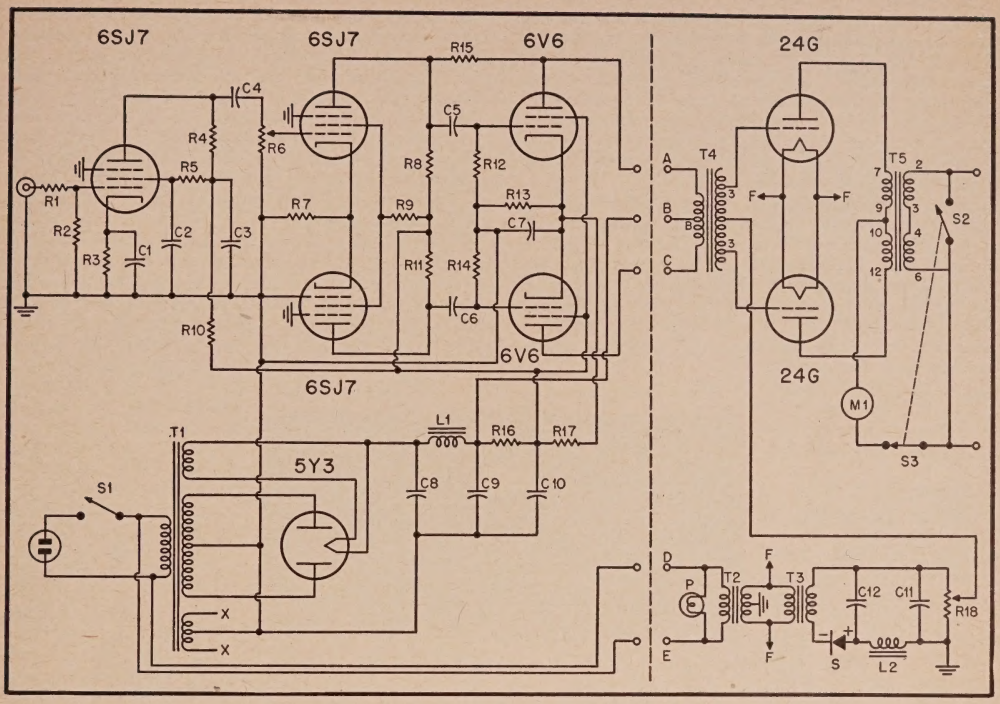
all traces of ripple. Decoupling isolates the stages and further filters the voltage applied to the sensitive input stage. A toggle switch on the front panel controls the a.c. input for the speech amplifier, as well as simultaneously applying voltage to the bias supply and filaments of the modulator. A five-wire interconnecting cable between the two chasses permits this control, as well as connecting the 6V6s to the driver transformer.

A meter in the plate circuit o fthe 24G modulators provides a visual check on the operation of the class B tubes.

Construction

As previously mentioned, the modulator and speech amplifier are constructed on two aluminum chassis bases, each 8 by 12 by 3 inches in size. This dual chassis type construction has proved to be easy to asesmble, helps prevent circuit interactions and hum pickup, as well as lending itself readily to circuit changes or modifications with a minimum of trouble.

The chasses are mounted with the 8 inch lip toward the panel, and layout is made accordingly. The a.c. switch, gain control, and the microphone connector are spaced out along the lip of the speech amplifier. A pilot light and the high voltage switch are mounted on the lip of the modulator chassis. A



C1, C7—50 μf, 25-volt electrolytic
C2—0.1 μf, 400-volt paper
C3—30 μf, 450-volt electrolytic
C4, C5, C6—.01 μf, 600-volt paper
C8, C11—10 μf, 450-volt electrolytic
C9, C12—80 μf, 450-volt electrolytic
C10—30 μf, 450-volt electrolytic
R1—47K, ½ w.
R2—1 meg, ½ w.
R3—1K, ½ w.
R4, R12, R14—470K, ½ w.
R5—2 meg, ½ w.
R6—1meg potentiometer
R7—680 ohms, 1 w.
R8, R11—470K, 1 w.
R9, R15—1 meg, 1 w.
R10—47K, 1 w.
R13—250 ohms, 2 w.
R16—3K, 10 w.
R17—22.5K, 10 w.
R18—2.5K, 25 w. with slider
L1—10 hy, 100 ma, filter choke
L2—30 hy, 50 ma, choke (d.c. resistance not over 700 ohms)
T1—Power transformer, 700 v., c.t., at 100 ma, with 5- and 6.3-volt fil. windings
T2—6.3 v at 8 amp, fil. trans.
T3—6.3 v. at 2 amp, fil. trans.
T4—Driver trans, see text. (UTC S-9)
T5—100-watt modulation transformer (UTC S-21)
S—200-ma selenium rectifier unit
S1—S.p.s.t. toggle switch
S2, S3—Centralab type XX ceramic wafers with 90-degree index
P—110-volt 6-watt pilot lamp
A, B, C, D, E—Connections to 5-prong cable for chassis interconnection
M1—0-200 d.c. miliammeter

milliammeter to indicate the class B plate current mounts in the center of the panel to complete the front layout.

On the rear lip of the speech amplifier are located the 110-volt male input connector, and a 5-prong socket for the connecting cable to the modulator. The modulator lip supports another 5-prong socket to accept this cable, as well as a ground post, and the two high voltage connectors for the incoming voltage from the power supply and the lead to the r.f. unit.

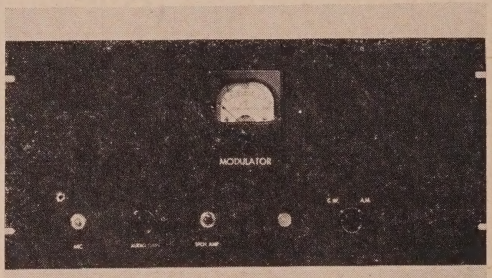
Viewing the top of the speech amplifier, the power transformer and filter choke, and the dual-section filter condenser mount to the rear. Sockets for the six tubes are mounted in two rows of three each, spaced sufficiently away from the panel to clear the meter. The 6SJ7 input tube is located in the corner nearest the microphone connector. Progressing to the right in the front row are the 6SJ7 driver and 6V6 output tubes. In the second row, the 6SJ7 phase inverter is first, then the other 6V6, fololwed by the 5Y3 rectifier. This layout helps isolate the input tube from the power supply and rectifier, and gives relatively short leads.

Mounted to the side of the modulator chassis, from back to front, are the driver transformer, modulator tubes, and modulation transformer. The 24G filament transformer occupies the space to the rear left, with the choke and filter condenser can for the bias supply directly in front. Below the chassis, on the side lip, are fastened the filament transformer, selenium rectifier and bleeder for the bias pack.

Chassis holes must be cut considerably larger than the terminals on the modulation transformer to avoid possibility of flashover. Wiring for the plate leads and switch must be done with care and with well insulated wire, since nearly 3000 volts appear at the r.f. side of the modulation transformer. Belden type 8869 wire designed for CRT use was used with good results in the original wiring job. Notice that in wiring the high voltage switch, the switch arms are at the supply end, which allows the peak modulation voltage to appear at the fixed contact, since this has some-

what better insulation to ground. The spacing between rotor and fixed contacts on the switch decks is not very great, but no trouble has been experienced with any tendency toward arcing. This comparatively close spacing of contacts on the deck across the modulation transformer might be advantageous in the event of Class C failure, by acting as a protective spark gap to short out excessive transient voltages.

Speech amplifier wiring is done simply in the direct point-to-point manner. Small parts are self supporting, with small terminal tie-downs added where neded. Plate and power leads are laced together where convenient, to make the wiring neat. No special precautions were observed in wiring, with the exception that the chassis is not used for the negative return. Instead, a ground bus carries the negative line, and is tied to the chassis at only one point, at the input grid. This does help avoid hum due to ground loops.



Front of panel, showing the layout and controls.

Operation

If the equipment is wired with care, in accordance with the schematic, no difficulty should be encountered in getting it into operation. The speech amplifier should preferably be checked for hum and general operation before using it to drive the modulator. This can easily be done by temporarily connecting a conventional output transformer and loudspeaker to the output plug. With a typical crystal microphone, for close-talking, the speech gain need only be advanced about a third open to give sufficient drive to the 24Gs. At this setting no hum whatsoever should be heard in the speaker. In actual measurement, the hum is better than 50 db down at full gain, and over 60 db down at normal settings. The speech should be clean and crisp when heard on the speaker, without excessive lows or highs. A phonograph or audio oscillator and scope will give an indication of distortion and frequency response, if such equipment is available for checking.

If the speech amplifier is clean, and the modulator wired correctly, no hum will be evident on the air. Modulator bias should be set for 60 volts or slightly greater, by means of the slider adjustment on the bleeder. With a 15,000-ohm 100-watt resistor connected as load on the modulation transformer secondary, high voltage may be applied to check the standby plate current. This may not run exactly 20 ma, but the tubes should not run with more than a dull orange color under these conditions.

It will now be possible to connect the modulator to the transmitter, which is done by connecting the lead from the power supply to the input of the modulator, and the modulator output connected to the r.f. final. This connects the modulation transformer in series with the r.f. plate feed in the conventional manner. A dummy load should be used on the r.f. stage.

With the high voltage switch in the c.w. position, it will be possible to tune up the transmitter and adjust for correct loading and proper class C operating conditions before attempting modulation. The high voltage should be removed by means of the switch on the power supply, before rotating the high voltage switch on the modulator. By switching to the AM position and reapplying plate voltage, the modulator will be in operation. The signal can be tuned in on a nearby receiver and the quality and hum checked, before actually putting the rig on the air. It is recommended that an oscilloscope or other percentage modulation check be made in order to establish gain settings for proper modulation.

By referring to the article in February 1950 *CQ*, it will be seen that two a.c. outlets are provided at the rear of the power supply chassis, and are energized by the front panel filament switch. The a.c. feed to the exciter is obtained from one of these outlets, and the a.c. line to the modulator should be plugged into the other socket. By this interconnection of the a.c. circuits, the filament switch on the power supply will turn on the 866 filaments, the exciter supplies, the r.f. filaments and bias, and now also supply a.c. to the speech amplifier and modulator. When the switch on the speech amplifier is turned on, the pilot light will glow, indicating that the speech amplifier is operating, and also that the modulator bias and filaments are energized.

The high voltage switch on the power supply will now feed plate voltage to the r.f. and modulator stages. When operating the rig with crystal control, it is generaly desirable to switch off the plate voltage, and then throw the standby switch on the exciter unit so as to open the cathode circuits, while receiving. If an external VFO is used, the standby switch can be left on and the VFO plate voltage removed, as well as the high voltage from the final, whenever receiving.

From this it is seen that change-over from transmit to receive involves the operation of two switches on the transmitter. This was not considered an objection, particularly since the Hallicrafters HT-18 VFO used with the rig allows the plate switch of the VFO to actuate the antenna changeover relay. Should it be desired to go to single switch control, relays can be used to replace the switches, since all switching is done in the primary circuits, with the exception of the exciter cathode switch.

Conclusion

Measurements were made on the completed transmitter as a check on its actual performance. A 1000-cycle pure tone was used as input to the speech amplifier, and the modulated carrier was checked on a model 330B Hewlett-Packard distortion analyzer. The total distortion is 3.2% at 30% modulation with pure tone, which is about equivalent to 100% modulation with complex speech waveforms. With the 1000-cycle tone level increased to modulate the carrier 85%, the distortion is 9%. The hum and noise level is better than 50 db below the modulated carrier.

The equipment has been given an on-the-air operational run for a two month period at

(*Continued on page 59*)

The M. A. R. S. Page

MARS A3NHB W3NHB/KP4

ANOTHER IN THE SERIES OF REGIONAL MARS CONFERENCES was held 23 April 1950 at Fort George G. Meade, Maryland. Delegates representing Regular Army, National Guard and Organized Reserve Corps units were present from Ohio, Pennsylvania, Delaware, Maryland, Virginia, West Virginia, Kentucky and the Military District of Washington.

First Lieutenants Robert Richardson (A3NHB) and William Lingle (A3RYW) conducted the one day seminar which was open to net control stations, state MARS directors, and other interested observers from the Second Army area.

Official action taken at the conference included:

ORGANIZATION—Delegates voted to adopt a staggered-hour system of net operation to diversify operating hours and days. This will permit many operators not capable of meeting the present fixed schedule to participate in more MARS drills. It was agreed to activate one daytime schedule each week for the benefit of MARTIANS who are unable to meet evening schedules.

FREQUENCIES—In those areas where daylight time is being observed all 2300 hour schedules are advanced to earlier hours. Local situations will determine the exact time in each area.

The Second Army net is now operating near the 7 megacycle band due to atmospheric conditions. This action is taken despite some reported interference to networks in other army areas.

To encourage MARS activity in UHF work net assignments are being considered in the 170 mc range.

RETIREMENT CREDITS—The procedure for recording and reporting point credits earned by qualified reservists through MARS participation is being reviewed with a view to simplification of administrative paperwork involved.

EMERGENCIES—A study is underway to determine the location and capabilities of MARS stations which can operate on emergency power.



Exercise PORTREX, Caribbean Maneuvers, didn't leave much time for hamming, but A3NHB took along some ham gear and managed to hook his home station of A3USA from Vieques Island, Puerto Rico, operating as W3NHB/KP4.



OFFICIAL DELEGATES—Attending the conference were A3ECP—Colonel Edwin S. Van Deusen, District of Columbia net representative; A3WR—Lieutenant Colonel A. F. Pyle, Delaware NCS and MARS Director; A4MO—Captain Carl W. Nielsen, Kentucky NCS; A3NT—Major Bert E. Martin, Maryland NCS; A8GDC—Captain Richard B. Jeffrey, Ohio NCS; A3ANK—Major William H. Hurst, Pennsylvania NCS; A4FJ—Lieutenant Colonel Theodore P. Mathewson, Virginia NCS; A4KIL—Captain Frederick H. Powell, Jr., Virginia National Guard Director; A8CLX—Captain Calvin R. Basham, West Virginia NCS; Major Maurice W. O'Conner, District of Columbia Director; 2nd Lieutenant Kenneth W. Russel, District of Columbia National Guard Director; Captain Robert W. Salling, Kentucky National Guard Director; Captain Michael B. Pickup, Maryland Director; Captain William M. Peterson, Maryland National Guard Director; Lieutenant Robert N. Maxwell, Ohio National Guard Director; Major Samuel S. Kale, Eastern Pennsylvania Director; Lieutenant Charles Beattie, Pennsylvania National Guard Director; Captain Jack Doherty, Virginia Director; Captain Cameron B. Patchell, West Virginia National Guard Director.

Others present included A4KSD, A4NGX, A3OVG, A3HCE, A4ODI and several amateurs stationed at Second Army Headquarters, Fort George G. Meade, Maryland.

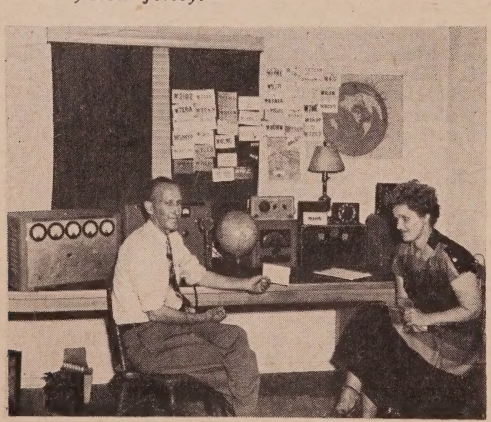


Conducted by E. M. BROWN, W2PAU*

THERE WAS PLENTY OF EXCITEMENT IN EVIDENCE on the v.h.f. bands during the past month. The six-meter band came to life with a series of "short skip" sporadic E openings which gave the gang a chance to swell their states-worked totals and renew old acquaintances. Coming after a winter during which short-haul openings were few and far between, these conditions were welcomed with an enthusiasm seldom equalled in these days of TVI and consistent ten-meter DX. The openings were wide-spread, geographically. Although all reports are not in, to date, it seems safe to assume that all parts of the country were treated to a least a sample of good six-meter conditions.

With the coming of warm weather, conditions on the two-meter band have started to improve. Reports of 300-mile-plus contacts have been received from several sections, and "minor" openings, which bring in signals from stations over 100 miles away with abnormal strength, seem to be occurring almost nightly here in the northeast. Activity has been fairly good, but not as good as might be expected, considering the number of stations equipped to use the two-meter band. Maybe the missing delegates are waiting for conditions that will permit contacts beyond the 1000-mile range! Or, have they just gotten out of the habit of operating? Better get on the ball, fellows!

** Associate Editor, CQ. Send contributions to E. M. Brown, 88 Emerald Ave., Westmont, Collingswood 7, New Jersey.*



W6OB—One of California's outstanding six-meter operators, and his XYL, Millie. She monitors the band while Jack is at work, teaching school. She also keeps the other local six-meter men on their toes by spotting band-openings for them! (Photograph by W6MVK)

LATE FLASH!

It has been reported that G2XC, VHF Editor of Short Wave Magazine, **and G5BY have successfully bridged the 132 miles between their home locations on 435 mc. Low power and crystal controlled rigs gave 579 signals in both directions. Watch this column for the whole story next month.**

The best time of year for v.h.f. tropospheric DX is in the spring and fall. Let's make the most of our opportunites.

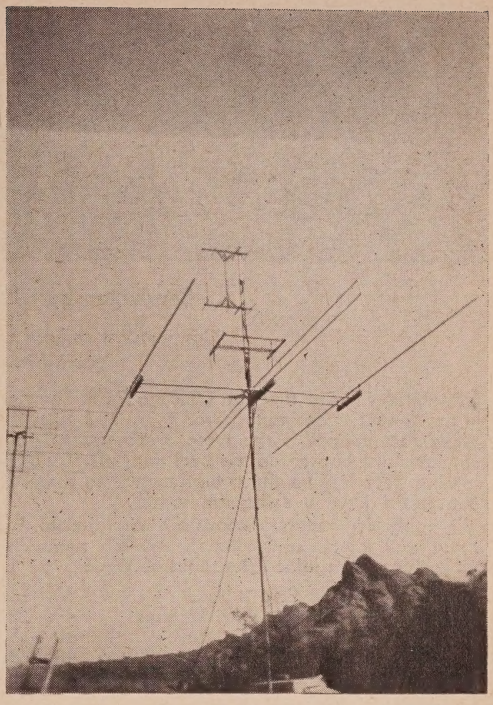
There is good news this month regarding 220-mc activity. W4HHK, of Colliersville, Tennessee, and W5NYH, of Lexington, Mississippi, set up a test circuit on 220; W5NYH using an 832A straight amplifier with about 25 watts input, feeding a 16-element horizontal beam only about 20 feet off the ground. The receiving line-up at W4HHK consisted of a 6J6 p.p. amplifier with long-line plate and grid circuits feeding an HFS, which worked into an NC-183. The antenna was a 16-element affair 48 feet off the ground. After several successful cross-band contacts over the 137-mile path (including duplex QSOs) Paul, W4HHK, concludes "I believe I'll be able to hear (or detect) his signal every day, even though some days it will be too poor to read." He also adds "W5NYH's 25 watts on 1¼ seemed to be doing as well as my 300 watts on 2." As yet no efforts have been made to set up a two-way circuit. We hear that Moore, W5NYH, has been laid up in the hospital lately. Get well quick, pal, and continue those 220-mc tests. That band could certainly use more activity.

420 mc activity has been increasing steadily. With the advent of good extended ground-wave conditions on 144 and 220 mc, the 420-mc experimenters had high hopes that they could take advantage of these conditons and work some real DX. Tests had been arranged for Friday evenings at 11 p.m. EDST between the northern and southern New Jersey groups. On April 28, K2AH, of East Orange, W2PEN, of Runnemede, and W2QED, of Seabrook, checked in on two meters and found band conditions better than normal. Test transmissions on 420 mc were 50% successful. Both W2PEN and W2QED heard and positively identified the 435-mc signals of K2AH. They were not able to make it a two-way QSO, possibly due to the fact that K2AH's receiver has relatively narrow band-width, and both of the S. Jersey stations were using modulated power oscillators. K2AH's transmitter was crystal-controlled, and used the new "pencil" triodes in the low-level stages. The final stage was made from an ATP5 cavity, by pulling out the feed-back loops. George

claims a very worth while power gain from this amplifier arrangement, and has measured power output as high as 30 watts. George's receiver also uses pencil tubes as r.f., mixer, and oscillator. A description of the receiver appeared in the RCA Review for September, 1949. (K2AH is one of the engineers responsible for the development of the pencil tubes.) The distance from E. Orange to Seabrook is approximately 100 miles. Having broken the ice, the boys are confident that it is merely a matter of time before solid two-way communications become a reality.

Not content with this achievement, a couple of nights later W2QED hooked up with W30WW in Stewartstown, Pa., approximately 85 miles away on two meters. W3OWW cranked up his 420-mc rig, with an 832A tripler feeding a ten-element horizontally polarized beam. W2QED had no difficulty in hearing Geary's signals, but before he could fire up on 420 to make it a two way QSO, conditions faded rapidly, and once again Ken was robbed of a good chance to rack up an outstanding fixed-station DX contact.

Late News Flash: On the evening of May 27, W3OWW and W2QED took advantage of favorable atmospheric conditions and finally made it a solid two-way contact on 420 mc, with S9 signals each way. W3OWW was using his new 20-element antenna which consists of four bays of 5-element Yagis, horizontally polarized. W3OWW's receiver was a modified APS13. W2QED was using his modulated rock-crusher, with about 50 watts input to a pair of 703s. His receiver is a composite job, with an APS13 front-end feeding a 645 i.f. strip. The antenna was a 32-element affair, held precariously in the horizontal position by Ken's brother, on the shack roof! The two-meter band was in excellent condition at the time, with many contacts out beyond the 300-mile limit going on at the time the 420 mc hop was being made.



W7QLZ's answer to the 420-mc polarization problem —two twin-fives, one vertical, the other horizontal. Space won't permit showing of all Clyde's 420-mc sky-pieces.

420-mc Techniques

There are two schools of thought regarding the type of equipment which we should be using in our initial attempts to exploit the 420-mc band. Most of the old-timers who have watched the development of the v.h.f. bands will admit that the hams never began to realize the full potentialities of their v.h.f. assignments until they put well-stabilized signals on the air, and mastered the art of making quiet, sharp receivers. Yet many seem to doubt that we can apply the advanced techniques to our 420-mc band successfully at this time.

We might as well admit it, it is possible to get on the air with a two-tube transmitter (including modulator!) and a "detector-and-one-step" super-regenerative receiver and have a lot of fun talking to other fellows similarly equipped. In fact, given a set of good conditions, it is quite likely that the DX record could be established using this type of equipment. It wasn't too long ago that W2BV was working stations 300 miles and more away with his TR-4 on two meters!

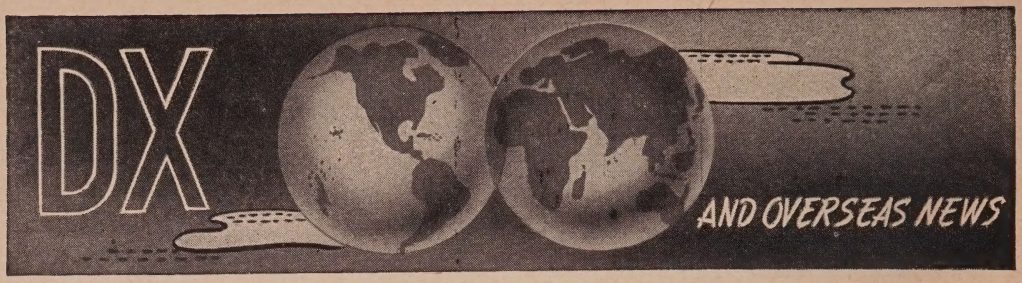
But the idea of using this sort of equipment is repulsive to the scientifically-inclined ham, who has studied the problems and realizes the compromises involved in this "kindergarten" approach to the problem. We had plenty of opportunity to observe the latest techniques during the war—the u.h.f. gear available in the war-surplus channels represents the best that could be produced a few years ago. Why shouldn't we take advantage of the experience gained on such equipment and start off on 420 at least at the state of the art that existed in the war-production laboratories a full decade ago?

The proponents of the "modulated oscillator and super-regen" school of thought claim that their approach is the only one available to the average ham who must "come by his equipment honestly"—with the surplus market shrivelling and no cheap u.h.f. components obtainable commercially. They maintain that we will learn a lot about the practical use of the 420-mc band by having a large number of stations active on the air—however poorly equipped—and we will gain little by waiting until the means are available to put high-quality signals on the air. And there are those who wil argue that the use of high power will make it easy to overcome the higher noise level of the necessarily wide-band receivers.

The purists counter with the claim that we might be holding up progress by encouraging the use of these out-dated techniques. By cluttering up the band with the un-controlled emissions of our receivers as well as our transmitters we may discourage the type of advanced experimentation which may eventually make our operations on 420 mc something to be proud of. And if the demand for space in our radio spectrum continues to increase, there is grave doubt that we will have such a generously wide band to splash around in a few years from now.

Modern equipment need not be expensive or difficult to build. The use of narrow-band receivers would make it possible to communicate with much lower transmitter power than would be required if the receivers were designed to accept the signals of unstabilized rigs. For example, a typical APS13 or 788 receiver when peaked up for ham communications has an i.f. response almost 2 mc wide. If we were to tune the i.f. signal from this receiver in on a good 30-mc superhet with a ten kc band-width we would be reducing the band-width by a factor of about 200 to 1. This implies that we are reducing the effective noise input to the receiver by the same ratio—expressed another way, we could copy a signal 1/200th the power of a signal which was barely detectable on the broad

(*Continued on page 51*)



Conducted by HERB BECKER, W6QD*

This month's column is by Andy Elsner, W6ENV, pinch-hitting for W6QD.

IT WOULD APPEAR that the Chicago Parts Show is an annual event that never fails, and likewise Herb's attendance is the same. Furthermore, this column must be written, they tell me; all of which totals rather low on my comptometer. In a word, you again have a substitute writer.

Our sincere congratulations are extended to five more well known and often heard DX men who have this month joined the ranks of WAZ

206	VK4EL	Eric J. Lake	40—162
207	G6RH	R. G. D. Holmes	40—222
208	KH6LG	Jack C. Wada	40—156
209	KH6CT	George W. Spare	40—204
210	W5GEL	Robert N. Douglas	40—187

Successfully wangling 40 zone cards seems to be more of a test of one's skill these days than the actual contacts needed for WAZ. In any event, WAZ still represents a lot of effort no matter how you look at it. This is probably as good a spot as any to offer encouragement to those of you who are waiting for a Zone 23 card from Reg Fox, AC4YN. In a recent letter to W7EYS, Reg says that every American station worked will definitely get a QSL card in confirmation of the QSO. He says that he has received hundreds of letters, many with coupons, cards, etc., but that it has been absolutely impossible for him to answer them, no matter how much he would like to. Quoting directly, he says, "If able to answer in the future, I shall try to gradually, so everyone must have a lot of patience. Although I am very sick with arthritis, I am also very busy with other very pressing work. This sounds strange, but it is a fact. The political situation here is rather uncertain at the moment. You must have heard the news that the Chinese Communists have many times made known their intention to 'liberate' Tibet, and this threat still hangs over us. If this happens, you can be sure that it will spell the end of 'AC4' DX. The Zone of course must remain, but the prefix will become 'C' without a doubt . . . that is if the Chinese Communists allow amateurs to operate." In view of this, there is no point in continuing a flood of correspondence. Let's give Reg a chance. We know he will do his best in spite of the trying circumstances.

** Send all contributions to Herb Becker, 1406 South Grand Ave., Los Angeles 15, Calif.*

Andorra and Monaco

There has been so much talk and so many rumors for so many months concerning the projected trip of ON4QF to both Andorra and Monaco, that a few more words might be in order. Mick just informs us that he has actually received the necessary permission from the Andorran authorities, but that such permission is subject to approval by the French authorities having supervision over Andorra. This French approval has been requested, and Mick has word from them that a decision will be forthcoming shortly. He apparently expects a "yes," particularly in view of the fact that the REF is backing his request. If all goes according to plan, he expects to be on the air early in July. The situation regarding Monaco is somewhat similar and should follow a bit later. DL4ND has spoken of teaming up with Mick for the Monaco trip. These two should make a fine pair for such an operation if it can be arranged. Let's keep our fingers crossed a little longer and hope for the best.

KP4KD is still looking for a KR6 with a good receiver. So far, he can't work one. Ev has also been chasing CR5AC, along with several thousand others, but says that he hasn't been able to find a time when the W boys stayed off of him long enough to tell just who he was QSO with. This seems to be standard practice, Ev. Doesn't look like it will ever change. KL7PJ sends along some dope on YU7FLA, YU7FLB and YU7FLE. They are all the same station, but with different operators. He worked YU7FLA first, then was asked to QRX for FLB and then for FLE. YU7FLC may be in on the same set up. As Chuck says, this arrangement certainly cuts down YU activity even though there are a lot of calls licensed. Lastly, a QSL from

Third CQ world-wide DX Competition—Phone Oct. 27 to 29, C.W. Nov. 3 to 5

Coming up in August! Complete details of **CQ**'s Third World-Wide DX Contest! Rules will be the same as last year, again featuring Single-Band awards, Multiple Operator awards, and the rest. This contest is designed for everyone and should afford a maximum of fun and DX with a minimum of effort. Full details will be printed in August **CQ**, and reprints of the rules will be circulated throughout the world to invite maximum participation. In the meantime send in for your contest logs, designed to make scoring simple, logs neat and accurate. Sufficient copies to make carbons will be sent upon request. Enclose a stamped return envelope, and if you want more than four forms, use a large size envelope. For new countries and lots of DX, keep those all-important weekends open!

W. A. Z. HONOR ROLL

CW & PHONE

WAZ

40 Zones

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W2BXA	227
W6EBG	225
W3BES	225
W6GRL	224
W3GHD	223
W6MEK	222
W6ADP	222
G6RH	222
W6PFD	222
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WØYXO	220
W8BHW	218
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W3EVW	213
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W8HGW	208
W6MX	208
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W9NDA	206
W6OEG	205
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W6DI	204
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W6PB	202
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VK2ACX	199
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W6JZP	168
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VE7GI	165
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W6WWQ	163
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I1IR	158
W6CYI	157
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W6BAX	155
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VK2QL	151
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W6EYR	150
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W6LS	147
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W2NSZ	209
W1BIH	209
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W2AGO	191
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WØEYR	186
W9MXX	185
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W2WZ	184
W3DRD	183
W4INL	183
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W8SYC	182
W1DQH	181
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W2EMW	179
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W6EHV	172
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W4LVV	171
W9LM	170
W6CTL	169
W1NMP	169
W9VND	169
W3JTK	169
OZ7EU	169
PY2AC	168
W2CYS	167
OK1VW	167
W8LEC	166
W4DKA	165
W7PGS	164
F9BO	163
W9FKC	163
W2BJ	163
W3KDP	162
W4BRB	162
W4VE	162
W2RGV	161
W6BZE	161
WOGKS	158
W4OM	158
W4RBQ	158
WØAIW	157
I1AY	157
VE3AAZ	156
W9YNB	155
DL1FK	155
W8VLK	155
I1AIV	154
W9TQL	154
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W2RDK	152
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SM5WI	148
W2COK	148
W2GUR	146
GM3CSM	146
W2MEL	145
OK1AW	144
TF3EA	142
W9DUY	140
W6LGD	140
W9ABA	138
I1XK	137
W6ATO	135
OE1CD	134
W7ETK	132
VK4RC	131
W6TE	131
CR9AG	131
W6WJX	131
W5CPI	130
VE7KC	127
DL1DA	125
VR5PL	124
W6MI	124
W6NTR	123
W6MUF	123
W7BTH	120
DL3DU	118
W6NRZ	117
KL7UM	117
W9NZZ	117
ZS2EC	116
W7HXG	115
W6JWL	114
W6EYC	114
KL7GG	114
KG6GD	111
W6VAT	110
W7GXA	105
W6FBC	104
W6LEV	103
W7LEE	91

38 Zones

W2HMJ	187
W2PUD	180
CM2SW	174
W8KPL	173
W8FJN	160
W2RGV	156
W2UEI	156
LU7CD	155
W2GVZ	154
W3LVJ	145
W8ZMC	143
ZS2AT	143
WØAZT	143
W9FKH	135
VE2BV	135
VE3ACS	134
W4FFK	131
W2PQJ	130
W3ZN	129
WØRBA	127
W9MZP	126
FE8AB	126
W9TB	122
GW4CX	120
WØFET	118
W6ETJ	114
KL7PJ	108
W7EYS	107
W6CAE	98
W6FXL	92
C1CH	84

37 Zones

W1KFV	168
W2ZA	160
W3WU	148
W4IWO	146
ZL3CC	143
GM2UU	142
W8EYE	142
W4ML	138
W3FYS	136
W2AYJ	133
W7HKT	130
W4DIA	129
W1APA	118
VE1EA	116
WØFWW	108

36 Zones

W4HA	149
W9WCE	136
OA4AK	128
VE1PQ	126
W3AYS	124
W2WC	124
W9LI	124
SV1RX	119
W2BF	115
W9HUZ	114
VE5JV	113
4X4BX	112
W5CD	108
W2JA	102
W5BX	99
VE8AS	93
OH3OE	85

35 Zones

W2OST	146
W1BFT	141
W4DHZ	132
W9CKP	132
W6ZZ	120
W9RQM	119
CO6AJ	119
W8AVB	119
G6QX	117
W9FNR	112
W9DGA	108
KZ5IP	108
W2HAZ	107
WØGBJ	101
ZL1QW	99
DL3AB	79
KL7CZ	66

34 Zones

W8NSS	133
W4IYT	127
W3MZE	121
W1MRP	118
W5NTT	107
W8JM	102
OE1FF	99
G2BVN	91
W9WEN	83
W8PCS	80

33 Zones

W4QN	110
W5FXN	101
W2SEI	100
W8QUS	85

PHONE ONLY

39 Zones

W6DI	192
W6VFR	172
W7HTB	161
VQ4ERR	160
HB9DS	145
VE7ZM	145
DL1FK	125

38 Zones

W2BXA	179
W4CYU	173
W9NDA	158
G8IG	155

PHONE ONLY

W1HKK	153
W6KQY	145
W6AM	117

37 Zones

XE1AC	187
W1JCX	170
W9RBI	170
W3LTU	169
W8REU	163
W7MBX	158
VK3BZ	158
G2PL	154
W6WNH	153
G3DO	153
W6PXH	152
W8BF	146
F9BO	137
W3JNN	136
W6TT	136
F8VC	124
C1CH	83

36 Zones

W1NWO	172
W1MCW	167
W1BEQ	164
PK4DA	150
W4ESP	144
W2DYR	140
W9HB	139
W9BZB	139
GM2UU	135
W6PDB	130
W4INL	129
W1FJN	128
W8AUP	128
G6BW	127
W9HP	124
VE3BNQ	122
WØHX	120
G5YV	106
VE7HC	105
W3DHM	96
W6SA	92
F8DC	87

35 Zones

HC2JR	152
W6PCK	141
W4HA	140
W9RNX	135
W6CHV	133
WØEYR	131
W2RGV	128
W2GHV	126
WØPRZ	124
W9CKP	124
G8QX	123
W8ZMC	122
CE3AB	121
WØPUE	117
W5LWV	108
W4OM	106
W3PA	105

34 Zones

W5KC	125
W6UZX	123
W2ZVS	122
W9BVX	121
W8BIQ	120
W4LZM	117
WØANF	115
W1BPH	105
W8UIG	100
W4IWO	99
W8QBF	92

33 Zones

W3ASG	134
W9MIR	127
W5ALA	122
W9WCE	119
W2ZV	115
W8UFQ	114
W8SDR	113
W8NSS	112
VE3BQP	108
WØANE	106
W2PQJ	100

ZK1AL indicates that he was operating portable marine, although nothing was said about this during the QSO. Sorry, we can't accept any water jobs.

W6TS and XYL Maxine, W6UIIA, just learned what HB9EU/AG actually meant. The "AG" is not an indication of Trieste, but stands for the Swiss canton of Aargau. This call was used by HB9EU during a Swiss contest held April 15th and 16th. Incidentally, the Swiss will award a very fine certificate to anyone working all 22 of the Swiss cantons. A lot of the gang have become certificate seekers during the slow-down of DX conditions, and this one should be of interest to them. Further on the subject of certificates concerns an attractive one that is being awarded by the Mobile Gang of the Honolulu Amateur Radio Club to anyone contacting five of the Mobile Gang. The catch to it is that although there are 18 members, all on 28 mc phone only, they won't tell the call letters of the members. It looks like you will have to work plenty of KH6s, tell them you want the certificate, and when you've worked the right ones, they will do the rest. Sounds intriguing.

Bob Wilson, W3GHD, asks that we save him the last spot on the phone only list inasmuch as he is now a phone man. Don't think we'll let him have the last one though, 'cause I'm saving it for myself. W2BXA says we are deleting so many of his "bootlegger friends" he finds it difficult to maintain his present score. A recent house cleaning of phonies such as VU4AC, ZC4AC, ZA1A, ZA3B and a few others left a number of the gang groping, and no doubt stamped us as being just a little meaner than "the meanest man in town." However, it's all part of the game, and we're sure no one would want an unfair, even though slight, advantage over his nearest competitor, it says here in microscopic print. It's quite interesting to note the various reactions to deletions from one's country total. A great majority accept them good naturedly, many realizing themselves that the stations in question were more than likely phony. Some grouse a bit, which is supposed to be the American way, but are not serious about it. Then there are a few who are really bothered. After all, the guy said he was there; the time was right; the signal sounded right; he came from the right direction (on a dipole usually); in fact, everything was right except the DX Committee. Heck, we think, is it really worth it? One point that seems worth mentioning and is often overlooked in our anxiety for something new and rare is simply this: Ham radio stations just don't appear out of thin air in rare, out of the way places, without someone somewhere in this world knowing about it. After all, there is a lot of thought, effort and planning behind every signal on the air, even our own, and much more for the foreigner with limited sources of equipment. By the time the operator has gone through all of the rigamarole of getting a signal on the air, someone is certain to have heard of it. The genuine ones who remain totally unknown have added up close to zero, so far. Now, who wants to be the first to bring one to our attention that doesn't fall into this category? Another one to add to the phony list is M1F. A good one is ZS8MK (exZS5MK) on 14 mc, and you don't have to have a modulator to work him either. Don't snow him under, gang, he'll be there indefinitely. W1BIH and several others have decided ZS7EC was NG. We are afraid they are correct, but hope to know definitely before long.

KH6PY expects to become a W4 along about next September. Jack has done very nicely in the Islands in a little over two years with WAZ, DXCC, BERTA, etc. Maybe it's good to move around occasionally; keeps up your interest. VE1PQ is what you would call a QRL DX man. While working a little DX, he rocks the three weeks old baby on his shoulder to keep her quiet, using the other arm for the key. This he says is easy enough, but one night in the middle of a QSO thus engaged, he heard a crash in the other room. His four year old boy had fallen out of bed while asleep. He's really earning his DX the hard way.

We are happy to have OZ7EU in the Honor Roll. Paul is our first OZ and starts with 39 and 169. MP4BAO, Bahrein Island, was heard to say in April that it was his last day on 28 mc, but that another station might be coming on in the near future; this from G2BVN. MP4BAL, also on Bahrein, has a QRP rig on 14,100 kc, and is looking for the W6 gang. Why W6s? He is Bob Leo, W6PBV, of course. Im glad somebody wants to work W6s. Such people are few and far between, and should be treated with extreme courtesy. Johnny Beck, W6MHB, was MP4BAL's first W6 and second W QSO. FB8ZZ has appeared on 14 mc c.w. near the low edge. New Amsterdam Island is the QTH for this particular French expedition. Unfortunately, New Amsterdam Is. has not as yet been classified insofar as the Official Countries List is concerned. It seems within the realm of possibility that it could go along with Kerguelen Islands, for our purposes. However, FB8ZZ doesn't seem much easier to work than FB8XX was. Wish someone would remind these boys of Lend-lease and the Marshall Plan. Morrie, VK3BZ, worked 8ZZ and reports receiving a card from CR1ØAA. This is good news.

It is with great regret that we record the death of Adrian P. Rosario, CR9AN, on April 24, 1950. Adrian had been around the DX bands for years, and will certainly be missed by amateurs everywhere. He was also active from Hong Kong as VS6AN from 1931–1939. W6LVN relayed this message from CR9AG, who is leaving for Hong Kong where he will operate under his prewar call of VS6AG. CR9AC is now active on c.w. and CR9AB will operate Johnny Alvares' old rig on phone only. Johnny told W7AJS that CR1ØAA would soon be in Macao, so it doesn't look too promising for future CR1Ø contacts.

From TI2HP, via W5ALA, comes a tip that there is another expedition going to Cocos Islands, and will probably use the call TI9ES. Jack also reports working KV4AQ on phone. This should interest someone because they are not plentiful on phone. DL4VG has a note for exDL4 stations who have returned to the States. The DL4 QSL Bureau will hold their cards for them for one year, and will forward them upon receipt of 10¢ in stamps and a correct forwarding address. The Bureau QTH is APO 757, c/o PM, NYC. The mystery of W1EWF's station signing F37 in Chalon has been solved by W7EYS, W2QHH and W4LVV. Thin spacing in F3MS is the answer!

AP5B/YA was operating in Afghanistan March 31 and April 1 with very low power. Out of some 30 odd contacts, mostly KH6 and European, was but one on this continent. VE7HC was the lucky man. How modest can a guy get? Gord didn't say a word, just stuck AP5B/YA on the bottom of a list of additions! On March 27th, AP5B/VU4 had two European contacts from Peshawar. All of this from Buck, W4TO, who handles all cards for AP5B, and passes along the hint that AP5B does not like "hogs" who call out of turn or make long calls on his frequency. In fact he refuses to QSL such stations even though he may work them. His logs are air mailed to W4TO every two to four weeks and Buck has the cards printed for him. Incidentally, Buck is receiving 10 to 12 cards per month from stations claiming contacts that are not in AP5B's log, which is no doubt caused by the heavy QRM referred to above. W6PYH passes along a note from FM8AD stating that FM8AB and FM7WR are phony. The only other station there besides himself is FM7WE (exF9QU/FM8). W6AM adds that FM7WE would welcome any offers to handle his QSL problems as he is swamped. Any eager biting beavers? If so, just write him and he will mail his log. Any of you in the printing business could oblige with some cards. What else can we give away today?

The Navy and CAA are closing down on Midway Island. KP6AB/KM6 has returned to Hawaii, and the only possibility of any future Midway activity would be from the cable station personnel there, should any of them get on the air. Anyone interested might try dropping them a line, c/o Commercial Pacific Cable Co., Midway Island. They will be the only inhabitants of the island after June 1st. Bill Fells, KP6AB, has furnished us with some QTHs for a few of the KM6 and KP6 stations recently active, which will be found in the usual spot. Bill Dawson, now JA2CV, is getting on 10 and 20 phone and c.w. and is especially looking for phone patch skeds. He is exW3EVG, W4EVG, W5FTU, and W6WMF. W6UZX has bought W6RM's 4-element rotary, hoping to find an extra "S" point

hidden therein. Hope 'twarn't in Smitty's hill, Jim. Everyone seems to be concentrating on phone these days. Even W8SDR sends in a shiny new phone only list. Suppose you've noticed VE7HC in the phone only column. That boy bears watching.

Wonder who will be the first to work W6QD on phone? He actually loves the stuff, you know, in spite of his bark at the mention of it. If he keeps on burning himself out punching the key like he's been doing the past couple of years, he may have to resort to a mike or else take it a little easier. The fact that you don't hear him in there all the time is due to a very special antenna that skips the USA quite completely. In fact, it skips so completely that . . . well, it just does, anyway. You know, my phone rang one night and over it came a somewhat familiar voice with . . . "Hi." After a return greeting of the same, Herb said, "Are you looking over the band now?" "Well—," I said, "I don't think so." He's a bit persistent, and comes back with, "Well, *can* you look over the band?" This kinda stumps me, being in the middle of a game of Canasta with the XYL, but I rally with, "Do you think I should? Is there something good on?" "Look," he says, "I don't know how good it is, but at least it's unusual. All the signals are coming in backward." My rallying power dropped considerably at this, but I finally manage with, "Herb, OB, are you feeling OK?" "Yeah," he says, "I guess I feel OK, but the signals are still coming in backward, or maybe they're coming in forward and maybe I'm backward. Aw nuts, what I mean is that the Europeans are coming in the long way." "But, Herb," I counter, "they can't. It's 9:00 PM, and doggonit, they just can't do that." "Well," he says, "I don't know about that, but they are anyway. And worse than that, the Zedders are coming in the long way over Europe." This I have to hear, so I suggest that he kind of take it easy 'til I have a chance to listen. Before I can hide my cards so the XYL doesn't gyp me, the phone rings again. "Look," he says, "maybe those signals are OK after all. I think my beam indicator is 180 degrees out of phase with something."

Anybody going to China?

W6BZE asks that if we know anybody going to China to have them pick up his C8FP card for him. This we'll be glad to do. W1NWO has added some good ones on phone including SP5AB and EA6AF, both on 14 mc. as well as VP8AI (Falklands) and UG6AB. Probably most of you know that UG6AB will go on phone if requested; likewise UQ2AB. G6QX would like to know of a good New Mexico station who would cooperate in giving him his last state. He has been after New Mexico since 1939. How about it? The CM/CO6 stations have formed a QSL Bureau which is listed as per usual. They are offering a certificate to anyone contacting all eight of the CM/CO districts. In case you didn't know, CM calls are issued for operation of phone on 7 mc only and c.w. on all bands, while CO calls will allow phone or c.w. on all bands.

From W4LVV comes the sad word that Jess Bell, EL5B, was accidentally electrocuted while working on a 220 volt line at Roberts Field, Liberia. His place will be taken by Steve Kravchuk, KP4JI/VP2LA, who will be active with a 250-watt phone and 450-watt c.w. rig shortly after arrival. By the way, Steve is not the VP2LA who has been on the last year, but has received a stack of QSL cards for this recent operator of VP2LA/VP2LX which he has forwarded to Beane Field, St. Lucia. 4LVV says that he understands that this last operator has returned to W2. More important, Chuck informs us that he has sent a ten watt rig to someone in FG8, but has not yet heard what the results will be. If any action, it will be on 7035 and 14,070 kc. Apparently WØPNQ and WØYXO have contributed towards this rig, so if the FG8 gets on the air, we owe them all a vote of thanks. Chuck is still handling the cards for VP5BF on Caicos Is., although he has run out at the moment. More are on the way, however, and when the last logs have been received he will catch up on the back cards. A self-addressed, stamped envelope will expedite delivery to the impatient ones. The rest will go via the bureau. Another PX1A was uncovered by 4LVV, requesting cards via F3BB/REF. How about that?

Lifted from the DX'ER, Northern California DX Club Bulletin, we see that exVK9NR of Norfolk is now signing ZL3OZ, but will soon be in Western Samoa, possibly as *ZM6NR*. A friend of FK8AC has left for Wallis Island and is expected to sign *FW8AA*. He'll be there for three years, so no doubt everyone will wait to be the last to work him. *AC4RN* has appeared with a chirpy, drifty signal, giving the same QTH as AC4YN and AC4RF. The DX'ER says it looks like he will be OK (we hope), but our own information indicates that he points wrong. They also mention *VS5CA* (Sarawak) at 14,010, but we wonder. W6DUB worked *C3WW* at 14,085, giving Taiwan (Formosa) as QTH. Via France and W6MHB we learn that there will be an FG8 on the air possibly signing FG8AA on 14,060. All that is holding up the proceedings is the awaiting of a license by the FG8. That makes two now, doesn't it?

Vatican City

Also lifted, and this time from the bulletin of the Southern California DX Club, is a contribution from W8JIN concerning the rumored story of I1ADW, who was supposed to have gone to HV (Vatican City), but because of an old-time law prohibiting private radio transmitters, was unable to set up his station. This law is going to be changed, it says, and he plans another trip this summer. VQ8CB on Chagos, 14,100, is again on. W6NNV hears from ZL4GA that ZS8MK, who was also G5MK as well as ZS5MK, should now have his 125-watt rig going. His first operation was with a 15-watt portable. VK1YM at 14,095 is a new one on Macquarte Island, and VK1PG, exVK2PG, is now active on Heard Island. ZB2G is now home. W6EHV worked *ZD9AC* for a first W QSO. Says he is ZS6ND and will be active for a few months. All cards will be sent after returning home.

The Guayaquil Radio Club's expedition to Galapagos Islands using the call HC8GRC was a complete success in every way. 2116 stations were worked, with 1538 on phone and 578 on c.w.! A total of 44 states were worked and 68 different countries. In addition to this, 116 stations were worked aboard ship while enroute to the islands. One point worthy of mention is that those of you who sent along the dollar for the special card have helped everyone as well as yourselves. Through this medium, the Club was able to answer all cards via second-class air mail to the various bureaus which is much quicker than first-class maritime mail. We feel that they did a swell job and are certain that everyone appreciates their efforts.

Persatuan Amateur Radio Indonesia (Indonesia Amateur Radio Union) has been organized and has been sanctioned by the government of the Republic of Indonesia. A collective permit for amateur radio was granted by the administration of Indonesia to the PARI, which in turn issues individual licenses or permits to those qualified who are members. Those who are not members are considered "bootleggers" by the PARI, and when found, their equipment is subject to confiscation. The division of call signs in Indonesia remains substantially the same, with the exception of New Guinea which will be PK7. PARI has applied for membership in the IARU. Much of this comes from W6UZX, who as you know, has been handling cards for PK4DA, 4OO, 5HI and 5HL while they were undercover. Cards for PK stations may now be sent in the normal fashion, and QTHs will be found in the QTH column. In winding up his services for these stations, Jim asks that anyone who has sent him a card for one of them, and feels that his return card is overdue, may notify him and he will check on it. Apparently some of PK4DA's cards have been lost, and these will be taken care of upon notification. Over 2000 cards were handled by UZX during this period. PK5HL has left Borneo for PAØ. PK5HI is supposed to have gone to Dutch Guinea to be PK7HI.

A letter to OY3IGO to W6VFR tells of Ingvar's problems in trying to obtain parts for a double conversion superhet rx. He mentions that OY2RD, after being on 3.5, 14 and 28 mc phone for a bit, left the Faroes last April. PK1TC is exPK6TC. *VR1C* is on

(*Continued on page 56*)



Conducted by LOUISA B. SANDO, W7OOH/1*

OF COURSE IT ISN'T POSSIBLE, and if it were it would, no doubt, create bedlam on the ham bands, but wouldn't it be nice if all U. S. forces stationed overseas could have ham rigs and all their families back home as well, so they could have personal QSOs? Some are lucky in this respect, and among them is W6HHD, Teresa Collier, and her OM, now CN8EL in French Morocco. The OM, who is a Chief Warrant Officer in the Navy, has done plenty of moving around—W7ECO, K6MTH, W6MTH. All of this time Teresa was lucky enough to be able to go with him, and she often found herself on the opposite end of a "hunk of wire" as he strung up antennas. This contact took effect, though, and Teresa got her own license last September. A mighty good thing, too, for with no available housing in Morocco and with a jr. op. of 15 in school as well as owning their home in Sonoma, this time Teresa had to stay behind. But at her fingertips she had W6HHD, consisting of a Collins 32VI, HRO-7, a beam and two folded dipoles, as well as a 20-meter beam atop a 42-ft. tower. "Quite a long haul from Sonoma to Africa," bemoans Teresa, "but we have had some very successful skeds on 10 phone and c.w. and we are now on 20 c.w. With 123 QSOs from mid-October to mid-March ham radio really has been a blessing!"

Hamfests

April is a time of spring "breaking out all over." Out here in Arizona it has also been a time of hamfests breaking out all over. In the middle of April a get-together was held at Sedona. We've *been* to many hamfests but this was the first time one ever *came* to us! There were about 60 hams and XYLs at the Sedona affair—a real turnout for this area of small towns and wide open spaces—with hams from central and all of northern Arizona, southern Utah, and even OK1VA among those who came up from Phoenix. A two-day affair, it was practically a field day complete with generator, furnished by W7GYK, portable stations as well as mobile, trucks, trailer, etc., all located in a picturesque spot among the red rocks that is a favorite of the movies often on location here. W7RIJ and ye editor were the only licensed YLs present, but we surely had a good time.

Just two weeks later, April 30th, Casa Grande was scene of another hamfest. Midway between Phoenix and Tucson, it drew well over a hundred and besides the usual feasting, rag-chewing and free beer, it offered a softball game (Phoenix won, with the help of W7RIJ!), plus an interesting talk by Southwestern Division Director Johnny Griggs, W6KW, and the awarding of his Director's Cup to the Suguaro Club of Phoenix as the outstanding club of this division for 1949.

This affair brought together eight YLs, some of them for the first time. As you will see from the pix, many of the gals are already familiar in this column. W7KAE came from Douglas; W7LIZ from Tucson; W7KOY, MAG, RIJ and TBR from Phoenix, while W7NQG was in her home QTH of Casa Grande. The first time we had met Elsie, we had a good rag-chew over the fun of operating on ten. W7NQG runs about 50 watts, but with a newly erected beam has been enjoying DX. Also recently to her credit is a ground-wave contact with W7NVN 65 miles away across the mountains in Tucson at noon on 4/28, a rare occurrence in these parts.

Though she didn't attend the hamfest, we hear Phoenix has a newly licensed YL with the call of W7OJT. FB, Lou, and we'll be listening for you!

Initial meeting with another YL which also turned out to be most interesting (don't they all!) was with W7MAG of Phoenix. Fay has had her ticket for a year and a half, but due to one difficulty or another (it's now 25-cycle a.c.) has done little operating to date, though she has been on 80 c.w., running about 40 watts. Her OM, W7JMS, is a jet pilot in the Air Forces and by the time you read this they will be on their way to Japan where, among other things, they're looking forward to getting on with one of those BC-610 jobs that seem so readily available, and to the pleasure of *being* DX.

Here and There

Another YL who shortly will have the pleasure of hearing how the Ws sound from the other side is W3CDQ. Liz leaves from New York July 1st on the Queen Elizabeth and will visit YLs and OMs in G, PAØ, ON, HB, F8 and I. She adds: "Shall be on from I1ER in Milan. Will be on 10 phone, 7 and 14-mc c.w.—so please give a listen for me." She will return on the Queen Mary from Cherbourg on August 25th. Lot's of luck, Liz!

In the same letter W3CDQ tells us that she, W3LSX and W3MSU have been working W3PZA (Red Cross station) on Friday nights. "Rigs are TDE (Naval Re-

(*Continued on page 54*)

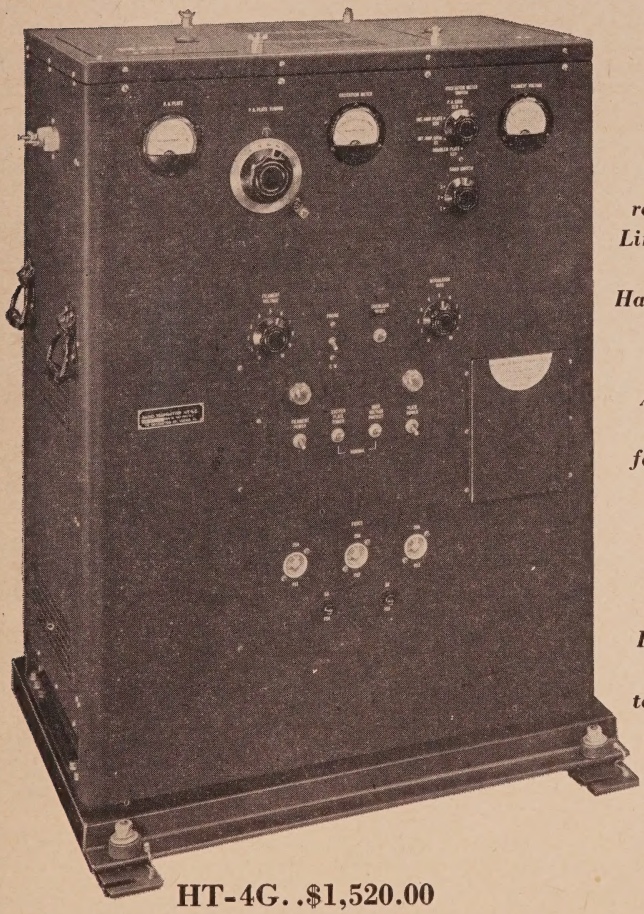
Address all correspondence to W7OOH/1, Apple Hill, East Sullivan, New Hampshire.



YLs at the Casa Grande (Arizona) hamfest. L. to r.: W7LIZ, RIJ, KAE, KOY, MAG, OOH, NQG and TBR.

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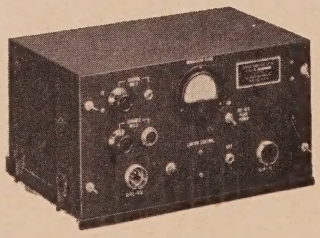
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The Monitoring Post

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THE STATE OF CONNECTICUT seems to have taken the lead in the affiliation of its hams with the State Police; on April 24 **W1BVB/1** and **W1EQ/1** exchanged traffic between the commissioner at State Police headquarters at Hartford, and commanding officers at the barracks where BVB/1 at Groton, and EQ/1 at Danielson were set up for operation. **W1NBP** has an emergency truck equipped with 75 and 10 meter gear, in addition to fire-fighting equipment, axes, flood lights, towing cables, extra gas and oil, etc., with a sign on the side in large letters, "Amateur Radio Rescue Corps"; within a short time all State Police barracks in Connecticut will house ham stations; all equipment is owned by the hams operating these stations. This is a good start toward the type of work ham radio has specialized in for a long time, and it is hoped that other states will follow the lead whether it be in solely emergency and disaster work, or in line with civilian defense organizations.

The **South Amboy, N. J.,** blast that took more than 30 lives and injured upward of 300, resulted in one of those short-term communications emergencies in which communications was vital. All telephone circuits went out with the explosion, but in a very short time **K2BC/M** and **W2HUZ/M** moved in. Simultaneously nets on 40 and 80 were put on emergency basis, as were all 10- and 2-meter nets in the surrounding 100-mile area. BC/M and HUZ/M worked thru **W2IHR** to **W2UYU/M,** located at Fort Jay, Governors Island, N. Y. All emergency traffic out of the disaster area went thru BC/M and HUZ/M. Inter-net operation was ready and traffic moved in an orderly manner with BC/M on 2 and HUZ/M on 10 meters. **W2EFA** was set up for operation at the scene with 10-meter gear. Stations in the First, Second, and Third Radio Districts had nets in operation on four ham bands, with **W2RUF** and **W2AOR** monitoring national emergency frequencies and northern New Jersey 80-meter net stations. Several cross-band circuits, 2 to 80, 10 to 80, 80 to 40, and 10 to 40 were in readiness, with direct telephone contact to national Red Cross headquarters arranged by **W3LT** from his 80-meter station. For hundreds of miles around nets were set up and prepared within an hour of the first reports of the blast over broadcast stations, and traffic was moving; information and Red Cross traffic flowed to Washington without difficulty, relayed from one band to another, and with **W2EA** and **W2SVI** handling the job of announcing the emergency to any station which unwittingly opened up, 2 meters was virtually silent except for those handling emergency traffic. Skeds with cross-country nets were arranged to move traffic to any point, local or at a great distance, or to carry out instructions originating at South Amboy from authorized officials. It is reported that our hams have come to the full realization that team-work is paramount; to be prepared, reporting into emergency nets, and then standing by for instructions from net control stations is the best way to serve in an emergency. Commendation to those who remained silent, as well as those actually participating, is extended by operators of net control stations. Literally hundreds of stations participated in this disaster, most of which monitored the bands, ready to answer any call that would be of service, though remaining silent until their particular location or facilities could be put to use. It was a swell job!

W2RH, known by that call since the war, and **W2RD** pre-war, a very popular and active station on 2 meters, has been silenced. It is reported that Ken succumbed to the effects of carbontetrachloride fumes being used in the lab where he was an engineer; rushed to the hospital, he lasted but one week. He's been active for more than a quarter century and will be sadly missed by his many friends.

W3PB renewed friendship with **W6ZZ** recently; 21 years between contacts—the earlier QSO was when ZZ was W1WV and a leader in ham radio around Boston. . . . **W7BTZ** specializes in tropical fish as a sideline hobby. . . . **W8BWI** is heard consistently on 80—Doc's QTH is now Spencer, W. Va. . . . **W4KR** has returned home to Georgia after several years away, while he held W2 and W8 calls—KR has been reissued to him, which was his original call. . . . The Eastern Shuttle Net is on 7120 kc at 10:30 AM Monday through Friday, and on 7280 kc Saturday and Sunday at 10:30 AM and 7 PM, EDST; this net covers 21 states and two Canadian provinces; **W8DAE** is net manager, with **W3NHI** and **W2VSU** assistants; **W3CUL** edits the Club News, sent to all members; there are now more than 60 stations in the net. . . . **W7BYG** operates a ski lift at Stevens Pass, Wash.; his ham gear is energized by gasoline driven generators. . .

The Schenectady ARA sponsored booth at the Hobby Show held in the armory four days in May, put **W2BSH** in the higher brackets for traffic handling with a total of nearly 600 messages; his busiest traffic month since starting ham radio in 1921; **W2CJP** and **W2DXY** are also to be remembered for their cooperation in helping to clear the hook of hobby show traffic; all messages left the armory via 2 and 80 meters. . . . **W4PL** came back full force to keep his long list of daily skeds, but went at it too strenuously, it appears; again he is missed—let's hope he'll listen to his doctor the next time he gets an okay to pound brass, and takes things easy. . . . **W3DQP** complains of his inability to work much DX with 80 watts on 40—his antenna is a half wave job running around two rooms within the house. . . . **W7GFM,** formerly a W6, teaches at the U. of Washington. . . . **W6GHP,** a Placer RC member, keeps busy on 2, 10, 40, and 160.

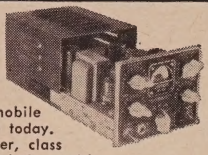
W8GLX, on the air in the early '20s as **1AZT,** when skeds were kept with **1BDI** while the latter attended the U. of Maine, hung up a record of 1200 miles contacting WNP returning from a North Pole expedition with a spark transmitter; after a 12-year absence from ham radio he's back on the air again this year enjoying renewed acquaintances in QSOs on 80, 40, and 20; his brother, **W1EIQ,** in N.H., just got his first ticket and can be heard on 40 chatting with GLX occasionally; before the advent of the spark rig. GLX tells of his frequent visits to 1OE, asking questions and generally getting in the way around 1OE's spark shack. . . . **W4NH** has 100 watts on 40, the rig being the same that was **D4AXR** in Berlin for two years; last year the family, dog and radio gear came out of Berlin on the air lift, but two beam antennae, built by the Germans, had to be

(*Continued on page 61*)

** Address correspondence to: The Brasspounder, c/o CQ Magazine, 342 Madison Ave., N. Y. 17, N. Y.*

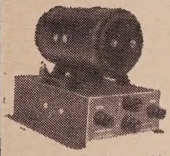
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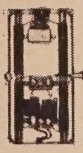
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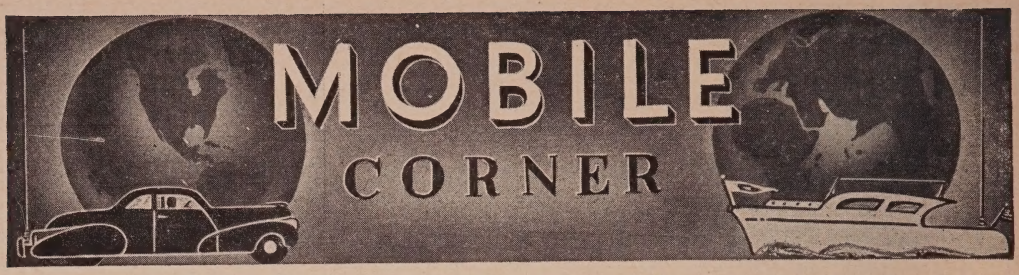
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Conducted by RALPH V. ANDERSON, W3NL*

Midwest Mobile Activities

Your editor has recently spent a month in the mid-west and naturally took advantage of every opportunity to inquire into the mobile activities at every point. The greatest activity was listening, believing that more information could be gained that way, even though it cheated me out of some good contacts.

It was found that even though the 10-meter band was almost completely dead, there was local mobile activity practically all the time. There was considerable activity on 75-meter mobile; the boys in the mid-west are using this band a great deal. A number of mobiles were heard and worked on 20, but band conditions did not seem too favorable.

Our mobile did not have a 75-meter transmitter, but a number of 75 meter contacts were made—WØOFR re-transmitted W3NL's 10-meter transmissions on 75; W3NL listened on 75. (Both stations must be Class A to do this.) WØOFR performed the function only of turning on his transmitter. This permitted a number of contacts on an otherwise dead 10-meter band.

There still seem to be no organized activities or clubs amongst the 75- and 20-meter boys; all clubs use 10 meters exclusively for their activities.

While at the twin cities, your editor was fortunate in being able to attend a hidden transmitter hunt of the Twin Cities Mobile Gang. These boys have direction finding down to a fine art. Practically all of them use a "closed loop" type of antenna with the first r.f. tube at the base of the loop. The loop can be turned while underway. (The efficiency with which the boys operate, if one stopped to take a bearing, someone else would surely find the station first.) S-meters are used on receivers to indicate nulls. This editor almost froze, but it was a lot of fun!

Your editor addressed the regular meeting of the St. Paul Radio Club, the subject being an automatic-calling device to be used in the future by the Washington Mobile Radio Club. This device operates from whistled "pulses" and calls a fixed station whether or not he is on the air. Because of the enthusiasm with which it was accepted, it is believed several will be operating in the twin cities area very shortly. Needless to say, all these units will be adjusted to the "national" mobile frequency of 29.640.

Twin Cities Mobile Gang

The Twin Cities Mobile Gang was organized in September of 1949 and at present has about 30 members. The Chairman is elected by the mobile gang and there are two co-chairmen, one each from the St. Paul and Minneapolis Radio Clubs. Present officers are: Chairman WØHKF, Minneapolis Chairman WØNBW, St. Paul Chairman WØHPJ, and Traffic Manager WØSMT. The club operates as an auxiliary of the St. Paul Radio Club, Inc., and the Minneapolis Radio Club, Inc. Friday night in the twin cities area is always a ham meeting night; the first Friday is the St. Paul Club, the second Friday is the Minneapolis Club, and the third and fourth Fridays are mobile get-togethers. The major activity is hidden transmitter hunts and drills for emergency communication with the Red Cross. The primary operating frequency is 29.640. Practically all mobiles work 10 meters with some, but very little activity on 75 or 20. Drills in the future will emphasize message handling.

Maritime Mobile Amateur Radio Club

It pays to get in on the Maritime Radio Club Net. Ken, KH6RR, an old radio operator, but a new mm, learned just in time the frequency and standby times of the net. The ninety-foot yacht GILNOCKIE, out of Hawaii for San Francisco ran into two storms; the first lasted 38 hours and the second 14 hours. The direction-finder was out, there was a bad leak in the starboard motor, and water was threatening the electrical system. In addition they were running out of fuel. Many radio stations, including the Southern California key station of the Maritime Mobile Radio Club heard his emergency call for assistance. The Coast Guard was immediately notified .by the radio amateurs, and the ship was brought into Monterey Bay.

As a sample of the traffic handled by the Southern California relay stations for the MM boys, here are some figures: January—338, February—226, March—218. The frequency used by this net is 28.772. The mm's can be found around 28.8.

W7MFN/MM on the Washington Mail recently inquired about his brother, W6HQI, while QSO one of the fixed stations of the club. He was surprised to learn that he was on the Great Republic, both bound for the Orient. Neither knew the other was at sea.

Tex, W5OCN on the Millicoma while at Okinawa, recently patched through the chief engineer, Harry (who is working on his ticket) to his wife in Burbank, California. Harry said he was getting tired of washing the old-fashioned way and wanted the family washer. When the Millicoma left San Pedro, Harry had the washing machine aboard!

W4AYE, on the Pioneer Wave is, to our knowledge, the first to have a galley installed in his floating ham shack, complete with Dutch oven and butterfly can-opener. We understand his specialty is chow mein and chop suey.

* *Send contributions to R. V. Anderson, 2509 32nd St., S.E., Washington 20, D. C.*

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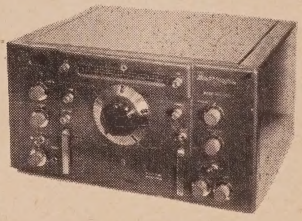
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SECOND WORLD-WIDE DX CONTEST

(*from Page 22*)

	Station	Band	Total Countries	Total Zones	Points
	GW5SL	14 mc	43	24	17,956
	GW5SL	28 mc	32	19	12,240
	HB9BN	7 mc			1,596
	HB9EU	14 mc	63	26	40,773
	HB9DZ	28 mc	14	12	6,188
	EA6AF	7 mc			5,325
	EA6AF	14 mc			12,857
	EI9N	14 mc	36	14	29,750
	GC2CNC	7 mc	23	7	5,070
	GC2CNC	14 mc	25	6	2,542
Zone 15	OE6AA	28 mc	18	10	2,884
	OK1HI	7 mc	37	13	6,800
	OK1HI	14 mc	48	22	28,280
	OK1HI	28 mc	39	24	35,784
	HA4SA	7 mc	33	10	7,611
	HA5BF	14 mc			40,000
	HA4SA	28 mc	21	11	4,480
	OH5NF	7 mc	22	6	1,596
	OH6NR	14 mc	20	11	10,446
	OH5NF	28 mc	19	10	5,916
	I1PL	7 mc	26	9	13,475
	I1PL	14 mc	42	19	20,252
	I1KN	28 mc	19	15	8,534
	I1BCB /Trieste	14 mc	27	13	4,480
Zone 20	YO3RF	14 mc	31	12	4,687
	4X4RE	14 mc	42	18	38,820
	4X4RE	28 mc	41	20	30,134
Zone 21	MP4BAD	14 mc	57	27	52,584
Zone 24	CR9AG	14 mc	40	26	42,174
	CR9AG	28 mc	38	20	34,858
	VS6AX	14 mc	20	17	8,880
Zone 25	JA2BQ	7 mc	5	5	880
	JA2BQ	14 mc	25	22	14,570
	JA2BQ	28 mc	16	14	7,050
Zone 27	KG6DI	7 mc	8	10	4,266
	KG6DI	14 mc	49	26	45,000
	KG6DI	28 mc	31	22	57,839
Zone 28	VS2BD	14 mc	33	19	18,512
	VS2BD	28 mc	5	4	198
Zone 29	VK6RU	7 mc	4	7	759
	VK6RU	14 mc	46	20	29,928
	VK6RU	28 mc	32	19	11,016
Zone 30	VK4EL	7 mc	9	11	4,840
	VK3OP	14 mc	68	30	79,674
	VK3OP	28 mc	10	10	3,120
	VK7GW	28 mc	30	18	16,224
Zone 31	KH6IJ	7 mc	12	11	8,970
	KH6IJ	14 mc	51	26	62,370
	KH6IJ	28 mc	20	19	35,334
Zone 32	ZL4GA	7 mc	13	13	7,332
	ZL4GA	14 mc	44	27	54,883
	ZL4GA	28 mc	14	14	15,564
Zone 33	CT3AV	14 mc	28	14	36,120
	EK1AO	7 mc	19	5	4,896
	EK1AO	14 mc	47	20	39,597
	EK1AO	28 mc	26	10	26,028
Zone 36	FE8AB	7 mc	12	6	1,044
	FE8AB	14 mc	37	24	64,111
	FE8AB	28 mc	29	13	13,736
Zone 37	MI3AB	14 mc	62	30	66,240
	MD4GC	14 mc	30	21	19,074
	CR7AF	14 mc	19	14	14,091
	VQ4SGC	14 mc	39	21	17,160
Zone 38	ZS5LI	7 mc	6	6	384
	ZS6OW	14 mc	54	28	79,704
	ZS5U	28 mc	32	14	12,604
	ZS3R	14 mc	6	8	924
Zone 40	TF3EA	7 mc	18	5	805
	TF3EA	14 mc	38	19	32,091
	TF3EA	28 mc	20	10	7,530

Single Band, Multiple Operator, Phone Winners

Zone 3	W6SA	14 mc	52	26	22,698
	W6NIG	28 mc	32	22	10,980
Zone 4	W5CD	28 mc	3	2	45
	W5CD	14 mc	1	1	6
	W8YPV	28 mc	41	18	10,915
Zone 5	W1RTB (W1IPQ)	28 mc	29	16	7,245
Zone 7	HP2RO (HP2RB)	28 mc	33	19	24,232
Zone 9	HK4JO	14 mc	25	15	8,120
Zone 10	HC2JR	7 mc	7	5	144
	HC2JR	14 mc	43	23	35,970
	HC2JR	28 mc	38	21	51,920
Zone 14	HB9P	7 mc	18	6	1,056
	HB9P	14 mc	40	18	12,006
	HB9P	28 mc	35	19	7,222
	EI3W	14 mc	27	12	8,775
Zone 15	I1AUH	7 mc	32	18	225
	I1AUH	14 mc	28	13	4,510
	I1AUH	28 mc	11	4	18,650
Zone 28	VS1DZ	14 mc	24	14	5,282
	VS1DZ	28 mc	26	16	14,700
Zone 36	OQ5LL (OQ5BU) (OQ5KL) (OQ5PW) (OQ5VD) (OQ5NK)	28 mc	65	25	54,450

All Band, Multiple Operator, C. W. Winners

Zone 3	W6SZY W6SA	141	74	474	291,110
Zone 4	K8AIR	87	58		80,185
	VE4RO	127	76	320	179,858
Zone 5	W2BXA W2LPE	135	64	483	272,431
Zone 10	HC2JR	75	49	606	221,960
Zone 15	HA5B	33	15		21,504
Zone 20	4X4BX 4X4AO	63	27		62,820

All Band, Multiple Operator, Phone Winners

Zone 3	W6SA	84	48	182	60,060
Zone 4	W5CD	4	3		84
	W5PXF				
	VE3JU	40	24		11,264
	VE3BHS				

	Station	Band	Total Countries	Total Zones	Points
Zone 10	HC2JR	88	49	504	196,869
Zone 13	CX3CS	57	39		60,192
Zone 14	ON4PJ	41	21		15,128
	HB9P	93	43	223	53,584
	HB9FM				
	HB9KX				
	HB9KU				
	HB9DU				
	EA2CQ	62	30		29,248
Zone 15	I1AUH	71	35		52,788
Zone 28	VS1DZ	42	22		31,296

(To be concluded next month)

V.H.F.—U.H.F.

(from page 39)

receiver, provided the low-powered signal was stable enough to stay within the 10-kc band of the communications receiver. This means that a crystal controlled 1/2-watt transmitter would be as easy to copy as a 100-watt modulated oscillator splashing over a 2 mc band! It isn't at all hard to get a half watt of stable power on 420. Present-day receiving type tubes can deliver this much sock. And the receiver need not be complex—a simple three-tube converter in front of your regular communications receiver should suffice.

If this all seems hard to take, look at the results obtained by G5BY and G3EJL using low-powered transmitters and simple converters working into standard communications receivers. G5BY's log shows a total of 7 QSOs with G3EJL over that 119-mile path, to date!

The problem of receiver stability is a tough one, but it can be licked by fairly simple means. G5BY uses a 2-meter oscillator tripling to 420 (no extra multiplier tube was needed) as the local oscillator. G3EJL uses a crystal-controlled local oscillator and tunes the i.f. receiver—an HRO. These fellows habitually use c.w. on 420! They are confining operations to the section of the band between 432 and 438 mc, the third harmonic of their two-meter band. Their success has produced many new 420-mc converts, and from the talk heard on the two-meter band, most of the stations in England are going on "70 cms" as soon as possible—all with crystal-controlled transmitters and communications-bandwidth receivers!

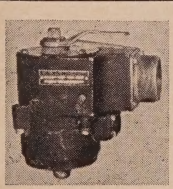
Ye Ed would like to find out how you fellows feel on this subject. It's easy to adopt a "hands off" policy and wait to see how things develop. But there are a great many hams now thinking seriously about getting on 420 who would like advice on the best way to get started on the band. If we suggest a simple converter into a communications receiver, there will be many disappointments when the experimenters find that they are not able to copy most of the signals now on the band. Nor is there much incentive to build a stabilized transmitter when the stations you aim to work are using radar receivers or super-regens. The only answer to that situation is higher power—and it isn't easy to get it crystal-controlled. So let's hear from you. . . .

And while we're at it, shall we settle the polarization problem, too? ! ! !

Two Meter Notes

Samples of early-season DX collected at random:

May 1: A good opening across the mountains of central Pennsylvania, during which W3RUE in Pittsburgh caught W2NLY and W2PAU. Ted wants to know "when are the stations in Delaware going to



¾ RPM ANTENNA ROTATOR MOTOR — High torque, reversible motor—operates directly from 110 Volt 60 cycle by use of condenser. Light weight, quiet running, ruggedly built, positive stop, easily mounted. Normally operates from 110 V. 400 cycle. With instructions, complete—NEW . . . **$4.95**
10 MFD 400 Volt Cond. $1.00 SPST Momentary Switch 35¢ DPDT Momentary Switch 75¢ Resistor, 100 ohm 25 Watt 50¢ 4 Wire Cable .05¢ per Ft. COMPLETE KIT OF PARTS: Motor, Cond., SPST Switch, and Resistor **$5.95**

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110 VOLT TRANSFORMER & CHOKE

BC-645-A Transceiver, 15 tubes, ideal for conversion to 460 MC. Citizens Band. Frequency coverage 435 to 500 MC. With conversion instruction—NEW and Boxed **$14.95**
TRANSFORMER for BC-645-A — 110 Volt 60 cycle input; output 400 Volt 150 MA. after filter. 12, 9, and 6 V. AC. 4 amps and 5 V. 3 amps. No. CH-645 . . . **$6.95**
CHOKE—15 Hy. 150 MA. Order No. CH-646 . . . . . **$2.95**
PE-101 DYNAMOTOR—13/26 V. input **$2.95**

New Transformers and Chokes:

TRANSFORMERS (Cased) 115 VOLT 60 CYCLE PRIMARIES:
OUTPUT: 750-0-750 V.A.C. (600 V.D.C. after choke input filter at 250 MA.) Includes 6.3 V.A.C. winding at 5 amps and 5.0 V.A.C. winding at 4 amps. CH-106 . . . . . **$8.75**
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OUTPUT: 250-0-250 V.A.C. at 60 MA. 24 V.A.C. at .6 amps: 6.3 V.A.C. at .6 amps. Designed for Army surplus Receivers. CH-109 . . . . . **$3.50**

TRANSFORMERS—110 VOLT 60 CYCLE PRIMARIES:
Sec. 12 V. 1 amp. . . **$1.50** Sec. 24 V. .5 amp. . . **$1.50**
Sec. 24 V. 1 amp. . . **1.95** Sec. 36 V. 2.5 amp. . . **2.95**
Sec. 24 V. 4½ amp. **3.95** Sec. 14-14 or 28 V. 7½ or 15 amp. . . **4.95**
Sec. 24 V. 2 amp. . . **2.25**

CHOKES (Cased)
CH-115—8 Henries at 500 MA. filter choke, 5,000 volt insulation **$10.95**
CH-116—5-20 Henries at 500 MA. swinging choke, 5,000 volts insulation **$10.95**
CH-121—13 Henries at 250 MA. filter choke, 1,500 volt insulation **$4.95**



BLOWERS:

115 Volt 60 cycle Blower (illustrated) Approx. 100 Cubic Ft. dis. 3¼" intake, 2" outlet. Motor size: 3½" x 3". 1525 RPM. Complete with mounting bracket. Gov't. surplus. Brand NEW. Order No. CQ-3604 **$7.95**

24 VOLT DC or 36 VOLT AC BLOWER—6" intake, 3" outlet. Approx. 200 Cu. Ft. Dis. Also has adapter for Dual outlet. Unused. Price **$5.95**
6 VOLT DC - AC BLOWER — Approx. 25 Cubic Ft. Dis. 1¾" intake, Dual outlet 1½". Complete with hose. Used for car defroster **$3.95**

DYNAMOTORS:

INPUT:	OUTPUT:	STOCK NO.:	PRICE:
9 V. DC. @ 6 V. DC.	450 V. 60 MA. 275 V. 50 MA.	DM-9450 w/Blower	**$3.95**
12 or 24 V. DC.	440 V. 200 MA. & 220 V. 100 MA.	D-104	**9.95**
12 V. DC.	600 V. 300 MA.	PD-86	**7.95**
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12 or 24 V. DC.	275 V. 110 MA.	USA/0516	**3.95**
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get on horizontal?" Well, Ted, there are plenty of likely prospects: W3ASD, W3LML, W3JDP, W3OWE and many others. Maybe you can un-sell them on vertical!

May 2: W5JTI in Jackson, Miss., pushed a good signal across to the Beaumont area and was worked by W5SM, W5DSB, W5QIO, and W5JBW. This haul is about 280 miles. W5VY of San Antonio got in a QSO with W5JTI for a dandy 531-mile contact. The Texas-Mississippi barrier was sure broken down that day!

May 6–7: W8WRN reports the band in good condition SW from Columbus, Ohio, and fairly good to the NE. Ken worked W4JDN, W4OXC, W8ZUR, W8MGA, W4PCT, W9BOV, W9NSF, W3RUE (off the back of the beam!) W9ASM, W4MKJ, W8LPD, W9VZM and W9LLA. He also heard W8WJC, W8WXV, W8EP, K9NAM, WØBJL, WØKYF, and W9GZQ. Thanks, Ken, for a swell cross-section of activity in your area. W8EP worked WØBJL for a FB 550 mile haul!

May 14: The band was in good condition in the NE section of the country with signals from the New England section coming through strong in the Philadelphia area.

May 17–18: Another opening reported in the Beaumont, Texas, area. W5VY and W5JJY of San Antonio were coming in well and worked several Beaumont stations. W5DSB worked W5ONS on both six and two meters. W5DAA caught W5QIO, for a nice 287-mile QSO.

May 22: W4HHK, Colliersville, Tenn., and W5XVW at Fort Worth, Texas, hooked up for what we think is the first Tensessee-Texas two-meter QSO. Signals over the 450-mile path were fair, but severe fading forced the boys to use cw during most of the QSO. W4HHK was using his temporary 4-element horizontal Yagi, the 16-element job being down for repairs. W4HHK also worked W5MJC in Texarkana, Ark., with weak 'phone signals over the 257-mile path.

Still May 22: In the NE, the band was open from north of Boston to the southern part of Delaware. There was plenty of activity! The best QSO we noted was W1KIM, Winthrop, Mass., to W3ASD, Smyrna, Del.—a distance of about 350 miles. The signals from seashore stations over 300 miles away were noted to be steadier than those from stations a few miles inland only 100 miles distant. If this opening could have extended to the boundaries of the opening that W4HHK and W5CVW encountered, what distances might have been covered?

May 26–26–28: Again, beter than normal conditions across the NE section! We have already noted the W3OWW-W2QED 420 mc QSO. On the evening of the 27th, W4ODG, of Hampden, Va., worked W3QKI, Erie, Pa., 416 miles DX. W4ODG and W4OLK were heard in Toronto that night. Ed, W4OLK, apologizes for not hearing all the calls aimed his way that night. Apparently Ed has a serious power-line noise in his neighborhood, which makes it hard to hear the weaker signals. Any other reports we missed? . . .

So, there's a slight idea of the sort of activity and conditions we have experienced on two meters during the month of May. If the list is not complete, perhaps you forgot to report your own achievements. . . . We aren't psychic!

More Two Meter News Items

Congratulations are in order to the Amateur VHF Institute of New York for the swell showing they made in the recent VHF Sweepstakes. We understand that their score was so high that it caused considerable suspicion among the judges and other contesting clubs! As a loyal member of the Institute, attending as often as possible in spite of the 100-mile trip to the meeting place, Ye Ed can only state that if any club deserved to win, it was this one. We know that several outstanding two-meter operators who *are* genuine Institute members did not throw their score in with the group's, due to stronger club ties close to home! So let's stop griping about the technicalities of club membership requirements, and congratulate an active and well-organized group of VHF specialists on a fine achievement in the recent competition.

Tom, W6MVK, is attempting to organize a two-meter relay system to spur activity, which has been lagging, lately. He thinks that a relay net from San Diego to San Francisco would be practical, and should provide incentive to the land-locked v.h.f. operators of central California. Doc calls it the VHF Relay League, for now.

Stations active in North Carolina! From W4AO we hear that the following stations are active in the Carolinas: W4CVQ, 144.875 mc; W4DCQ, 144.65 mc; W4DLX on 146.8 mc. each of these stations has plenty of power, and should be able to poke a signal out over a radius of several hundred miles, under good conditions. At present, they are all using horizontal polarization. Judging from the comments we heard on the 27th and 28th of May, all these guys need now is a good band-opening warning system!

W8BKI of Charleston, W. Va., has a pair of helix antennas and wants to run tests with other two-meter stations similarly equipped . . . W3UFP, on 144.43 mc is putting Williamsport, Pa., on the two-meter map. . . . W7FGG of Tucson, Ariz., is running mobile tests on 420, 144, and 50 mc simultaneously, with interesting results.

It is with deepest regrets that we record the passing of W2RH, Ken MacLea, of Port Chester, N. Y. An active and enthusiastic v.h.f. pioneer, Ken will be mourned by the many friends he made through his contacts on the air.

Six Meters During the Past Month

Picking up where we left off last month, HC2OT was knocking off W5s on April 6th. On the 7th, conditions were quite similar, and Steve worked W5VY, W5FFM, W5NPD, W5ONS, W5JGJ, W5IYG, W5PKX and XE1GE. After a fade-out at about 1800 EST conditions again improved, and more contacts over the same paths were made up to about 1840 EST. About 2 hours later, Steve heard and worked KH6NS for the first KH6-HC2 QSO. Some aurora scatter was noted by W9VPZ late in the evening. On the 8th the W4s and W5s found the path to Buenos Aires open, and many QSOs were accomplished. HC2OT repeated his feat of the previous day by working KH6NS. Many contacts were made between countries of South and Central America. The days following brought no excitement to the Ws, although there were good "sunset" openings in South America from the 9th to the 13th. XE1FU caught a break to the LUs on the 14th.

The sporadic E season opened for the North Americans during the morning of April 15th, with the W5s and W6s getting together shortly after sun-up.

W5VY, W5JLY, and W5LFQ were active, with W6AMD, W6TMI and W6OB on the other end. Later in the day, the band cracked open to the 7th call area, where W7CJN, W7KKB and W7FLQ were kept busy answering calls from a flock of W6s. On the 16th scattered occurrences of short skip produced contacts over widely-separated sections, but no real big opening materialized. For the next few days the only DX reported was from South America. Things remained pretty quiet until the 23rd, when some aurora scatter was noted by W8CMS, VE3AET and others. Some sporadic E activity was reported by W7FGG in Arizona, who worked W5FFM and W5QIO. On the 27th XE1GE and XE1QE found the band open to the W5s, and worked a good cross-section of the faithful fifth-district ops. On the 28th short-skip occurred in the south-central part of the country, but not for long. Things were a bit better for the W6s and W7s in Washington on the 29th, with an early-morning opening fairly well attended. The month of April wound up with an un-scheduled aurora opening which aided contacts across the entire northern section of the country, and extended feebly down into the 4th district.

The six-meter gang really hit the jackpot in May. It would take too much space to tell the whole story of the wide-spread sporadic E sessions which snapped the gang back to life. Perry Ferrell is going to have his hands full recording all the contacts which will be reported for this month! On the 6th, the WØs has a crack at everything from W8 and W5 to VE5. This opening was not too well-attended. On the 7th, the NE

boys got that long-awaited day-light week-end openin, and the skip swung from the southern W4s around through the WØs and up to the northern W9s. Some cases of apparent "double hop" were reported by New Jersey stations who hooked the southern W7s. Conditions faded out a couple of hours before sun-down here in the East. Clyde, W7QLZ, claims that it must have been a big opening on May 8th, since KPHO-TV on the 82 mc band was heard in Portland all afternoon. (We also noticed some peculiar DX TV signals at the same time, here in N. J., but reports do not bear out the assumption that it was a bang up opening.) A few contacts between the northern and southern ends of the 7th district were reported. On the 10th, another big opening broke from the NE section of the country to the W4s and W5s.

We have no detailed reports for the last part of the month of May, but for us here in New Jersey, it has been a busy month. On the 22nd, we had a chance to chew the rag with the gang in Kansas and Missouri, and the signal from WØBPL was one of the strongest we have ever logged here on six meters! On the 24th, another dandy opening to the 5th call area was enjoyed by the local gang. (Yep, we missed it!) On the 28th W2MEU reported working into the WØ call area, but for only a brief period.

You fellows who want a more complete story on these six-meter activities—why not get in touch with Perry Farrell, RASO Project Supervisor, 121 South Broad St., Philadelphia 7, Pa. His monthly Project Newsletter treats the six-meter story in far greater detail than we can hope to, in the limited space available here.

A Few News Items From Six Meters

W4FNR had been hoping for a chance to QSO a W on six meters all year. The poor guy had only worked LUs and OAs (and he's complaining!) up until May 7th. On that day he heard signals coming in from the north, swung the beam, and proceeded to work 7 VE3s in a row! Thought he was jinxed! But he finally managed to hook a representative sampling of W4s, W3s and W9s. . . .

The Monumental Six Meter Net, representing the Baltimore area, meets every Friday night at 2300 (guess they mean EDST!) according to NCS W3JVI. Details may be obtained from W3JVI or by checking into the net some Friday. W3NNB of Elkton, Md., is trying to organize a "Mason and Dixon" net, to link the North and the South!

W6MVK kept a room full of patients waiting on the morning of April 29 while he proceeded to knock off W3CIR/7, W7JPA, and W7BYK! Moral—If you're in a hurry, don't pick a Doctor who's a six-meter operator—the band might be open!

New Transmission Line of Interest to VHF Hams

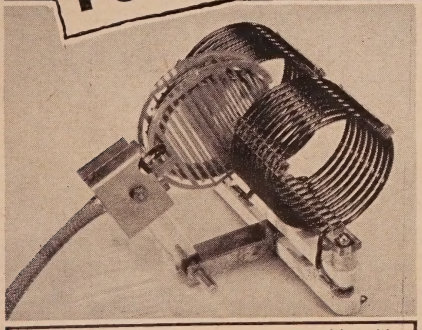
The Gonset Company, of Burbank, California, has announced the development of "pre-fabricated" open-wire r.f. transmission line. Made up of two conductors of #18 hard-drawn copper, Formvar-coated, spaced approximately 1 inch by ¼ inch diameter polystyrene spacers which are hot-moulded to the wire, this line has a characteristic impedance of approximately 450 ohms. The loss is much less than that of conventional ribbon-type twin line. This new feeder is packed in a convenient dispenser-type package which avoids the problems of twisting and tangling. It should be a boom to the 420 mc workers who are discovering to their sorrow that "what goes in doesn't necessarily come out" of conventional feed lines! The new line is rated at 250 watts r.f. input at 144 mc, but we'd take a chance with it up to the legal limit. Accessories are available for supporting, splicing, and keeping tension on the line.

That's about all we have room for this month. If you don't see enough news about your section in here, why not drop a card giving me the low-down on your activities. Maybe all the other guys in your neck of the woods are too busy to write, too!

73 for now
Brownie, W2PAU

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Cat. No.	Description	Ham Net
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238-301	150/500 watt link shield only.	.99
238-302	1000 watt link shield only.	1.26

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THE YL FREQUENCY

(*from Page 44*)

serve stations and transmitters and Red Cross supplies the building and uses the rigs in emergency time)," she adds. "Our radio club has use of W3IPZA on Friday nights. We expect to send code practice (via tape) on ten meters and have theory classes in the building; also have use of the shop, so it looks pretty good." W3PZA is operated by the hams of D. C. and environs and is permanently connected by teletype to the American National Red Cross teletype system.

More news from the live-wire gals in California. On April 22nd the San Diego YLRL met the Los Angeles YLRL at San Juan Capistrano for luncheon at El Adobe. W6YZD's description make us envious: "There were 22 of us in all, ten girls from San Diego and the rest from L. A. After a lovely luncheon we made a tour of the San Juan Capistrano Mission, took several pictures of the girls with pigeons on their hats [those we'd like to see!], etc. This mission [founded in 1776 according to a picture card received from W6UHA] is so very interesting. The flowers there are out of this world; the most beautiful roses you have ever seen and so much iris in full bloom. We have such a good time when we get together," continues Jean, "that the next meeting has already been planned for the 4th of July at W6NZP's home in Long Beach; picnic affair with OMs and harmonics included."

At its April meeting the San Diego YLRL made plans to be on again this year for Field Day. Writes Jean, "Will work 10, 20 and 75 phone, and 40 and 20 c.w. We have a new licensed gal in our midst and she's all ready to work the c.w. with Ellen, W6YYM. Our new gal is W6IGP, and her name is Carole Hiebert. At our meeting we also made plans for two more social events: an old-fashioned box social on May 6th and our annual picnic to celebrate our club birthday, No. 3 this year, on May 21st at Balboa Park." Looks like the San Diego girls really keep busy!

The ZSs are active as ever. Writing at the end of April, ZS6GH tells us that she has recently been elected to the Johannesburg Branch of the SARL, the first YL to serve in that branch. "It is the largest in the Union," adds Diana, "with about 350 members, so I hope I won't cramp the OMs' style at the meetings!"

Among other items of interest Diana tells us that ZS6KK, Marie Kramer, has received her DXCC and has 109 countries to her credit. She not only is the first YL in ZS to get this certificate, but she has worked all of her DX without a beam.

The ZS YLRL has recently held elections with these as the new officers: ZS2AA, Iris Hayes, president; ZS5KG, Muriel Neill, vice president; ZS5DZ, Bee Jordan, secretary. Diana is YLRL Editor for *Radio ZS* and also is chairlady of the Johannesburg group, with ZS6YL as secretary.

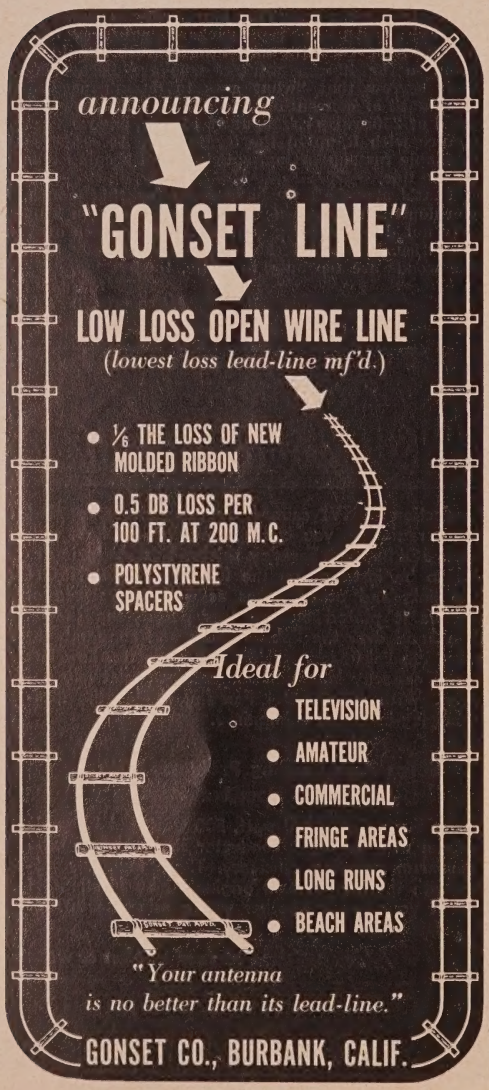
"The South Africans are now using 3-letter calls," adds Diana, "so it seems as if ham radio is becoming more popular. The latest YL call is ZS6YY."

Incidentally, Diana says that at the Rand Easter Show held in Johannesburg, television was shown for the first time in South Africa, the equipment having been flown out from England. As she had seen television in New York it was not new to Diana, but she adds, "South Africans generally displayed great interest in it." Let's hope for the sake of the ZSs that their interest isn't *too* great!

YL of the Month

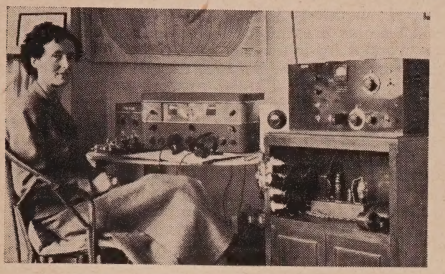
Our YL of the Month spotlight is directed this time on the YLRL D/C for England this past year, G3ACC, Margaret Mills, of London, better known as "Meg." We first started corresponding with Meg about YLRL, and that led to a request for a picture and a story. The latter was readily forthcoming, but the former proved more difficult. But we'll let Meg tell it: "I did not know a photographer so phoned up a number I found in an RAF magazine. A charming gentleman called to take the pictures—dressed in a delightful hacking jacket. However, just as I was getting settled, getting my face composed, etc., he said, 'Of course, I don't usually take *this* sort of thing—*I* specialize in *horses!*'" After recovering from the shock Meg replied, "But surely humans are easier, you can tell them what to do. 'Ah,' he said, 'but horses can't answer back and what is more they are *never* displeased with the pictures!'" Well, Meg, at least it turned out all right!

The transmitter shown at the right in the picture of Meg's shack is a self-contained CO-FD-PA, operating on 3.5, 7, 14 and 28 mc, with an 813 in the final, and having a built-in 1500-v. power supply. This transmitter can be v.f.o. driven from an auxilliary unit com-



prising the conventional Clapp oscillator. For phone, control grid modulation of the 813 is used, with a carbon mike and small speech amplifier (located in the cabinet under the main transmitter).

G3ACC has a QRP CO-PA transmitter (not pictured) running 8 watts input, which is available for top band



YL of the Month, Margaret Mills, G3ACC.

and 80 meters. This transmitter is generally used when the main one has to be off the air due to TVI, and Meg also uses it as a portable rig when on holiday.

A crystal calibration unit, to the left of the receiver, is used for frequency checking, and the receiver is an AR77E. The aerial is a 67-foot top, fed by 80-ohm coax at a point quarter-wave from one end. This is operated as a full-wave system on 14 mc with a 67-foot counterpoise on 3.5 and against earth as a Marconi aerial on 1.7 mc.

During the war Meg was in the WAAF, first as a teleprinter operater, and finally as a Signals Officer. It was while training to become a Signals Officer that she met G6CL, as they both were members of the same officers mess, and it was there he explained the mysteries of amateur radio and persuaded her to become a member of RSGB. She was made a BRS (listener) in 1942. After the war she attended many of the lectures held at the Institute of Electrical Engineers and it was at one of these that she was persuaded to apply for an amateur license. The ticket came in July, 1946, and with the kind help of G5RV. G3ACC was able to get on the air. He lent her an SX16 and a simple transmitter until she was able to purchase or build the necessary equipment. He also supervised her first efforts at building gear, and between them they produced the QRP rig which is still going strong. Nor is this the extent of Meg's building—latest "bug" is making miniature BC sets.

Meg now has her DXCC and adds, "I'm thrilled with it. It is dated October, 1949, and I think I am the first G YL to get one. I've now worked 114 countries, mostly on c.w. Have worked 32 of your States and that is the next thing I want to get—WAS."

Meg by the way, is working in the Technical Literature Department of the Research Section of Cossor (radio, of course!).

Best wishes to W2EHR on getting her license. Marguerite is the XYL of Tex Beneke, W2CKD. Presently on tour with his band they're sharing a 10-meter mobile rig and a little 3-watt job they use in hotel rooms. Writing to Teev and Dick, W5DRA and W5BIW, with whom they have had many QSOs, Marguerite announced her ticket thus:

"Ye gods and little fishes,
2CKD got his fondest wishes;
Maggie has a call of her own,
2EHR goes on c.w. and phone!"

Congratulations to Amelia, W2OLB, and her OM! They are now proud parents of a son born May 7th.

— . . . —

Here we go again! By the time you read this we'll be on our way to New England for the summer (see address on page 40). We're looking forward to seeing a lot more of you YLs along the way, and to bending an elbow (over a mike—or maybe one of those long cool affairs) with old acquaintances "back home." 33.

COLUMBIA'S CUT-RATE CARNIVAL!

We dare anyone to meet or beat this **274-N 40 METER TRANSMITTER - RECEIVER COMBINATION!** Receiver, 6-9.1 mc. Transmitter, 7-9 mc., all tubes, xtals, etc. Good cond. Reg. $17.00. BOTH this month only, **$10.95**

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R-89/ARN5-A GLIDE PATH RECEIVER: Swell for conversion to FM. Complete with tubes and xtals. (See Mar/50 RADIO NEWS for conversion.) Good condition .. **$4.95**
NEW in original carton 5.95
BC733 LOCALIZER RECEIVER: Ideal for conversion to 2 meters. Companion to Glide Path Receiver above. Contains 10 tubes: 3-717A, 2-12SG7, 2-125R7, 1-125Q7, 1-12A6. Good cond. **$4.95**

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Operates approx. 420 MC. EM designed to give accurate height above ground. Unit can be revamped for the 420 mcs. ham or foundation for citizens' band. Contains 2—955, 2—9001, 5—12SH7, 2—12SJ7, a dynamic vibrating capacitance for producing FM signal. (Makes excellent unit for FM or TV sweep generators.) Many other useful parts. Excellent cond. **$3.95**
With Plugs 4.95
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AUTOMATIC RECORD CHANGERS: 78 r.p.m. 10" & 12" records. Nat. known brands. Like new **$14.95**

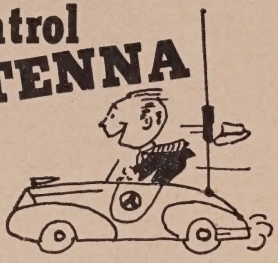
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0-1 mil movement with 100-0-100 scale .. **$3.49**
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—weight 30 lbs.—90 day guarantee. PRICE $69.95 $20 deposit with order—the balance C.O.D. Coils for 80, 20 and 10 meters $2.42 per set. Coils for 160 meters $3.00.

LETTINE RADIO MFG. CO.
62 Berkley St. Valley Stream, N. Y.

DX & OVERSEAS

(*from Page 43*)

phone as well as c.w. on 14 mc. KG6GD/KC6 was on phone in both Palau and Caroline Islands. ZL1DA, via W6PQT, mentions *ZK2AN* on Niue Island, who is only on 3.5 mc as a result of being a new licensee. *FD3RG* was worked by a few on 14 mc, but has migrated to 28,330 kc, on phone. *VR5GA* can be found around 14,-165 kc, on phone. EA6EG expects to be on with the call of EA6AM according to W6MX.

In case anyone would be even slightly interested instead of just plain disgruntled, we have been steadily deleting VO from your country lists, and now have the job about completed. We've tried to do it the painless way by waiting until you have sent in some additions to make up for it. When your published total appears to be one lower than you expected, this will explain why.

At a recent post-contest gathering here in the L. A. area, our lone-wolf contest operator, Benzadrine Davis, W6IBD, in an unusually optimistic mood, worked himself up to a rather rash bet concerning the next contest. In the midst of all kinds of witnesses, Warren vowed to shave his head to resemble a billiard ball should he lose the bet! A bit later our boy seemed to have a slight change of heart, but the witnesses turned a deaf ear. We can hardly wait 'til next contest time. Would anyone like to donate a bottle of Kreml or a warm hat for a good cause?

QTH Column

C3WW	Wang, Post Box 1, Taipeh, Taiwan (Formosa)
CM/CO6 Bureau	P. O. Box 136, Santa Clara, Cuba
CR5AC	Box 38, Bissau, Port. Guinea
CR5AD	Box 206, Bissau, Port. Guinea
CR9AG	Box 541, Hong Kong
FD3RG	c/o Service Radio, Lomui Rim, Fr. Togoland
FF8PC	Box 209, Dakar, Fr. W. Africa
FY7YC	Ravin, c/o P. O., Cayenne, Fr. Guiana
JAØIJ (Iwo)	APO 815, c/o PM, San Francisco
JA2CV	Maj. W. S. Dawson 8597A, 1808th AACS Wing, c/o PM, San Francisco
KM6AH	Fred Carpenter, c/o CAA, Canton Is., So. Pacific
KM6AP) KP6AB)	Wm. E. Fells, Jr., Box 590, Hilo, Hawaii
KP6AA) KP6AC)	c/o KH6MG
KP6AE	W. J. Christian, c/o Guam Amateur Radio League
KV4AQ	Box 147, Frederiksted, St. Croix, Virgin Is.
LZ1TPI	Post Box 830, Sofia, Bulgaria
PK QSL Bureau	Postbox 108, Djakarta, Java, Indonesia
PK7 (Only)	c/o VERON, Postbox 400, Rotterdam, Netherlands
PK1HX	Henry Wolvekamp, Djalan Palm, Djakarta, Java, Indonesia
PK2ZZ	Via VK7LZ
PK4DA	Arie Bles, c/o Standard Vacuum Oil Co., Soengi Gerong, Palembang, Sumatra, Indonesia
PK4OO	c/o PK4DA
PK5HL	c/o VERON
VK1RD	via VK5RD
VP2SC	C. Aubrey Watson, Richmond Hill, St. Vincent, Windward Is.
VP7NM	Box 362, Nassau, Bahamas
VR1C	C.G.L.T.S. Unit No. 84, Navy 824, c/o FPO, San Francisco
VR2BU	c/o Nadi Airport, Fiji Is.
VR5GA	Pat Spry, Box 60, Nukualofa, Tonga Is.
YU1CAF	Box 48, Belgrade, Yugoslavia
ZS8MK	Dr. R. L. Markham, Qachas Nek, Basutoland, or c/o SARL

SCRATCHI

(*from Page 4*)

not having any money anyway, but how peeples to know this.

Few minutes search are disclosing telephone on desk, and then are coming final last piece of straw. Hon. Telephone are deader than amateur getting across four thonsand volt power supply. By gollies, when this office building are closing for weekend it reely closing. Scratchi now as stuck as pullman car window. I look all around office reel carefully, and finding absolutely no way to getting out, unless are jumping down nine stories out the window.

I are about to catch up on my reading with all the magazines and wait till Monday for rescue when I notice machine with several zero to 500 mil meters on it. Hokendoke!! it are diathermy machine. I quickly pull out knife with broken blade to use as screwdriver and get the back off the machine and find circuit diagram on back cover. Hon. Ed., it are the most beautiful little eleven meter transmitter you are ever seeing.

Scratchi are not having any trouble getting power on rig, but final not loading up on acct. of having no antenna. I are thinking that heating pads not doing much radiating, so are putting Hon. Noggin in action, and shortly are coming up with sooper idea. Are going to windows and taking down curtain rods. Then getting adhesive tape and fastening curtain rods to operating table with adhesive tape. Shortly are having reel snazzy three-element beam, rotary and tiltable.

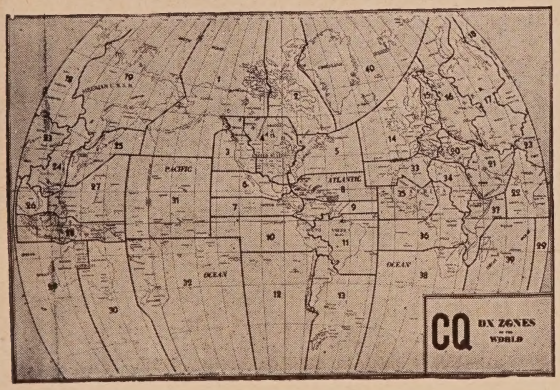
Next I taking some a-c cord from table lamp and making link on final tank and coupling to beam. Final are now loading like million bux, cash, but to making sure are getting flourescent lamp from ceiling fixture and it lighting up ok when touched to beam. If are having more time I probably could figure out way to modulate rig, but instead are trying see-w first. So, are sending QRR and giving location, using plate switch as key. Are not able to send at usual 40 words per, but at least are on the air.

Are sending message several times with beam in different directions, and hoping for best. Are spotting electrocardiagraph machine and thinking maybe can make receiver out of it, but give this idea up until see if my sigs are being heard by some amateur.

First ten minutes Scratchi are still trapped like rat in trap, and no one coming, so I again sending out QRR on diathermy machine. Another halfhour passes, and I are about to fall asleep when are heering commotion in hall outside, and shortly door are opened and two cops come in to rescue me. They believe my story, so everything turning out hunky-dunky. Evidently some ham are heering me and sending cops. Just calling me Hon. Hero Scratchi.

Respectively yours,
Hashafisti Scratchi

P.S. Just finding out that no ham are heering me after all. Diathermy machine are ruining TV program in neerby tavern and manager are calling police.



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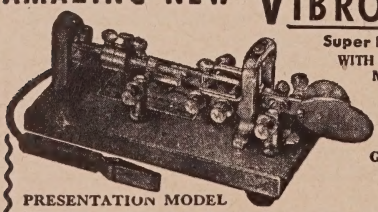
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THE SECRET WEAPON

(from Page 28)

signal in either the 3500–4000 kc or the 7000–7500 kc band fed into the converter grid, I tuned the local oscillator to its corresponding frequency. The two then beat together to produce a 1750-kc note which was radiated from the i.f. can by the one-foot wire and picked up on the communications receiver. I then tuned the trimmers in the i.f. can for the loudest signal in the communications receiver. This is most easily done if the receiver has an "S" meter. This i.f. can was now approximately tuned, and was connected to the first i.f. tube, which in turn feeds into the second i.f. can. This second i.f. can was tuned in the same way. The regenerative detector was tuned to 1750 kc (its radiation may be picked up on the communications receiver) and left there. If it doesn't oscillate, it will be necessary to reverse the feedback winding. The rest of the receiver is of standard construction and was fairly simple. With the receiver finished, a steady signal was tuned in and the i.f. cans touched up for maximum performance.

Operation

Once the little rig is finished, operation is fairly simple. Turn it on, allow a minute or so to warm the filaments, and switch it to the transmit position. Select the crystal wanted and plug it in. Then, holding down the key, tune the PA plate condenser for meter dip. Next tune the antenna tuning condenser until the plate meter shows a rise in current, showing that the tuner is drawing current (about that time the neon tuning indicator should light also). Then touch up both controls for maximum brilliance of the neon bulb, and you're on the air. This particular antenna tuner will resonate only antennas that are nearly an electrical half wavelength long or multiples thereof. It will work fine on a 130-foot wire; a 260-foot one, etc. On 40 meters alone, it will work on multiples of 65 feet.

There is then nothing to tuning the receiver—just twist the dial until you hear your station, and leave it there. The r.f. input to the converter grid will already be tuned to the transmitter frequency, since it acts also as PA plate load. Seldom do you work anyone these days unless he's on or near your frequency. Seldom would you have time to search very far from your own frequency before he signed anyway. And if you do work a guy on the other end of the band, the only result on this rig is a slight drop-off in signal strength which can easily be tolerated.

Construction Hints

A few construction notes are in order. The first one concerns the chassis braces. Since both the power transformer and its filter choke are on the back of the chassis away from the front panel, it is obvious that there would be quite a strain on the chassis without the braces shown in the photographs. They are made from sheet aluminum triangles with a half-inch lip on each of the two short

sides. One lip is bolted to the face plate, and the other fastens to the chassis. I also went to some pains to bring all leads out the back of the set so no wires would be in my way when I tried to operate the controls. It will be noticed in the photographs that the antenna terminals, the key jack, the earphone jack, and the power plug all come out the rear of the chassis, and there are holes cut in the steel cabinet to allow access to them. A third construction novelty concerns the power cord. Since it is envisioned that this station will be packed around, a cord could get in the way and be damaged, so I put a PL-55 plug on the end of the power cord, and on the rear of the chassis an insulated jack leading through the on-off switch to the 110-volt primary of the power transformer. When you pack up, just pull out the power cord, roll it up, and put it inside the steel cabinet. I doubt that this system is suitable for kw rigs, but it works FB here.

This little rig was not intended as a DX rig, and no attempt has been made to work DX, but it has worked up to 1500 miles, which shows at least that it will get out. As stated, its main use would be as portable, fixed portable, field days, or apartment house hamming. Parts cost was approximately $70.

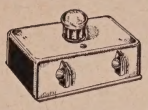
A MEDIUM-POWER MODULATOR

(*from Page 36*)

W3QEQ, with operation confined to the 10-meter band. Both NBFM and AM have been used with excellent results obtained from both. Verified contracts from such calls as KV4AQ, HB9JZ, ZS2EW, G2HFO, KL7ABD, XE1IQ, DL4YN, KZ5FL, KP4FN, HC1GE, LU2CX, and others with consistent signal reports of S7 to 9 plus indicate that the rig has a healthy voice.

As a result of this operational period, a few minor modifications have been made to the r.f. unit which have resulted in more reliable operation. The dropping resistor R_{15} in the exciter should be increased to 1500 ohms, 50 watts. This higher wattage is desirable because of the considerable heat dissipated by the resistor over prolonged periods of operation. The larger resistor should be mounted out in the clear under the chassis, rather than on the original terminal board position. The balancing condenser C_{21} was replaced with 50 μμf air trimmer, single spaced plates, such as the Hammarlund APC style. The RF choke L_{12} must be a transmitting type, with a current rating of 300 ma with good insulation to ground if plate modulation is to be used. The neutralizing condensers have been replaced with larger physical size units, which will withstand the heat from the 24Gs somewhat better. Bud NC-1930 or Millen 15005 condensers can be used. The latter were installed in the rig, but it will be necessary to reduce that capacity by cutting the length of the cylindrical sleeves to about one-half their original length. This will also serve to reduce the overall height of the condensers.

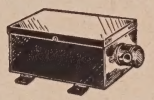
With these slight changes the transmitter will operate very satisfactorily with NBFM or AM, and will be stable and reliable even under prolonged operational sessions.



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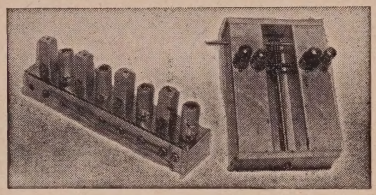
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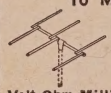
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LOW-FREQUENCY DISCONE

(from Page 16)

easily if the mast has to be lowered at a time when the roof is icy and inaccessible.

The cone elements are fastened with just enough tension to keep them from sagging, and then, alternating from side to side and from back to the front of the garage, they are tightened to guy the mast uniformly. The coax is then connected to the transmitter, and the system is ready for operation.

Feeder Systems

In order to keep the RG-8/U cable as far from the field of the discone as possible, I buried it at a depth of 10 inches for the 60 feet it traverses to the house. R.f. on the outside of the feeder is kept to a minimum, and no deterioration of the cable has been noticed thus far. A deeper ditch would have been dug if it had not been for the rocks. As far as transmissions are concerned, the coax can be strung eight feet above the ground with good results, but for the low-pass filter tests, the underground feeder operating into the discone presented an excellent, symmetrical load.

Results

The 11-mc discone was finished on Labor Day last year. Since then, numerous comparison tests have been run on 20, 10, and 2 meters. Generalizations fom the data obtained indicate that the vertically polarized signal emanating from the discone is about 2-db stronger than a signal from a vertical dipole. Polarization is important on 10-meter ground-wave contacts, but it is only important that the receiving antenna and transmitting antenna be polarized the same way. If they are not in the same plane, as much as 40-db difference in signal strength can be found. The discone is a sure-fire target for signals from the mobile gang, and many enjoyable QSOs have been had over long ground-wave paths.

Evidence for the behavior of the discone at 29 mc in the range from 1000 to 1500 miles is conflicting. At times a horizontal dipole was 6 to 9 db better. At other times the discone was superior. On the long skip paths, however, the discone was always superior to a horizontal or a vertical dipole.

On 20 meters, polarization did not have as marked an effect over ground-wave paths as it did on 10, and comparisons with a horizontal dipole over short-skip, long-skip and DX paths always showed the discone to be the better radiator. After a month or more of such tests, I was convinced that the 20-meter dipole was superfluous, and took it down.

Six-meter tests have not been run, but some are planned in the near future. At 2 meters the 11-mc discone does radiate, but it is 10 db below the level of the "bird-cage" 100-mc discone. Loading is no problem at 144 mc because the S.W.R. is still reasonable at that frequency, but the large spacing between the disc and cone is probably the cause of the poor radiation pattern. Naturally, I use the 100-mc discone for 2-meter work.

The 11-mc discone will be used at W2RYI on 21 mc as soon as the 15-meter band it made available. When that important date arrives, the big discone will be the basic antenna for operations on 20, 15, 11, and 10 meters, and I don't think it's going to be too long before an 829-B will be feeding that buried coax in the long-neglected 6-meter band.

THE MONITORING POST

(*from Page 46*)

left behind; on the air for 28 years, NH has been known by other calls.

The dream of **W4GJW** and **W1AGM** has come true in that a directory of physicians and dentists holding ham calls has been published; each medico listed gives their call, year of birth, education, specialty, military service, other calls, bands used, sports interested in, and fraternal and civic affiliations; GJW claims the dream became a nightmare before all this information had been compiled, but from now on the result will promote friendships, encourage skeds and roundtables among the medicos. . . . The Ridley RC, a new club holding meetings at Ridley Twnshp. (Pa.) High School, has already started classes to train those desiring to become hams; plans include a club station with a request for W3RRC as call letters—**W3HNG** will be station trustee; **W3KPB** and his xyl **W3NHI** started the club and are now serving as temporary prexy and sec.-treas., respectively. . . . **W2AGB**, one-time secretary of the Hudson City RC—'way back when **2BAY, BOC, BOX,** and **NL** were also members—is still pounding brass; a hitch in the Navy, '23–'27, gave him his start in ham radio and he's held that call since 1928.

At the WBZ transmitter in Boston are **W1AGC, VM, OSO, FCZ, PFT, MZN, DIU,** and at WBZ-TV transmitter are **W1IVI, OUT, IHG, JTZ, WN, CED, ENW, BZ, ERH, KXV,** and **BGH**. . . . Your chances of getting one of those achievement certificates from the Southern Nevada ARC, mentioned in last month's column, will depend upon your own endeavors; Nevada has about 150 stations, not all active, and, of course, not all on the same band, so when a certificate is earned, the holder can feel he has truly achieved something by contacting 25 Nevada stations and receiving QSL cards from each—it won't be a cinch; those accomplishing this will be listed in this column in the future.

W2CGG says "There is nothing like ham radio for a guy who's tied down." Pop talks from experience, for when a heart attack hit him last winter the only thing good about it was when W2EWL set up a rig for him in the bedroom and set the key on the bed for Pop to kill many hours while he was on his back; he's heard again on 40 and 80, but the doctor says he can't go back to work yet.

Birthday congratulations to **W9JXH** and **W2OXM.**

LETTERS

(*from Page 6*)

where, no matter how intense our other amateur activities, we may relax for a little of the social side of the game. Were we all voluntarily to limit our power input on this band to somewhat less than 100 watts, TVI and BCI would be minimized, good communications would be possible, and everybody would have a chance in the fun. Seventy-five, 20, and 10 have all become battlegrounds of power and directivity. Let us not make the same of 160.

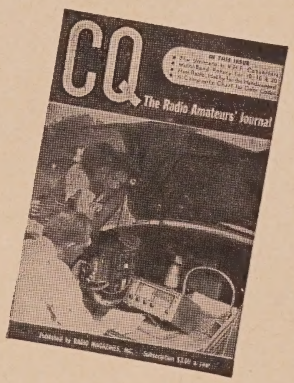
To further interest in low-power work on this band, may we suggest a contest be sponsored—a 160-meter low power QSO contest. Such a contest would encourage more social ragchewing activity in amateur radio, and would give some of the less affluent hams a new interest in operating activities. Discussion of such a contest among the 160-meter gang in this area has indicated approval of such an activity.

C. F. Rockey, W9SCH

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VOLUME COMPRESSER KIT—two tubes, 15 db. compression—build into your speech equipment. Complete with tubes, parts and instructions—$4.85. NRCS, Box 1311, Havre, Montana.

YL FCC COMMISSIONER

(*from Page 32*)

Before joining the FCC, her hobbies were music and golf. Since her duties leave her little time for these today, she now claims the FCC is her hobby as well as her work. She expressed the hope of undertaking to become a ham after the pressing TV situation is cleared up—a method, perhaps, of better understanding the radio field which she helps regulate.

And with her interest in education, Commissioner Hennock made the following statement for hams and more particularly for the upcoming generation (hams, we hope):

"I think the best way to appreciate any art is to engage in it. Just as the best way to understand and appreciate music is not just to take courses on appreciation of music, but actually to try to play it. Learn some instrument and execute yourself what these great composers had in mind and tried to express in their music. The best way to appreciate beautiful paintings is to learn how to paint yourself. This applies to the art of electronics. The best way to learn to appreciate the electronics age is actually to be a participant in some form of electronics—Amateur Radio for instance.

"Furthermore, there is a practical side to this great hobby of you 'hams.' Imagine having your greatest hobby become your life's work. The odds are high; many amateurs do become professionals in the end and make their hobby their livelihood for life. There is a great satisfaction in earning your living at what you like to do most."

32V TRANSMITTER

(*from Page 31*)

operation of driver stages may also be obtained from the 32V.

Notice that none of the ideas in this article entail any high-powered rebuilding or modification of the 32V. No revamping of the 32V is necessary. These suggestions are merely additions that may be added at leisure to an already excellent piece of equipment. All bands, 1.8 mc to 420 mc with one basic transmitter, not bad, eh?

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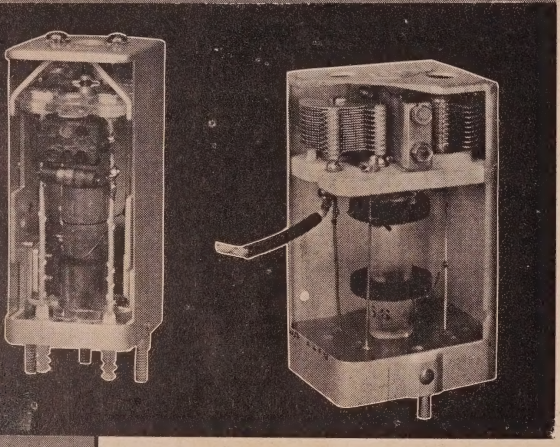
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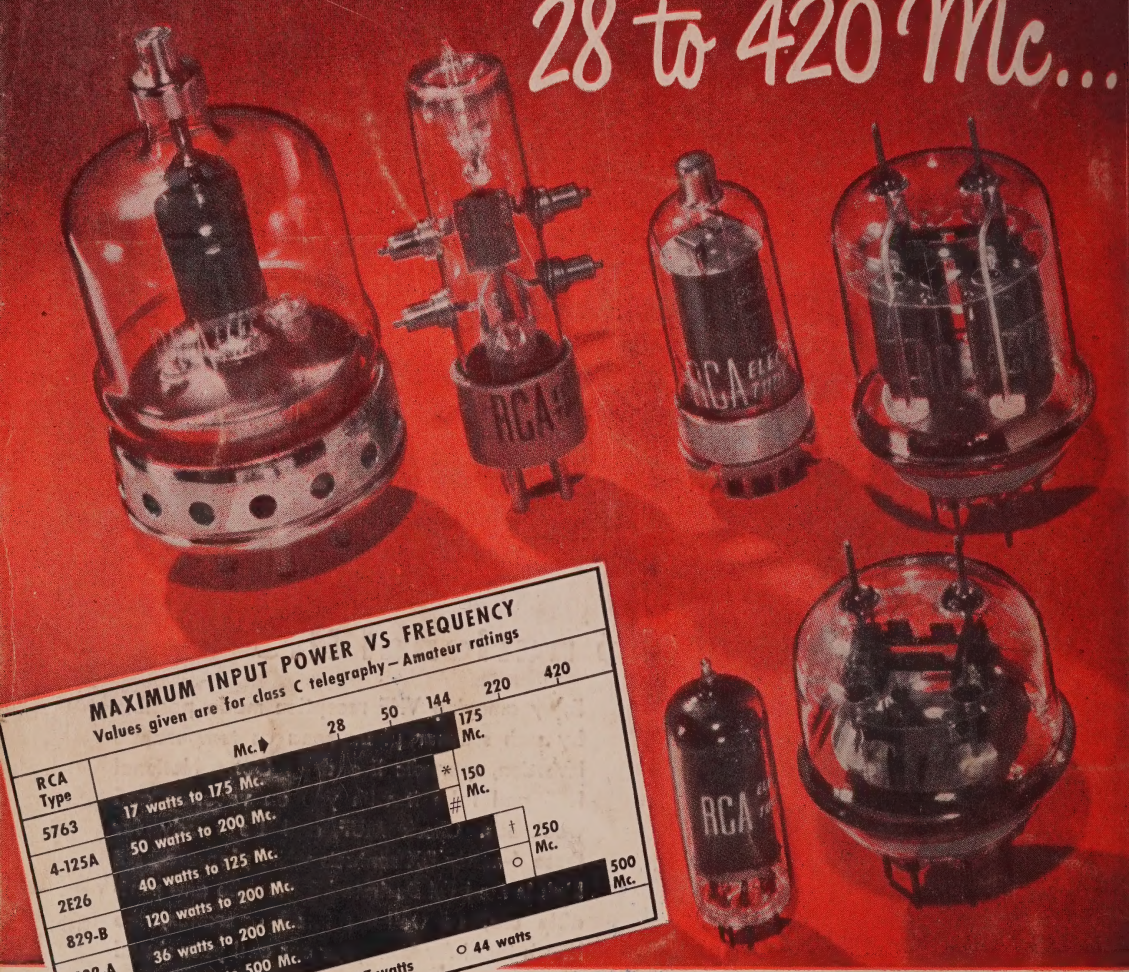
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