The SHORT WAVE Magazine

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for the radio amateur and amateur radio

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CONTENTS

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FOR THE RADIO AMATEUR AND AMATEUR RADIO

The SHORT-WAVE Magazine

EDITORIAL

Tendencies

In recent years, the practice of Amateur Radio—in the sense of operating, and on-the-air activity—has developed some quirks that, looked at objectively, cannot really be in the best interests of all who are concerned simply with the straightforward business of making contacts, whether across the parish or over the world.

First, we have the cult of the QSL manager—whereby some not very important chap, working DX in the ordinary way—makes the portentous announcement that so-and-so is to be his "QSL manager"—and is as solemnly picked up in all the journals.

If, as is often enough the case, they are both listed in the current "Call Book," it seems hardly to be of significance. (It can even double the paper-work!). The only situation which justifies a QSL manager—and that very rarely—is when the DX station concerned is in some inaccessible part of the world to which mails can only penetrate once or twice a year. It is then reasonable for him to make his QSL arrangements, over the air, with somebody who is able to handle the traffic without unreasonable delay.

Another tendency to be regretted is that by which operating certificates are offered under terms which are designed primarily to generate QSO's for the sponsoring body—e.g., The Radio Club of Cutchpawani (of whom practically nobody has ever before heard) offers a decorated parchment to all amateurs who can prove having worked five of their seven members, certificate being issued on payment of Rs. 15 or x-number of IRC's in lieu—or whatever. There are now 100's of so-called awards in this category, the great majority of them utterly worthless in any serious DX operating context.

Austin Forsyth, G6FO.

AERIAL TUNING UNIT FOR ALL-BAND OPERATION

USING SINGLE-WIRE AERIAL — TEN METRES TO TOP BAND INCORPORATING VSWR INDICATOR — DESIGN, ADJUSTMENT AND RESULTS

E. P. ESSERY (G3KFE)

FOR multi-band operation there is much to be said for the end-fed piece of wire; but the difficulty that arises is that most modern transmitters, or transceivers, are so designed as to require a feed impedance of 50 or 75 ohms and, with the small components which are of necessity used in them, any serious departure from the designed load impedance is liable to result in failure. Additionally, the low-pass filter in the output circuit is normally designed for operation into a specific value of impedance, which must be adhered to if the filter is to do the work of suppressing harmonics satisfactorily.

Furthermore, there is the fact that many people are firmly convinced that the end-fed " piece of wire " as an aerial will result in troubles with stray RF in the shack and/or increased TVI. Some experiments were therefore carried out to determine whether the end-fed arrangement was acceptable for use as a multi-band aerial, as compared, say, with dipoles for each band.

Preliminary checks suggested that for the HF bands the Top Band aerial was indeed a good possibility. As a first move, the earthing arrangements were looked into. The existing ground-spike was augmented by running a dozen radials, each of thirty feet length, from the multiway solder tag on top of the spike. Each radial consisted of 22g. bare tinned copper, and the set was arranged in a fan covering an arc of 90° from the spike in a corner of the garden directly beneath the shack window. When all were laid out, the garden spade was used to make a trench about a couple of inches deep along the course of each radial, and the wire thumbed into place. A quick walk along the line of each trench, and the lawn was (almost) back to normal. After a spot of rain it was impossible to tell where the wires had been laid in.

Tuning up the system on Top Band produced an immediate improvement of nearly three S-points all round compared with the spike earth alone, there being no noticeable effect on the tuning of the ATU.

Improving Aerial Layout

Then, to move the " best bent wire "—most of which had been less than six feet above ground level—out, up and into the clear. For this, the co-operation of some neighbours had to be secured, but the resulting " invisible aerial " was approximately half-wave, lying more or less East-West and, apart from close proximity to one TV aerial, pretty well in the clear. A first check showed the system to be firing, on Top Band, more or less as expected—that is, North-South. Both the commercial rig that usually adorns the home station and the home-brew mobile transceiver were tried with it, there being no apparent troubles with RF instability. However, the speech-clipper (which had previously lived inside a cocoon of insulating-tape in the mike lead to the /M gear) showed a tendency to want to take off, when observed on the 'scope. This was soon cured by fixing the thing inside a tobacco-tin and using coax connectors in and out, instead of taking bits of screened wire to the input and output ends. In other words, the job which had not been finished a year before, because of haste to try it out, was now taken to completion!

On the HF Bands

For the other bands, a multi-band ATU had to be organised. A little consideration of the Top Band ATU previously used indicated that the aerial feed was highly reactive—indeed, when that wire was disconnected and the ATU grid-dipped to find its own self-resonant frequency it was nowhere near Top Band—a discouraging start, indeed.

However, a scratch round in the junk-box revealed a transmitting variable capacitor of around 150 $\mu\mu$F, a ceramic coil-former, a ten-position three-wafer ceramic switch, a double change-over with a centre " off " toggle, a *Painton* stud switch, 100 μA meter and, praise be, a somewhat battered but still serviceable metal case to put the bits in. Finally, quite by chance, a length of silvered copper tubing wound into a coil of thirteen turns of 1in. diameter and fitted at one end with a stand-off pillar—Heaven only knows where it had started life, but it was almost certainly part of a job lot at a Club junk sale years ago!

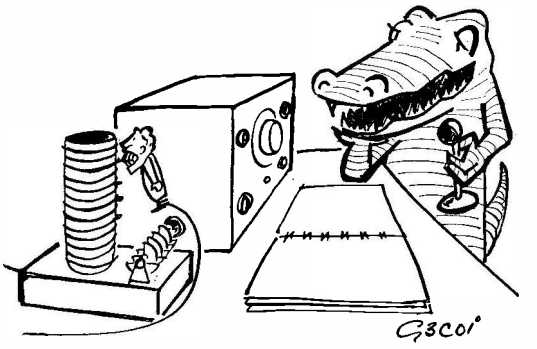
This little lot was gummed together in the circuit shown opposite, but no attempt was made at this point to connect the switch tappings to the coil. Instead, the last position of the three-bank switch was fitted with a croc-clip lead on each bank. First move was to try out the SWR indicator into the dummy load. The shortest length of coax which would give an acceptable indication on Top Band was used, which meant the thing was none too trustworthy on Ten, due to excessive length; not much of a penalty insofar as there was another indicator around the shack which was known to be OK at 28 mc. RV1 was adjusted for zero return current on the dummy load, at 28 mc. Once this little lot was found to be OK, the SWR indicator section was screened by bending up an internal case to cover it, and bringing the ATU end through the screen by way of a feed-through coax-coupler. This is not absolutely necessary, but if it is

omitted one tends to find stray radiation straight off the coil appearing on the outer braid and giving confusing readings unless the whole length of coaxial used in the SWR indicator is symmetrically disposed about the coil in such a way that the induced currents on the outer are self-cancelling—which is not too easy. The length of coax was tailored by slicing the outer sheath straight down the length of it, removing and putting to one side. The braid was then crunched up towards the centre from each end, when its diameter increased enough to enable the pick-up wire to be introduced between the braid and the insulation of the inner. The wire actually used is not too important, provided the enamel is not broken at any point to allow a short-circuit to the braid. The writer had a length of fairly hefty gauge wire insulated with *Lewmex* enamel which is capable of withstanding quite high voltages and is also tough. The wire being introduced, the braid is then stroked back to its former position, the outer sheath slipped over it and taped in place here and there, and the whole shebang fitted together all-same circuit below.

The dummy load was made of ten *Electrosil* resistors of 470 ohms each, in parallel; the type specified are of very good stability, and overload characteristics are such that they should be able to stand up to seconds of full-bore operation on occasion without serious injury. S1 provides the forward and reverse positions of the meter, and S2 is used to connect the output of the SWR indicator either to the ATU proper, the coaxial sockets provided for other aerials, or to the dummy load R1 for tuning-up purposes.

The ATU

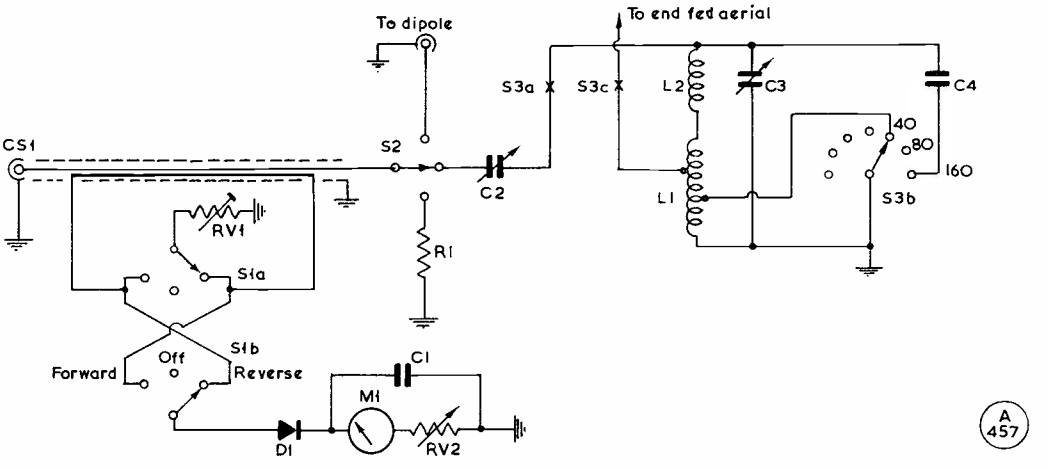
Attention was now turned to setting up the ATU proper. It had originally been intended to use the croc-clips to tap on to the coil and to fiddle with all three



". . . Always use man-clips here to tap the ATU . . ."

until a position was found which would give zero return current on each band. In the event, it was found that on all bands the variable capacitor feeding the RF from the transmitter to the coil was happy sitting at the top of the coil, and so on this wafer all the contacts ended up by being linked. As a position was found which gave zero return current and maximum output as noted on a field-strength meter on the other side of the room on each band, the positions were transferred to soldered connections on the switch, starting at Top Band, and working clockwise round the switch to Ten. On several bands, it was found that the croc-clip ended up at a point on the coil where a tap already existed, and when this was the case, the soldered connection was made by cross-linking on the switch itself.

The tuning procedure for doing this was simple: The transmitter was fed into the dummy load; it was



Values for Multi-Band ATU: C1, .001 μF, silver mica; C2, 2/500 μμF, in parallel; C3, 150 μμF, Tx type; C4, selected by test, see text; R1, 10/470 ohms in parallel, to form load of 50 ohms nominal impedance; Rv1, 100 ohms; Rv2, 2500 ohms; D1, any germanium or silicon diode suitable for RF applications; S1, DPCO with centre "off"; S2, SP 3-way wafer type; S3, 3-pole 10-way heavy duty type, with ceramic wafers; M1, 0-500 microamp, m/c; L1, 25 turns on 2½in., 20g. enamel; L2, 13 turns ⅛in. silvered copper tuning, wound to be self-supporting, o.d. 1 inch, turns slightly spaced. C2 must be isolated from chassis and driven through an insulated coupler and extension shaft, with a panel bush, to avoid hand-capacity effects.

then turned down to a level where the PA could stand continuous running by reducing the carrier insertion to a low level in the " tune " position. The thing was then fiddled with, leaving the transmitter severely alone, till the output on the FS meter was maximum and the PA drawing the same input as into the dummy load and showing zero-reverse on the SWR indicator, plus a forward current similar to that drawn through the dummy load. A final check was to see the PA was still " on the nose " as far as the *pi*-tank tuning capacitor was concerned. This done, the connections were made from the points where the croc-clips had ended up on the coil back to the band-switch position for each band involved. Operation was then checked by turning the bandswitch to the correct position and quickly repeating the checks. Back round to the end position of the switch, turn to dummy load, tune up transmitter on next band, and connect croc-clips as before.

Points to Watch

The only real snags encountered were due to the fact that the coil did not really have enough reactance to enable tuning with the desired amount of C on Top Band; and here the bandswitch wafer which on the HF bands was used to short out unwanted turns was connected to add additional capacity, a 330 $\mu\mu$F mica, across the coil; this enabled the 160m. band to be tuned in the same manner as the others, albeit rather too sharply for comfort in that small changes of frequency required readjustment of the ATU tuning capacitor to get the return current back to zero. It was found that no other controls on the ATU or the transmitter output *pi*-network needed touching (although a fair shift in frequency would of course require the Tx drive control repeaking, as normal). On Ten, a certain amount of difficulty was encountered in finding a suitable tapping point, which was primarily due to the reactance of the wire cancelling out the coil so that virtually no coil was in circuit. The problem was accepted, although a slight change in aerial length or a bit of shunt capacity would probably have cleared it up more easily.

Notes on the Results

On the Top Band, where the aerial normally fires North and South, little or nothing in the way of W contacts was to be expected, nor were any made. On the other hand it became quite evident that the amount of RF off the ends of the aerial was such as to make working GW stations at 59 or better a commonplace, while the GM counties activated by the DX-peditions nearly all seemed to respond to the first or second call, and gave creditable reports.

Eighty is not normally a band much used by the writer, but time was taken to listen round and establish as far as possible that the aerial radiated and received quite successfully. TVI was no worse than previously, and instantly curable by means of one of those ferrite-ring filters which break the TV set coax screen at the receiver end and so prevent pick-up of fundamental signal developed across the small grounding capacitor which is all the I.E.E. safety standards allow to earth the screen of the coax where it enters the receiver. The radiation pattern of the aerial was not noticeably directional, and a fair amount of DX was heard; no direct comparison was possible due to the fact that a special aerial for this band had never been available.

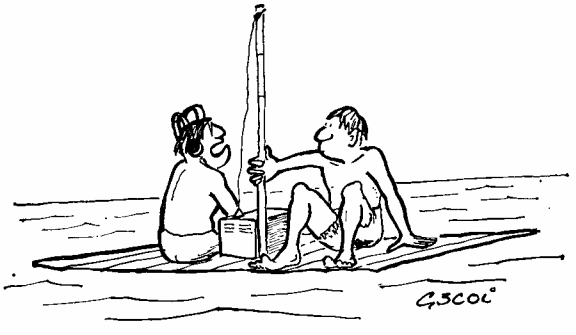
Forty began to show the pattern of improvement over previous aerials that had been hoped for, and also the directional effects began to develop. However, the minor lobes were still evident enough to ensure that full coverage could be made around the compass with no obvious nulls.

On Twenty the directional pattern was quite marked; VK/ZL and W rarely coming in at less than 59 from the better stations when the band was flattish, and a considerable improvement over a dipole at the same height. TVI was found to be non-existent on 7 mc and only very slight—certainly no worse than before—on 14 mc.

As for Ten and Fifteen, TVI had always been a plague and time for operation correspondingly slight due to the necessity for earning a crust and a distaste for early rising. However, reception tests were made, also the odd QSO, all of which tended to show that the aerial had become very markedly directional and that the minor lobes were, if anything, down on what one could have expected in theory, although still quite capable of putting a respectable signal into unexpected places. TVI on the 28 mc allocation was no worse than before, and in general it could be said that operation would have been possible for short periods at times when the majority of viewers were watching ITA. But is has to be said that the advent of a couple of new TV sets with solid-state front-ends changed the situation for the worse—although again comparative tests using a dipole showed the situation to be similar in respect of these receivers.

Conclusions

Summing up, the long-wire multi-band aerial operated against a good earth system does not appear markedly to worsen the situation as far as TVI is concerned, and it does seem to produce better results in terms of signal strength in its favoured direction than a dipole at the same height—always provided the aerial is fed through a suitable coupling unit. The minor lobes fill in the gaps in the coverage quite well on the HF bands, although of course it cannot compare in any way with a good beam. Nonetheless, considered as a practical system for multi-band operation without too much defacement of the skyline it has much to commend it, and it is by no means to be despised. No difficulties with the station equipment



". . . He suggests we try a long wire . . ."

due to " RF in the shack " arose, other than that already mentioned, and no worsening of the TVI situation could be noted.

In conclusion, a few words about the method of using, and if desired, calibrating the VSWR bridge portion of the circuit may not come amiss.

It will be found that on most bands, the forward current is less useful as an indicator than the reverse. The ATU controls, C2 and C3, should be adjusted so that no reverse current is indicated, after first loading the transmitter into the dummy load. The transmitter tuning controls should not then be touched, but S2 switched to the ATU, and C2 and C3 adjusted for no reverse current; they will be found to interact with each other to some extent.

To calibrate the VSWR bridge, so that VSWR can be read when S2 is switched, for instance, to a dipole, RV2 should be adjusted to read full-scale on the meter in the Forward direction, and the reading on Reverse also noted. The formula

$$\text{VSWR} = \frac{\text{Forward Reading} + \text{Reverse Reading}}{\text{Forward Reading} - \text{Reverse Reading}}$$

may then be used. However, it should be noted that the resistance in series with the diode is not really enough to linearise the meter reading, and so values found by the use of this formula should not be taken too literally. An improvement can be obtained, at the sacrifice of good indication on the lower-frequency bands, by adding about 10,000 ohms in series with RV2.

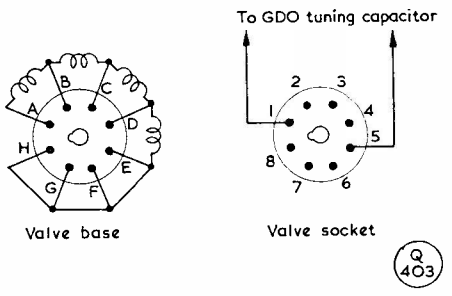
COIL CHANGING ON A GDO

SIMPLIFIED PLUG-IN ARRANGEMENT

R. C. WHELAN (GW3PJT)

ALTHOUGH the GDO is an extremely useful instrument it has the disadvantage that a large number of plug-in coils are required in order to achieve a reasonable frequency coverage. Any method of reducing the number of coils required is clearly useful. The type of coil needed for a GDO is normally of the two-terminal variety. A very suitable plug-in former is the international-octal valve base on the bottom of the old type of glass-envelope valves. This valve base, after removal of the glass envelope and connections, can be used as an 8-pin former of 1⅛in. diameter and will usually accommodate a winding ⅞in. in length. As stated, only two of the eight pins would normally be used, but it is possible to arrange to utilise the complete set of eight pins as a coil switch.

The octal base can only be fitted into the octal socket in one way because of the key on the spigot. If either the spigot or the key are removed the base can be inserted in eight different positions. A suggested wiring diagram is shown below. The base is wired with pins A, B, C, D and E connected to the coil and pins E, F, G and H wired together. Only pins 1 and 5 are used on the socket. It is now possible to select four different coils and thus achieve an extended frequency range without the complication of a wafer switch.



Pluggable coils for a GDO, mounted on an I.O. valve base—see text—to plug into an international-octal socket.

In practice a continuous coverage is normally desired, without gaps between ranges. The approximate positions of the tapping points can be found either by using formulae or by experiment with the particular GDO you happen to use. Start with the highest-frequency range to be covered, and then work downwards (in frequency). It is a matter of juggling turns till you arrive at the fewest number of turns for the lowest-frequency range.

As readers will appreciate the coil connections given here are only one of the possible combinations. This, however, has proven in practice to be the most useful circuit.

APPLICATION OF THE INVERSE BALUN

TO AMATEUR TRANSMITTING AND RECEIVING ANTENNAE. A J-BEAM DEVELOPMENT

V. R. HARTOPP (G8COB)
(J-Beam Engineering Ltd.)

FOLLOWING the successful use of the *J-Beam* patented " Inverse Balun " on all commercial (TV) UHF and certain VHF aerials over the past three years, tests were carried out to determine its application to amateur antennae, with highly satisfactory results.

Readers will be familiar with the Coaxial Balun shown in Fig. 1. Its features are: Step-down ratio of one-fourth and conversion of balance to unbalance. It has, however, one further use which is extremely useful. If the inner conductor of the balun shown in Fig. 1 is traced, it will be seen that it is electrically identical to a shorted stub in parallel with the radiator feed points. A stub connected here behaves in an equal and opposite manner to the radiator and hence cancels out the variations of impedance and reactance which occur with change of frequency.

When a folded dipole is used as the radiator in a Yagi aerial, the feed impedance is reduced below 300 ohms by an amount depending on the number and spacing of the parasitic elements. Thus, the resulting value may vary widely. If the folded dipole is tuned away from its minimum impedance, it rises rapidly and a length can be found to give 300 ohms again, but with a *reactive* component. This reactance (either inductive or capacitive) may be cancelled out by tuning the shorted stub already mentioned until it appears purely resistive. The correction as the frequency is changed still holds good and the other functions of the balun all operate normally.

Other types of radiator, such as the skeleton slot, can also be used, but as the impedance can be designed to be purely resistive, the balun can be tuned on frequency.

The snag with this Coaxial Balun is that it is mechanically unwieldy and the unskilled can short or damage the balun when connecting the main feeder. This resulted in the design of the " Inverse Balun " (Fig. 2) which, as the name implies, involves turning the coax section inside out. In the early research. it was found that p.v.c. insulated wire gave a loss of three-quarters of a dB at 500 mc, this loss appearing as heat in the p.v.c., and thus a special polythene wire was adopted and for high power applications, p.t.f.e. has been used.

First tests in amateur use of the device about two years after it was commercially available on TV aerials, showed that a performance equal to a coaxial section could be achieved and the required power could be handled. In this connection, for development of the

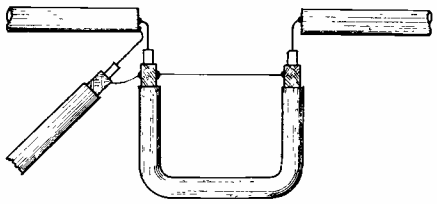


Fig. 1 : Coaxial Balun

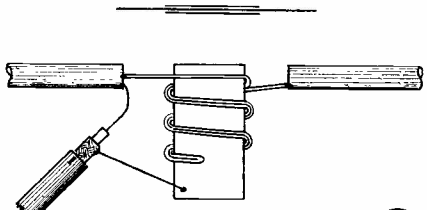


Fig. 2 : Inverse Balun

A 458

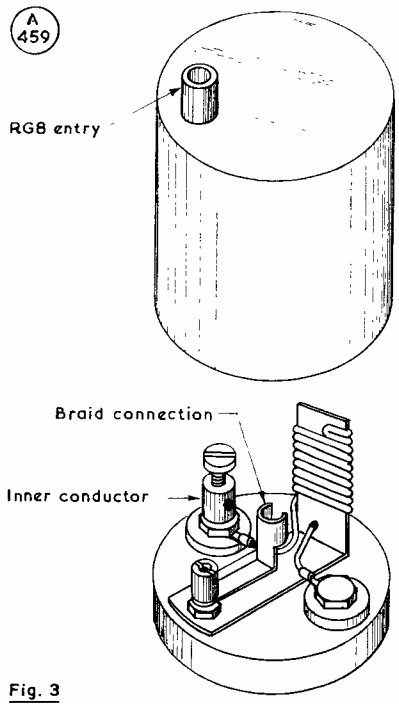


Fig. 3

American market, samples had to be sent to the States for testing to keep within the law. An enthusiastic reception was given it in the United States, despite the N.I.H. (" Not Invented Here ") syndrome, which maintains that *nothing* was *ever* invented *outside* the United States!

Naturally, this unit can be very compact and reliable and, being sealed into the insulator box, it is not affected by weather. As previously remarked, all UHF television aerials produced by *J-Beam* since about 1966 have incorporated an " Inverse Balun " and for the last year, a commercial telecommunication version has been used extensively in all types of professional installations.

The fitting of this balun instead of the previous coaxial model does not affect the performance in any way and thus the new models may be stacked with the previous type without difficulty.

Fig. 3 illustrates the general assembly of the new balun and insulator box which will accept cable up to RG-8 and UR-57 size or down to TV coax. All connections to the dipole are already made and the coax is merely secured in a braid clamp and the inner conductor fitted to the terminal provided. The winding of the balun should not be disturbed.

TRANSISTOR GAIN MEASURING METER

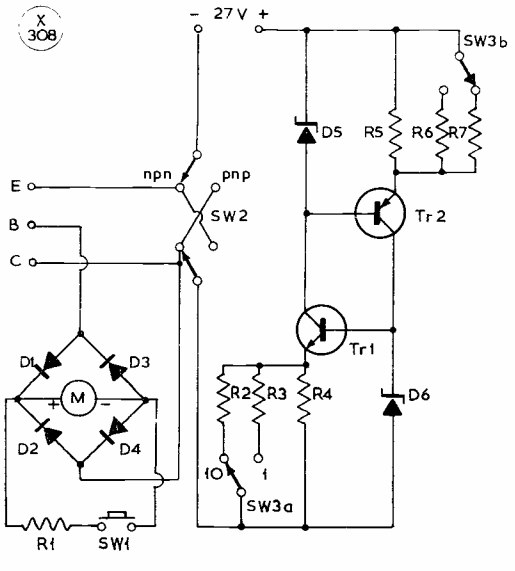
INSTRUMENT FOR DETERMINING THE COMPARATIVE *BETA*

A. LANGTON

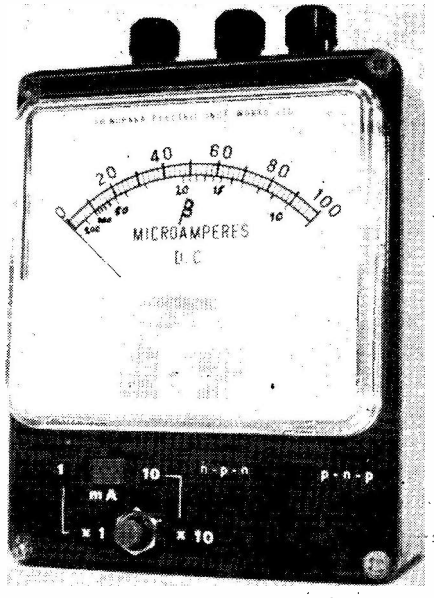
THIS instrument was originally built to match the gains of transistors used in a DC complementary amplifier. Since then it has proved very useful in both amateur and professional work, as a means of quickly checking transistors, as well as selecting them for gain requirements.

By passing a constant current through the transistor it is possible to measure the base current and express it as a ratio of the collector current—that is, the base current meter may be calibrated in terms of DC gain.

The constant current generator is a " ring of two reference " circuit. (Williams, *Wireless World*, September 1966). Note that it is a two-terminal device. The collector current of the first transistor is held constant by the zener diode in the base circuit, and is used to provide a regulated current for the second zener diode, which regulates the base voltage, and therefore the collector current, of the second transistor. This regulates the current through the first zener, which regulates the collector current in the first transistor, which . . . and so on. By switching the emitter resistors it is possible to provide different currents. In this instrument, only 1 mA and 10 mA were used. Higher currents can be provided, as long as the power rating of the transistors is not exceeded. Sw2 is a reversing switch, transposing the emitter and collector connections. The meter is connected between the base and collector terminals *via* a bridge rectifier, to avoid having to reverse the meter connections

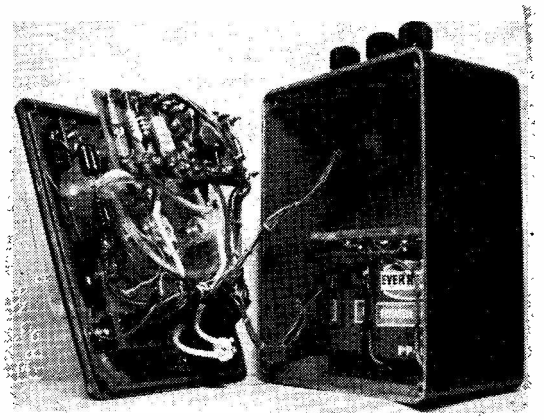


Values for the Transistor Beta Meter: R1, 112 ohms (100 + 12); R2, R7, 1.2K; R3, R6, 15K; R4, R5, 47K — all resistors rated ¼w., 5% tolerance; D1-D4, OA81; D5, D6, OAZ202; Tr1, 2N1304; Tr2, 2N1305; Sw1, push-button, closed at rest; Sw2, Sw3, DPDT toggle; meter, 0-100 μA; batteries, 3/PP4.



The finished Transistor Tester as described in the article herewith.

(Right) an exploded view of the Transistor Tester discussed in the text, showing general construction. It is all accommodated in a small Eddystone diecast box.



when changing the polarity of the transistor under test. A meter shunt is used on the 10 mA range, to give a $\times 10$ increase in sensitivity. However, this must be open circuit on the 1 mA range or else the calibration will be invalid. There is no on/off switch; when the transistor is removed, the supply is disconnected.

The whole assembly was fitted into a standard Eddystone diecast box 11·5 × 9 × 5·5 cm. The meter is 8 × 9 cm, which gave enough room to re-calibrate the scale in terms of *beta*. Screw terminals were used, but " press-and-poke " ones would have been more suitable. (A socket would probably be even better). One improvement which could be added would be a battery test button; a resistor of 27K and a push-to-make button connected between the base and emitter terminals would be sufficient. If you do not care to go to such trouble, you can put a resistor between the terminal posts if you think the batteries are running down. The batteries used are three PP4's.

Putting a transistor in " round the wrong way " does not have the usual disastrous results, because the voltage across it is very low, just enough to make it conduct. When connecting a transistor, leave the base lead until last, and disconnect it first, otherwise all the current will flow through the base circuit and overload the meter, perhaps also damaging the transistor.

SPECIALLY ON THE AIR

With reference to events that have already taken place—there were quite a number of them during July—we would be glad to have brief reports, with photographs (where possible), covering results and experiences during the operation of the station, with callsigns of the operators involved.

GB3SMG, July 28-August 2 : On the occasion of the International Games for the Paralysed to be held in the new Sports Stadium at Stoke Mandeville Hospital. Operation will be on all bands 10 to 160m., and it is hoped to be on the air continuously from 0900 till 1800 BST daily.—G. H. Ungar, G3XIF, Stoke Mandeville Hospital, Mandeville Road, Aylesbury, Bucks.

From August 1 : Exhibition station to be set up by Lerwick Radio Club, Shetland, for the month-long celebrations in connection with the 500th anniversary of the pledging of the Shetland Is. by the King of Denmark to the Scottish crown. Main radio activity will be during first week August under special callsign (not known at moment of writing), with operation on all bands 10-160m., CW and SSB, six or seven GM operators being available. All contacts will be confirmed by a special commemorative QSL card. —G. Black, GM3XPQ, Sandsound Schoolhouse, Tresta, Shetland.

GB3NEF, August 3-9 : For the Royal National Eisteddfod of Wales, to be held this year in Flints., station organised by the Flint & District Radio Society, to operate on 160m. (base station and mobile, both AM) and on 10-15-20m. SSB. H.R.H. The Prince of Wales will visit the Eisteddfod on Wednesday, August 6, for which day skeds are specially invited—they will also be welcome for any other day, as will visitors to the station.—T. Hewitt, GW3YFD, Central Library, Church Street, Flint, CH6-5AP, North Wales.

GB3WRA, September 6 : Operating from the annual Wycombe Show on The Rye, High Wycombe, Bucks., running all bands 4m. to 160m. AM/CW /SSB. Visiting amateurs will be specially welcome. —A. C. Butcher, G3FSN, 70 Hughenden Avenue, High Wycombe, Bucks.

ALWAYS WANTED

Articles and photographs of Amateur Radio interest, to be considered for publication in these pages. All such material that we can use is paid for. immediately on publication. Currently, we are paying more than £100 a month to outside contributors alone. *i.e.*, those who send in material on the chance that it might be acceptable. What we always require are well-presented technical and constructional articles; short items on subjects of current interest; and good photographs of the sort you see in any issue of SHORT WAVE MAGAZINE. Articles should be set out as explained under the heading " Authors' Mss." on the Contents page of any issue. Photographs should be prints (we do not want to juggle with mini-negatives) black-and-white glossy and of good quality, about post-card size being preferred, with all the details on a separate sheet—and *not* scribbled on the back of the picture (with a smeary ball-point pen!). In short, material should be sent in as it is expected to appear in print—which will be made clear enough by a careful study of any issue of the *Magazine*. All material offered for publication should be addressed to: Editor, SHORT WAVE MAGAZINE, Buckingham.

VANGUARD, VALIANT, LG.50, DX-40U

SOME NOTES FOR THE BEGINNER ON AM/CW TRANSMITTERS AVAILABLE SECOND-HAND

F. G. RAYER, A.I.E.R.E. (G3OGR)

WHEN fitting up a newly licensed station, it is natural to look around for second-hand equipment, including a transmitter of good performance but reasonable cost. Used AM/CW transmitters in the power range around 30 to 60 watts are easily obtained. The old hand will probably at some time have seen or possessed some of these, or will at least have read reviews or other data. But for the beginner starting on the air the mere " name " may convey little.

For these reasons, the information here on a few of the more readily available medium power AM/CW transmitters may be helpful. A prospective purchaser will then be able to decide if the equipment is likely to be of the type wanted, and can go on from there, in the light of experience.

It is clearly impossible to describe all the gear available, however briefly. Those items discussed here are for CW or AM only. The power ratings of around 30 to 60 watts make a nice compromise between relatively low cost and compact equipment, and quite a useful RF output. A receiver S-meter calibration of 6 dB per S-point is a power ratio of 3·98. Therefore, the full 150w. input with a larger transmitter would give about one S-point better signals than a transmitter running 40 watts or so. Thus an S9 contact with 150w. would be about S8 with 40w. It is important to realise this at the outset! It is repeatedly confirmed in practice, and may account for the great popularity of transmitters in the 30-60w. range—in other words, the *aerial* is the factor that really matters, as has been explained time and again!

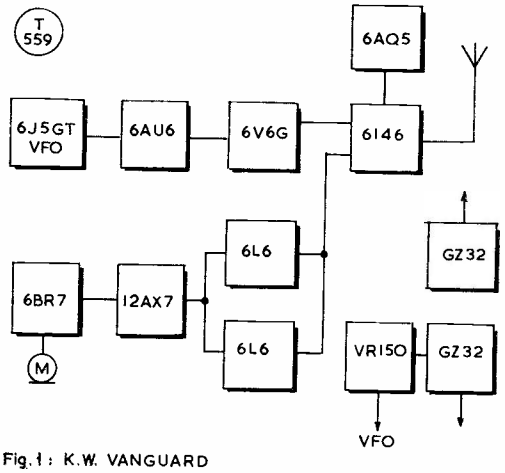


Fig. 1: K.W. VANGUARD

K.W. Vanguard

With slight variations, this is as in Fig. 1. The VFO has three basic ranges, which operate over 28-29·8, 21-21·6, 14-14·4, 7-7·45, and 3·5-4 mc, individually calibrated on a large central dial, which is part of the Geloso VFO. Some models have the modification for reduced-power working on Top Band. The 6J5 stabilised VFO is followed by a 6AU6 buffer-multiplier, 6V6 driver multiplier, and 6146 PA, into the usual *pi*-tank.

Modulation is by a microphone amplifier, 6BR7, amplifier-splitter (the 12AX7) and 2/6L6, which give high-level control of PA anode and screen. The 6AQ5 screen clamp, used for PA protection if drive fails (unlikely) and keying is not incorporated in some models.

Separate HT transformers supply their own rectifiers for modulator and RF sections, and a third transformer feeds the heaters. A meter with 3-way switch reads grid current, anode current and modulation percentage, with limit marking. There are also the audio gain, net, grid drive, CW/AM, *pi*-tank and other controls. A send/receive switch on the panel throws the aerial from Tx to a receiver, and mutes the receiver speaker if wished. So no external aerial change-over relay is necessary. The transmitter weighs about 56 lbs. and is self-contained in a cabinet approximately 20 x 12 x 12in. deep.

This transmitter is extremely easy to use with success. High-level modulation puts plenty of audio on the carrier. Good results are possible with less than full loading of the PA, normal input being about 50 watts. Speech quality is excellent and the Tx is docile on all bands.

K.W. Valiant

This can perhaps best be described as similar to the Vanguard, but without the AC mains power circuits (transformers, rectifiers, etc.) and thus in a smaller cabinet. It is for mobile or fixed use, with appropriate power packs. It is robust, well designed and handsome.

For fixed-station use, a mains PSU giving about 400v. at 120mA (for modulator) and 450v. at 150mA (RF section) would be required. Some latitude can be accepted in the voltages here. The heaters require 6·3v. at 4·5 A, or 12·6v. at 2¼A. For mobile use, they would run from the 12v. accumulator. VFO buffer, driver, PA, audio and 2/6L6 stages are the same as in Fig. 1.

Labgear LG.50

This Tx is designed for the 3·5, 7, 14, 21 and 28 mc bands, with internal VFO and calibrated dial. Fig. 2 is a block diagram. The EF80 VFO is followed by an

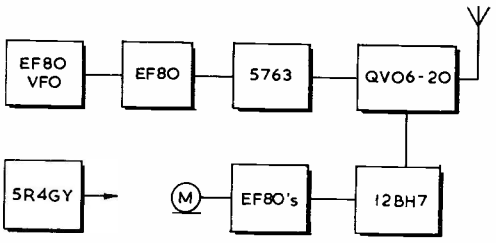


Fig.2 : LG.50 BLOCK DIAGRAM (T 560)

EF80 buffer-multiplier, 5763 driver, and QV06-20 (6146) PA, working into the customary *pi*-tank. A pre-amplifier and 12BH7 give screen-grid modulation of the PA, with power from a 5R4GY rectifier.

Panel controls include VFO setting, band change, tune, *pi*-tank and load controls, and a meter which can be switched to read grid or anode current for the PA stage. Dimensions are approximately 16 x 12½ x 14in., and weight 35 lbs.

Input is up to 60 watts CW, and 40 watts phone, the latter operating with the reduced anode efficiency usual with SG modulation. This means that the instantaneous peak output is less than with high-level modulation at the same PA input, as customary with grid-modulation systems. This is the price paid for eliminating the additional components required for high-level modulation.

Heathkit DX-40U

Fig. 3 shows the stages in this popular transmitter, hundreds of which are in regular use. The 6CH6 is a crystal oscillator, followed by the 5763 multiplier-driver and 6146 PA, which feeds the aerial through a *pi*-tank network, covering the 10, 15, 20, 40 and 80m. bands. A single mains transformer supplies heaters and HT, with the 5U4G rectifier.

Modulation is applied to the screen-grid of the 6146, with carrier control. The ECC83 is the microphone amplifier, followed by the triode-pentode stage, screen current for the PA flowing through the cathode circuit of the latter.

A meter can be switched to read grid current or PA anode current. A switch provides net, standby, phone and CW working. The transmitter is approximately 13 x 8½ x 9½in., and it weighs 25 lbs.

Maximum PA input is up to 75 watts CW. In the AM mode, input is lower, peaking up to 60 watts maximum on speech peaks (the "controlled carrier" method). As with SG modulation in general, speech quality and modulation depend somewhat on aerial loading. The DX-40U is a very nice CW transmitter.

A switch on the rear panel drop allows the choice of three crystals, or VFO. With suitable crystals, working on more than one band is possible, by multiplication.

The related VF-1U VFO—with which the DX-40U is often associated—employs a single valve and voltage regulator, and can draw its power from the DX-40U. It is approximately 9½ x 6½ x 5in. and is frequency calibrated. Output is switched, and may be either on 1·75 or 7 mc. When operated in conjunction with the multipliers in the DX-40U any amateur band from Eighty to Ten metres can be covered. The DX-40U with VF-1U VFO make an effective beginner Tx set-up, though a good aerial is necessary to achieve satisfying results on telephony.

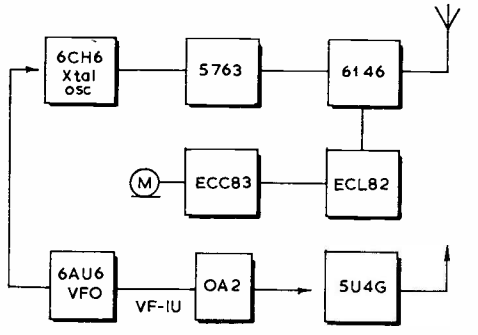


Fig.3 : STAGES OF DX-40U AND VFO (T 561)

TWELFTH JAMBOREE-ON-THE-AIR

October 18-19, 1969

What has become a very important event in the Amateur Radio calendar—the Scout Jamboree-on-the-Air, whereby Scout groups throughout the world are brought into contact through stations on the amateur bands—will this year take place over the weekend October 18-19, 0001z on the Saturday till 2359z on Sunday 19th.

As not many Scout groups have a licensed station of their own, it has become the practice for radio amateur operators to offer to represent local Scout troops—which of course also involves working their QSO's with distant Scout stations while members of their local group look on. (So far as the U.K. is concerned, the regulations are strict as to anyone non-licensed speaking towards the microphone). During the Jamboree, all bands are worked, in all modes, and in previous years many very interesting contacts have been made. The event is *not* a contest, and there are no prizes. All that is looked for is a general get-together of Scouts, world wide, through the medium of Amateur Radio. It is an interesting and worth-while exercise for all taking part.

DESIGN FOR AN AMATEUR-BAND RECEIVER

COMPLETING THE CIRCUITRY — POINTS ON CONSTRUCTION AND FINISH — ALIGNMENT AND SETTING UP — FINAL ADJUSTMENTS, CALIBRATION AND MEASURED PERFORMANCE

Part III

D. A. HOLLINGSBEE (G3TDT)

IT is hoped that this series of articles is for some readers not only a constructional project but for others also an introduction to some of the modern devices available. Unfortunately, very few of these components can be obtained from the " local radio dealer on the corner " and no experienced constructor would buy surplus without some guarantee as to source and origin.

One firm that can supply all the transistors and integrated circuits is *A. Marshall and Son (London) Ltd., 28 Cricklewood Road, London, N.W.2.* The same firm also have data sheets on the integrated circuits, at 2s. each.

Q Multiplier

So far, the receiver has only been used with established designs of Q-multiplier. However, there is no reason why any sound design should not prove satisfactory, although most of these require considerable nursing to obtain good performance. From circuits published here and there in the Amateur Radio press, there is scope for the experimenter as regards transistorised Q-multipliers.

AGC, S-Meter and Squelch Control

As predicted in an earlier part of this article, there have been changes since the write-up was started. Several of these have been absorbed but the AGC system has been completely redesigned. (Fig. 11, p.358.) Originally a CA3005 was followed by a pair of BFY51's. This was considered rather a waste of the CA3005IC and was not giving quite the performance required. As a result the circuit was modified round dual transistors to an arrangement equivalent to the Darlington pair. Ideally, the AGC amplifier should be driven from the penultimate IF stage, to prevent interaction from the CIO. This can not be done on this receiver as virtually all the gain is produced by the final integrated circuit and possible non-linear gain would ruin the AGC action. For undefined reasons the original system was not affected by the CIO, but the new set-up most definitely was. Hence, a simple source follower stage was fitted between the last IF and the product detector. The circuit of this buffer is shown in Fig. 10 and although an FET has been used, with correct bias a 2N2926 would serve as well. In theory, the buffer should be fed from a high-impedance source and it may be worth taking the signal from the junction of the IC and the IF transformer. A double tuned IF should be even better.

The first stage of the AGC system is a straight amplifier with a preset input level to compensate for gain variations. The AC component of the output is fed to a diode pump and thence to a choice of three capacitors that provide AGC delay. Originally only two condensers were used, the second being switched in with the CIO. In practice, it has been found a very real advantage to be able to select delay according to band conditions. For instance, with long delay and heavy static, several words of fast talk or CW would be lost from an S5 signal each time the AGC followed the static. On the other hand, short delay on a slow SSB signal is most unpleasant to listen to as even the best AGC system takes a syllable or so to react.

The capacitor output is split two ways to feed further 2N5305's, both of which are used as inverting DC amplifiers. In the first case, the output, which falls with

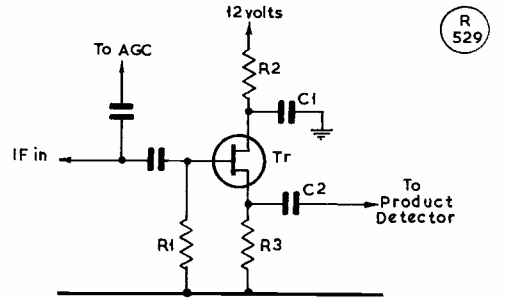


Fig. 10: IF BUFFER

Table of Values

Fig. 10. Circuit of the IF Buffer

C1 = 0·2 μF	R2 = 22 ohms
C2 = 0·1 μF ceramic	R3 = 1,200 ohms
R1 = 2·2 megohms	Tr = 2N3819

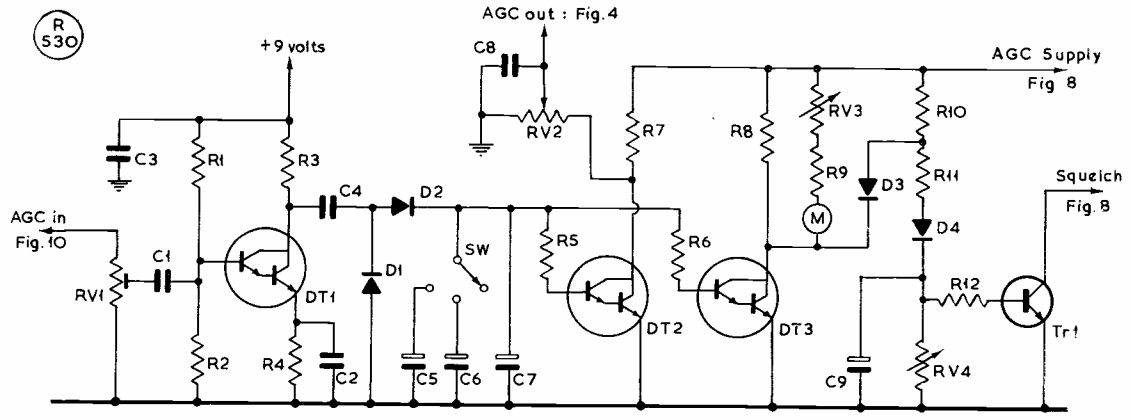


Fig. 11 : AGC AMPLIFIER, S-METER & SQUELCH CONTROL

Fig. 11. The AGC Amplifier, S-Meter and Squelch Control Circuitry.

a rise in input, is fed back to the bias control of the first IF amplifier. It is taken *via* a simple IF gain control which is extremely useful under noisy band conditions. In the second case a DC voltmeter is connected across the load resistance to provide an S-meter. In fact, this meter reads the change in voltage required to produce a constant IF output and, like the majority of S-meters, is affected by the gain control settings. In this case, the AF gain has some effect. Nevertheless, it can be calibrated in dB, as discussed later. There is more nonsense talked about S-meter readings than almost anything else and, as far as G3TDT is concerned, it is a tuning meter and signal strength comparitor. (Next time somebody tells you that you are " 40 dB over 9," ask for the S-point calibration figures—but make sure you have done your own homework!)

The squelch control is also taken from this point and works as follows: Having tuned to a clear part of the dial, the panel control is advanced (increased resistance) until the squelch transistor bottoms, thereby lowering the bias on the input to the AF integrated circuit and killing the audio output. Under these conditions the diode, D3, is reverse biased but if the receiver is subsequently tuned to a station an odd " S " point above the noise, the voltage at the collector of DT3 falls and the diode becomes forward biased, so that the series combination of D3 and DT3 are, in effect, in parallel with R11 and the panel control. This lowers the voltage on the base of Tr1 which then cuts off and restores the audio. The diode D4 acts as a trigger to provide a fairly snappy action while the capacitor C9 across the control takes care of any clicks that may result. Any adjustment to the IF gain control will upset the squelch setting, but it is simple to re-set and very effective. The 5K control Rv4 should be adequate for any reasonable transistor, but it may be advisable temporarily to substitute a 10K potentiometer for R10 and R11 to find the best combination.

Almost any modern silicon n.p.n. transistors could be used to make up the Darlington pairs providing they have a low current gain of about 40. This could be cheaper than the 2N5305 and if this method is adopted then it would be worth trying, say, a 2,200 ohm resistor between the emitter and base connection of the DT2 and DT3 pairs. This would raise the input impedance and a lower value capacitor would provide the same AGC delay, but with a faster attack time.

Coming back to the AGC, the arguments will long continue over the *pros* and *cons* of audio derived *versus* RF derived systems. A careful analysis of all the possible conditions will reveal that there is a lot to be said for both systems and it was decided that a combination of the two was desirable. AGC *plus* AVC if you like! This proved a simpler problem than was at first envisaged.

Reference to the AF amplifier will show that the output stage is fed *via* a dropping resistor from the 12 volt rail. This means that the DC voltage at the output stage feed point, nominally 9 volts, will fall with loud signals, albeit heavily damped by the smoothing capacitor. If this same point is used as the AGC voltage supply point, then the IF gain is also reduced with heavily modulated signals. The effect is remarkably good with the Sunday morning net becoming a pleasure to listen to—or would be if everyone was on the same frequency!

Table of Values

Fig. 11. Circuit of AGC Amplifier, S-Meter, Squelch Control

C1	= ·01 μF	R11	= 4,700 ohms, *see text*
C2, C3, C4	= 0·1 μF	R12	= 4,700 ohms
C5	= 4 μF, 15v. wkg.	Rv1, Rv2	= 10,000 ohms
C9, C6	= 8 μF, 15v. wkg.	Rv3, Rv4	= 5,000 ohms
C7	= 12 μF, 15v. wkg.	DT1, DT2,	
C8	= 0·47 μF paper or polyester	DT3	= 2N5305, *see text*
R1, R2	= 1 megohm	Tr1	= 2N2926
R3	= 1,200 ohms	D1, D2,	
R4, R7	= 1,000 ohms	D3, D4	= OA91, etc.
R5, R6, R8	= 1,500 ohms	M	= Meter, 500 μA
R9	= 10,000 ohms	SW	= Single-pole, 3 way
R10	= 5,600, *see text*		

CONSTRUCTION

It is not intended to offer the prototype as an example for construction! Although by no means a breadboard set up, the many modifications have left their mark and many improvements to lay-out are obvious. As a result, the mechanical layout suggested by Fig. 12 (below) is a cross between what has been done and what the author intends to do by way of a rebuild.

No chassis is used, instead all RF components are built into three diecast boxes, as suggested by Fig. 13. The two larger boxes measure $10\frac{3}{4}$ x $6\frac{3}{4}$ x 2 inches deep while the smaller box, for the VFO, is $6\frac{3}{4}$ x $4\frac{3}{4}$ x 2 inches. These were obtained from *Electroniques/STC* but it would be possible to use the even smaller *Imhof* or *Eddystone* range with careful layout, but do not crowd the RF coils. By bolting the two larger boxes together it is possible to screen completely all the RF sections except the lead from the VFO to the second mixer. This connection must be made with fully screened plugs and sockets. (The miniature types are ideal, but expensive.)

The AF amplifier and power supply are external to the boxes and all controls not handling radio frequency are mounted on the front panel. DC supplies in and out of the boxes are *via* ·001 μF feed-throughs. Other connections, *e.g.*, the A.F. output, are by using PTFE or similar lead-outs. Special care must be taken to keep the CIO control leads as short as possible and not run close to earth or other cables. The CIO itself is assembled in a small container within the larger box. Individual circuits should be earthed at one point only and panel control earths must be brought back to the circuit earth using ·001 μF feed-throughs. Needless to say, all leads should be as short as it possible.

In practice, it will be found that—as is the experience of all constructors of amateur receivers!—front panel size and layout will be dictated by the dial used. Doubtless, the best buy is the HRO replacement which is compact and reliable, but as ugly as sin and requires separate calibration charts. The only new dial with slow enough tuning is the *Eddystone* 898. Unfortunately, this is on the large side and spreads out the other controls. If you know a Rx or Tx with a dial you like the look (and feel) of, then it is worth asking the manufacturer/distributor if a spare is available—but be careful: Some dials, such as certain of the *Muirheads*, require real precision in the mounting arrangements. There are several interesting possibilities in the current *Jackson Bros.* range.

One point that cannot be over-emphasised is the need to draw everything up carefully before any mechanical work is started. A week of spare time (using the kitchen table as a drawing board) should produce a complete set of working sketches that will save untold hours of frustration later. Many a good project has been shelved indefinitely because the thought of stripping down just to drill one fixing hole was the final straw. Make certain you can remove the box covers without major dismantling. The VFO cover in particular will be on and off many times when the dial is calibrated. It is worth mounting the front panel on brackets to the boxes. It must be rigid, as flexing could cause the VFO to shift. Remember also that some components will be between the boxes and the panel, so make sure you have room and check whether or not they can be assembled with the panel in position.

Cabinets are a personal matter, but don't forget the old adage that unless a thing looks right it is *not* right. (Unfortunately, the reverse is not so definite.) With the prototype it was decided to break away from the rather dull designs in current production. With no screening problems, a wooden case to near classic proportions was made, measuring approximately 17 x 8 x 10 inches deep. The wood used was half inch ply and it was veneered outside with mahogany. This is easy using

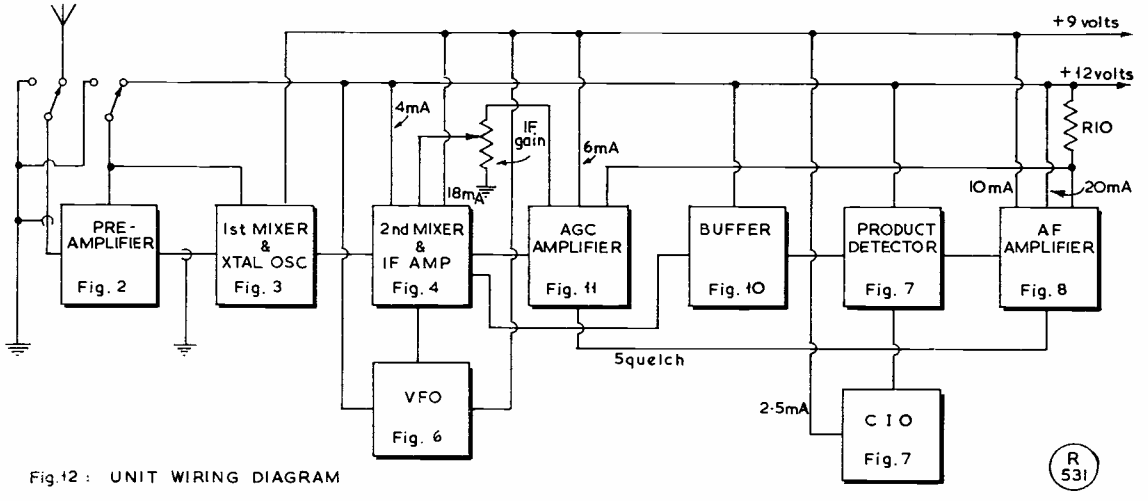


Fig. 12. The Unit Wiring Diagram — showing general interconnection.

Evostick. Carefully rubbed down (flour paper—*with* the grain only), it was filled and given one coat of polyurethane varnish applied with a pad. Next day a polish with *Simonize* wax finished the job. The front panel is sprayed a light blue—a " do it yourself " spray known as *Baby Blue* and intended for bedroom furniture. It goes well with the deep reddy brown of the wood, while the black and chrome knobs (*Radiospares* style SK and PK) introduce a little contrast. If you can have the panel engraved this is best, if not then *Letraset* instant lettering or *UNO* stencils can produce a neat job. Perhaps the best would be the new *Presletta* transfers. Try a sheet of capitals and figures in *Eurostile Bold*. The references are *TE1 10 pt. C*, and *TE 10 pt. N*, respectively. Any good drawing office supplier or stationer should be able to get them for you. The author's own result following these notions is shown on p.213 of the June issue of SHORT WAVE MAGAZINE.

It is a good plan to build and test the circuits separately. If you intend to experiment then pegboard or *CirKit* is a good method, and then use home-made printed circuit or *CirKit* for the final design. Single sided *Veroboard* was used in several places on the prototype, but this can be expensive unless offcuts are available, as the boards can seldom be re-used. Don't forget to provide a means of fastening the boards—a good method is to secure them to the dividing screens with 6BA screws and ¼in. spacers, but the IF strip and the mixers will need to be mounted flat so that the transformers can be trimmed. A good scheme here is to assemble cheese-head screws and spacers on to the board and then secure the screws to the bottom of the die cast box with *Araldite*. A piece of foam rubber and the box lid replaced will stop things moving while the adhesive sets. As long as no adhesive has reached the thread (a spot of grease will ensure this) then the board can be removed leaving the screws behind. (Don't try to use the screws as earth points!) The same method can be used to fix the coils in place.

While planning the layout it is worth remembering to include a small monitor speaker, say the 2in. size. This will prove extremely useful during the setting-up period or when making future adjustments. With the limited frequency range of the Rx the added distortion of the small speaker is most unpleasant. For the permanent installation a properly mounted speaker, at least a 5in. is recommended.

Components

Many alternative semiconductors have been suggested in the text. The author does not set himself up as an expert on transistor selection and use, so if you deviate from the recommended types then the performance may well change. In general, avoid VHF types when IF or AF currents are involved; if low-noise types, such as the BC109 and BC149, are available they should be used. In all cases the 2N2926 can be substituted for the 2N2925. Almost any RF " N " channel FET's should do in place of the 2N3819 and 2N3825, but the latter is recommended for the pre-selector. Since starting this project, *Mullard* have announced a new dual-gate FET that appears to compare with the 3N140. The type number is BFS28 and it could replace the 3N141, subject to availability and perhaps some component adjustment. Also from *Mullard* are a new range of integrated circuits that could replace, perhaps with advantage, those specified. The series have the reference letters TA, but no detailed data is available at the moment.

Unless specified, all resistors are ¼ watt 5%. If you want to use them, then 1/10 watt will do in most cases, but the mechanical failure rate is high.

Except in critical applications, capacitor types have not been specified. In general, disc ceramic or mica types should be used for coupling, while polyester or paper will suffice for LF decoupling. If in doubt, stick to ceramic, but avoid *Hi-K* types. RF chokes can be the miniature ferrite variety; those used in the prototype were hand wound on *Mullard* ferrite ring cores.

Alignment

If you wish to hear " what it sounds like " then the front end and 1st mixer can be set up first and fed into a general-coverage receiver. The correct way is to start at the output and work your way back. Before any circuit board is fitted it should be double checked for correct wiring, shorts and dry joints. Always apply power through a milli-ammeter and a 5K wire-wound variable resistor. Increase the power while watching the meter. Some approximate currents are given in the unit wiring diagram, Fig. 12, p.359.

AF Output

This is best checked with an AF signal generator. Short the base of the squelch transistor to earth and apply a few milli-volts to the input terminals. Check that frequency coverage is correct and adjust the AF filter as described in the text. If no generator is available, then the " Tape " or " Earphone " socket of a *transistor* radio can be used, suitably loaded and coupled through 0·5 μF.

CIO and Product Detector

Check for output of the CIO with an oscilloscope or valve voltmeter. Set the output to about two thirds full power, Rv3, Fig. 7, p.282, July. Apply a 455 kc signal to the input of the product detector and adjust the CIO for zero-beat audio output. This is an approximate setting to be trimmed at a later stage. The AF output trimmer Rv2 should be at about half setting and the AF gain control about a quarter turn up from minimum.

IF Strip

Make certain the RF signal generator is warmed up and stable. If the AGC amplifier is connected, turn the input adjuster (Rv1, Fig. 11, p.358) to minimum. Remove the connection from the IF gain control and the AGC amplifier and re-connect the control to the 9 volt rail through a 1000-ohm resistor. Set the generator to 455 kc, connect the 'scope across the 2nd IF output and feed the generator into the IF strip, after the filter, and adjust the IF transformers for maximum output. It may be necessary to feed the signal into the 2nd IF stage if the transformers are badly mis-aligned. If a 'scope is not available then use a modulated signal and adjust by sound level or, if the AGC amplifier is connected, then slowly advance the input adjuster to obtain an S-meter reading. Connect the generator to the filter input through a 4·7K resistor and connect the 'scope to the filter output. It is best to

use unscreened cable unless an RF probe is available. Carefully adjust the generator for maximum reading, move the 'scope to the output and finally trim the IF transformers. This too can be done by ear or the S-meter, as the IF transformers have a wide pass band. Switch on the CIO and leave it running for a few minutes. Set the panel control to mid-travel and finally adjust the CIO for audio zero beat. Set the CIO output to give a clear signal at a reasonable level of audio.

AGC Amplifier

Reconnect the IF gain control to the AGC amplifier, adjust the AGC input so as to give a reasonably constant AF output when the signal generator output is swung up and down. Make certain the S-meter is not overshooting and set up the squelch as described earlier.

All this section will be subject to final trimming when RF signals can be applied.

Second Mixer

Remove power from the VFO and all previous stages. Apply a 455 kc signal to gate 1 of the 3N141. Adjust the first IF transformer for maximum output as described earlier.

Reconnect power to the VFO and if a suitable 'scope or valve voltmeter is available with an RF probe, check the signal voltage on the second gate of the 3N141; this should be between 6 and 8 volts peak-to-peak—if not, then a small wideband transformer can be wound on a *Mullard* toroid core.

Couple the signal generator to gate 1 with a low-value capacitor (say 22 $\mu\mu$F). Set the VFO to mid-frequency and sweep the generator between 4 and 6 mc to find the IF signal. Having found this, adjust the VFO to give coverage of the tuning dial when the generator is tuned from 5·0 to 5·5 mc. Start at the HF end of the range and adjust the pre-set capacitor to bring the 5·5 mc beat to the end of the dial. It may be necessary to " inch " the generator—that is to say, set the VFO to the required mark (VC1 at minimum) and find it with the generator. Make a small adjustment to VC2 and re-adjust the generator. Repeat until the generator is on 5·5 mc or you have nothing left on the pre-set control. Re-tune the VFO to its lowest frequency—plates fully meshed—and repeat the procedure but adjusting the core of L1.

Re-tune the VFO to the highest frequency and repeat both steps until no further adjustment is needed.

Two points should be noted. First, make sure your generator is accurate by checking against a known signal such as MSF on a general coverage receiver. Secondly, do not use the extreme ends of the VFO dial as not only will your front-end crystals vary a little but also the tuning capacitor will be non-linear at the extremes of movement. About 5% is a reasonable figure so, on the Eddystone dial, use 25 and 475 on the logging scale.

1st Mixer and Crystal Oscillator

With the power off, switch to each range in turn and adjust the coils of the crystal oscillator using a GDO. Connect in the oscillator through a milliameter and trim each coil, in turn, for a rise in current. There is likely to be a steady rise followed by a peak and then a very sharp fall off. The best setting is just LF (core

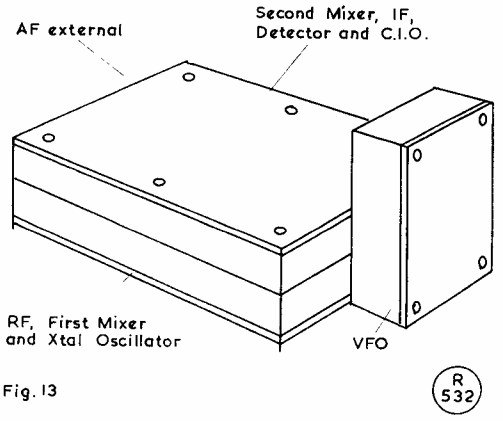


Fig. 13. Assembling the Units in diecast boxes.

further in) of the peak. It may not be necessary to use the GDO on the 7 and 9 mc coils, but on the higher ranges it is only too easy to tune to a harmonic. As with the second mixer, the injection voltage to the 3N141 should be 6 to 8 volts peak-to-peak. Very few oscilloscopes can handle this sort of frequency so some degree of compromise is needed. Too low a signal will reduce conversion gain which is not so important, but the noise level will also rise which is more of a problem.

To line up the 5 mc transformers, feed a 3·6 mc signal into the aerial socket and adjust the pre-tune control for maximum signal. Peak the output on the first 5 mc transformer. Re-tune the receiver to 3·9 mc and adjust the second transformer. This is best done with the AGC by-passed, as described for setting the second IF strip Check over the full tuning and trim both transformers as required to obtain a near flat response. With care and patience, plus and minus 1 dB is possible.

FINAL ADJUSTMENTS

As the AGC amplifier, S-meter and IF gain control are interdependent very careful setting is required if the best results are to be obtained. The matter is further complicated by the different dynamic characteristics of the six amateur bands and the various levels of aerial noise. After many hours of practical listening tests the following setting-up procedure is recommended :

If possible, choose a time of day when 20 metres is just open but clear of European noise. Tune the receiver to a quiet spot and set the IF gain control to three quarters of maximum. Adjust the AGC pre-set control until the aerial noise just, and only just, lifts the S-meter off the stop. Remove the aerial and replace with the signal generator. Feed in a signal of 2·5 milli-volts and adjust the S-meter for full scale deflection.

Replace the aerial and check that the noise reading is substantially unchanged. If it has moved a lot, then it will be necessary to repeat both steps until a balance is found.

Very few signal generators are in fact calibrated with any degree of accuracy and in the absence of a reliable instrument the maximum reading should be set against

a very strong signal on, say, Top Band or Eighty. Some constructors may prefer to bring the S-meter trimmer out as a panel control or even re-wire it in a bridge arrangement so that it can be zero'ed for any level of band noise or IF gain setting.

If a suitable generator is available then the following calibration points are suggested:—
S1, 1 microvolt; S2, 2 μV; S3, 4 μV; S4, 8 μV; S5, 16 μV; S6, 32 μV; S7, 64 μV; S8, 128 μV; S9, 256 μV; S9 + 10 dB, 810 μV; S9 + 20 dB, 2560 μV.

Finally, set the AF pre-set control to give a range that suits the user and adjust the CIO output for a clear signal, preferably by viewing the output on the 'scope.

Providing the coils have been checked with the GDO, the preselector will not require any adjustment.

Calibration

Stray capacity and crystal errors mean that band edges will not all be in the same place on the dial. Consequently, each band will need to be calibrated separately. For all practical purposes a 100 kc crystal calibrator will provide the essential information, the sub-division being obtained by visual interpolation. If a 10 kc divider is available so much the better, but the only really accurate method is to use a frequency meter such as a BC-221 or LM-14. It is well worth spending an evening preparing a separate chart for each band.

It is often overlooked that, when receiving SSB, the receiver is tuned to the centre of the sideband and *not* to the missing carrier. This means there will be an error of approximately 1·2 kc on the dial reading. Some advanced receivers automatically shift the VFO to compensate and although this could be incorporated it was not considered to be worth the complication involved.

Power Supply

For the development of the receiver, dry batteries offer considerable advantages, but for practical use a car battery or mains PSU is preferable, as the demand approximates 1·5 watts. In either case a stabilised 9-volt supply is required. The mains power pack in use at G3TDT is shown in Fig. 14, below. The 13-volt heater transformer and bridge rectifier produce about 20 volts of smoothed DC. The 13-volt zener diode and Tr1 form a simple shunt regulator which is coupled to the series regulator Tr2. The voltage out is the zener voltage less the base/emitter drop of Tr1 and Tr2. There is some variation with load but this is not important. Tr1 should be fitted with a small heat sink or clip but Tr2 has to dissipate 1·5 watts and at least 4 square inches of heat sink should be used. As the prototype is built into a diecast box and the case is used as a heat sink, do not forget that the collector is connected to the case so an insulated mounting is essential.

The 9-volt section employs the conventional long-tailed pair followed by two series/cascade regulators to provide a low impedance output. The output is set to 9 volts by Rv1 and regulation is better than 1% (at 100 mA) and ripple less than 1 mV. Tr6 will require a heat clip.

The BFY52 is cheap enough, but there are plenty of other suitable types, the 2N3053 for example. For

Table of Values

Fig. 14. Circuit of the Power Supply

C1, C2	= 500 μF, 40v. wkg.	Tr1, Rr2, Tr5, Tr6	= BFY51, *see text*
C3, C6	= 0·1 μF, ceramic	Tr3, Tr4	= 2N2926, *see text*
C4	= 16 μF, 15v. wkg.	T	= Mains transformer, Sec. 13-volt (*Radiospares* "Heater")
C5	= 0·22 μF ceramic	MR	= Bridge Rectifier, 500 mA, 30-volt p.i.v.
C7	= 1·0 μF paper or polyester	Z1	= 13v. Zener, 400 mW, BZY88C13 or equiv.
C8	= 100 μF, 15v. wkg.	Z2	= 6v. Zener, 400 mW, BZY88-C6V2 or equiv.
R1	= 3·3 ohms, wire-wound	SW	= SPCO switch
R2	= 270 ohms	FS	= 250 mA fuse
R3, R5	= 1,200 ohms		
R4, R8	= 1,500 ohms		
R6	= 1,800 ohms		
R7	= 330 ohms		
R9	= 0·5 ohms wire-wound		
Rv1	= 1,000 ohms		

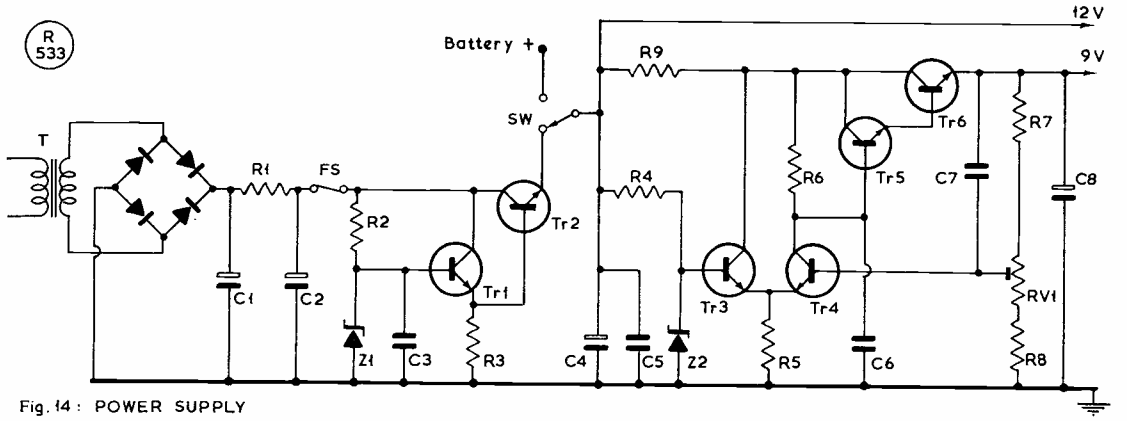


Fig. 14 : POWER SUPPLY

Fig. 14. Suitable PSU for the G3TDT Experimental Amateur-Band Receiver.

Tr3 and Tr4 there is an even wider choice—2N706, ZT80 and the BFY52 have been used.

There is no overload protection in this circuit. Fuses should be fitted to the mains supply and perhaps the 250 mA fuse in the rectifier output is an advantage, but for component protection no fuse will act fast enough to be of any use. Electronic protection could be incorporated, but it would involve extra components and complications. Far better to make certain that the risk of failure is removed by careful workmanship! Incidentally, a recent check in an electronic workshop revealed that most transistor failures were the result of the careless use of test meter probes!

DATA

The performance of the prototype was measured with a Roband Oscilloscope (RO50A), LM-13 wave meter, Signal Generator and a 30,000 ohms per volt Multimeter.

Sensitivity:	Better than 0·5 μV for 10 dB signal-to-signal-plus-noise ratio on all bands (SSB) except 10 metres. AM approximately 1·0 μV.
Stability:	Less than 20 cycles per hour drift under normal room conditions.
AGC:	Less than 3 dB AF change for signals from 1·0 μV to 10 mV. Variable delay. 0·25 to 1 sec. approximately.
IF and Second Channel Interference:	With an aerial tuner these are below noise level.
Spurious Signals:	Interfering signals occur on 80 metres (1 at S1), 15 metres (2 at S1 & 2) and 10 metres (several to S7). Both 15 and 10 metres could be cleared by lifting the crystal oscillator above signal frequency, *i.e.* 26·5 mc and 33·5 mc.

FINAL NOTES

When the re-build of the receiver is started it is probable that the pre-selector will be re-designed to provide better selectivity and to permit Rx/Tx switching with a bias voltage. The AF filter, although useful, is not exceptional and a really good RF Q-multiplier and/or crystal filter would be better for CW reception.

As mentioned earlier, the VFO could be improved and a mock-up based on the G3SRY design (February 1969 SHORT WAVE MAGAZINE) is under construction. The companion transmitter is also under way and should be on the air in a few months.

This receiver project took five months, at an average of four hours per day, to build and describe. No cost record was kept and in any case many of the more expensive components were to hand from earlier receivers.

(*Concluded*)

AMATEUR RADIO FUND — CHESHIRE HOMES

This is the 21st anniversary year of the founding of the Cheshire Homes—started by Gp. Capt. Leonard Cheshire, VC, DSO**, DFC*—and there are now 57 of these Homes in the U.K. and Eire, with several more in prospect. The only three that have a licensed operator and fully-equipped station (there are four others in the amateur-SWL category) have proved so successful that Gp. Capt. Cheshire is anxious that all Homes eventually should enjoy the therapeutic value of Amateur Radio.

Of course, for such a project money is required, in fairly generous quantities. To this end a committee has been formed and authorised by the Parent Foundation to start a fund—called The Cheshire Homes Amateur Radio Network Fund. For a beginning, the objective is to supply each Home with a Heathkit RA-1 receiver, speaker and suitable aerial. To economise on the financial side, the receivers will be bought in kit form and assembled—showing a considerable saving per Rx.

The Committee for CHARN are all licensed U.K. amateurs, and have already been very successful in raising funds, privately, for some of the Cheshire Homes now equipped. Donations for this most worthy cause—the Cheshire Foundation is wholly charitable and freely doing essential work outside the orbit of the National Health Service—should be addressed to: CHARN, W. M. Clarke, G3VUC, Fillace Park, Horrabridge, Yelverton, Devon. All remittances should be made payable to the *CHARN Fund.* To keep expenses down, receipts will not be given unless requested.

Editorial Note: We commend this Appeal to all radio amateurs. Having knowledge of the circumstances associated with the Cheshire Foundation and the conditions under which it operates, we can say that *CHARN* is a cause worthy of the support of readers.

CORRECTION NOTE — "TRANSISTOR POWER SUPPLY"

In this article in the July issue, the second paragraph under Circuit Modifications on p.288 should read "When the voltage across R *and* the zener is about 4 volts . . ." And in the circuit Fig. 5 on p.289, the diode below the pressel switch (closed for normal operation) should be seen as a thyristor.

SCOUTS OF AMERICA

The U.S. national Scout Jamboree took place during July 16-22, in the Farragut State Park, Idaho. They had KF7BSA on the air, using CW/Phone frequencies in the 3·5-28 mc bands. They also put on K2BFW/7 to operate in the 15-40-80m. U.S. novice bands. From the reports we have had, KF7BSA (yes, that *was* the callsign) was kept continuously on the air for the whole week, with Scouts at the microphone or on the key. Contacts with or reception of KF7BSA or K2BFW/7 will count for all the Tables.

MOBILE ON A BICYCLE

OR, VHF/M THE HARD WAY

C. RICHARDSON (G3WPR)

BEING too young to run a car, plus the equally important point of having insufficient money, the writer obtained a mobile licence which could be used pending the eventual acquisition of a vehicle.

Frustrated by the rather infrequent use to which the licence could thus be put, it was thought, could mobile operation be successfully achieved (and for that matter, be safe) on a bicycle?

The problem was pursued, and after some time spent in collecting the various pieces of equipment, building the halo and converting the HP-18 for two-metre operation, the task of putting it all on the bicycle began.

Installation

Whereas it is moderately easy to fix equipment in a car, a bicycle with very little storage space for equipment posed a real problem. It was decided that as the rig drew 7-8 amps. from a 12-volt supply, a car battery was essential, and this with the transistor inverter should be situated at the rear on a really strong cycle rack. The latter now having been completely utilised, it left only the handlebars or under the crossbar, for the transmitter-receiver and speaker. The audio output on " receive " being rather low compared with traffic noise meant that the speaker had to be directly in front of the rider. Thus, it was found by experiment that the layout as shown in the photograph herewith was the most practical. (It may look odd, but it does work!)

Results

In fact, the whole system works exceptionally well, and many contacts have been sustained at very consistent signal levels over quite a distance, the only trouble being caused, as usual, by blanking out due to bridges, power lines, and the surrounding terrain.

Recently, the writer decided to visit the exhibition station GB3DDS, run by the Deptford and District Scouts, which was assumed to be situated in its home-town not too far from his own QTH in Ilford. Having reached the former, the station was raised and worked, only to find that they were situated 9 miles south of Bromley, and to G3WPR's horror (remember the weight) this meant nearly another 20 miles!

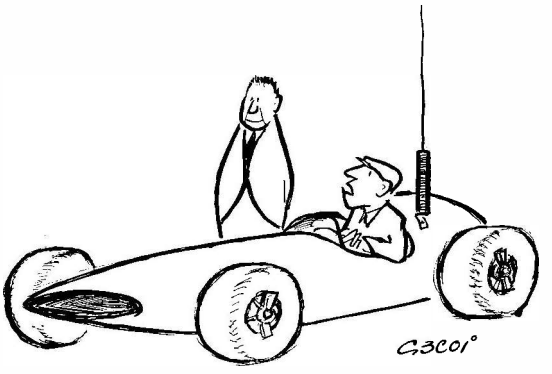
However, ultimately the goal was reached, but the

prospect of the journey home on the same day was too dreadful to contemplate, and two of the operators kindly supplied food and shelter for the night.

The return home was comparatively uneventful—no thanks to the hard saddle—and home was reached 3½ hours later, the operator at least being somewhat lighter.

It was rewarding to note that both on the forward and return journeys, contact was maintained with G2HR at Chingford, who for a large part of the time received G3WPR/M at over the S9 level.

EDITORIAL NOTE: We congratulate G3WPR/M—not yet 17 years of age—on his ability, enthusiasm and fortitude, and on the fact that he is able to get such interesting results on the two-metre band under leg-power conditions—and we feel sure that many readers will agree.



". . . Trouble is I'm out of range before I can get the report . . ."

GROUP MORSE TRAINING

PRACTICAL APPROACH FOR CLUBS AND STUDENT GROUPS

A. D. TAYLOR (GW8PG)

NOW that the R.A.E. pass-slips have been distributed many Clubs and groups of amateurs will be starting Morse classes for those who have completed their theory training. This article describes some of the methods that the writer uses for his own class. It is hoped that it will be helpful where a new class is being started, and to those looking for ideas to improve an existing one.

The Instructor(s)

The success of the class will depend largely on the instructor(s). They must be willing volunteers who regard the job as a challenge. The ability to send good Morse at any speed between 2 and 15 w.p.m. is essential, together with the patience and tact necessary to encourage students and correct their shortcomings without giving offence. It will be necessary for them to give up about an hour each week to prepare material in readiness for the class meeting. Finally, and most important, they must realise that future amateur telegraphy (CW) standards in their district will be those that they have taught their students, and must be prepared to set their own personal standards to meet this requirement.

Ideally, one instructor should take the class right through the course, and more than two should not be used if at all possible. There is no quicker way of killing a Morse class than by having a stream of casual instructors each with a different standard and most of them with little long-term interest in the success of the project.

Equipment

The equipment required for the first few weeks of the course consists of an audio oscillator, a loudspeaker, a key and a timer. The timer is a vital piece of equipment and a good one will greatly ease the task of the instructor. The ideal is a large photographic-type timer with a sweep second hand and " stop " and " reset " levers.

After a few weeks the loudspeaker should be dispensed with and students should be asked to bring their own headphones. At a later stage at least two additional keys will be required to allow students to practise sending. If the practise equipment is well constructed in the first place it can be used for years, so time spent in this direction is a good investment. Unless the equipment can be permanently installed a transistor oscillator should be used. It must have enough output to feed the loudspeaker and a number of pairs of phones. It should also be switchable between spot frequencies around 500 and 1000 cycles. A suitable kit of flying leads should also be provided, terminated on jacks for the required number of keys and pairs of headphones. A further invaluable training aid is the tape recorder. Its use will be dealt with later.

The Three Stages of Training

The object of the class will be to produce students who can send and receive at 14 w.p.m. in plain language English, and at 8 groups per minute in figures (each word or group consisting of 5 characters). Anyone who reaches this standard should pass the 12 w.p.m. GPO test easily, the extra 2 w.p.m. providing a good margin for the effect of " examination nerves."

Training to achieve this standard consists basically of three stages as follows:—

(1) Initial letter and figure familiarisation (0 to 3 w.p.m.)

(2) Consolidation of letter and figure familiarity and the initial acquisition of vocabulary (4 to 7 w.p.m.)

(3) Consolidation and extension of vocabulary and the building up of speed by training the subconscious mind. (7 to 14 w.p.m.).

Note: " Vocabulary " is meant here as the ability to recognise common words as an entity rather than as a

set of discrete symbols. It forms the basis of the ability to " copy behind " at high speeds.

Each stage of training requires a special approach, so they will now be discussed in greater detail.

Stage 1

This involves (*a*) learning to recognise the letters and figures by their *sound*, and (*b*) acquiring the ability to copy them as words or groups at slow speed.

The letters and figures should be taught in groups, the suggested grouping being as follows:—

Group 1: K J P Q W X Y Z

Group 2: A C E G L O R T U

Group 3: B D F H I M N S V

Group 4: Figures 1 to 0 inclusive.

It will be noted that Group 1 includes the letters most rarely used in plain language and therefore less often heard.

The method of teaching is as follows: The instructor prepares a card on which the letters in the group to be taught are jumbled up, but each letter appears twice in succession, thus:—

KK JJ QQ PP WW ZZ YY XX QQ KK JJ WW ZZ XX PP YY . . . etc. Before using the card he writes the symbols for the eight letters on the blackboard in " dits and dahs," and then sends each letter a number of times to familiarise the students with its sound. He then uses the card:

Send the letter " K ". Allow a four-second pause for the student to recognise the letter and write it down. *Call out " KILO ":* Pause for 2 seconds to allow the student to check his copy.

Send " K " again: Pause for 2 seconds. *Call out " KILO ":* Pause for 2 seconds.

Send the letter " J ": Pause for 4 seconds: *Call out " Juliet ":* Pause for 2 seconds. *Send " J " again:* Pause for 2 seconds. *Call out " Juliet ":* Pause for 2 seconds.

Send " Q " . . . and so on.

When the students have become reasonably familiar with the letters in the group, single-letter runs without a verbal identification should be commenced, a four-second pause being allowed between each letter.

Once the letters in Group 1 have been mastered, Group 2 should be introduced, using the same method. It should be interspersed with single-letter runs from Group 1, and when the Group 2 letters have been learned, single-letter runs from both Groups should be carried out until the students are familiar with all the letters. Group 3 is then similarly introduced, followed by Group 4, then simple plain language.

The process described will normally take about eight one-hour sessions, and at the end of it the students should be capable of reading about 3 words per minute. During this stage they should be encouraged to convert mentally anything they read—advertisements in trains, newspaper headlines, etc.—into its " dit-and-dah " equivalent.

Stage 2

When Stage 2 is reached the loudspeaker should be discarded, the students listening on headphones. Practise during this stage should take the following form, assuming a one-hour practise session: Forty minutes of plain language, 10 minutes of 5-letter groups and 10 minutes of 5-figure groups. The session should be divided into 5-minute receiving periods and the various types of material should be suitably interspersed with each other. All the material sent must be carefully timed at 5 letters or 2·5 figures to the word, the method shown opposite being convenient for indicating the half-minute and one-minute timing points. When making up 5-letter groups the 26 letters of the alphabet, together with an additional Q, Y, X, and Z, should be jumbled together to provide six 5-letter groups. A further six groups can be obtained by writing the original groups down backwards, then the process can be repeated. This ensures that the students get roughly the same amount of practise on each letter in the alphabet. The same method can be used to provide each four groups of figures. (It might be thought that greater familiarity with the code would be obtained if all practice was carried out on such groups. Unfortunately this would condition the student to sustain his concentration only for 5 characters, followed by a pause, and would eventually make it very difficult for him to copy plain language where words containing a greater number of letters are common.)

The sending speeds should be such that half the practise is at a speed that the student can copy with few errors, and the other half at a speed one word a minute or so faster than this. The instructor must point out that students can only increase their speed by trying to copy a proportion of material that is a little too fast for them.

Stage 2 should continue until the students can read 7 w.p.m. with only a small number of errors. How long this will take depends largely on the amount of practise the students get. If the total practise time is only two 45 to 60 minute periods a week, the average individual with no previous Morse training may take about five months to reach 7 w.p.m., and slow students may need considerably longer. At 45 minutes per day, on the other hand, most students would reach this speed in 6 to 8 weeks.

Problem

By the time that 7 w.p.m. is reached the instructor is almost certain to find that he has a " two-stream " class on his hands, a percentage of the students being well below the 7 w.p.m. mark. This situation requires tact and leadership on his part. The speed at which one learns Morse is *not* a measure of mental ability and many slow learners eventually become very fine telegraphists (The writer was himself a slow learner!) The instructor must stress this point and do everything possible to encourage his slower students. It is now that a tape recorder becomes an invaluable aid to the single-handed instructor. It allows him to use pre-recorded tapes to give practise for the faster group while continuing to send by hand to the slower lot. This avoids damaging the morale of the latter by giving them the impression that they have been left behind, and at this stage morale is a vital consideration so far as the slow learner is concerned.

THEY HAD BOUGHT 4 NEW AMBULANCES
FOR THE NEW RURAL SERVICE AND THESE
WOULD BE

+ = half minute timing marks.
1 = 1 minute timing marks.

Stage 3

When the students can copy 7 w.p.m.—and not till then—they should be taught the elements of sending. The instructor should demonstrate and explain the method of holding the key. He should also adjust the keys to be used by the students, bearing in mind that the beginner normally requires a slightly wider gap and a slightly greater spring tension than the experienced operator. All early attempts at sending should be monitored carefully by the instructor, who must point out errors in the way that the key in manipulated and in the formation of any particular letter. He must also impress upon the students that at this stage they should not send unless someone else is listening to them or they are able to tape record their sending and play it back to themselves.

This particular point in the course is a moment of truth for the instructor, as the Morse formation that the students are trying to reproduce will be *his* Morse!

For speeds between 7 and 12 w.p.m. practise material should consist of 70% plain language English, 20% five-figure groups and 10% " interest " material. The latter can include strings of amateur callsigns, passages in a foreign language, simulated CW contacts and so on. During each session two students should be asked to send to the class for a 5-minute period to give them confidence. Once 12 w.p.m. has been reached, each session should include a simulated GPO Morse Test consisting of 3 minutes, plain language at 12 w.p.m. and ten 5-figure groups sent in 1½ minutes. This will familiarise students with the examination procedure. Similar test pieces should be used for sending practise.

When students reach a stage where they can send and receive 14 w.p.m. for three minutes without more than three errors they are ready for the Morse Test and will pass!

Using Tape Recorders

Few classes will be able to hold daily practise sessions, but all students who have access to a tape recorder should be able to practise daily. Tapes covering 3 to 14 w.p.m. can be prepared in a few hours and once completed they can be transcribed on to tapes provided by individual students. Ordinary plain language should not be used for such tapes, however, as the student tends to learn it by heart after a few repetitions. This can be overcome by using a mixture of foreign language texts and " nonsense " English, plus about 20% of five figure groups. There are two methods of preparing " nonsense " English. To explain the first, assume that four lines of text from a book are to be sent. The words in line 1 are sent first, but in the reverse order, *i.e.* reading the line from right to left. Lines 3, 2 and 4 are then similarly sent. If more material is required lines 5 to 8 are dealt with in a similar manner. The result is a text which it is very difficult to memorise!

The second type of " nonsense " is prepared with the aid of a dictionary. Four unusual words beginning with each of the letters from A to Z are extracted. Twelve of these should be words of 2 or 3 letters and 20 of them should be of 4 letters. These should be jumbled together to form passages of practise material. Once again the end result will be something that it is very hard to memorise.

Students using the tapes should have the vital importance of *regular* practise stressed to them. A 20-minute session each day will work wonders, and two such sessions daily are even better. This is really the great advantage of tape, because it allows the student to get daily practise at times which fit in with his own personal schedule. The preparation of a library of such tapes should be within the capability of even the smallest Club.

Conclusion

If this article helps Clubs to set up their own classes and provides even one idea for those running existing classes it will have served its purpose.

Editorial Note: Our contributor is a very experienced instructor, having had 10 years' experience of preparing students for the GPO Test. The approaches he suggests should ensure a high proportion of successes. In fact, there are all sorts of ways of learning, and teaching, Morse—but that developed by GW8PG is obviously a well thought out, practical method.

POINT — SMALL BUT IMPORTANT

Immediately you are issued with your new licence, send it in to us for registration and publication in the " New QTH " page, which has appeared every month for more than 20 years. The same applies where changes of address are concerned for stations already licensed. The reason why it is important is because we keep the Chicago publishers of the international *Radio Amateur Call Book* (for which we are the U.K. agents) up-to-date with the G call-sign listings. It costs you nothing—it is a service offered to all U.K. radio amateurs, even those who are not readers of SHORT WAVE MAGAZINE.

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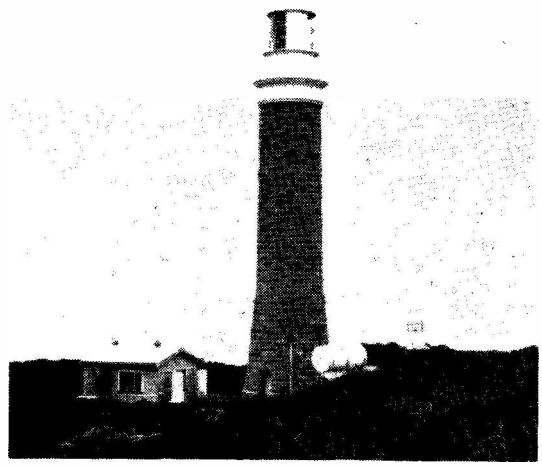
For many years now, the Readers' Small Advertisement columns of SHORT WAVE MAGAZINE have been not only the U.K. market-place for anything and everything worth offering in the buy-sale-exchange category in the Amateur Radio context, but also the medium by which the re-sale value of a wide range of equipment has been established. Each month, £1000's worth of second-hand gear is put into the market. We do not guarantee results. Nor do we say that anything you offer will be sold. What we *do* say is that by using the *Magazine* Small Advertising columns, you will be sure of getting the widest possible coverage of the U.K. radio amateur market. It is a fact that a large number of readers—and this is something that always makes the Editor's face a bit red when he is reminded of it!—say that they "must have the *Mag* for the Small Ads"! Indeed, some 100's of them take the trouble each month to send us an advance 4s. to make sure they get the *Magazine* in time to catch the small advertising.

Well, be that as it may, we carry far more paid small advertising of radio amateur interest (to say nothing of display space!) than any other similar publication circulating in the U.K. Our basic reader small adv. rate at 3d. a word has been maintained for more than 20 years. For anything you may want to buy, sell or exchange, you cannot do better than use the Readers' Small Advertisement columns in SHORT WAVE MAGAZINE. As we have a large carry-over each month, send your notice in, with remittance, as soon as possible, to: Advertisement Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

"... Have some gear to sell here—prefer buyer collects ..."



The Eddystone Lighthouse, at Eddystone Point, in the north-east of Tasmania, along 37 miles of single-track rough going and as many miles from anywhere. The significance of this apparently harmless picture is that it proves there is another Eddystone Light and (like the one in the English Channel) has been visited—as this was in January this year—by Arthur Edwards, G6XJ/VK3AMM, who, till his recent retirement was chief executive of Eddystone Radio, world famous manufacturers of amateur-band receivers and components. The firm's trade mark has always been—the Eddystone Light!

MODIFICATIONS TO THE JR-500S

With reference to the article by G2HR, about getting the JR-500S on to the Top Band (*see* SHORT WAVE MAGAZINE, April 1969), it now emerges that some later models have a further modification to the preselector. This means that any approach to the JR-500S to get it working on the 160-metre band should be made with caution, and with due attention to the actual circuitry of the model you have.

SPACE OPERATING FREQUENCIES

Following a N.A.S.A. release to the American technical press, the frequencies used for the *Apollo-10* project—for communication, tracking and ranging, TV transmission, telemetry data and recovery—have been widely publicised. They lay in the ranges 243-297 mc and 2106-2287 mc. It would have involved a pretty sophisticated ground-station set-up to have made anything of these transmissions. In the amateur context, it is questionable if more than a few fleeting noises could have been heard in the 243-297 mc band, and even then only *if* by chance a sufficiently high-gain aerial had been aimed in the right direction at the correct time.

ROYAL SIGNALS AMATEUR RADIO SOCIETY

All past and present members of Royal Signals, of R.E. Signal Squadrons and associated formations—including T.A., V.R., AAC/ACF and OTC, whether serving or retired—are reminded that they are eligible to join the very active Royal Signals A.R.S.—which in effect offers membership to all Army personnel interested in Amateur Radio. Full details from the Honorary Secretary, Royal Signals Amateur Radio Society, Blandford Camp, Blandford Forum, Dorset.

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

REVERTING to our comments last time round on /M operation as a way of getting at the DX, there is another problem which is worth considering—and that is the question of making sure the whip is truly " on the nose " when calling. There is no doubt at all in the writer's mind that, having got a reasonable transmitter and receiver combination in the car, it can all be brought to naught if the aerial is not just right. The first experiments can be made by coupling in the GDO to a one-turn link at the base of the whip, using as loose a coupling as may be to ensure the GDO does not pull in frequency. For normal tune-up operations, it is essential to use a field-strength meter in the car every time the rig is adjusted, and to limit one's excursions up and down the band to a very small increment before rechecking with the F/S indicator. This is more important the lower the band, and indeed a move of 10 kc is enough to shift so far off resonance as to reduce one's range on Top Band from fifty-plus miles in all directions down to just a few—and it will be found that backing the car up the drive to the garage doors will shift the resonance point, as seen on the meter, by as much as 30 kc on Top Band. The field-strength indicator need be no more than a 0-500 μA meter, a diode of some sort, and an RF choke (wired up like the child's crystal set with the meter in place of the phones) built in a box on the back shelf of the car, and fitted with a small pick-up lead of stiff wire cut to give about 80% FSD when everything is peaked " on the nose."

Changing tack a little, to the question of TVI, some remarks by G3TNO (Horsham) are not inappropriate. Malcolm has a field strength of about 50 microvolts of TV signal at peak-white level, using an H-aerial, and a similar level on Band III. After some talks with the local GPO people, G3TNO rebuilt the screening round his PA, using self-tapping screws at one-inch intervals, as a cure for radiation from the transmitter itself. He runs a pair of TT21's at 75 watts input CW, 100w. p.e.p. SSB, during TV hours. This gives a perfectly clean TV picture. He can stoke up out of hours to 150 watts CW and 300 watts SSB, with 1200 volts on the anodes—in other words, keeping the PA out of grid current during Box time. Another local has 10 watts of RF on Twenty to a *Class-A* PA which nets him quite a few decent QSO's—which is better than going QRT rather than foregoing full stick! As to what can be done, it is not so long ago that one operator of the writer's acquaintance made WAC on Forty with one watt of CW in quite a short period, to win a bet—and was so pleased with the result that he continued that way for several months.

Contests, Past and Present

Results of a past one first, namely the 1968 *CQ WW* event. Taking the Phone leg first, we have DLØWR at the top of the multi-operator single-transmitter category, with 3,048,903 points. In the multi-operator, multi-transmitter section OH2AM sits on the top of the heap,

SIX-BAND DX TABLE
(All-Time Post War)

Station	Countries	28 mc	21 mc	14 mc	7 mc	3.5 mc	1.8 mc
G2DC	336	171	308	328	165	112	20
G3IGW	204	127	152	168	122	91	42
W6AM	348	131	140	347	116	54	7
G3IAR	221	126	161	193	91	73	12
G3DO	337	199	237	330	90	83	9
G3PQF	159	103	46	96	84	57	12
G3LZQ	254	138	155	201	72	38	8
G3RJB	163	63	48	149	59	37	8
G3XBY	156	93	108	91	56	53	5
G3VDL	145	59	105	101	53	31	—
G3VPS	123	27	42	104	50	36	14
9H1BL	151	84	83	111	49	44	—
G3WPO	94	34	14	52	47	23	21
G3SED	136	31	26	66	43	40	39
G3WJS	63	—	8	49	37	43	14
G3NOF	314	177	216	297	34	39	2
G3IDG	122	74	89	55	27	19	11
G3EJA	106	100	23	51	22	12	2
G3MDW	116	47	66	88	20	15	7

Note: Placings this month are based on the " 7 mc " Column.

having racked up a score of 10, 074, 120. Single-operator, all-band winner was ZD8Z. As for the single-operator, single-band leaders, YV1LA won on 28 mc; CX2CO on 21 mc, with G3HCT not far behind in third place; 14 mc showed YV5ANF at the head; on 7 mc it was YV4UA; 3·5 mc W1FZJ/KP4, with G3IAR and G3RHM fifth and sixth respectively. W8GDQ heads the Top Band list. Congratulations to all concerned, and in particular to the U.K. stations.

On the CW side, the multi-op. single-transmitter pennant went to DLØKF; multi-operator multi-transmitter to PJØCC; and the single-operator all-band to KV4FZ. Single-band winners were as follows: 28 mc K1JGD; 21 mc CR6GO, with G3HCT fifth; 14 mc PY4OD; 7 mc LZ1KPG; 3·5 mc OM1BY, with G3VMK fourth; and on 1·8 mc DL1CF brought home the bacon, with nary a G in the first six.

Among the forthcoming events, low-power enthusiasts should consider the QRP Contest, 2000z August 16 to 2359z August 17. Two points per QSO, plus a multiplier consisting of the sum of the states, provinces and non W/VE countries worked, and a " power factor " as follows: Over 100 watts, 1; 25-100 watts, 1·5; 5-25 watts, 2; 1-5 watts 3; and four is the multiplier if you are running below one watt. September 15 is the mailing deadline, to Czuha-Jewski, WA8MCQ, Route 3, Paw-Paw, Michigan 49079, U.S.A.

DARC have their WAE Contest soon; August 9-10 for the CW, and September 13-14 for the Phone leg. The rules are much the same as in the past, with the addition of a rest period of 12 hours into the 48 hours between 0001 GMT on the Saturday and 2359z on the Sunday, divided up into not more than three periods, clearly shown as such in the log. (The three periods do not have to be equal in length.) Usual five or six-digit contest exchange, starting at 001. One point per QSO, other than 3·5 mc, where they count 2. Multiplier is based on the ARRL Countries list for European stations while the non-European stations have a multiplier based on the WAE list. In addition, call *areas* in W/K, VE/VO, JA, PY, VK/ZL, ZS, and UA9/UAØ are all counted for multipliers. On top of all this there is the further complication of the QTC list. A QTC is defined as a report of a confirmed QSO that has taken place earlier and is later sent back to a European station—*only* from the non-Europeans. The QTC is to contain time, call, and QSO number of the contact received. Thus 1400/G3KFE/001, would indicate that at 1400 G3KFE bestirred himself and gave out his QSO Nr. 1. For each station reported back in this manner one point may be claimed; it may only be so reported once and not, obviously, to the originating station. Maximum of 10 QTC's per band is allowed. Final score, QSO points plus QTC points times multiplier earned on each band. Three power divisions are recognised, (a) Up to 200 watts input, (b) More than 200 watts, and (c) Newcomers licensed less than one year. Certificates to the highest scorers in each category in each country and district listed, with second and third where this is justified by activity, plus trophies for the EU and Non-EU leaders in all three sections. The Continental leaders will also be honoured.

The Canadian ARTG are sponsors this year of the World-Wide Medallion Sweepstakes for the RTTY hounds. Details will be coming forward later, but it is suggested that interested operators contact VE3RTT at 85 Fifeshire, Willowdale 430, Ontario, Canada, in plenty of time. The dates of the actual contest are given as October 4-6.

Scanning the Bands

As far as 28 mc is concerned, naturally enough at this time of the year it is, to put it mildly, a rather untrustworthy mount for DX-chasing, although when something or other of real interest opens up on a " dead band " it has a knack of producing a world-wide spread of takers.

As far as 9H1BL (Malta, G.C.) was concerned, the main event of the period was the arrival of a daughter, and, as he predicted last time out, it has resulted in operation at odd—distinctly odd, indeed—hours. Alan is a bit worried because the infant is, or rather, was at the time of writing, three whole weeks old, and as yet completely fails to respond to even the slowest CW! Coming back to the 28 mc question, Alan has only managed to work the odd North-European station on first-hop skip, and does not consider any of the crop worth mentioning by call.

At G3XBY (Wombourne) the month has been rather punctuated by examinations which have cut back the available time for radio. However, a few cursory looks over the 10-metre band at the right time resulted in SSB with A2CAQ, CR6GA, CR6IY, HS3LJ, assorted ZS's and ZE, 9Q5MW, plus Europeans including OHØNI and EA3RF.

One hardly thinks of G3XTJ (London, N.13) in the HF bands context this month, but before he went off to GC he found some good openings to North and South, which resulted in contacts with CR6, ZE, and 5N2.

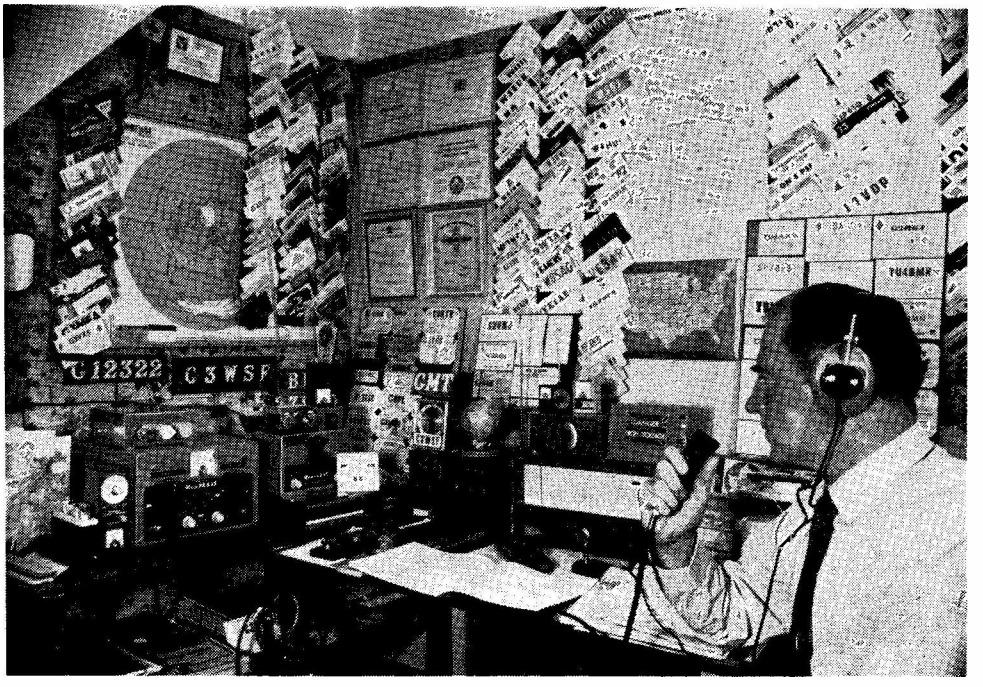
G3NOF (Yeovil) did not find the band all that good as far as DX was concerned, thanks to some rather strong EU's. SSB QSO's were with FY7YQ, VQ8CG, ZD9BM, ZE's, ZS's and 5H3LV. Gotaways, sadly, included VP2GLE, XW8BS, VQ9EP and 7P8AB.

The manner in which Ten Metres comes to life when Gus Browning turns up on it from his latest sandbank is remarked on by G2DC (Ringwood) who managed a couple of definite new ones in VQ9/A and VQ/A/D, to which must be added the old contact with CR6AI, TA2E, VS6AA, VS6AF, VK8HA, VQ9/A/BR, VQ9/A/EC, VQ9/A/BC, VU2XZ, 9J2XZ, 9J4AA/P.

A couple of contacts only are considered worthy of mention by G3XYP (Navenby), these being with VQ9/A/D, and ZD9BM.

Fifteen

Not a bad old band, in some people's opinion—such as for instance GM3JDR (Golspie) who operates on no other band. It must have been a rather frustrating experience, insofar as one evening Don could hear a whole gaggle of Europeans busily working the KC4, Navassa expedition, and all the time the DX signal was completely inaudible, even though such goodies as VP2A, VP2G, 6Y5 and KP4 were all round him and at S6-S8. Such is life! However, frustrating or no, GM3JDR managed SSB with VQ9/A/D, VQ/A/BR, VS6AA, KR6VX, MP4TCN, MP4BHL, G3RJS/MM



Russ Hey, G3WSF, at 7 Marlborough Crescent, Bedford Park, London, W.4, got his amateur ticket in 1967, after a long professional career in radio—first in the Merchant Navy, then in the R.N., and later on the technical staff of Cable & Wireless, Ltd., serving at many of their stations overseas. A keen CW operator, he runs as main equipment a Heathkit DX-40U with VF-1U VFO, the Rx being an Eddystone 840C with Q-multiplier, and the aerial a 120ft. wire, half of it indoors. The operating pattern is all Friday night into Saturday morning on 20m. CW, and 40-metre phone on weekday mornings. The product of all this activity is shown by the goodly array of QSL cards and operating certificates.

near 6W8, JA and W. On the CW side, LU1EP, 7Q7RM, 9X5PS, UW9WZ, ZE1BT, KS6CX, KR6TA, TJ1AJ, 3V8AC, UI8KAB, MP4TCE, KP4DAC, UAØKAR, VQ8CR, VS6BC, CR6AI, CR6AL, OA4ED, UA9CJ, EA6BH, KR8AG, UI8DA, G3RJS/MM, CX4JK, 9J2EJ, CR6KB, UJ8AJ, PY9FH, PX1UD, XW8CD, MP4TDA, CE3CF, VS6AA, UH8KBC, VQ8CC, CR7BN, ZS6ASY, KZ5EK, LU1ZR, 9J4AA/P, VQ9/A/D, VQ9/A/BC, VQ9/A/EC, VQ9/A/BR, UL7JE, ELØC/MM, W's and JA's. Not a bad haul for one month!

Another one who goes for 21 mc is 9H1BL, who found some first-class openings into the Far East, with JA workable from 0800 till 2300 frequently. Best out of his log were CX9BT, ZF1GC, VQ8CR, VS9MB, HL9KQ, KR8EA, XW8CS, KH6DQ, 4S7NG, UJ8KAA, JX4EJ, plus 46 assorted JA's.

Fifteen for G2HKU (Sheppey) meant SSB with VE3DDR, MP4TDA, and ZC4HS, plus CW QSO's involving JA1BFN, VQ8CR, 4Z4BR, VS5MC, the last-mentioned being a new one.

Your scribe had almost given up G3AAQ (Swinford) for lost, it is so long since last he was in the clip; but it is all in a good cause, namely work, and all the essential goings-on that seem to go with moving house as well. Just to prove the rig still perks, Jake went out to a suitable spot nearby and worked a couple of new countries, plus contact with Gus from Desroches and Seychelles. By the time this reaches print, Jake will be up in Scotland operating /M, from various counties, all being well.

"QRT on Fifteen" is the sad tale from G3YDX (Bridgwater) who is in this state having sold the rig; but before he did so the indoor dipole at 20 feet raised OX3FD, KH6AG, K4RSD/KH6 and the usual crop of W's. Ron is now QRV from Bridgwater on Top Band and Eighty.

The absence of G3DO (Four Oaks) from the lists of late is simply due to Doug feeling that he had nothing of value to report. For the month under review, G3DO found K4IA/KC4 on Navassa, FR7ZL/T, and DL7SU/YBØ, on Fifteen, plus VQ9/A/BR and VQ9/A/BC—albeit, like several others, he is waiting to see what sort of status these receive before claiming them as new countries.

The TVI problem has caused G3XBY to look at the possibilities of /M operation of his rig on 21 mc, and so far the best DX worked has been PY1CAD on Sideband. Other QSO's on SSB were with KH6GKD, VE6AGV, W6's and TU2AZ, while CW gave him contacts with WN6JUU and WN7LNW.

On quite a few occasions the 15-metre band has stayed open all night, avers G3NOF, so that W's have been workable from around 1100 to 0800 the following morning. At 0900 several W6's and KH6's have been S9. Between about 1600 and 1900z there have frequently been

S9 signals from S.E. Asia, VS6 and JA. Contacts were made with FM7WQ, FR7ZL/T, K6ZQP, K7OQQ (Nevada), KH6CD, KR6VX, HS3ML, HS2JR, MP4BGX, VE6NR, VS6AA and VS6AL, VS9MB, W6's, W7CVD in Nevada, ZP5GJ, 9M2DQ and 9V1PA.

G2DC regards Fifteen as the best of them all in terms of the DX return equated against freedom from QRM. The evening period 1800-2100z can and does produce for him DX from all continents. EA9AQ, K4IA/KC4, MP4TAF, ST2SA, TJ1AJ, UH8KBC, VK2AO, VK3MJ, VU2VZ, VQ8CR, VQ9/A/D, VQ9/A/BR, VQ9/A/EC, VQ9/A/BC, VS6AA, VS6BE, VS6FX, VS9MB, XE1RV, 4S7DA, 8P6AE and 9Y4LA were all worked on CW.

As far as G3XTJ was concerned, his work on 15m. raised one big query, in UAØKAR, Dickson Island —do *we* know where it is? This means a short geography lesson: Dickson Is. is USSR territory, position 73° 40'N., 80° 10'E., in the Kara Sea, about the neighbourhood of Severnaya Zemlya. The co-ordinates for Dickson Is. plot into Zone 18. There have been UAØ's there for years, working at some establishment the Russians maintain on Dickson. (It might be interesting, when working a UAØ giving his QTH as Dickson Is., to ask him what he's doing there!)

In his forays on Fifteen, quite a bit of troublesome EU short-skip QRM was noted by G3XYP—but nonetheless David managed to dangle his particular piece of bait successfully under the noses of such interesting stuff as KH6GPZ, TU2BB, TU2BS, VQ9/A/BS, VQ9/A/D and 7Z3AB.

FIRST YEAR OPERATOR'S LADDER

TOP BAND ONLY

Call	Counties CW	Counties Phone	Countries
G3XTJ	68	62	14
GM3YCB	1	57	9
G3XVC	40	27	11
G3XTL	71	—	15

Note: A first entry for this Table must be accompanied by a statement of the date of first licensing. The same county may be claimed for both CW and Phone. Placings will be by taking a different column each month: this time it is based on the "Counties Phone" column.

Reporting the HF Bands

On the Maritime Mobile Tack

A long and very interesting letter from G3UOF/MM (Tanker *British Judge*) who had been pretty QRL with work during the period prior to his letter, medical traffic and maintenance having taken priority.

When he was in Rastanura Mike just missed a personal contact with 7Z3AB, but in working ship's traffic (outside our bands) with HZY, found the operator of that station to be a keen SWL and a buddy of 7Z3AB and HZ3AQ. A call at VK6 disclosed the local radio inspector to be an ex-VK6 by the name of R. Field. G3UOF reports on other /MM's, as below: G3PLQ/MM is joining Trident's new tanker *Ardtaraig*, of 215,000 tons. (They get bigger, these boats!) Pete, G3RQZ, has been on three-week short trips with the Brocklebank cargo ships for the past six years, and so has not become /MM. A free-lance radioman is Mike, G3XFP, aboard the Greek ship *Master Stelios*, SVNI; not unnaturally, the U.K. authorities are not interested in giving him /MM facilities, and so he is making an approach to the Greek authorities, and hopes to have the call SV3TVI /MM! G3XFP was previously on a Liberty ship, with a Liberian registration, and as the appropriate authority had no interest in allocating an EL call, it leads to a suggestion of doubt about the status of ELØ/MM calls generally. However, your scribe believes that this feeling of Mike's is not supported by the facts, there being at least two ELØ calls about whose validity there seems to be no doubt at all.

From the P. & O. cruise ship *Oronsay* G3RJS/MM writes in with various pieces of news. Paul is now on a five-month trip to VK/ZL and the Far East with various interesting calling places on the programme. His amateur gear is now an FT-DX400 transceiver, still used with a trap dipole. Among the unusual calls heard recently was ZB2XP/MM, who is ex-ELØB/MM and runs Hallicrafters SR-400 gear; incidentally, he is often on 21100 kc CW/SSB looking for other maritime mobiles. UWØIH/MM was of interest as well, worked on Twenty CW; he is a member of the Russian Antarctic Expedition and at the time was at Novolazareskaya.

Twenty Metres

This is a band that has been noticeably better when checked after dark, in the view of most reporters.

G2DC has mixed feelings about this, as he finds the QRM pretty grim between 1000 and 2300, so that if a DX signal does show up it does not last very long before sinking without trace. The morning period 0630 to 0830z is often pretty fair with good signals from VK/ZL and W6. A spot of amusement was produced by calling what Jack thought was "VR2EK," but who turned out to be UR2EK—for quite a few minutes hordes of EU's were busily calling "VR2EK" on the frequency! CW QSO's were booked with EA9AI, EA9EQ, K4IA /KC4, KH6CX, KL7MF, XE's, VK1-7, VQ9/A/D, VQ9/A, VQ9 /A/BR, VQ9/A/EC and VQ9/A/BC.

For most amateurs the "hundredth country worked" is rather a landmark—and so it was for G3XTJ, who raised FG7XC to make his century (although it must be many years ago that he passed a similar landmark as an SWL).

Daytime conditions were pretty poor in the view of G3NOF, who found the early morning period best with sometimes VK/ZL and sometimes the W6's stronger. In the evenings North and South America were heard, but not much from Africa. Gotaways included FM7WQ, FO8AA, KJ6BZ, but he had success with CO2DC, FG7TH, HI8XEW, HKØBIS, K4IA/KC4, KH6GDO, TF2WLS, VK2-3-6-7, VP2AW, VP5TH, XP1AA, WA5TQT in New Mexico, WØQLD and 'SYB (both in Colorado), W6's and W7's

VU2AJW, ZC4AK and ZL4BX.

As for G3XYP, David found the month quite good on the whole, but there was a marked deterioration during the last week of the period in that nothing of great interest came up. SSB on 14 mc produced CEØAE, CR8AI, FO8BS, K4IA/KC4, VQ9/A/BR, VQ9/A/D, VR6TC, VS5MC and ZL3ABJ/C.

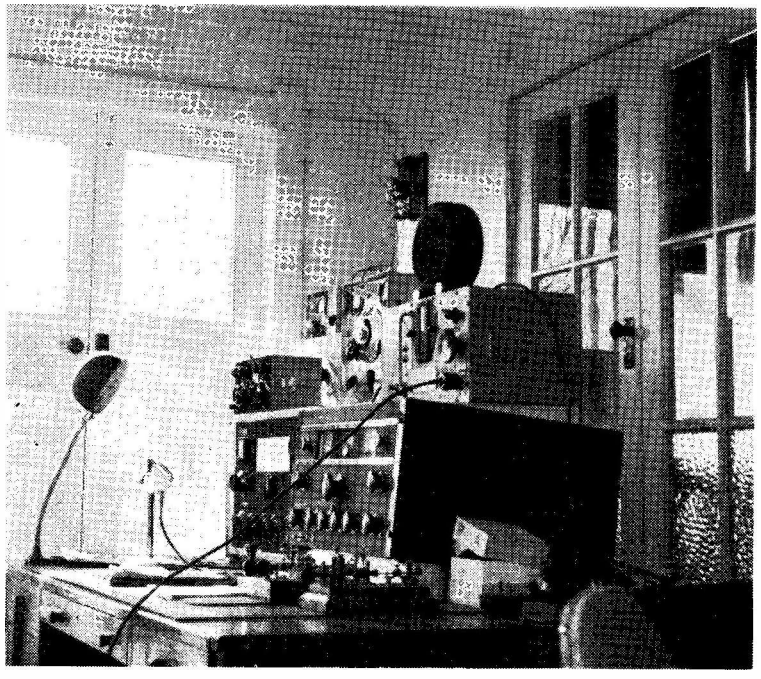
Two discoveries of interest to G3WJS (Halstead) rather cancelled each other out. Nr. 1 was that the way to make his QRO CW rig behave was to put the correct heater voltages on his 807's, so that now he is QRV on all bands covered by the station receiver. The second, not so good discovery, was that his end-fed wire does *not* outperform a beam; consequently, all he has to offer is W/VE, HK3RQ, UL7KBH, PY's, YV5CKR, UAØTN, LX1FT, SVØDD, UA9's and KV4AA.

If we disregard the Europeans worked on the key by G3XBY/M in the course of his experiments, Dale used the gear to connect with CR4BB, HK4ZX and UD6BR on SSB, from the home shack using the same gear.

An all-time new country on Twenty in K4IA/KC4 is the only item reported by G3DO—but, after all, Doug. can afford to be choosy about the contacts he thinks worth mentioning—he has 330 countries up on the band! G2HKU made a couple of new ones for Twenty with K4IA/KC4 and HI3PC, both on CW, and on SSB reversed the process by giving WA6EBK/6 *his* first G contact—as well as working W7LJH, W7FPT (Oregon), WAØLMN, VK7KW, ZL2KP and ZL3SE.

Recently G2FUU (Upper Nazeing) took a trip to the West Indies, where he enjoyed some sessions on the air from VP2AW in Antigua and 8P6CC, Barbados. Although the glorious weather and warm sea took up most of the time, Tommy also enjoyed the hospitality of other amateurs on both Islands, and made quite a few U.K. contacts, despite the high level of European and South American QRM and the strings of breakers attracted by the rare calls.

9H1BL mentions receiving a rocket from an Italian station, for calling CQ DX when there were hordes of Europeans who would like a QSO with Malta—but as Alan rightly says, although he can work EU's 24 hours a day, particularly on Forty, it does become a little bit of a bore.



The station of Jack Parminter, ZL2OU, Wiroa, New Zealand, the "other end" of the famous daily sked with G5QA (Exeter), as recently reported in this feature. As well as having such an effective DX set-up, ZL2OU is a keen fisherman in the other sense—he runs a launch from his country cottage on Lake Waikaremoana, 80 miles from Wiroa. This photograph was taken by G6XJ/VK3AMM during a visit to New Zealand in February this year.

Notes and Comments

There are nearly always odd points that crop up in the mail and give your scribe a lot of pleasure in the reading, even though some of it may be unprintable!

G3WJS comments on the question of QSL cards raised last time round by G3DRN. John finds his overall return is about 47%, with G's on Top Band among the *worst* offenders, followed closely by DX stations who say "sure, QSL 100%," and don't—particularly if the card happens to be one wanted to complete the set for an award!

G2HKU finds all is revealed to him as far as the methods of Top DX operators are concerned. On Twenty, CEØAE was calling "CQ Denver"—and for ten minutes a G2, a G3 and a G8 were all going back to him, by name as well as call, until eventually CEØAE abruptly shifted frequency without working any of them.

Still on the acid-comment tack, G3XBY wonders just why it is that whenever he is on CW signing /M he is immediately drowned in a deluge of twits calling CQ smack on the frequency. Dale would have thought it should be clear to these types that it is not so easy for him to QSY as for them. True enough, but if they did realise this—or could read Morse—then they would no longer be twits! On a different line, G3XBY has found a solution to the problem of operating his negative-earth transceiver in a car having the positive pole of the battery earthed. A ferrite isolating transformer wound with ten turns primary and secondary (bifilar) is used between the coax from the transceiver and the aerial, while the actual transceiver sits on the seat. Such a simple solution could be improved still further in cars having a bench front seat by fitting a clip mounting over the squab.

Moan of the month from G3XTJ refers to the characters who insist on going below 1850 kc for late-evening local SSB nets, some of whom are 150 miles away from him and

umpteen over S9—surely they could have *some* consideration for the CW types, in their narrow band.

A late letter from MP4BGX, who is now back home and signing G3XHE from Middleton-on-Sea, Sussex. Greg has replied to all the QSL requests that have come in so far, and is now fairly active on the LF bands with CW. There is a hint that perhaps Greg may soon appear on the bands with another rare DX call—he says he can't stand the climate over here!

G3AAQ has been somewhat inactive of late, as remarked elsewhere in this piece, but in the course of earning his daily crust, in business contacts he has managed to meet amateurs from all continents other than South America; so he wants someone to invent a " Met All Continents " certificate!

TOP BAND COUNTIES LADDER

Station	Confirmed	Worked
	Phone and CW	
GM3OXX	98	98
G2NJ	98	98
GM3UVL	98	98
G3APA	97	97
G2HKU	96	96
G3SED	93	96
G3WPO	88	91
GI3WSS	88	90
G3WQQ	74	87
G3VLX	72	93
G8HX	72	81
G3XTL	57	71
G3WJS	60	86
G3XDY	56	86
G3RFB	55	78
G3XTJ	51	82
G3XGD	42	55
G3KFE	34	60
G3VPS	27	53
	Phone only	
G2NJ	98	98
G3SED	91	92
G3VGB	82	93
G3WPO	77	84
G3MDW	67	82
G3PQF	64	80
G3RFB	36	47

(Failure to report for three months entails removal from the Table. Claims may be made at any time. Six months of " Nil " reports will also result in deletion.)

Forty and Eighty

More news here than we have had for some time; and at the top of the pile is G3IGW (Halifax) who has been on 3·5 mc, SSB, and has worked CN8AW, CR6IV, a whole string of PY's, TF3IRA, ZS6AK, 4X4TB, 5A2TR, gotaways being CR6MN, CX7AP, MP4TAF, OD5BA, ST2KG, VP8KO, ZD9BM and 5Z4LS. One CW QSO is recorded, this one being with 9J2XZ. Quite a change for a confirmed CW addict!

Forty gets a mention in the note from G2NJ (Peterborough) regarding three interesting CW/MM contacts—with G3RJS/MM off the coast of Morocco; YO3SC/MM near Mauretania; and YO4AJE/MM, off Gibraltar. No doubt about it the /MM interest is increasing vastly.

Both the bands under consideration have been tackled by G2DC although he found very little of interest on Eighty, apart from the odd U.S. station. Forty was rather more rewarding. A couple of skeds with VK failed to come off, and K4IA/KC4 was not hooked; the latter was about S4 at the time, and several G's called him but also failed to make it, although there was no pile-up. Successful contacts were with PY7ST, ZL3IE, ZL3IS and ZL4IE, all around 0700-0800z.

New ones for 9H1BL on Forty included UA9's, TF, CE1AD and a few PY stations, the latter on SSB. A little nearer home is G3WJS, who described matters on Forty as " Antenna QRT, QRM worse, SSB down to 7020 kc." CW did blast through, however, to some of the W areas, to VE1-3, UA, UL7GW, UO5WT (and GB2HRH). Eighty was a different kettle of fish altogether, and indeed is G3WJS's favourite band. UP2QA, LZ2DC, VE1ZZ, UQ2, EA5CS, UL7GW and ZC4GM, were all worked to take the score up by three.

G2HKU seems to have checked Eighty around 2130z most days, and at this time reports QSO's with a " 5ATR " (probably a typing slip for 5A2TR), CN8AW, LX1EB, LX1GP, CR6IV and CR4XTB, all 3·5 mc SSB. Forty produced a Sideband QSO with G3BHT/LX, while CW gave PX1EI, but failed to connect with PYØAM, the latter giving PY1AM as his QSL address.

Special Activities

The Forestry Commission recently had a golden jubilee Exhibition up in Edinburgh, and several enthusiasts among the Commission staff made quite sure that Amateur Radio was represented, among them G3TBT, G3VFL, G3WNI and GM6XI. The gear was loaned by K.W. Electronics, and used in conjunction with crossed trap dipoles at 45 feet, plus a Top Band dipole. Over the five days, 230 stations were worked, in all continents other than Antarctica. Best bands seem to have been 21 and 14 mc, with a certain amount of short-haul traffic on 7 and 3·5 mc, and one goodish session on Top Band when they managed to work down as far as Essex.

The Cardiff University Trans-Africa Expedition was mentioned in a little paragraph on p.758 in the February issue, which was about the time at which they set off. Our latest news is dated April 9, by which time they had visited 5A1TK, which was one of the objects of the exercise, but then had trouble with the authorities, which meant they were sitting in Cairo waiting for permission to motor through Egypt and the Sudan, then over the desert to Ethiopia, while the KW-2000 was being sent to Nairobi through the mails to avoid further argument. When and if they get into Kenya, all the permissions are in hand for the rest of the run down to Cape Town—assuming the gear is not lost in the post!

QSL Information

G3XTJ writes to say he is doing the honours for GC3UJE and GC3UJE/A for last winter's operations, together with the G3UGK, G3XTJ and G3YDX exercises in Huntingdon and the Channel Islands. On a more DX note we have information from G3NOF, who says that cards for *9Q5DG* go to W6KTE; *FG7TH* to F2VX; *HS3ML* to WB2DST; *ZD9BM* to GB2SM; *VP5TH* to VP5NF; *5H3LV* to VE3ODX; *VQ8CG* to G3APA;

5A1TL to WB6WAA; *HBØBIS* to P.O.B. 411, San Andres Is.; *VU2AJW* to WA6NFC; *XP1AA* to WA7CYY; *FY7YQ* to WA4GQM; *HS2JR* to DK1RR; and *FM7WQ* to W4OPM.

Top Band

Here the DX-peditionaries and the holidaymakers have been having a fine old time, and conditions have, on the whole been abetting them, if we disregard the foul weekend of July 5/6.

One point mentioned in several letters, is the fact that not all the chaps who come on from rare counties take the trouble to pass on advance information of their intentions, which means that lots of the keenest chasers fail to make the most of the expedition, for both sides of it.

Bob Mannion, G3XFD, is reckoning on going to the Scottish Highlands with tackle for Top Band, Eighty and VHF, the LF operation being CW over a period of ten days; August 18 to September 3 are the dates, and it looks as if the itinerary will include Perthshire, Inverness, Ross and Cromarty, and Sutherland.

The promised GM trip by G3SVK and G3VUE is definitely " on," with dates as follows. August 30, *Cumberland;* August 31, *Kirkcudbright;* September 1, *Angus;* September 2 and 3 *Caithness;* September 4 in *Nairn;* finishing up with September 5 and 6 in *Kinross.* All cards to the operators, with s.a.e., *please,* or via the Bureau.

G3XTJ, G3UGK and G3YJI pleased a lot of people with their trip to Guernsey, although the advised date of the Alderney exercise coincided with those 120-m.p.h. gales we all read about in the newspapers, with the result that there was neither air nor water-borne transport. However, at this writing, it is known that Alderney will be done, and possibly Sark, by GC3UGK before he returns to the mainland.

G3VNR reminds the expeditionaries that quite a few of the W's are chasing English counties, notably K2CPR and W2QHH. If there is anyone contemplating an expedition in Wales or Scotland, please contact G3VNR (*QTHR*) to arrange an HF sked with these chaps.

On to G3YDX, who reminds us that future operations are on the cards, and the next efforts look very much like being Rutland—which is almost certain—and Brecon, which is being seriously considered.

Walter Ripley, G4AD, 436 Meanwood Road, Leeds, Yorkshore, started as AA/2DOV in the 1930's and got his full ticket at Christmas, 1938. Home-construction is the order of the day at G4AD, and on the operating side a regular 10-metre sked is kept with his brother 9J2WR, Zambia. The next move is into SSB.

G3FIH spent June 14/28 up in Inverness-shire on a family holiday, during the course of which he contrived to do a spot on the air as GM3FIH/A, with the home-brew transceiver he took along. In all, 36 stations were worked, some of them several times, although it was found that, due to the short Northern night, Top Band did not really open up till after midnight when most operators down South were getting ready for bed.

Your conductor had quite a month on the band, with seven new counties booked in, and an eighth nearly hooked; the latter was Hereford, in the person of G3PRJ (Leominster) who was RS57 to G3KFE/M when out mobile near Sawbridgworth, but copy the other way was not good enough to make a full QSO of it. However, a 120-mile hop at least proved the /M tackle is still working!

GI3WSS still escapes G3KFE, who managed to make contact with GM3LGN/P on SSB for county Nr. 30, leaving a few (difficult ones) in Scotland to fill up.

As for G3WJS himself: GM3WPF/P (Kirkcudbright); GW3SVK/P and GM3SIG/A in Angus; GM3HJB, Ayr; GI3JXS, PA and OK made a pretty fair month—and he even managed a QSO with G3KFE one afternoon, an event that has been hanging fire for months.

G3XDY (Cleethorpes) has found new ones in the shape of GM3JWS/P in Argyll; GW3UXS in Cardigan; and G8RZ, Cumberland—all on CW. With SSB he raised GM3UGC/P, Dumfries; GW3SVK /P Pembroke; and GW3VUE/P, Cardigan, not to mention GB2HRH —an operation the success of which must have exceeded its sponsors' wildest hopes—it is understood that something over 3,000 QSL's will have to be written out! (An article on the GB2HRH operation is in hand for appearance in *The Magazine.*)

Deadline

The Top Band news this time has had to be compressed rather more than a little, owing to the large amount of hard news that arrived a the last minute. And so, naturally enough, mentions have been pruned all along the line to fit the available space. But, of course, we still want to see your letters, and for next time the deadline is **August 11,** addressed as always CDXN, SHORT WAVE MAGAZINE, BUCKINGHAM. Till then *73 es DX, de G3KFE.*

VHF BANDS

A. H. DORMER (G3DAH)

THE opening noticed in "VHF Bands" last month, which started over the weekend of June 7/8, continued right through to the following weekend, although the best DX was worked by the Southern stations after Monday night. Tuesday and Wednesday were particularly good for DL and OZ, with a few of the northern French stations putting in good signals. Little activity was heard from south of Paris. Seventy centimetres was also open, and both audio and video were exchanged with PAØ, DL and ON.

Ducting was much in evidence at this time, the Continental DX being best in the North and Midlands at the start of the period, and in the South during the latter half. On June 11 particularly, when RS-5/9+ signals were being received in Herne Bay from DL and OZ, the Midlands did not appear to be finding them at all. A plot of the 51 DJ/DL contacts made by G3DAH over June 11/12 on two metres showed them all lying within 100 km of Flensburg, although the beam was frequently turned without result towards the South-East for any DL/DM/HB activity which might appear. The duct also made it possible to complete solid QSO's with the German stations, since it appeared to be passing over the heads of the PAØ's, who, under normal tropo. openings, present a formidable QRM barrier.

Conditions from then till the time of writing have been patchy, with occasional lifts on both Two and 70 cm. Coincidentally with the break in the fine weather, paths became very unstable, with QSB swinging signals from S9 to S2 at short intervals. Violent thunderstorms in the South also made reception difficult.

Two-Metre Contest July 5—6

DX was again not too easy to come by during this Contest. To the South, activity in Frence was high, but few contacts south of Paris seem to have been made, a notable exception being F1AB/P in DI76g, who was RS-59 at times. HB9IN/P was also audible at intervals, but was always a very weak signal, even on CW. Elsewhere, GD3XAC/P was well received in the South, as were several of the GW portables, notably GW3NUE/P and GW3TXR/P, both of whom were passing scores around the 200 mark towards the end of the event. Of course, without knowing the distances involved, one cannot say what these totals will amount to in terms of the final result, but it is very good going under difficult conditions. GW3BVP/P in Brecon was also putting up a fine score, as was G8BBB in Cambridge, who was passing 158 towards the end. The most active, and apparently well received, French station was F1AOV /P near Calais, operated by several well-known local amateurs, who was giving 173 by mid-morning on Sunday, and must have got over the 200 mark by the end. At 0700z on Sunday, DJ3ZU/P passed 231.

Operating standards were fair, with some badly modulated signals and a few QSO's heard on phone in the CW portion of the band, but it does seem that the action taken recently in disqualifying persistent offenders is having some effect. Many stations, both fixed and portable, were heard operating out of Zone to the detriment of resident stations on the lower frequencies, and this spoiled many a DX contact, There is no regulation to stop this sort of thing, since the Band Plan is not mandatory, but it is doubtful whether it will lead to a greater number of contacts if the practice increases, since QRM between 144·1 mc and 144·5 mc was already pretty fierce at times. Well-equipped and multi-operator stations, mostly tune both ends in anyway. There was quite a bit of CW operating, most of it very good, although from time to time there was a peculiar quality about some of the notes that made one think of aurora—not that any was observed. The contest was well supported by G8/3 and the later G3 calls, some, alas, unreadable due to poor modulation and FM on the carrier. But this Column awards a strawberry to G3SOA (Bedford) in particular, who was putting out a consistently excellent transmission, strong, well modulated and of very fine quality.

Contest Rules

One's heart bleeds at times for the Contest Committee. Whatever they do, there is criticism from one quarter or the other. Having served on this body for two years, your scribe can vouch for the fact that they really do try to please everybody, but as has been said before, *ad nauseam*, this is an impossible task all the time. The latest complaint was heard from several sources on the two-metre band after the recent 144 mc contest. Why start so early? Why finish so early? Why not arrange times to coincide with the concurrent IARU Region I contest? All really part of the same question.

There is indeed some justification for the proposal that times of U.K. contests should coincide with those of Region I, and, following the Brussels Conference in May of this year, it appears that there will be much more standardisation in this, as in other, procedures. But, to suggest that the Committee was just being bloody-minded, as one participant was heard to put it, is ridiculous. Many hours have been devoted to the consideration of the timing of Contests, bearing in mind the problems which beset portable operations, sufferers from TVI and less than madly-keen wives, and although many of the decisions taken by the Committee are of necessity compromises, they are never taken lightly, and by and large, satisfy the majority of operators. That the organisation is on the right lines can be deduced from the increasing interest in contests, as evidenced by the rising number of entries received. It is the opinion of this Column that thanks should go

to this much criticised, but nevertheless indispensable, body of fellow amateurs, who devote much of their free time to trying to give pleasure to so many.

VHFCC Awards

Awards this month go to G8BZQ, G3EHM, G8BJK and F1VP. Congratulations.

The Award to F1VP, who operates from Chatellerault in the Vienne Departement of Western France, is the first (of the new series) to any station outside these Islands. Unfortunately, no details of the equipment etc. are available, and all that can be said at this juncture is that the Award is for operations on two metres. It is noted from the claim that one British station figures in the list, G3ORL/P.

G8BZQ, Steve Davis, is located in Walsall, Staffs. The site is 600ft. a.s.l., with a good take-off in all directions except to the East where there is some screening from the neighbouring hills. This may be improved by the project to raise the antenna from its present 15ft. above ground. A 5-ele Yagi cannot be too high! Many of the hundred contacts were made with a QQV03-10 in the final and controlled carrier modulation, but this has recently been pressed into service as the driver for a QQV06-40A job, running about 75 watts and modulated by a pair of 807's in Class-A. A valve converter is in use, tuning 8·5 mc to 10·5 mc into the AR88 IF/AF strip. Steve hopes to come on 70 cm. shortly.

From Meir Heath, Stoke-on-Trent, Ken Parkes, G3EHM, operates on both two metres and 70 cm. The antennae are at 50ft. on a lattice tower, a 10-ele Yagi for Two and a 14-ele for 70 cm. The QTH is 850ft. a.s.l. and there is a clear take-off in all directions. The two-metre gear consists of a QQV06-40A AM transmitter with a transistor modulator and an SSB rig using two 4X150's in the final, giving some 300 watts p.e.p. The exciter is a Hammarlund HX-50 feeding a home-built transverter. For reception, Ken has an FET converter, using TIS88's and producing an IF of 4—6 mc, which is fed to either a BC-454 or a transistorised IF strip. A MOSFET converter has just been completed and will be in operation shortly.

On 70 cm, a home-built transceiver for two metres drives a varactor tripler to 432 mc, some ten watts being available from the BAY96. Construction of a QRO PA has just been completed, and this consists of a 4X150 in a cavity which was cast from aluminium and turned up to size on a lathe. (Ken also made the blower motor for it!) Modulation is by valves or transistors. The receiver starts off with two RF amplifiers in trough lines using the AF239 and AF186. The mixer is a BF181. The IF is 19-22 mc, and is played through an Eddystone EC-10. The whole of the 70 cm gear is battery operated.

THREE-BAND ANNUAL VHF TABLE

January to December, 1969

Station	FOUR METRES Counties	FOUR METRES Countries	TWO METRES Counties	TWO METRES Countries	70 CENTIMETRES Counties	70 CENTIMETRES Countries	TOTAL pts.
G3DAH	11	1	59	14	15	4	104
G8BMD	—	—	49	9	27	4	89
G3COJ	10	2	45	8	17	5	87
G2JF	—	—	47	9	24	5	85
G8AUE	—	—	39	2	25	4	70
EI6AS	13	7	38	12	—	—	70
G3EHM	—	—	45	10	11	2	68
G3LAS	20	1	36	4	—	—	61
G2AXI	15	2	32	5	4	1	59
G8APZ	—	—	29	5	15	3	52
G8ADP/A	—	—	33	3	12	3	51
G3EKP	17	5	17	5	—	—	44
G8BJK	—	—	34	6	—	—	40
G3TDH	35	5	—	—	—	—	40
G8AYN	—	—	14	4	16	5	39
G8APJ	—	—	23	4	8	2	37
G8ASR	—	—	32	4	—	—	36
G8AUN	—	—	29	6	—	—	35
GI5ALP	8	3	17	5	—	—	33
GD2HDZ	—	—	27	4	—	—	31
G3KMI	12	1	14	3	—	—	30
G3AHB	—	—	20	4	3	1	28
GC8AAZ/P	—	—	22	4	—	—	26
G8ARM	—	—	—	—	16	4	20
G8BJC	—	—	11	1	—	—	12

TWENTY-THREE CENTIMETRES

STATION	COUNTIES	COUNTRIES	TOTAL
G8AUN	7	1	8
G8ARM	7	1	8
G8BAV	3	1	4
G8AYN	1	1	2

The THREE BAND ANNUAL TABLES show total claims to date from the year commencing January 1st, 1969. Claims should be sent as here-to-fore to:—VHF Bands, SHORT WAVE MAGAZINE, BUCKINGHAM. Summaries by bands will be published at suitable intervals.

Operating times are Monday evenings on two-metre SSB, and Friday evenings on 70 cm, beaming South-East, with as much operating on all modes and bands during the week as Ken's job as a lecturer in two of the Stoke-on-Trent Technical Colleges will permit.

Brian Cockell, G8BJK, operates from the highest point in St. Albans at some 500ft. a.s.l., with a clear take-off in all directions. The transmitter is a Murphy base station Type MR-880 and runs 40 watts input to a QQV03-20A. The modulator is a pair of EL84's in Class-AB1, with a Grampian DP4 microphone. A T.W. nuvistor converter is used for reception, and this feeds into an Eddystone 840A at 4-6 mc. The beam is a slot-fed 8/8 at 40ft. above the ground. His QSL return rate is just above 25%; he sent out 500 cards and received 130 back.

UHF News

G8AYB (Luton, Beds.), will shortly be active on 23 cm. The transmitter, which runs 40 watts to a 2C39A tripler, is complete, and the receiver is well under way.

G8AJC (Canterbury, Kent) is now QRV on 23 cm. He uses a 2C39A tripler in a G2RD cavity. The converter is a valve job at present, but a transistor model is under construction. First contact was with G3PNI in Margate at 15 miles.

G3OBD (Poole, Dorset) has a klystron going on 9 cm. and is looking for contacts. He is busy building a mobile shack at the present time, which he proposes to tow behind a caravan during a projected trip to GW, of which more details later.

Activity on 13 cm. also has been upped by G3OBD. On that band he runs a 12AT7 oscillator/multiplier, and QQV03-20A tripler and QQV03-20A amplifier to 384 mc, followed by a 2C39A tripler and DET-22 doubler to a home-made cavity on 2305·8 mc. Output is of the order of one watt. The converter has been constructed to the G3RPE design, and produces an IF signal at 28-30 mc. The antenna is a wave-guide feed to a 4ft. diameter parabola. Best DX so far is with G8AGM/P at 44 miles, but tests are in hand with G3BNL/P and F1RJ/P to raise this. Philip will be operating from Brecon on 70 cm. during the period July 28—August 5 at around 1900z each evening, and will be looking for contacts on the higher bands also. Two metres will also be available in case things are a bit quiet on UHF. He will be using the GW3NUE/P site at 2,400ft. a.s.l. if the weather is good, otherwise he will be at Bwlch at 1,700ft. a.s.l.

While on the subject of 13 cm. activity, those indefatigable souls G3BNL, G3EEZ and G3OAD are pressing on with test and contacts. G3EEZ and G3OAD are now working on the development of a system for modulation of pulse transmissions, and the former has built a narrow-band receiver for the frequency, details of which will appear, in due course, in SHORT WAVE MAGAZINE.

Firsts

Further claims for 70 cm. " Firsts " come from GW8AHI, Bill Davies, with contacts with GD8AGY/P on July 28, 1966; and with GI5AJ on September 22, 1966—and from GC3VXK/P who worked ON4ZK September 2, 1967.

On two metres, GC3WMS/P claims a first with GD3NUE/P on September 3, 1967. GD3FOC worked F9NJ on October 9, 1965, and PAØLB and ON4MV on October 10, 1965, for further " Firsts " on this band.

Since fresh claims are arriving at fairly regular intervals for both the two metre and 70 cm. lists, a comprehensive amendment will be published in a few months time. For the present, therefore, please keep claims coming.

QSY and New Calls

G8CIS of Harringay in North London is now G3YNC. He still runs twelve watts to an 8-element beam at 60ft., on a good site.

G3PMX has at last found a QTH which satisfies both the family *and* the technical requirement for a good VHF site. He will have moved by the time this appears to Great Waltham, Essex.

Another QSY is that of G3EGK, who transfers to the Leicester area at the beginning of August. SSB operators, please note.

G8CNQ (Gillingham, Kent) is now active on two metres again after many years away from the band during which time he allowed his call of G3FMB to lapse.

G8CFF should be operating as EI2VBB between August 22 and September 9. Frequency 145·350 mc, antenna 14-ele *Parabeam* and 8/8, and transmitter is about five watts to a QQV03-10. Counties to be visited are Tipperary, Waterford and Kilkenny. Mode will be AM, and CW if some nearby EI will oblige.

G8AFN will be on from near Otterburn, Northumberland, on the night of August 6 from 2000 BST onwards. Frequency 145·738 mc or 145·765 mc. Equipment is a T.W. Communicator, and the antenna an eight-element Yagi.

G8AMG/P, operating portable recently was well received in the South from Rutland, Northumberland and Edinburgh, and also managed some nice DX to points West.

It was very surprising to receive a serial number of 004 from G3KDG during the small hours of the recent 144 mc Contest. Here was a well-equipped and competently operated station, at DX range for most of us, with such a small score after so many hours' working, and one wonders what the reason can be. Charles is in Petrockstowe, Devon, having retired there from Edgware, where he was very well-known for his CW and phone activity on Two. He runs 30 watts, plate-and-screen modulated by 807's, to a 6/6 beam at 30ft. on a home-built tower from a QTH at 280ft. a.s.l. Receiving set-up is a cascode converter tuning 4·5 mc to 6·5 mc into an AR88. Although screened to the South and South-West, he has a good take-off to the East and North, and frequently has the beam turned towards the London area. Perhaps this is a case for the use of CW, since he has been worked several times from Herne Bay using that mode, and always with solid copy, even under barely average conditions. His frequency is 144·1 mc, and it surely must be worth a try on the key.

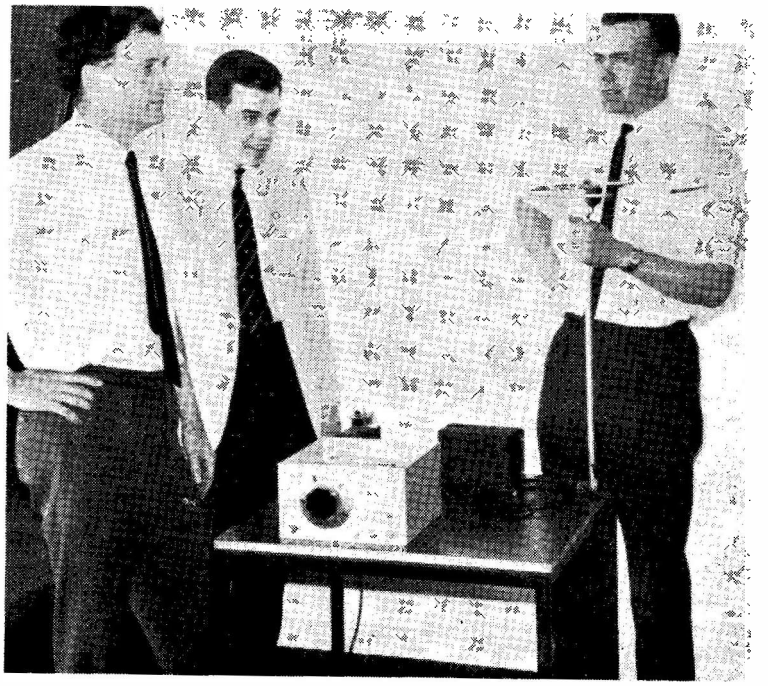
Another refugee from the bustle of the Home Counties is Arthur Breese, now GD2HDZ in Laxey, I.o.M. He was active on two metres and 70 cm as long ago as 1957 while in Pinner, Middx., and has just come back on Two after an absence of some twelve years. His first QSO on two metres, after refurbishing all

the old gear, was with GM3BHT/P, which must have been encouraging, and after having satisfied quite a number of enquirers that he was *not* a pirate, he has now amassed a respectable number of counties for the Three-Band Annual Tables, the majority being acquired during the openings of June 9/10 and June 29/30, the highlight being a QSO with F1ADD/A on the 29th. After so long an absence, it was interesting to hear Arthur's impressions of the band. He finds that there are *still* a lot of S4 carriers with modulation which cannot be resolved at all, and *still* too many gabbled callsigns which the phonetic alphabet seems to do little to help. The Band Plan, he says, seems more honoured in the breach than the observance, and the SSB boys are tending to operate a closed shop, in that many of them cannot, or do not, tune the whole band after a CQ call. It cannot but be admitted that these observations are, in the main, justified. For those who want GD and a contact with GD2HDZ, listen on 145·800 mc. They will find a fine operator there who (as can be vouched from personal experience) is prepared to stay on the band and give a contact to callers until quite early in the morning. Gear for 70 cm is available, but not yet in commission. GD3FOC on SSB and GD2HDZ are indeed putting the Island on the two-metre map.

Four Metres

The first QSO between this country and Iceland on four metres was made at 0840z on June 27 by G3JVL, Hayling Island, Hants., who worked TF3EA in Reykjavik at RST 579, both ways. Some warning of an opening to the U.K. was given when the Icelandic station reported reception of the Scottish beacon GB3GM, which was at 5/9+ between 2230z and midnight on the previous day, and of EI4RF between 0007z and 0025z on Friday. At 0850z, TF3EA was contacted by Constance Hall, G8LY, Lee-on-Solent, Hants., at RST-579/RST-449. Congratulations to all concerned who have put in much effort to bring this off. Fine feats, indeed.

Heinz Stellberg of Konigswinter, who has been taking an enormous interest in monitoring the 4-metre band, reports hearing EI4RF, GB3GM and G3WZN (Liverpool) during the recent Sporadic-E openings, as well as stations in GI. G3JQI (Norwich) also reports reception of EI4RF at RST 599.



At the very successful Midlands VHF Convention at Wolverhampton on June 14—the lecture session, for which the attendance was 93, no less, was taken by G3NNG and G2HIF, the committee member being G3THW. This Convention, and the subject for the lecture, was discussed on p.308 of July's "VHF Bands."

For those looking for four-metre DX, 5A3TW in Tripoli is anxious to oblige. He has access to some pretty good equipment, and may be raised on 7070 kc between 2230z and 2300z each evening, or as Desmond J. Blocksage, PO Box 2390, Tripoli. With all the Spor-E about these days, this could well be on.

Auroral Reception

Although these summer months are not the most productive of Auroral openings, readers may wish to note for future reference, the following callsigns and frequencies of stations known to be active during an aurora.

OH9NV, 144·005 mc, 144·030 mc; OHØNI, 144·076 mc, 144·237 mc; UR2BLI, 144·175 mc; UR2DZ, 144·144 mc; UR2OQ, 144·255 mc; OHØAA, 144·033 mc; UQ2AO. 144·042 mc.

The Brussels Conference

The IARU Region I Conference in Brussels last May, took several decisions which will affect UHF/VHF operations in this country. Among these were:—

(1) Two-metre beacons are to be operated at HF in the band between 145·95 mc and 146·00 mc.

(2) Beacons in the 70 cm band to be between 433·45 and 433·50 mc. From 433·50 mc to the upper limit of the band will be reserved for A/TV.

(3) CW allocations are to be 144·0 mc to 144·15 mc, 432·0 mc to 432·1 mc and 1296·0 mc to 1296·15 mc.

(4) The 70-centimetre SSB international calling frequency is to be 432·15 mc.

(5) International calling frequency for RTTY is to be 145·3 mc, and for mobile operation, 145·0 mc.

(6) The standard for NBFM transmissions is an audio band of 3 kc and a modulation index of 1. This implies a total deviation of ± 6 kc.

(7) The QRA Locator will be

used for distance calculations in Region I contests.

(8) With effect from 1970, the annual Region I contests in the autumn will include a separate section for SWL's and will be of 24 hours duration starting at 1800z.

(9) A Special Region I UHF/SHF contest is to be arranged for the first weekend in October from 1970 onwards, and the May contest will be dropped. A CW event is to be organised for the first weekend in November. All VHF/UHF/SHF bands will be used, during 2000z to 0800z.

(10) Discussions and negotiations are to be initiated for frequency allocations for space communications with artificial satellites within the amateur bands, other than two metres, for which agreement has already been reached.

(11) Stations contravening Region I band plans (for example, by operating phone in the CW section) may be disqualified from contests.

Other decisions either confirm existing practices in this country or are long-term targets.

It is obvious from the above that a certain amount of re-thinking on the U.K. band plan and re-arrangement of contest dates and rules will now be required, and full details will be published as soon as they become available.

Beacons

ON5PJ in Dinant, has set up a two-metre beacon on 145·500 mc with an output of one watt. Operation is continuous except for when ON5PJ is himself in QSO. Antenna heading is not known, but reception in Herne Bay is of the order of RST-449. Still a useful indicator of DX conditions to the East.

Many operators will have heard a transmission on 143·965 mc consisting of a carrier with a 1000 kc tone superimposed, which has been radiating day and night for some weeks now, although it has not been heard here for the last few days or so. It D/F's in the Cologne area, but the German authorities deny any official knowledge of it. Can anyone identify?

News Items

For those who heard and/or worked SL6BH during the mid-June opening on Two, the QTH is Halmstad in Sweden, and the prefix SL indicates a military (and this includes Naval and Air) establishment. The QRA Locator is GQ25g.

G3UAN, Kenton, Middlesex, is getting some odd looks from passers-by as he walks along with his two metre walkie-talkie in his hand. The whole thing is in a box $4\frac{1}{2}$ x 7 x 3 inches, with a quarter-wave whip on the top. The transmitter consists of a BC108 oscillator on 48 mc, a 2N708 tripler and BSX20's as driver and amplifier, and the output is 200 mW. Best DX to date is with F9NJ in Lille! The modulator uses four transistors and doubles as the receiver output stage. The front-end has an AF180 as the RF amplifier and an AF186 superregenerative detector. From the top of Ditchling Beacon, twenty-mile contacts at 5 & 9 are usual.

G8AYC (Gillingham, Kent) has been putting video over to F9NF, ON4RY and PAØGDV recently. His A/TV call is G6ADK/T, and he seems to be quite well known on the Continent these days—so much so, that he is being asked for details of his equipment. G3WFC in Brentwood now has 150 watts of video and a flying spot scanner, and G3UNT is building for A/TV.

G3BHW (Margate, Kent) has not been very active on two-metre SSB recently as his spare time is being devoted to the excavation of the skeleton of a horned dinosaur in the chalk deposits near his QTH. He cannot confirm at present that the horn is of a dimension suitable for 13 cm operations!

G3USB (Cambridge) is now running nearly the full legal output on two-metre SSB with a pair of 4CX250's in the final. He uses the same amplifier for NBFM, with appropriate power reduction, and during the last two-metre contest made nearly 50% of his contacts in that mode. Chatting with him produced mutual agreement that 150 watts of NBFM is worth more than 30 watts of AM under most conditions, and indeed it can be shown that FM has some advantages even over SSB when signal strengths are high—but under weak-signal conditions, it compares unfavourably with both other modes, particularly when the incoming carrier is below the limiting level for the FM detector, in which case one has to go to AM detection and tune to the slope of the IF to resolve the

When the G3BA/G3BHT Scottish DX-pedition were in Cumberland on the way home (May 31), they met the local VHF group. On the left is G3BW (Whitehaven), well remembered as a keen GDX operator on two metres. Others in the picture are G3RHE and G3BJD, with Tom Douglas, G3BA, at centre.

intelligence, thereby reducing the level still further. Of course, from the point of view of saving in cost and space of a high power modulator, and possible relief from TVI, there is much to be said for NBFM.

For those wanting it, G3SVK (with G3VUE) will be in Kinross for the VHF field day, September 6-7.

Many German stations worked during the mid-June openings were heard to use the term " 55 " in addition to the more customary " 73 " when signing at the end of a QSO. Enquiry elicited the information that this signifies *Alles gute, alles beste*, or in free translation " All the best." So now you know!

G8AYN of Croydon, in common with many others, must have been glad he came home for the weekend of June 15/17. He worked OZ5AH in EP34g and OZ9PZ in EQ65d for a new country on Two, and heard OZ2ND, who, incidentally, runs but two watts output. This was followed by a string of PAØ and ON4MV for another new country. On the Saturday he worked ON4ZK on 70 cm. and G3LQR on 23 cm., and G3REH in Spalding gave him another 5/9 both-ways QSO on that band. G3DNR also took advantage of the opening, knocking off 11 PAØ, two DL, six F, also G and ON and two OZ from the Margate QTH, running just five watts. The encounter with OZ9OT was at 740 km. Paul seems to go in for QRP contacts, since DC8QM was only running two watts and ON5KG, portable in Ostend, had only 500 mW, and said he was going QRT because of TVI!

The Isle of Sheppey is often in demand for an Award, and it is pleasing to note that Ted Trowell, G2HKU, is again active from there on two metres with 15 watts to a 4/4 to 40ft. a.s.l. He is badly screened to the North round through East to South-East by a 270ft. hill, but gets out fairly well to England. He will be pleased to arrange a sked with anyone who wants Sheppey, *QTHR*.

Anglo - American friendship received another boost when G3DOR of Staines, armed with a ten-element Yagi and a low power tripler, worked his first " American " station on 70 cm at 2130z on June 23. Signal strengths were 5/6 both ways. At the other end was Karl Kanalz, G5AGX, in Hounslow, who is now QRV on that band. He would like more contacts, but finds 70 cm as quiet as 70 mc. As do many of us!

South Bucks. VHF Club having a sale of components and gear (*not* junk) on August 5 at Bassetbury Manor, Bassetbury Lane, High Wycombe, Bucks., opening at 7.30 p.m. All Clubs and visitors welcome. G3PQH, *QTHR*.

Neat two-metre beam assembly on its home-constructed lattice tower at G3KDG, Petrockstowe, South Devon. The beam is a slot-fed six-over-six and, remote as he is, most of G3KDG's contacts at any sort of distance are on CW. He has worked G3DAH (Herne Bay, Kent) on numerous occasions, always with a good signal.

Forthcoming Events

The two-metre SSB contest is planned for August 4, the 432 mc Open for August 10, and the four-metre CW contest is on August 16. VHF Field Day is scheduled for September 6/7, and this coincides with the IARU Region I event. The 144 mc fixed-station contest takes place on September 21.

Deadline

Deadline for the next issue is **August 9**, and the address for news, claims and comment is " VHF Bands," SHORT WAVE MAGAZINE, BUCKINGHAM. Cheers for now and *73 de G3DAH*.

* * *

Editorial Note: On completion of this month's " VHF Bands," G3DAH went into hospital for an operation that may keep him away a month or more. This means that Mike will not be available to contribute this feature for the September issue. As we understand that A. J. Devon is still lurking about somewhere, we may be able to prevail upon him to perform as stand-in. In any event, *all* VHF correspondence, please, to SHORT WAVE MAGAZINE, BUCKINGHAM.

THE MOBILE SCENE

NOTES ON THE LONGLEAT, SOUTH SHIELDS AND COLCHESTER RALLIES

FOR the Rallies that have taken place during the period, Wx conditions have varied from fine and warm to the other extreme—but even in the latter event attendances have been good.

For the Longleat (West of England) Rally on June 29 they again had perfect weather—the attendance actually logged was 910 names in the visitors' books and 420 cars parked by 2 p.m., and this takes no account of those who failed to identify by signing in. Truly, a splendid result, of which the Bristol boys may well be proud. Extra space had to be found this year to accommodate ten trade stands. Certainly, the setting for this Rally could hardly be bettered, as anyone who has been to Longleat would agree.

* * *

The tenth Rally organised by the South Shields & District Amateur Radio Club, held on July 6 in rather cool and cloudy weather, saw a remarkable increase over previous years' attendances—more than 160 cars arrived, of which 36 were equipped for /M on Top Band, plus eight mobiles fitted for two metres. In addition to the local support, they had visitors from as far as Croydon, Cheltenham and Cambridge. The four competition winners included one YL (and the test was " technical questions "!). The Rally featured four trade stands, which did useful business. For years, this Rally has been run by Derek Forster, G3KZZ, and once again he has a notable success to his credit.

* * *

The venue for the Colchester Rally, also on July 6, is of more than usual interest as a family occasion, for it is held at the local Zoo, and appropriately enough the talk-in stations on Top Band and two metres signed GB3ZOO—they also had another station working the HF bands using a KW-2000A. This was the third year for the event and unfortunately this time it was practically rained out. However, in spite of the Wx about 70 cars turned up and it was noticeable that a fair proportion were equipped for VHF/M. With gathering experience, the Colchester group aim for bigger and better things next year—at least, they have proved to the Zoo authorities that it is very well worth their while giving full co-operation to an event like a Mobile Rally.

* * *

According to current information, following are the Mobile Rally events yet to take place—there may be one or two others of which we have had no official information (as previously explained, we can only accept details for publication as notified).

July 27: Cornish Mobile Rally, at Boscawen Park, Truro, Cornwall, with talk-in on 1837 kc, 70·38 mc and 144·1 mc.—Cornish Radio Amateur Club, G3VJB, *QTHR*.

July 27: Pudsey & District Radio Club Mobile Rally, at Allerton High Street, Leeds 17. Talk-in on all regular bands.—M. S. Gaunt, G3WGW, *QTHR*.

August 10: Radio picnic at the Scenic Car Park, Yelverton, Devon, organised by the Plymouth Radio Club, with talk-in by G3PRC/P on 2m. and 160m. This is intended to be an informal get-together, on the lines of previous years.—J. H. Peters, G3YDU, 43 Holtwood Road, Glenholt, Plymouth.

August 17: The Annual Derby Mobile Rally, twelfth in their series of highly successful events, with an average attendance in previous years of over 4,000. As usual, the venue is Rykneld School, Bedford Street, Derby, with free admission, parking and entertainment. This will include field events, a mammoth prize draw, radio-controlled model aircraft display, grand junk sale, a band of music, and a (controlled) number of trade stands. Refreshments will be available on site. Talk-in stations, opening at 10.0 a.m., will be ready on 2m., 4m. and 160m., and it is intended also to operate a station to work DX on the HF bands. For the keen mobileer and Rally visitor, Derby is not to be missed. And even if it rains, there is plenty of indoor accommodation. —T. Darn, G3FGY, 1 Sandham Lane, Ripley (*2972*), Derby, DE5-3HE.

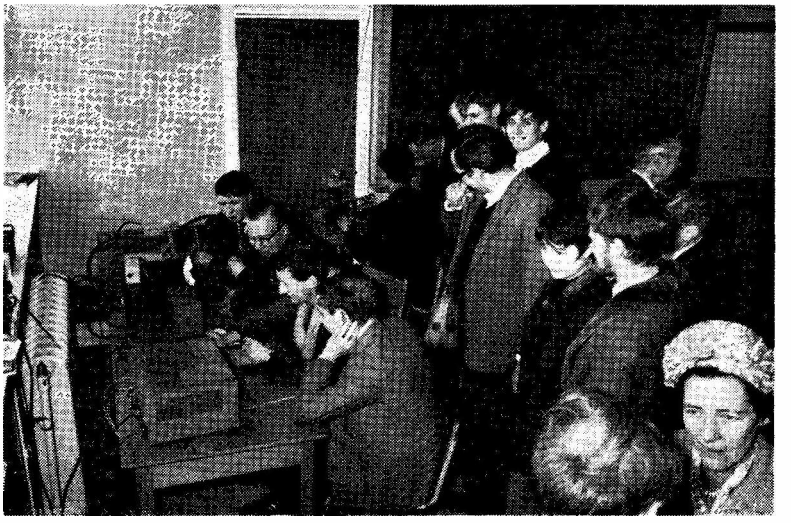
August 24: Torbay Amateur Radio Society Mobile Rally, at the Newton Abbot Recreation Ground (head for the gas-holders!), with talk-in from 10.30 a.m. on 2m. and 160m., signing G3NJA/A. Refreshments will be obtainable on the ground, and various entertainments will be offered.—D. Webster, G3LHJ, 14A Keyberry Park, Newton Abbot, South Devon.

August 24: Royal Signals and Amateur Radio Mobile Societies' Rally (open to members only) at the Royal Signals Camp, Blandford Forum, Dorset.—N. A. S. Fitch, G3FPK, Hon. Secretary, A.R.M.S., 40 Eskdale Gardens, Purley, CR2-1EZ, Surrey.

August 24: Swindon & District Amateur Radio Club Rally in the grounds of Lydiard House (off the A.420, 4m. west of Swindon—routes will be well sign-posted). Talk-in on 2m. and 160m., with prizes for the longest distance worked to control. Also competitions, raffles, side-shows and several commercial stands. Lydiard House itself will be open for viewing. Adequate parking, cover if wet, and light refreshments available on site.—D. R. Durham, G3SIR, 3 Dobbin Close, Covingham Park, Swindon, Wilts.

August 31: The G3VGG, Bromsgrove & District Amateur Radio Club, Mobile Picnic will be held in the grounds of Hartlebury Castle (Worcestershire County Museum) near Kidderminster, Worcs. Talk-in will be given on 2m. and 160m.—J. Dufrane, 44 Hazelton Road, Marlbrook, Broomsgrove, Worcs.

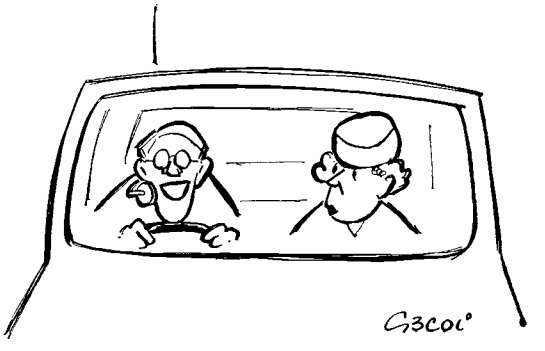
October 12: Peterborough Radio & Scientific Society's Mobile Rally at Walton County School, Mountsteven Avenue (off Lincoln Road), Peterborough. Opens at 2 p.m., with free admission, parking and entertainment. Talk-in stations on 2m., 4m. and Top Band, also trade stalls. Refreshments available on site, and plenty of indoor accommodation if wet. —D. R. Byrne, G3KPO, Jersey House, Eye (*351*), Peterborough.



For the Northern Mobile Rally on May 18, the Leeds Radio Society provided their own G3BEW, seen here being operated (before an interested audience) by G4AD and G3TDZ. Venue was Moorgrange School, Leeds, and this Rally drew a very large attendance, as reported in the July issue.

At the Maidstone Mobile Rally on June 1st, a view of some of the trade stands at this very well-attended event. The exhibition side was organised by G3AGP, and the Rally itself by the Maidstone YMCA Amateur Radio Society, as reported on p.293 of our July issue.

At the Amateur Radio Mobile Society's Rally at the Shuttleworth Collection, Old Warden, Beds., on June 1st—left and right, Mr. and Mrs. Margolis, G3NMR, with G3FPK (centre). Between them, they make the A.R.M.S. function, and have been very busy in its interests for years now.



". . . Must say a mobile QSO does relieve the tedium of a journey . . ."

THE MONTH WITH THE CLUBS

By "*Club Secretary*"

(Deadline for September Issue: August 8)

(Please address all reports for this feature to "Club Secretary," SHORT WAVE MAGAZINE, **Buckingham.)**

A LITTLE time back, we discussed the importance of ensuring the safety of club equipment at times when the Hq. is unattended; and now we must turn to a point that is probably neglected even more in the majority of groups, and that is the important question of *safety*. Whilst it is true to say that the majority of stations are basically fairly safe in the hands of their regular operator, there is equally no doubt whatever that the modern TVI-proofed transmitter—or, indeed, valved receiver—is potentially a killer. If one was foolish enough to put a finger into a silly part of the old breadboard rig of pre-war days, one merely swore and removed it very smartly, with no damage done other than removal of skin from a knuckle. Nowadays, a similar situation with a transmitter may well result in pulling the rig off the table and on to one's self with possibly fatal results.

Any group having its own clubroom and gear should take adequate precautions against the risk of accident by applying rigidly certain safety rules laid down by the committee, and making certain that these rules are observed. For instance, one of those large notices indicating how best to resuscitate after electric shock should be prominently displayed. All wiring and control circuits should be carefully and correctly run in in accordance with IEE Regulations. All earths should be correctly dealt with. Every member should be aware of the location of the master switch which cuts power off the whole shack with the exception only of the overhead lighting, and be reminded at each and every time the rig is used. Possibly the most important is to insist that nobody is allowed to be in the shack alone, and to have on the wall an *up-to-date* list of the emergency services, (doctor, ambulance, fire brigade, and so on). Finally, and this should help to fill up a hole in the programme, the local doctor should be asked to give a talk on the risks and dangers of electric shock, and to make particular reference to the effects of the various levels of voltage —information which would startle quite a few members! Finally, of course, a first-aid box in a prominently-displayed spot on the shack wall, kept fully stocked and regularly checked to be so, the replacements coming from the Club funds.

Incidentally, your conductor, who has had occasion to meet this problem in the past—not, thank Heaven, in the Club—has been amazed at how few GP's are really *au fait* with the dangers and risks inherent in microwave RF.

National and International Groups

Difficult to say how pleased your conductor was to hear once again from **WAMRAC** after some considerable time; so long in fact that he was beginning to wonder if it had "folded" after all the set-backs of recent years. It is doubly pleasant to report that this group of Methodist amateurs is very much alive and kicking still, with representation all over the world. The reason for the long silence was the illness of the secretary, G3NGF, who is now happily well on the mend and once again keeping things going. All regular church-goers are eligible for membership, whether of the Methodist or other persuasion.

Sad to say, G2FUX, the hon. secretary of the **Ex-G Club,** has sad tidings in his letter this time, reporting as he does on the sudden death of Norman Thompson, W8YHO, of Akron, Ohio, who was for so long hon. sec. for the Club in the States, and who did so much to make it the fine and thriving gang it now is.

On to **RAIBC,** a group we have extolled so many times in these pages it is hard to know how much more we *can* say—other than that they have lots of members, and so need lots of supporters; and of course they are always open to donations from local clubs, and offers of receivers which can be used, after a going-over, to set up another of the "full" members with the wherewithal to listen in. Of course, they meet mainly by nets on 3·7 mc, and would appreciate clear channels on Tuesday at 10 a.m., Wednesdays at 2 p.m., and Thursdays—the Cheshire Homes Net—at 2 p.m. also.

A.R.M.S. caters for the /M interest, with members not only in U.K., but other countries also. We rather get the impression that their AGM, at the Mobile Rally at Old Warden recently, was one of the best attended for some time, with much stimulating discussion as to the future of the society.

Monck Street is the location of the **Civil Service** Sports Centre in London, S.W.1, where the lads are having an informal Natter Evening on August 20, although it is understood that the shack will be open on Friday evenings for the net which is run with the country members.

British Railways ARS sent in their bi-monthly newsletter, with some interesting "letters to the editor," which should provoke considerable correspondence; this group caters for all members of the British Railways and associated organisations. For details, write to the

Sunshine, fresh air and breakfast for members of the South Birmingham Radio Society on the occasion of the G3LNS/P field day operation. Left to right: G3YKQ, G3YKO, G3OMG, the cooks, and G8BHE (right). They had a good time and enjoyed themselves.

Hon. Sec.—*see* Panel, p.387.

Pressing on with the clip, we come to **BARTG,** which is the society dealing with the RTTY interest in the Amateur Radio field, and well it does so indeed. The latest issue of the *Newsletter* marks the tenth year in the life of the group which has gone from strength to strength in this period. The newsletter includes a series of green pages at the rear which contain advertisements of interest to RTTY operators and to those thinking of entering the field for the first time. It does seem as though membership of BARTG is a " must " for anyone seriously interested in amateur teleprinter working by radio.

Local Clubs

This time it is proposed to go straight through the pile of reports as they come up, as a change from the area layout which we have been using of late.

First, we have the **Cornish** crowd, who have their main meeting at the SWEB Clubroom, Pool, Camborne, on the first Thursday in August, when the topic will be " Simple Test Gear " given by G3OCB, followed by the potted talk of the evening, when G3UCQ describes a thirty-shilling Quad. In addition there are other subsections devoted to various specialised interests, for details of which, application should be made to the Hon. Sec., at the address in the Panel.

Over at **Norwich,** the lads are getting together every Monday evening at the Brickmakers Arms in Sprowston Road, Norwich. August 4 sees G3IOR organising a Quiz, followed on 11th by a Ragchew Evening. On August 18, the matter to be discussed is the formulation of the programme for the coming months, and the 25th is the " star turn," when Mr. R. Porter, of Jodrell Bank, is to talk about Radio Astronomy Techniques.

The **Mid-Sussex** crew seem to be having August off if their newsletter is to be taken at face value, but there is a hint of informal activities, albeit not at the usual Hq., so a line to G3RXT (*see* panel) to confirm the true position would not come amiss if you are intent on looking them up.

Apart from their regular gatherings at the " Victory " in Tilehurst, **Reading** have their Annual Picnic at the Child Beale Trust near Pangbourne, on the A.329 road from Reading to Oxford. Plenty for all the family is the promise in the write-up.

At **Bradford,** August is a month of recess for the local group, who reconvene in September at Bradford Technical College; for all the details, contact the hon. sec. at the address in the Panel, p.387.

Yet another Club to go into recess for the summer is **Barry College of Further Education,** where things do not restart until Thursday, September 25, when they are having the first meeting of the new session in Room W5.

Alternate Fridays is the form for **Saltash,** which means a barbecue on Kit Hill on August 8, with talk-in and Mobiles active, an Outing to Westward Ho! on the 17th, again with /M and /P stations active, and on August 22 a trip to Plymouth Power Station, Prince Rock, at 7 p.m.

Membership Point

A total on the Nominal Roll of 644 is the proud claim of the **Derby** and District Amateur Radio Society; the present total is 191 fully-paid-up members, 94 of whom have transmitting licences, together with 52 who were, at the time of writing, in arrears with subs. This is *quite* a total—Derby is, of course, one of the oldest Clubs in the country. Dates to reserve in August are as follows: August 6, for a Surplus Sale at Hq.; August 10, for the last-minute preparations for the Mobile Rally,

CLUB SECRETARIES, PSE NOTE!

Closing dates for " Month with The Clubs " in the next few issues are, Fridays: August 8, September 5 and October 10—addressed " Club Secretary," Short Wave Magazine, Buckingham. Reports received later than these dates cannot be taken in for the issue in preparation.

which comes off on the 17th; August 20, for the fifth D/F Practice Night, and, last but by no means least, a lecture at Hq. on August 27, entitled "Atmospheric Electricity," which is to be given by Dr. C. W. Stone. All "home" events are taken at Room 4, 119 Green Lane, Derby.

August 6 is a date to reserve if you are within the catchment area of the **Verulam** club, when they go to Salisbury Hall, and put the Club call, G3VER on the air. G3OFH being the presiding genius for the evening.

Nice to see the **Crystal Palace** *Newsletter* carrying forward information on programme details, both for the benefit of the lads in arranging holidays, and for your scribe in giving out the latest gen; Saturday August 16, is a Test Gear Evening, put together by G3XCB, G3OOU and G3FZL, which should be well worth the journey.

New Club Award

Pressing on, we next make a stop at **South Birmingham,** who are encouraging activity among members by offering a trophy to the first member who makes the grade with their new "Worked all Birmingham Postal Districts" award. There are 39 good ones, excluding 40 and 41, which cover Smethwick and Warley, and the requirement is to work 32 of these, after June 1, 1969. QSL's will of course be required. The award will also be open to non-members albeit the latter will have to pay 4s. as part cost of the award. Cards to the hon. sec.—*see* Panel. (The QSO's may be mixed AM/SSB/CW, or endorsed for one mode only.)

Nice to hear again from **Roding Boys,** who are now in three branches, centred on Walthamstow, Holloway, and Canterbury. It is understood they are running a membership drive at the moment, and also have an annual camp organised with activity on various bands; this year the camp will be at Nazeing, Essex.

Although meetings are usually slated for the third Tuesday in each month for **Midland,** this is having to "go by the board" to some extent, the dates to reserve being August 19, September 16 and October 14, the latter being the AGM. All are at Hq., the Midland Institute in Margaret Street, Birmingham 3.

Solihull do not make any mention of the details, but simply that they are in session on the third Tuesday in each month, at the Old Manor House, 126 High Street, and would be very pleased to welcome visitors or intending new members.

Still in the same general area, we have the **East Worcs.** chaps, who assemble on August 14, at the Old People's Centre, Park Road, Redditch, for a Junk Sale.

* * *

Digressing a little from the strict theme of this piece, your scribe has by him at this moment a copy of the *Wireless World.* Nothing unusual in that, you may say—but there is, because this one is dated May, 1940. Two of the interesting things about it are, first, that it has no reference to the momentous events that occurred in that period—a vivid demonstration of the need you Club Secretaries have to give us the *advance* gen in your reports, as what is history when you write is *ancient* history when it finally gets to print. Secondly, the list of clubs reporting in with their activities: One notes reports from Bristol Experimental Radio Club, Croydon Radio Society, Eastbourne and District, Robert Blair Radio Society in London, N.7., Edgware Short Wave Society, and Ashton-under-Lyme and District. One wonders how many of the groups of today active in the same areas can trace their ancestry back to those old clubs of pre-war days. Perhaps it would be an interesting exercise, and help to fill in some of the gaps in the history of our hobby.

One group that *has* taken the trouble to trace its history back has already been mentioned in this piece, namely Derby—but now we have another letter, from the hon. sec., G2CVV, which mentions that their recent dinner and dance gave him a bit of a surprise—he and his wife were the guests of honour, upon completion of no less than 21 years continuous service as honorary secretary! Congratulations are due to G2CVV—but far more so to that lucky Derby Club for having the inestimable advantage of the continuity such devoted service brings to their affairs.

Talking of Derby, reminds one of the presence of another group in the same district, namely **Nunsfield House Community Association,** Boulton Lane, Alvaston, Derby, being the location of their Hq. August 3 sees them assembling at Nunsfield House at 3 p.m. for a practice D/F event. Otherwise it is all "at home" events, each Friday in Rooms 8 and 9, with films, tape lectures, and open evenings when the club transmitter will be operated.

Another group based on a Community Association is that at **Nottingham,** which has a place at Woodthorpe House in Mansfield Road. Nothing formal has been teed up for August, but from September onwards the story will be a little different. On the first Thursday there will always be a natter session, the second a film show, third a ragchew again, and on the fourth a discussion or lecture.

A recess in the first part of August simplifies life for the hon. sec. at **Shefford,** where the only evening which is booked is August 28. This is set apart for VHF NFD preparations, with G8AKT "acting as ringmaster," as they say.

Nothing formal is down for August at **Salop,** either, not even the Church Stretton Traction Engine Rally, which is "off" this year due to non-availability of the usual field. Odd, how many radio amateurs find another interest in steam engines of one sort and another—the last such affair your scribe attended, near Debden, was almost as near to a Mobile Rally as a Traction Engine one! Coming back to the point, it is suggested that for details on what is on at Salop, interested parties contact G3WNI at the address in the Panel.

Details of the August doings at **Hereford** are not yet available, although we are aware that the chaps are getting together on the first and third Fridays in each month. For the details, it is suggested that contact be made with the hon. sec.—*see* Panel, opposite.

At **Stockport,** the accent is on VHF for August, with a demonstration of 144 mc by S. Revel and chairman A. Evans down for the 6th; on the 20th, the same two follow up by giving a constructional lecture on the subject of two-metre gear.

It is quite a time since we heard from **Hemel Hempstead;** it seems they have now amalgamated with the Radio Section of the Addressograph-Multigraph Sports and Social Club to form a new group which

assembles in the clubhouse on the first and third Friday in each month. Equipment is being organised for all bands up to 144 mc and as the site is well up and in the clear (with room for a Top Band full-wave aerial!) the rig should put out a pretty fair old signal. Future intentions include talks, demonstrations, films, practical evenings and other attractions. For details, contact G8BEH, the address as in Panel.

* * *

Cray Valley next. August 3 is down for G3MQT, who is to take as his theme "The Investigation of Radio Interference." This deserves a good turn-out, as quite apart from the fact that G3MQT is a professional who knows his subject, he will be making quite a long journey from Hastings to come and give this lecture. A Natter Nite is, as always, the other event of the month, this time on August 17. Both meetings are to be held at the Congregational Church Hall, Court Road, Eltham, S.E.9.

Neachells Cottage, Stockwell Road, Tettenhall, is the home base of the **Wolverhampton** Society, and on August 4 at this venue they are to have a lecture and demonstration of the Zetfax facsimile equipment for transmission and reception.

Now to **Echelford,** where the Hq. is at The Hall, St. Martins Court, Kingston Crescent, Ashford, Middlesex. August 11 appears on the programme as a Junk Sale, and 28th as a D/F event—but it is not quite clear whether the latter will in fact make a start from the Hq.

At **North Kent,** the AGM produced a reshuffle in the management; and the new committee makes it quite clear that it is going to try to live up to the very high standard set by the previous members—it is nice to hear of a committee thus making quite clear to all that the previous holders of the posts were appreciated. As for the business of the August events—there is VHF NFD, and then on August 28, Len Randall will take a little time off from SWL DX-chasing to talk about Wine-making. A pity the scribe forgot to indicate where the meeting is, but luckily "Club Secretary" has a good memory, and is able to say that it is the Congregational Church Hall, adjacent to the Clock Tower, Bexleyheath.

Bishops Stortford group get together on the third Monday in each month, at the British Legion Club at the top of Windhill in Bishops Stortford—but, and here you can savour the joke—your conductor, who is himself a member of the Club, cannot for the life of him recall just what is on at the August meeting, other than that *something* has been fixed up!

After such a mishap as that just mentioned it is nice to come back to earth again; and it has to be said that the hon. sec. of the **Acton Brentford and Chiswick** gang has done just this. He has never missed since the writer

Names and Addresses of Club Secretaries reporting in this issue:

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BANGOR: J. W. Campbell, GI3OLJ, 48 Abbey Drive, Bangor, Co. Down.
BARRY (College of Further Education): D. H. Adams, GW3VBP, 49 Colcot Road, Barry, Glam. CF6-8YJ.
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BISHOPS STORTFORD: A. Stanley, G3WUR, 43 Havers Lane, Bishops Stortford, Herts.
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COVENTRY: C. Jaynes, 20 Belgrave Road, Wyken, Coventry CV2-5AY.
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ECHELFORD: M. Clift, G3UNV, 45 Fordbridge Road, Ashford (*59628*), Middx.
EX-G: F. W. Fletcher, G3FUX, 53 St. Ives Park, Ringwood, Hants.
HEMEL HEMPSTEAD: D. W. Hill, G8BEH, 3 The Orchard, Kings Langley (*5434*), Herts.
HEREFORD: S. Jesson, 181 Kings Acre Road, Hereford.
HONG KONG: M. Caplan, VS6AA, P.O. Box 451, Hong Kong.
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MID-SUSSEX: E. J. Letts, G3RXJ, 87 Meadow Lane, Burgess Hill (*3552*), Sussex.
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NORTH KENT: A. Watt, G3WZJ, 67 Glenhurst Avenue, Bexley.
NOTTINGHAM: A. L. Paterson, G8CQQ, 15 Bayliss Road, Gedling, Nottingham (*249896*), NG4-4JE.
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SALTASH: J. A. Ennis, G3XWA, 19 Coombe Road, Saltash, Cornwall.
SHEFFORD: C. W. Stedman, 10 Wychwood Avenue, Luton, Beds.
SILVERTHORN: D. Standley, G3XSA, 212 Westward Road, Chingford, E.4.
SOLIHULL: J. Lester, G3VXV, 173 Damson Lane, Solihull, Warks. (*021-705 3060.*)
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SOUTH MANCHESTER: P. J. Wilde, G3XDS, 7 Braddon Avenue, Brooklands, Sale, Cheshire. (*061-223 1322.*)
STOCKPORT: D. I. Lunn, G3LSL, 4 Farnham Avenue, Macclesfield (*7903*), Cheshire SK11-8LT.
SURREY: R. Morrison, G3KGA, 33 Sefton Road, Croydon CRO-7HS, Surrey. (*01-654 5982.*)
TORBAY: Mrs. G. L. Western, G3NQD, 110 Truro Avenue, Hele, Torquay.
VERULAM: W. C. Dennis, G3NCK, 129 Colney Heath Lane, St. Albans, Herts.
WAMRAC: Rev. A. Shepherd, G3NGF, 52 Thanet Street, Clay Cross (*2184*), Chesterfield, Derbyshire.
WESSEX: A. G. Emery, G8AVE, 7 Brunel Drive, Preston (*3177*), Weymouth, Dorset.
WOLVERHAMPTON: J. P. H. Burden, G3UBX, 28 Coalway Road, Wolverhampton.

Some of the licensed members for G3XNO, of the Otley Radio Society, are seen here, taken in their Hq. at Otley (Yorks.). Callsigns are: G3WVD, G8BZY, G3WPS, G8AWN, G3WDW and G3NNO.

has been doing this piece, and this time he tells us that on August 19, at Chiswick Trades and Social Club, 66 High Road, Chiswick, G3CCD will demonstrate and discuss the all-band ATU which he has recently designed and constructed.

The problems of attracting and maintaining the interest are taxing the minds of the **City of Belfast YMCA** crowd—so much so, indeed, that they have sent out a questionnaire to all the Clubs of whom they have knowledge, in the hope that by analysis of the replies they will be able to see deeper into the problem and its solution. This is a very sensible thing to do, even if, as with your conductor, the feeling is that there is a " negative " problem, if anything, in that too many of the wrong sort are encouraged with results that are at best heard as bad operators on the bands and at worst as pirates. But *any* research into a problem and discussion of the results is always enlightening even if the answers achieved are not the expected ones.

Nice indeed to hear from **Northern Heights** again, after their hon. sec.'s return from his trip to the States. No about about it, G3MDW had the best holiday of his life—so much so that he forgot that we want the gen for August, whereas, he sent in the July stuff! All we can therefore tell you is that the home base is the Sportsman Inn, Ogden, Halifax, and for the rest get in touch with G3MDW at the address shown in our Panel.

The **South Manchester** boys have a place at the Conservative Association Offices, 449 Palatine Road, Northenden, Manchester 22, where they meet every Friday. Various lectures, visits, and R.A.E. sessions, plus the operating of their station G3FVA make up the programme.

From where we sit, it looks like August 19 for **Surrey**, at the Swan and Sugarloaf in South Croydon, although we have no confirmation; and it also looks as though Nell Corry, G2YL, a most popular speaker, has the stand, to talk about her latest trip.

Bournemouth next; **Wessex** is the name, and the venue the Cricketers Arms, Windham Road, Bournemouth, where the booking is for the first Friday and the Monday 17 days later. The Wessex members wish to make it specially clear that they are *always* pleased to see visitors or prospective new members to the group, whether licensed or not.

* * *

At **Chippenham** the lads foregather every Tuesday evening at the Boys High School, Hardenhuish Lane, and on August 12 are starting at 7.15 with another of their Mini-D/F Hunts. In addition there is a net every Monday at 8 p.m. on Two, plus another on Top Band on Thursdays, to keep everyone in touch.

Sackcloth-and-ashes are being worn by the unfortunate hon. sec. of the **Maidenhead** group, who has only just managed to avoid missing the deadline for three months on the run—but it is all due to pressure of work at the end of the academic year, or to put it bluntly, the soul-destroying task of marking exam-papers! August meetings on the 4th and 19th, are both informals, at the Victory Hall, Cox Green, Maidenhead, as so many of the chaps are on holiday, but it is understood that the regular routine of a lecture at the first meeting of each month will be resumed in September.

Not one but *two* calls are now possessed by the **Silverthorn** club, who have added G8CSA to their earlier G3SRA; the idea is to give the " B " licensees in the Club more of a chance when the other call, is in use on the lower frequencies. Hq. is at Friday Hill House, Simmons Lane, Chingford, London, E.4.

If you are going out /P it is always a good thing to have a cook in the party. In this particular respect **Bangor** (Northern Ireland) are lucky in that SWL Taggart is somewhat of an expert in that art. When the lads are not " out and about " the normal meetings are held at the Silverstream Unionist Hall on the first Friday in each month, with the proviso that if something special crops up the date may be changed.

It is rare for a club to combine the duties of local

Club and National Society, but the **Hong Kong** group seems to get the best of both worlds in making life interesting for the VS6 boys. If you are thinking of stopping off there, or going to work in Hong Kong, a contact with the locals would seem to be a " must " if the *Newsletter* is anything to go by. Being " rare DX " whenever they go on the air has its lighter moments, as when VS6AA worked W4AX, who averred he had been looking for a QSO with VS6 since 1916—an awful long time to wait! Incidentally, there is quite a lot of two-metre activity in VS6, so if you go, make sure you have a crystal for 144·450 mc in the bag.

North-East Essex Technical College and School of Art is a long title adopted by the **Colchester** crowd by virtue of their new gathering-place, but it does *not* mean that they have ceased to be an " open " club; indeed they welcome visitors and new members. Owing to the College being shut down for the summer they are not having a formal get-together till October 1, but in the meantime various activities are being cooked up, in which their new caravan-shack will no doubt play a major part. For details, contact G3VAG, at the address in the Panel (p.387).

At **Torbay,** the Hq. is in Bath Lane, rear of 94 Belgrave Road, Torquay. August 30 is the date of the next meeting when G3CKQ is billed to give the lecture, but before that there is their Mobile Rally, which comes off on August 24.

Coventry are busy bees again this month, one way and another. Vic Hartopp, G8COB, of J-Beam has been persuaded to come and talk about Aerials on August 1—and a pleasure it is to see that name appearing as a lecturer again—followed up on August 8 by a night-on-the-Air. August 15/17 is set aside for a weekend trip to Wales, and on 22nd there is another evening of operating the rig. The month is rounded off by a trip to Coventry Power Station, on the 29th.

MCC—ADVANCE WARNING!

The weekend for this year's Magazine Top Band Club Contest (MCC) will be November 8-9, with rules much as for recent years. Get the knives sharpened, and remember that Clubs that have not entered for the last five years should write in for an identification code—otherwise, identifications will be issued and published automatically in the October issue of " Short Wave Magazine."

Conclusion

And there it is, for another month. Reports for next time should contain the *September* programme news and be organised so as to arrive with us by **August 8,** addressed as always to " Club Secretary," SHORT WAVE MAGAZINE, BUCKINGHAM. In conclusion, may we just remind you all that MCC time is not too far off? Get your club Top Band CW-wallahs to reserve the weekend November 8/9, and the technical types to prepare the gear and aerials plenty before then; most important of all, chat up the member with the best Top Band location, so *he* has time to chat up his XYL! *73 es BCNU.*

COURSES OF INSTRUCTION — R.A.E.

As in previous years, we shall be publishing lists of centres where instruction is being offered for the Radio Amateur's Examination, Subject No. 55 in the City & Guilds of London Institute prospectus (the organising authority for the Exam.). For many candidates, there will be one important difference from previous years—due to the general financial economies now imposed on Local Authorities, many of them are refusing to subsidise evening institute courses and what is known as adult education to the extent they have done in the past. This means that, in many instances, fees charged for courses of R.A.E. instruction will be more realistic than in previous years.

We shall be glad to publish here (free of charge, naturally) the necessary details about any R.A.E. course that may be available, anywhere in the country, together with the scale of charges. Those responsible for organising R.A.E. courses are invited to send in, as soon as possible, their notice, set out in the form shown here, for publication in the next List. Address to: Editor, SHORT WAVE MAGAZINE, BUCKINGHAM, marked " R.A.E. Course."

Barry, Glam.: At the College of Further Education, Colcot Road, Barry, on Tuesday evenings (R.A.E. Theory) and Thursdays (Morse tuition and Practical Work), 7.30-9.30 p.m., starting September 23. Inclusive fee, 30s. Enrolment Sept. 8-12. Apply to the Principal, at the College.

London (Hounslow): At the Brentford Centre for Adult Education, Girls' Secondary School, Clifden Road, Brentford, evenings, starting Sept. 22, enrolment Sept. 11-12, 15-16, 6.30-8.30 p.m. Fee 50s. Apply Adult Education Office, Hounslow Manor School, Holloway Street, Hounslow, Middx.

Northampton: At the College of Technology, St. George's Avenue, courses in R.A.E. Theory and Morse Tuition, enrolment during the second week in September. Early application is recommended, to the Principal at the College.

Stockton-on-Tees: At the Stockton/Billingham Technical College, Oxbridge Avenue, Stockton-on-Tees, on Tuesday evenings, 6.30-9.30 p.m., starting on Sept. 23. Apply for details to the Principal, Stockton/Billingham Tech. Coll., Roseberry Road, Billingham, Tees-side.

Wolverhampton: At the Wombourne Evening Institute, Dunsdal School, Wombourne, starting in September. Apply as soon as possible to Mr. D. E. Battison, at the Institute.

Intending candidates should note that *we* cannot answer enquiries about R.A.E. courses. All the information we have is published. It is usually possible to get advice about nearby courses in Subject No. 55 from the local office of the Education Authority (address in telephone book). Remember to quote " Subject No. 55, City & Guilds."

NEW QTH's

This space is available for the publication of the addresses of all holders of new U.K. callsigns, as issued, or changes of address of transmitters already licensed. All addresses published here are reprinted in the U.K. section of the "RADIO AMATEUR CALL BOOK" in preparation. QTH's are inserted as they are received, up to the limit of the space allowance each month. Please write clearly and address on a separate slip to QTH Section.

EI3BZ, M. Byrne, 18 Reid's Place, Cobh, Co. Cork.

G2CTV, J. R. Tweedy, 64 Lordsmill Street, Chesterfield, Derbyshire. (*Tel. Chesterfield 4982.*)

G3XAR/A, A. J. Mutch, Zodiac House, Porthcurno, Penzance, Cornwall.

G3XOV, R. M. Johnson, 21 Ashdene Gardens, Wordsley, Worcs.

G3XYF, J. F. Wresdell, Out-Gate Farm, Lowthorpe, Driffield, Yorkshire. (*Tel. Nafferton 295.*)

GC3XZC, G. V. Cobley, L'Islet, Samares Coast Road, St. Clement, Jersey. (*Tel. Jersey Central 24973.*)

G3XZO, M. D. Rhodes, 199 Queensgate, Bridlington, Yorkshire.

G3XZY, T. R. Garner, 51 Crowland Road, Haverhill, Suffolk.

GI3YBZ, J. McCann, The Lodge, Castlewellan Forest Park, Castlewellan, Co. Down.

GD3YDB, J. D. Thorpe, 12 Viking Road, Willaston, Douglas.

G3YDV, S. H. F. Dove, 69 Shiplake Bottom, Peppard Common, Henley-on-Thames, Oxon.

G3YGJ, D. K. Brierley, 71 Lawn Street, Bolton, Lancs.

G3YGS, D. W. Clouting, 3 Jackson Court, Brading Crescent, Wanstead, London, E.11. (*Tel. 01-989 3275.*)

G3YHC, W. R. Hermes, 68 Wolds Drive, Keyworth, Nottingham. (*Tel. Plumtree 3708.*)

G3YIC, V. R. Sedgley, 272 Malden Road, New Malden, Surrey. (*Tel. 01-942 9928.*)

G3YIV, M. G. Easterbrook, 8 Churchside, Vigo Village, Meopham, Kent.

GM3YKE, R. J. English, 52 Central Avenue, Kilbirnie, Ayrshire.

G3YKI, K. Vickers, 1 Knowles Avenue, Bradford 4, Yorkshire.

G3YKY, A. P. Vincent, Melody House, Gillotts Corner, Henley-on-Thames, Oxon.

G3YLG, K. Corrigan, 9 Belsize Close, Hemel Hempstead, Herts.

G3YLP, J. B. E. Thorpe, 7 Pipers End, Wolvey, Hinckley, Leics.

GW3YLV, P. Jones, 99 Lynmouth Crescent, Rumney, Cardiff.

G3YMH, R. Wainwright, 65 Wraysbury Road, Staines, Middlesex. (*Tel. Staines 53765.*)

G3YMV, I. MacHardie, 17 Blandford Road South, Langley, Slough, Bucks.

GM3YMX, D. E. Ferguson, 1 Braidburn Crescent, Edinburgh, EH10 6EL.

G8CDW, E. H. Double, 33-B Windmill Hill, Enfield, Middlesex.

G8CFG, K. R. Cates, 267 Uppingham Road, Leicester. (*Tel. Leicester 68718.*)

G8CQJ, B. Mellor, 15 South View, Churchwell, Morley, Leeds. LS27 7PQ.

G8CQQ, A. L. Paterson, 15 Bayliss Road, Gedling, Nottingham. (*Tel. Nottingham 249896.*)

G8CQR, R. E. Lee, 16 Vauxhall Road, Adeyfield, Hemel Hempstead, Herts.

G8CSA, Silverthorn Radio Club, Friday Hill House, Simmons Lane, Chingford, London, E.4.

CHANGE OF ADDRESS

G2CAS, J. Douglas, c/o Lloyd's Register of Shipping, 5/7 New York Road, Leeds 2, Yorkshire. LS2 7PJ.

G3HAL, R. A. Parrott, 17 Brougton Avenue, Aylesbury, Bucks.

G3IIO, D. R. Harriott, 23 Hamsey Crescent, Lewes, Sussex.

G3KOQ, B. Parker, Shortacre, Promenade, Arnside, Westmorland.

G3LDO, P. G. Dodd, 25 Wood Road, Spondon, Derby.

G3LGL, J. E. French, 7 Bridgnorth Road, Stourton, Stourbridge, Worcs.

G3LTZ, M. Allenden, 3 Westhill Close, Highworth, Swindon, Wilts.

G3MAE, Dr. A. E. Wilson, 31 Ford Road, Lanchester, Co. Durham.

G3OHH, R. A. Hargreaves, 46 Castle Road, Mow Cop, Stoke-on-Trent, Staffs.

G3OHL, D. S. White, 9 Elmwood Road, Eaglescliffe, Stockton-on-Tees, Teesside.

G3RGF, R. D. Young, Ranelagh, Main Road, Danbury, Chelmsford, Essex.

G3RYE, J. D. Harris, Little Bohays, Westhill Road, Wyke Regis, Weymouth, Dorset.

G3SBO, R. V. Court, 76 Neville Avenue, Hove, Sussex.

G3TEY, Mrs. P. Hargreaves, 46 Castle Road, Mow Cop, Stoke-on-Trent, Staffs.

G3VMT, T. J. Poole, 26 Lismore Close, Woodley, Reading, Berks. RG5 3RT.

G3VNI, S. C. Cammies, 7 Carisbrooke Drive, Maidstone, Kent. (*Tel. Maidstone 53729.*)

G3VNX, A. R. Unwins, 18 Clarendon Road North, St. Annes Lancs.

G3VYN, M. S. Turner, 25 Roland Drive, Hempnall, Norwich, Norfolk. NOR. 64-W.

G3VZD, N. Blaxter, Bird in Hand, Norfolk Street, Kings Lynn, Norfolk.

G3VZS, H. J. Green, 27 Albury Drive, Pinner, Middlesex.

GM3WBP, J. D. Broadley (*ex-G3WBP*), 67 Ranachan Gardens, by Campbeltown, Argyllshire.

G3WBV, R. F. Rawlings, 74 The Lindens, Field Way, New Addington, Surrey.

GW3XOT, Haverfordwest Amateur Radio Society, c/o A. Thomas, 7 St. Martins Park, Haverfordwest, Pembs. (*Tel. Haverfordwest 2181.*)

G3YEL, M. C. Holtby, 32 Woodcroft Crescent, Hillingdon, Middlesex.

GM3YHJ, P. J. Simmons (*ex-G3YHJ*), 13 Princes Gardens, Glasgow, W.2.

G3ZY, J. R. Tweedy, 102 Longedge Lane, Wingerworth, Chesterfield, Derbyshire. (*Tel. Chesterfield 77866.*)

G8ABS, D. G. Richmond, 11 Beckfield Lane, Acomb, York.

GM8BOW, L. P. Farrell, 24 Shiel Court, Glenrothes, Fife.

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SALE: Trio Transceiver TS-500, with separate VFO and PSU, £185. Trio Receivers, Model 9R-59DE and JR-500SE, price £61, delivered.—**Saltash Radio, 84 Fore Street, Saltash, Cornwall.**

QSL Cards for Tx and SWL. Send s.a.e. for samples, stating which type required. Prices from 12s. 6d. per 100, purchase tax and post paid. — **Beaumont, G5YV, 8 Ashfield Avenue, Morley, Leeds.**

UFO Detector Circuits, with data, price 10s. refundable. — Paraphysical Laboratory (UFO Observatory), Downton, Wiltshire.

OFFERING: KW-500 Linear, in first-class condition, fitted Xenon rectifiers and new 813, bargain at £40.—**Amateur Radio, 170-172 Corporation Street, Birmingham, 4.** (Tel: 021-236 1635.)

QSL Cards and Log Books, GPO approved, cheapest and best. Prompt delivery. — Samples from **Atkinson Bros., Printers, Looe, Cornwall.**

YOUR Callsign Engraved. In white letters on black plate, size 6in. x 1½in., 5s. 6d. Also badge pin, 2in. by ½in., 4s. Post free, cash with order. — **Workshops for The Disabled, Northern Road, Cosham, Portsmouth, Hants. PO6-3EP.**

SWOP Your camera or hi-fi equipment for Trio 9R-59DE, h.p. or cash. — Holdings Photo-Audio Centre, 39/41 Mincing Lane, Blackburn (59595/6), BB2-2AF, Lancs.

LOW-PASS Filters for TVI prevention. Send s.a.e. for details.—Fytton Electronics, 227 Valley Road, London, S.W.16.

DETACHED three-bedroom Bungalow, six years old, with garage, two toilets and central heating, in first-class North Leeds residential district. **Very** large garden, with Ministry-approved mast and Cubical Quad site: very good co-operative neighbours. Write for details.—Box No. 4816, Short Wave Magazine, Ltd., 55 Victoria Street, London S.W.1.

QSL Samples, excellent range at the right price. Also Log Books at 7s.—**Bailey & Co., Greenfield Place, Weston-Super-Mare, Somerset.**

QSL Cards: Two-colour, attractive design, variable features, from £3 3s. per 1,000 (inclusive). Send foolscap s.a.e. for samples.—ARA Press, 46 Moat Avenue, Green Lane, Coventry.

SEPTEMBER Issue: Appears August 29. Single-copy orders, 4s. (4s. 3d. "first-class" mail) to reach us by Wednesday 27th, for posting on the 28th.— Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London S.W.1.

READERS ADVERTISEMENTS

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SURPLUS: Top quality polypropylene non-rot rope. Diameters: ¼in., 1300 lbs. breaking strain; 5/16in., 1890 lbs. B/S; and ⅜in. dia., 3100 lbs. B/S. Send s.a.e. for sample.—Powell, GW3HUM, 21 Tanybryn Estate, Valley, Anglesey.

SMALL ADVERTISEMENTS, READERS—*continued*

CORNWALL, near Praa Sands: New Holiday Bungalow; 1968 4-5 berth Caravan; or bed and breakfast available on Farm.—Cole, G3MMI, Chycarne, Balwest, Ashton, Helston, Cornwall. (Tel.: Germoe 2473.)

SELLING: KW-2000A with AC/PSU, in as-new condition, with original packing and instruction manual, price £155, with free delivery up to 120 miles.—Milne, 4 Woodside Drive, Penicuick, (4242), Midlothian, Scotland.

FOR SALE: Brand new KW-2000B (PA 6146B's), with AC/PSU and K.W. E-Zee Match. Genuine offers, pse.—Fox, G3HID, 26 Manor Road, Burnham-on-Sea, Somerset. (Tel: Burnham-on-Sea 2511, evenings.)

FOR SALE: Heathkit DX-40U, less VFO, with xtals and in good working order, £20. Top Band Tx, VFO/buffer/PA, with modr. and PSU, £5. Radiogram chassis, complete and tested, stereo 5wt P.Ch, covering VHF/SW/MW/LW and gram, with PSU, decoder, and dial, all transistorised, price £24 or near offer?—Simpson, G3NJQ, 50 Vicarage Road, Norwich, Norfolk.

SELLING: Two-metre converter, JXK, IF 28 to 30 mc, as new, £12. Transformer giving 10v. 10 amps, new, £4 (post extra). Two-metre 15-ele Yagi J-Beam, price £7. Can deliver to 30 miles.—Kemble, G3UYK, QTHR.

EXCHANGE: Aka 35mm, 3·5 Polaroid Swinger cameras for CR-150 or similar Rx, W-H-Y-? — Hird, 148 Monks Road, Lincoln.

BUILDING a Converter, Receiver, etc.? Colour-coded PVC wire, off cuts, assorted colours, minimum lengths 4 feet, 5 ozs. make about 63ft., price 3s. 6d., inclusive.—Smith, 365 Grimsby Road, Cleethorpes, Lincs.

FOR SALE: Hammarlund SP-600 receiver, coverage 54 kc to 54 mc.—For details ring Burt, 01-542 0530, any evening or week-end.

SELLING: Telefunken tape recorder, Model 75-15 twin-track, been kept in mint condition, price £25 or nearest offer. — Foster, 72 Vimy Road, Billesley, Birmingham.

FOR SALE: Sommerkamp FL-DX500 transmitter, with companion receiver FR-DX500 and FL-1000 Linear Amplifier, all in new condition, the lot for £275.—Jones, G5ZT, Tel: Plymouth 76552.

WANTED: Pair of Transistor Walkie-Talkies, approx half-watt output (£15 maximum).—Elton, 121 Ibstock Road, Ellistown, Nr. Leicester.

OFFERING: Station rig, Heathkit DX-100U. with SB-10U; also HRO, separate case for PSU and speaker, including nine coil packs, £50. Buyer to collect.—Targett, G3NUP, QTHR.

DISPOSING: HW-32A Transceiver, very little used, perfect (gone multi-band), first £45. WANTED: Multi-band Beam. (Midlands).—Box No. 4814, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: AR88D with S-meter, manual and spare set of valves, price £45. Also Hallicrafters HT-40 Tx, coverage 10 to 80m., AM/CW, runs 75 watts, price £20. (Kent).—Box No. 4813, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

COMPLETE Two-Metre Station for Sale, comprising TW-2 Tx, 12-Watt AM/CW, with mains PSU and microphone; also 6BQ7A converter, IF 28 to 30 mc; and 4-ele J-Beam for two metres. Price £43—Marriott, G3VWC, Vineyard Cottage, Bury Green, Bishops Stortford (4796), Herts.

BARGAIN SALE: Minimitter mobile or fixed 10 to 160m. converter, just plug in to home or car radio (own PSU), price £7 only. Also home-built preselector, 30s.; No. 10 Crystal Calibrator, requires slight attention, 40s.; Burndept VHF airborne transceiver, beautiful job, £9; Z-match coils and condenser, rated 150 watts, 15s.; low-pass filter, 150w., 15s.; G5RV-type antenna, 10s. Copies "Practical Wireless" 1960-'61, plus oddments, 10s. B.S.R. auto-changer plinth, 20s. Jason TV and FM tuner, requires attention, 20s. Japanese tape-recorder, shabby but works, 10s. Two 2,400ft. virtually new Emitapes, 60s. For any of these bargains, ring Matthews, G3VFB, 01-748 0205.

SALE: Eddystone EC-10 receiver, little used and in mint condition, with mains converter, a bargain at £40, or near offer. (South-West). — Box No. 4815, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Hammarlund SP-600JX communications receiver, in excellent condition, coverage 540 kc to 54 mc, price £90. R.209 Mk. II communication Rx, as new, £10.—Williams, GW3NKZ, 71 Station Road, Llanishen, Cardiff (753743), Glam., South Wales.

FOR SALE: R.C.A. AR88D receiver, in perfect condition and recently overhauled with new set valves, price £20 or nearest offer. — Wilson, 192 Southfields Avenue, Stanground, Peterborough.

SALE: National HRO, rack type, with four general-coverage coil packs and PSU, £14. Also R.109 Rx, 6-volt, £4.—Rowlands, 37 Hampton Road, Oswestry, Shropshire.

SEPTEMBER Issue "Short Wave Magazine" due out August 29. Single-copy orders, 4s. (or 4s. 3d. "first-class" post paid), to reach us by Wednesday 27th, for despatch on Thursday 28th. These copies are sent flat in an envelope.—Orders, with remittance, to: Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SMALL ADVERTISEMENTS, READERS—*continued*

SELLING: Heathkit RA-1 receiver, with xtal calibrator, just overhauled by Daystrom, price £28. Also copies "Short Wave Magazine", Jan '67 to date, 30s.; RSGB "Bulletins", Sept '66 to date, 30s.—Viney, 13 Buckhurst Close, Redhill, Surrey.

WANTED: Urgently, handbook or circuitry for TW4 Communicator; purchase, or loan for copying; return guaranteed. — Haylock, G3ADZ, Bowyers, Steepmarsh, Petersfield, Hants. (Tel: Liss 3314.)

WISH to Purchase, manual for the Hallicrafters SX-28.—Walwyk, 321 Parkside Avenue, Barnehurst, Bexleyheath, Kent.

MOVING House, so must dispose of many useful pieces of equipment: Approximately 50 units from 2000 mc and 4000 mc microwave links (PSU, baseband, control and RF); signal generator for 4000 mc; nine-inch Radiolocator IV display; 5-inch marine display; quantity of 3-centimetre waveguide components and waveguide; ten-centimetre wavemeter; signal generator for 10 cm.; IF amplifier strips; 600-ohm audio amplifiers; 4 Roband regulated PSU. Also many valves, components and other items. All reasonable offers considered, prefer buyers view and collect, after 7.0 p.m.—Poole, 130 Mildmay Road, Chelmsford, Essex.

FOR SALE: Commercial Tx for 4 metres, 18w. output, xtal ovens, £12. Two R.1475 receivers (one for spares), £6 the pair. Two new 18in. parabolic dishes, 50s. each. Several lengths new silver-plated 3 cm. waveguide, 10s. each. Type ZA-39384 IF TU, with PSU, £4. Valves: M8100 (special quality EF95), EF92, EL91, EF95, EC90, EB91, EAC91, 1s. 6d. each. post and packing extra.—Preece, G3TRP. 28 Stoneyfield Road, Old Coulsdon, Surrey. (Tel: 71 52138.)

ALL Items or-near-offer and carriage paid: HRO coil packs 0·9 to 2·0 mc; 1·7 to 4·0 mc; 3·5 to 7·3 mc; 7·0 to 14·4 mc; and 14·0 to 30·0 mc, all at 20s. each. PCR3 Rx, fitted PSU and speaker, 70s. Radiovision preselector, 3·5 to 30 mc, self-powered, 50s. Geloso VFO 4/101, 70s. Class-D wavemeter, AC powered, £4. Eagle transistor FM tuner, £4.—Barker, 171 Birchover Way, Allestree, Derby.

FOR SALE: FL-200B transmitter, £95; FR-100B receiver, £85; FL-DX2000 Linear, £75; matching speaker for FR-100B, 60s.—Bailey, G3TFP/VS6DO, 3 Garden Close, Harbledown, Canterbury (62617), Kent.

SELLING: Mosley TA-33Jr, CDR rotator and control unit, on 32ft. tubular mast (2in. dia., in three sections), with polypropylene guys, coax and control cables, all 2 years old, price £30, buyer to collect.—Grist, G3GJX, Gortraney, Horsehoe Lane East, Merrow, Guildford (60163), Surrey.

WANTED: For rebuild, National HRO Rx; coils and PSU not essential, but would take if cheap.—Cobb, 14 Dale Road, Swanley, Kent.

WANTED: HRO bandspread coil packs for 10-20-40-80m.—Gillies, G3VWM, 15 Hart Road, Byfleet, Weybridge, Surrey.

SALE: Heathkit DX-100U transmitter, only 6 months old and in mint condition, with Ae. change-over and Rx muting built in, price £60, delivered reasonable distance. Valves: 813 at 20s. (base 7s. 6d.); 807 at 5s.; EF91 at 2s.; 4D32 at 25s.; 5U4G at 5s.; 12AU7/12AT7 at 3s. Rectifiers 4064B, 4242A, 4052A, 4069A, at 15s. each. Plus postage. LT transformers, Gardners potted, mains input: outputs 0-4-5-6·3v. at 3 amps., twice; HT transformer, 500-0-500v. at 150 mA, 35s. Chokes: 7 Hy 500 mA, 10s., also 5 Hy 300 mA, 10s. — Thomas, G3VBW, 4 Hemdean Gardens, West End, Southampton.

SMALL ADVERTISEMENTS, READERS—*continued*

FOR SALE: HRO receiver with PSU and coil packs, calibrated S-meter, in very good condition, £15. Also R.1475 Rx with original PSU, in good working order but looks shabby, £8. "Elizabethan" all-band transmitter, complete with (horribly large) PSU and modulator, price £20, and buyer must collect! Evershed & Vignoles recording milliamp-meter, with six rolls of chart, £8. A few 100/10 kc crystals, B7G type, 15s. each, post free.—Grigg, G3PRX, 72 Elmstone Road, Rainham, Kent.

OFFERING: Pye Rangers modified for two-metre mobile, price £8 plus 15s. carriage. (East Anglia). —Box No. 4817, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Over 200 items. TS-34A/AP Oscilloscope, £20. BC-221 frequency meter, £16. W-1191A wavemeter, £10. R.107 receiver, £10. Mobile R/T set, £10. Also components, valves, meters, PSU, transformers, magazines and many other interesting pieces. Send s.a.e. list, or phone for details.—Wickstead, 11 Norman Road, Ilford, Essex. (Tel. 01-478 5057.)

FOR SALE: Heathkit SB-401, professionally wired, brand new, price £145. R.C.A. AR88D receiver, with S-meter and manual, mint condition, £50. Hy-Gain HT-18 Tower, in good condition, £50. Buyers to collect.—Menzies, GM3GNE, 60 Beech Avenue, Newton Mearns, Renfrewshire, Scotland.

SALE: I have obtained 150 packs of each of the following wet-rot-proof polythene twine, in about the following quantities: 400 yards at 100lb. breaking strain; 150 yds. at 200lb. B/S; and 100 yds. at 300lb. B/S—all going at 25s. each, plus post 2s.—Robinson, 32 Clifton Road, Halifax, Yorkshire.

MANUALS: For B.40, 35s. Eighty other popular types, send s.a.e. for list.—Brooks, 5 Farrant House, Winstanley Road, London, S.W.11.

EXCHANGE or Sell: Star SR-550 amateur band receiver, £35 or near offer, or would Exchange for Eddystone EC-10. (Lancs.).—Box No. 4818, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SELLING: KW-600 linear, nearly new, used few times only, cost £114, first offer £75 secures. (Gone QRT.)—Adams, 7 Chestnut Avenue, Grays, Essex. (Tel. Grays Thurrock 3145.)

FOR SALE: **SBE-34 Transceiver** with microphone and pre-amplifier, £125. **Four Mark-Mobile Heliwhips**, for 15-20-40-80m., including base mounting, price £15. **Linear Amplifier**, professionally home built, 4/811A, fan-cooled, with separate HT/LT transformers, solid-state 2000v. HT, two relays, and engraved front panel with three flush meters, £45. —Jacobs, G3OGB, 41 Queenborough Gardens, Ilford, Essex. (Tel. 01-550 1697.)

SALE: Hallicrafters VHF Rx, coverage 128 to 143 mc, in perfect condition, price £22. (London Area). —Box No. 4819, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Hallicrafters HT-40 transmitter, in good condition, with PSU, but no VFO or crystals, £20. Also KT-340 receiver, in very good condition, £20.—Ring Glenn, G3YCU, Woking 4292.

SELLING: R.206 Mk. II Rx, with PSU and long-range adaptor, first-class condition, £20 or near offer. Advance signal generator, Type E.2, coverage 100 kc to 100 mc, £20. PTA-15 linear transistor amplifier, 15 watts output, inputs for pick-up, tape recorder, radio, etc., in as-new condition, £12. Buyers collect.—Ring Billington, 01-656 9882, after 7.0 p.m.

SMALL ADVERTISEMENTS, READERS—*continued*

SALE: Boom microphone, high impedance, and earpiece (low impedance), unused, 45s. K.W. 1:1 Balun, unused, 25s. R.C.A. valve 6883B (same as 6146, but 12v. heater), 35s. All post paid.—Michaelson, G3RDG, QTHR. (Tel. 01-455 8831.)

FOR SALE: Inoue IC-700R (see Lowe Electronics advertisements), ten hours' use, £75. Latest JXK two-metre MOSFET converter, IF 28-30 mc, unused, £15. (South Midlands).—Box No. 4820, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Eddystone 770U receiver, Mk. I or Mk. II model, must be excellent as regards condition and performance. Please state details and price asked.—Signey, 50 Sturdee Gardens, North Jesmond, Newcastle-on-Tyne 2, NE2-3QT, Northumberland.

DISPOSING: Two-Metre Station, fixed/mobile, comprising latest issue Heath HW-17 transceiver, four crystals, HWA-17-1 DC supply, J-Beam 8-element Yagi and halo, all in at £75. Mark two-metre fibre glass Heliwhip and single-hole mount, £5 5s. All in mint condition.—Barry, G3UFU, 15 Fairlawn Court, Acton Lane, London, W.4.

SELLING: R.C.A. AR88D, in mint condition, with S-meter, 100 kc crystal calibrator, no modifications. R.209 Rx, new and plus extras, £11. PSU's from 12s. 6d. Preselectors, 40s. Brand new 14-ele J-Beam for 70 cm., mast and coax, 70s. Valves, 100's of magazines and other surplus equipment.—Ring Thompson, 01-979 4503.

EXCHANGE: T.W. Topmobile with stabilised PSU, for T.W. Twomobile.—Gaunt, G8CDP, 28 Laurel Street, Middlesbrough, Tees-side.

SELLING: Heathkit RA-1, in good condition, with crystal calibrator, £36. Heathkit Mohican GC-1U, in good condition, with battery eliminator for mains operation (BFO switch needs attention), £29. Codar PR-30X preselector, as new, £5. Or £65 would take The Lot. Could bring to you for viewing, evenings, within radius 50 miles.—Fuller, Red House School, Moor Monkton, York.

SALE: Heathkit DX-100U Tx, £30. Codar items T.28, A.T.5, 12/MS, 12/RC, Halson whip with 80/160m. coils, £25 complete. HW-30 "Two'er," battery PSU GP-11, 4-ele Yagi and halo, £20. Frequency meter BC-221M, £10. All items in good condition. Buyer collects, or could deliver to reasonable distance.—Ring Maddox, G3JBA, 01-643 2845, after 7.0 p.m.

WANTED: Heathkit Transceiver HW-12 for 80m., with PSU.—Coverdale, G3TZJ, 425 Fulbridge Road, Peterborough (71046).

FOR SALE: KW-2000A, with PSU and Shure microphone, £165. Linear amplifier, 813, £25. Katsumi electronic keyer, unused, £6. Mosley antenna Type TW-3X, unused, £6. K.W. SWR bridge, £6. Send s.a.e. for list of other gear, valves, magazines, books, etc. —Richardson, 50 Hayes Street, Bromley, Kent, BR2-7LD. (Tel. 01-462 5004.)

SALE: Eddystone EC-10 Rx, new style model, price £30. Joystick de luxe with Type 4RF tuner, £6.—Ring Capell, 01-749 1863 (Acton, London).

WANTED: Mobile Rig for 80/160m., or two metres, complete or part, also "Natterbox" or similar home-built transceiver.—McLardy, G3LYK, 8 Wenton Close, Cottesmore, Oakham, Rutland.

SALE: Heathkit RA-1 receiver, £28. Codar PR-30X preselector, £5, mint condition. Both units together £31, or near offer. Carriage extra.—Poulter, G3WHK, 279 Aragon Road, Morden, Surrey.

SELLING: Eddystone EC-10, complete with mains PSU, in excellent condition, price £40.—Ring Wilkinson, Brighouse 4554 (Yorks.) during business hours.

SMALL ADVERTISEMENTS, READERS—*continued*

SALE: K.W. Viceroy Mk. III CW/SSB Tx, £75. Hammarlund HQ-170A receiver, coverage 6m. to 160m., price £65. Z-Match, including SWR bridge, £5. Trap dipole, 10m. to 80m., £4. Or offers.—Laycock, G3WZW, 1 Campsall Cottage, Churchfield Road, Campsall, Doncaster, Yorkshire.

REFERENCE my last advertisement (p.335, July) all equipment advertised now sold except Heathkit SB-300 Rx, with several spare (new) valves, AM/CW/RTTY crystals fitted; also Heathkit two-metre converter, in immaculate condition. First £80 secures foregoing. Following items have now come to light: Taylormeter Type 88A, with adaptor for measuring capacitors and inductance. Valves: 5/4X150A's, PL-5D22, 4-125A. Also (3) Waters Protax antenna transfer switch (new). Waters com-preamp. speech compressor (new and unused), Model 359. No reasonable offers refused. All enquiries will be answered.—Barnes, G3HXM, The Common, Wacton, Long Stratton, Norfolk. (Tel. Norwich 49291.)

SALE: Hallicrafters SX-28 receiver, 500 kc to 43 mc, in perfect condition. £40 or near offer.—Twells, 18 Chaveney Road, Quorn (2814), Loughborough, Leics.

BOOKS IN STOCK

Amateur Radio Construction Projects (Foulsham)	21/-
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