

The SHORT WAVE Magazine

VOL. XIX

OCTOBER, 1961

NUMBER 8

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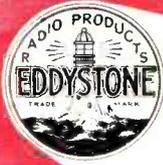
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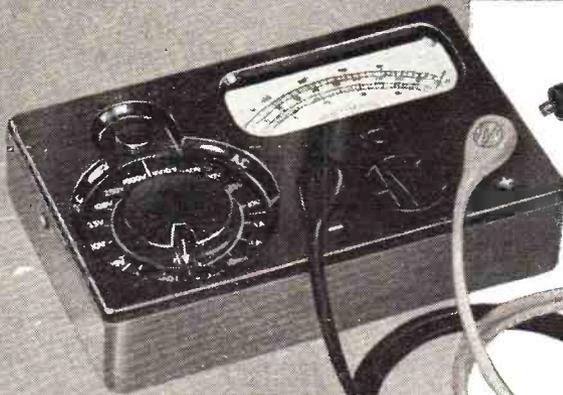


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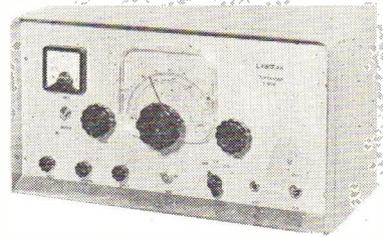
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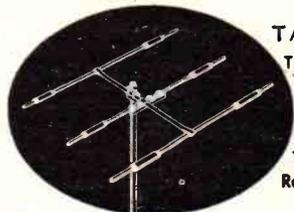
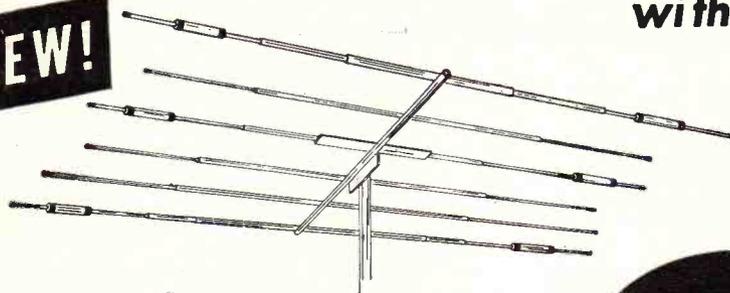
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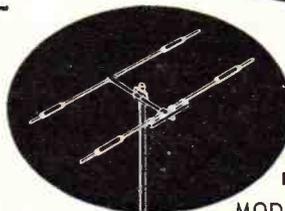
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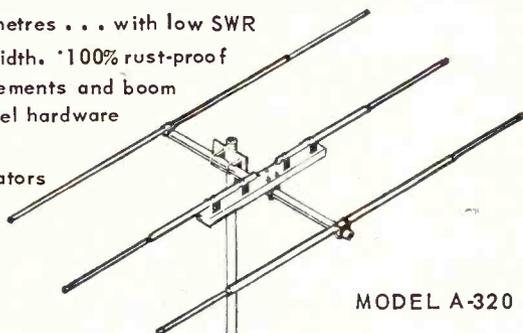
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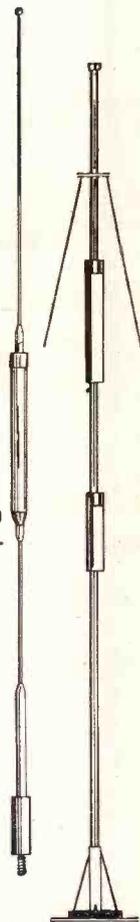
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16	450	1" x 2"	Clip	2/-
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Vol. XIX

OCTOBER, 1961

No. 216

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Managing Editor: AUSTIN FORSYTH, O.B.E. (G6FO)

Advertisement Manager: M. GREENWOOD

*Published on the first Friday of each month at 55 Victoria Street,
London, S.W.1.*

Telephone: Abbey 5341/2

Annual Subscription: Home and Overseas 33s. (\$5.00 U.S.) post paid

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The
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E D I T O R I A L

Peace *One of the best ways of ensuring peace is to be prepared for war — nothing deters a potential aggressor more than the certainty that he will be hit back. While it is not our business in this space to discuss current political portents and difficulties, what we can say here is that every citizen is concerned, in greater or less degree, with the national defence organisation — either as regards its effectiveness to give him protection, or the part that he can play in it.*

From time to time over the years, we have drawn attention to the need the reserve formations of the Signals (telecommunications and radar) branches of the Fighting Services have for recruits able to familiarise quickly with their specialised equipment and procedures. There is also now what is in effect the fourth Service — Civil Defence, which would have at least as large a part to play as the three fighting Services if our country were to come under direct attack.

For years, Civil Defence has been starved of effective personnel, largely because the idea has been allowed to get about that “there is no defence” — this is entirely a theoretical conclusion, and based mainly on conjecture at that. There is every reason to suppose that, in fact, organised Civil Defence could do a very large job of protection, salvage and rehabilitation.

One of the requirements for Civil Defence is an effective communications system, fully integrated with the local organisation. This is where radio amateurs, unable to commit themselves (for business or other reasons) to a reserve formation of one of the fighting Services, could play an important and essentially practical part. When it comes to telecommunications problems and equipment, radio amateurs (as was proved in the last war) are highly adaptable, and thus could quickly make themselves extremely useful in the most practical way.

All over the country, there is a local Civil Defence set-up of one sort or another. Because they have this specialised knowledge and technical ability, radio amateurs should not allow themselves to be enrolled as stretcher-bearers, or canteen workers, or ambulance drivers. They should recruit strictly as signals personnel and — if there is no plan for local emergency communication — set about working up a traffic-handling network, of course in full collaboration with, and under the direction of, the Civil Defence Hq. for the region. This is something quite different from, and potentially far more useful than, a sort of private spiders'-web operated on the amateur bands.

*Austin Fobyl
G6FO.*

Indoor Aerials for Twenty Metres

DISCUSSING SOME
PRACTICAL POSSIBILITIES
FOR EFFECTIVE RESULTS

L. Blackie (G3DIJ)

While it will always remain that a properly designed transmitting aerial in the clear will give optimum results, the fact is that at many amateur locations this is very difficult, if not impossible, to achieve. Over the years, experience has shown that very satisfactory results can be obtained, on any amateur band, with indoor transmitting arrays. This article discusses loft-installed systems for one of the most popular HF bands, and the author shows that there are even advantages in having an indoor aerial layout.—Editor.

BOTH a loft and a large garden are available—but the aerial is in the loft!

Why the loft? Reasons are numerous, and may even be considered sound: One can experiment and carry out adjustments with unusual designs with a minimum of difficulty. It allows for the erection of two-dimensional systems 20 feet above ground without the expense of masts or the bother of maintenance. It eliminates the necessity for ploughing through red-tape if the local authority's planning permission is required before masts can be raised. The aerial and supports do not become a hazard when there are high winds or electric storms. And the garden does not become a timber-and-wire jungle.

Obviously, if one must have the last possible dB of signal there is nothing for it but stacked rhombics on a hill top. Failing such facilities, one must put up with whatever happens to be available. Having retrogressed from the rhombics on the mount to maybe a dipole in a suburban garden, one need not worry about retracting the aerial the further short step to the loft.

But what about performance? Results suggest that criticism of indoor transmitting aerials is based on tradition rather than on any real lack of effectiveness. Losses with indoor aerials due to absorption by their surroundings are surely exaggerated. There was

a time when a BC-625A and an indoor beam were used on two metres at G3DIJ. Despite the fact that the beam was in a tiny room and within inches of the ceiling, when directed through the length of a whole street of houses there was still enough RF energy 100 miles away to bring back a good report. It is therefore difficult to believe that 20-metre energy is going to be much embarrassed by having to penetrate an inch of tile. Reports from DX indicate that this reasoning is sound.

If the aerial is very close to house-wiring, plumbing or metal guttering then strange things *can* happen to the radiation, but shifting the aerial only a foot or two can reduce a serious effect to a negligible one. It is desirable to give at least 3 feet clearance from such obstructions. Provided they are not resonant their effect will then be negligible; if they are resonant then only field-strength readings or distant reports will show what they do to the radiation pattern. A grid-dip or absorption meter held against them will indicate conclusively if they have a natural affinity for the transmitted frequency. In practice it will be found that even these stray resonances can be eliminated by suitable bonding.

Wiring and plumbing runs will be found

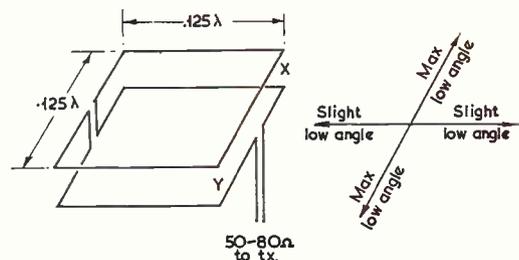


Fig. 1 a Appreciable high angle off leg XY

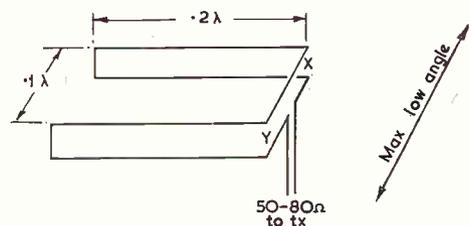


Fig. 1 b Moderate high angle off leg XY

A
279

In Fig. 1 (A) and (B) are two practical indoor arrangements for 20 metres, requiring a maximum horizontal space of about 11ft. for Fig. 1 (A) the Reinartz Loop, and of 15 ft. or so in the case of Fig. 1 (B). These measurements allow the aerials roughly 3 ft. of clearance.

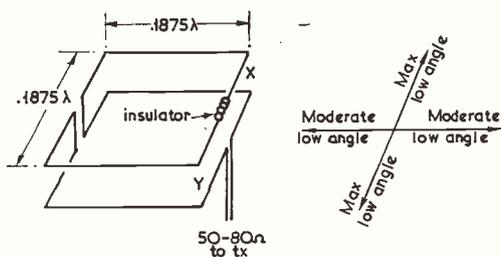


Fig. 2 a Moderate high angle off leg XY

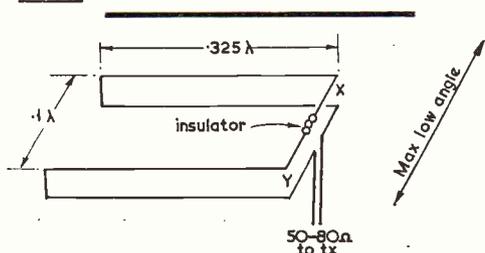


Fig. 2 b Slight high angle off leg XY

(A 280)

Fig. 2 (A) and (B) are further variations on the author's theme, which is to find a good indoor transmitting array for the 20-metre band. Fig. 2 (B) is tending to be large, requiring about 25 ft. on the maximum dimension, but would still be manageable, if the directions for which it can be placed in the roof-space are favourable.

scattered round the level of the loft floor, so the aerial must be raised to clear them as far as possible. In doing this the convergence of the roof will, of course, restrict the available space for aerial erection. Even in quite a diminutive space, the chances are that a well-designed system can be made to fit. This does not mean just stringing up a twiddly dipole.

Design

The approach to the design question is elementary, consisting of a comparison between a horizontal dipole and an end-fire array, both 0.25 wavelength above ground. This height was chosen as being typical if the aerials were on 20 metres and in the loft of a modern house. In this respect it pays to browse through the literature on 8JK beams (ARRL *Antenna Book*) because this type of end-fire array allows considerable flexibility in design.

The vertical polar diagram for the dipole shows that the resultant single lobe of radiation is vertical with cancellation along the horizon. With the end-fire array both the vertical and horizontal radiations are cancelled, the resultant lobes of radiation being at an angle of 40° above the horizon. A similar pattern can be obtained from a horizontal dipole only if its

height is increased to 0.5 wavelength above ground.

In the absence of a perfectly conducting ground these patterns are somewhat modified but as a general rule it can be said that the angle of radiation from an end-fire array 0.25 w/l high will be almost as low as the angle of radiation from a horizontal dipole at 0.5 w/l height. (The theoretical angle from the dipole would be 30° above the horizon.) Where low-angle radiation is required for DX working an end-fire array is thus more satisfactory than a single wire at any given height.

While various conducting elements round the house will upset any performance predictions it remains true that a good design will be more successful than a bad one. The performance of even an outdoor aerial is by no means easy to predict, depending as it does on ground conductivity and often on "house elements" if the aerial is not really remote from them.

The usual text-book end-fire array for 20 metres requires a good deal more space than the average loft offers, but if the basic end-fire principle is remembered it is possible to arrange many compact yet efficient systems which will fit confined spaces. Compression will inevitably mean that the design and radiation pattern will differ from the ideal, the usual result being that some energy is radiated at high angles. The amount of high-angle energy usually represents only a small proportion of the total energy radiated and is hence not of great importance.

The requirement is that two elements must be spaced 0.1 to 0.25 wavelength apart and fed with spacial antiphase currents of equal amplitude, the gain being greatest with a 0.125 wave spacing. This close spacing of the elements will lower the radiation resistance, aggravating aerial resistance losses and

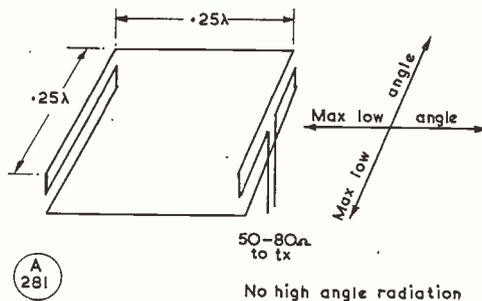


Fig. 3. Another variation, still taking low-impedance feed, in which a continuous length of wire is folded from the feed-point.

making feeding difficult, so it is desirable to increase the radiation resistance to a value which approximately matches standard 50- to 80-ohm cables. This is best achieved by adopting twin- or multi-wire techniques in aerial construction. The match between aerial and feeder need not be highly accurate because with the very short run of feeder needed for an indoor aerial even a large SWR will give little loss, particularly if the feeder quality is high. Even miniature cable with a SWR of 20 (an extremely unlikely figure) would introduce a loss of not more than about one dB with a typical 10 to 20 feet run. With such aerials good *balance* is far more important than correct matching.

Practical Aerials

Despite the aches and pains of loftitis (caused by bumping into, falling over, swinging round, kneeling on and otherwise getting involved with roof timbers) several aerials were tried before a final choice was made. No difficulty was experienced in getting any of them to load the Tx properly, although the aerial matching circuit should be capable of handling low impedance because the impedances encountered are more likely to be lower rather than higher than the characteristic impedance of the cable used.

Probably the most compact aerial with some measure of efficiency and low-angle directivity is the modified Reinartz loop of Fig. 1 (A), which can be further modified to give better directivity, as in Fig. 1 (B). A 300-ohm ribbon folded-dipole is suitably bent and fed with 50- to 80-ohm cable.

A 0.75 wave folded-dipole can be bent into a similar loop as in Fig. 2 (A), or it can be arranged as shown in Fig. 2 (B) to improve the directivity. The opened-out dipole has a radiation resistance of about 500 ohms but bending reduces this to match, approximately, 50- to 80-ohm cable. With a 0.75 wave folded-dipole, spaced separate wires must be used because voltage *maxima* and *minima* occur on adjacent wires at the centre of the aerial. This separation is not critical and 2 inches is satisfactory on 20 metres, the spreaders being of any good insulant, such as polythene sheathing pulled from odd unwanted lengths of coax.

For an elegant all-round low-angle radiator an Alford Loop can be tried where the loft is

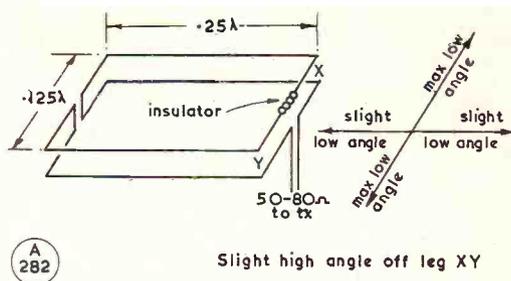


Fig. 4. The final version evolved by G3DJJ, with the results described in the text. It requires a maximum indoor dimension of about 20 feet, allowing for clearance.

large enough. In this the central 0.25 wave sections of four half-waves are brought into phase round the loop, the writer's version of a 50- to 80-ohm fed model being shown in Fig. 3. It will be noted that there is no break anywhere.

The Derived Design

The aerial finally adopted is shown in Fig. 4. The very first call with this brought an S9 report from a YV5. The second call some minutes later resulted in an identical report from a VE3. On the initial tests the transmitter ran 150 watts under a wide variation in conditions. Of the first 25 DX QSO's ("DX" meaning anything over about 3,000 miles) three gave S9, four gave S8, eight were S7, seven said S6, one gave S5 and another S4, with one report not received. Approximately 50 calls were needed to obtain these 25 contacts and past experience indicates that this "1:2 return" is quite satisfactory, adequately confirming the effectiveness of the indoor radiator.

The inherent flexibility mentioned for the end-fire design can be illustrated by the fact that this aerial is not strictly a one-band affair. On 21 mc there is a mismatch (which is unimportant with short feeder runs) but it remains an end-fire array with a 0.2 w/l spacing. On 28 mc it is necessary to short-circuit the central insulator to maintain a reasonable match and bring the phasing right, but again it remains an end-fire array with a 0.25 wave spacing. The direction of the low-angle radiation remains about the same on all three bands, but with the increase in fre-

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quency the electrical height above ground is increased and so the angle of radiation is reduced.

With these aerials the horizontal directivity is rather broad, the gain obtained being in the lowered and sharpened angle in the vertical plane.

Fundamentally all of the mentioned aerials are end-fire types regardless of any "loop" label. All give greater or lesser amounts of low-angle radiation and are well worth trying. They can be a revelation — especially when installed in the confined spaces of an average loft!

SENSITIVE FIELD STRENGTH METER

WITH TRANSISTOR AMPLIFIER

C. F. FLETCHER (G3DXZ)

A NOT uncommon piece of gear in an amateur station is the absorption type signal strength meter; a typical circuit is shown Fig. 1A. These instruments, although admirable when plenty of RF is around, do not show up so well when placed some yards away from the aerial—in other words, something more sensitive is required.

A typical problem recently was trying to tune up a mobile whip. The simple meter of Fig. 1A proved

far too insensitive to be useful and something had to be done about it.

A long whip aerial on the instrument itself might have solved the problem, but it was decided to give the meter some gain instead. As the solution had to be easy and cheap, a transistor circuit seemed appropriate. So the circuit of Fig. 1B was designed to meet the following requirements: (1) Must work with surplus quality transistor; (2) must use existing parts; (3) must work as simple absorption meter with the battery disconnected.

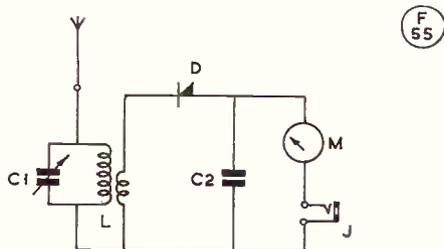
How does it work? Well, RF is tapped off the tuned circuit by a low-impedance coupling winding L2 and rectified by the diode, D. This develops a charge on C2 which passes current into the circuit of meter and transistor emitter-base junction in series. If no voltage is applied to the collector of the transistor, the emitter-base junction has a forward resistance of, say, 30-100 ohms, and so has little effect on the function of the circuit. Under this condition, then, the circuit is a simple absorption device. However, when we connect in a battery of 3 volts or so, negative to collector, the input resistance of the base-emitter junction jumps to about 1,000 ohms and a current gain is obtained between base and emitter. The increase in input resistance of the b-e junction also "undamps" the tuned circuit, giving sharp tuning.

Admittedly, this is a very simplified explanation, but it is hoped it will ease the problem as seen by those who are not familiar with transistor technique.

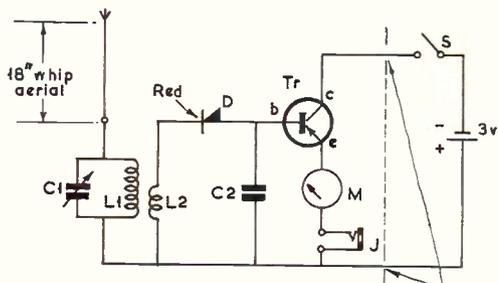
In the model constructed by the writer, the battery was not mounted internally, as it is only rarely needed, but a pen-torch battery is all that is required if an incorporated battery is wanted.

An 18in. stiff wire aerial gave good results at 15 feet with the writer's model when tuning the mobile whip with 6 watts input to the mobile transmitter. The effect of connecting the battery was to increase the meter reading six times.

Finally, some points to remember: Collector to battery negative for p-n-p transistors; there is little to be gained by increasing the battery voltage above 3 volts; with no signal there should be very little current showing on the meter, 5 to 10 microamp. or so; an audio transistor will do.



(A)



(B)

Fly leads if preferred

The arrangement suggested by G3DXZ, to increase very considerably the sensitivity of the simple RF detector device in common use; the transistor functions as a DC amplifier. Values are: C1, 100 μ F variable; C2, .001 μ F; L1, L2, plug-in coil assembly for band(s) to be covered, with L2 not less than 10% of L1. The transistor can be the cheap type used for audio applications, the diode rectifier is an OA79 or similar, and the meter should be scaled 0-500 microamps. for maximum sensitivity.

LIVERPOOL UNIVERSITY STATION

The University of Liverpool operates G3OUL and, on the occasion of the University Freshers' Conference, Sept. 28 to Oct. 4, planned to have the station on the air, on all bands, from the Students' Union, using a Labgear LG.300, a Heathkit DX-40U and an Eddystone 888A. The QSL policy is 100%.

Top Band from a London Flat

DESIGN FOR A PRACTICAL AERIAL SYSTEM

From Notes by

J. M. Osborne, M.A. (G3HMO)

As regular readers over the years well know, our contributor has always been able to offer original ideas, or a new approach to an old problem. There can be few more challenging situations than that of finding a way of radiating efficiently on Top Band from a lower-floor flat in the heart of the bricks-and-mortar district of London, S.W.1. The solution he has found is both ingenious and effective, and may suggest the way out to others in the same sort of difficulty.—Editor.

THE circumstances at G3HMO (London, S.W.1) are that the only space in which the gear can be accommodated is a dark corner of a third-floor flat in a five-storey building; the shack has neither a window, nor the possibility of connecting to a reasonable earth. The only elevated wire that can be put up is a 45 ft. length over a flat roof. There is access to this roof—through other people's flats—and it was found that a run of feeder cable could be dropped down one of the chimney pots to find an unused fireplace in the G3HMO abode. (Naturally, this in itself was a matter for some careful experiment!)

With the requirement being a transmitting aerial for Top Band, the sketch at Fig. 1 shows how this was finally achieved. A 45 ft. top length is supported between a pair of 20 ft. bamboo poles lashed to the chimney stacks. A loading coil is placed between this 60 ft. (approximately) run of wire and another 70 ft. or so of rubber-covered lead—terminating in an insulator and “lost” over the side of the building—used as a counterpoise.

Each end of this loading coil is “hot” to RF; it is link-coupled to 70-ohm coax, this being dropped down the chimney to the shack—see Figs. 1 and 2. The nett effect is that the counterpoise side, having a good deal of capacity to ground, lengthens the aerial electrically and thus raises the RF current at

the upper (loading coil *plus* roof length) part of the system. Hence, maximum radiation is where it is wanted—off the roof section.

Loading Coil

The dimensions for this, as found at G3HMO, are given in Fig. 2. But it should be noted that the number of turns on the coil is critical, and will be different in other situations, since the object is to resonate the system; the constants will change considerably for different locations. So start with a tapped coil.

Similarly, the size of the link winding is important; by using more than the usual number of turns for this, coupling adjustments can be made at the transmitter end.

Setting Up

The first thing is to tune the transmitter, at the required part of the 160-metre band, into a 70-ohm dummy load. Then, with RF fed to the coax line, adjust the turns on the loading coil for maximum RF into the roof-length

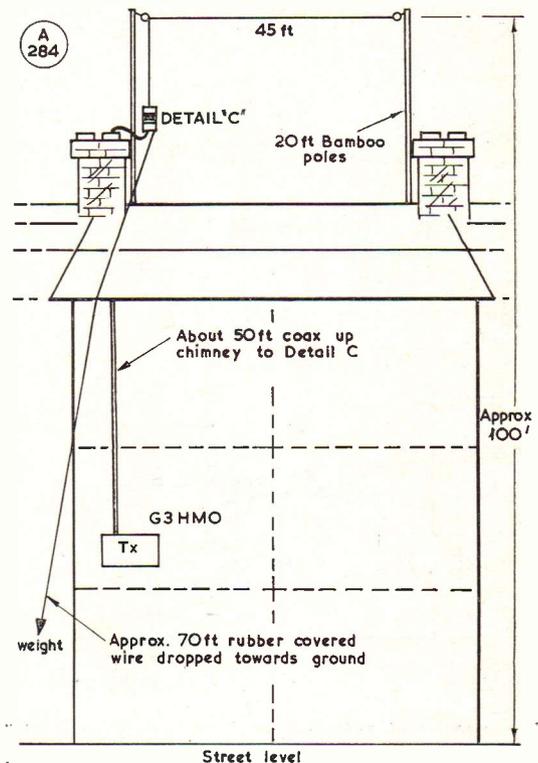


Fig. 1. General arrangement of the 160-metre transmitting aerial at G3HMO, London, S.W.1, of which full details are given in the text. The main feature of the design is that the RF appears at the highest point in the system.

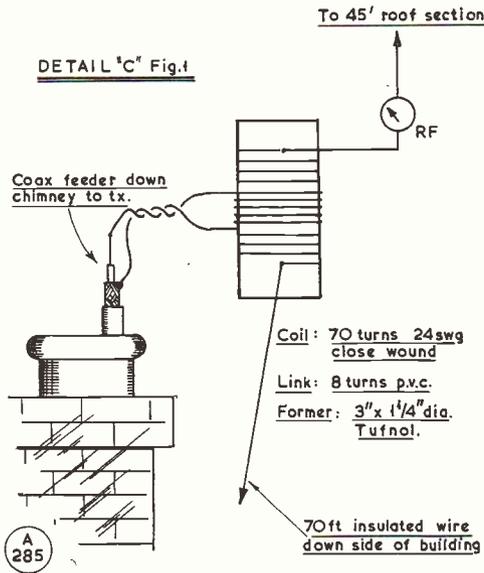


Fig. 2. Dimensions of loading and link-coupling coils, the feed to the system being by coax (down the chimney). It should be noted that the loading coil value is critical, to a turn or two, so that a tappable coil should be made up before finalising the coil assembly. There will be wide variations due to local site conditions.

of aerial, as shown in Fig. 2. Then vary the link turns and the degree of coupling to draw the same power as into the dummy load, with a maximum reading on the aerial ammeter.

Having determined the size of loading coil required and the adjustment for the link coupling, rewind the coil to these dimensions but without taps, then dope or varnish, disconnect the RF ammeter (after a final check), and put the whole tuned circuit—shown as Detail 'C' in the drawings—into a polythene bottle for weather protection. Once adjusted and sealed into the bottle, it can be left on the roof indefinitely without the system "losing its tune."

For the preliminary adjustment of the coil, with power on, a ferrite rod aerial is very helpful. If the coil has too few turns, the aerial current will increase as the ferrite rod is brought up and resonance is approached. The adjustment is, of course, to obtain maximum current (by variation of turns) without the presence of the ferrite rod, which will indicate as a first step whether turns need be put on or taken off.

Any further adjustments for loading or modulation can be made by observing a field strength meter at the transmitter end — provided the reading falls to zero when the coax

feeder lead is pulled out, it can be taken that the FSM is giving an indication off the aerial itself when the coax line is plugged in. The FSM will also check the resonance curve of the system; it should be reasonably flat over 100 kc or so, anyway.

Results

With the layout as shown in Fig. 1 and a 50 ft. run of coax down to the transmitter, and some time spent on the roof in bringing the system to resonance, very encouraging results have been obtained on Top Band from the heart of S.W.1, where no 160m, contacts at all were possible before. Additionally, there is a bonus on the receiving side, in that the system is distinctly "gainy" over the resonant frequency range, with a reduction in local noise level, due no doubt to the long screened lead-in when on "receive."

Daylight QSO's on phone have been made to distances well outside the Greater London area. It can therefore be said that this type of aerial installation—on which infinite variation is possible, according to location and site conditions—should help to find the answer for others unable to radiate on Top Band because of aerial difficulties. Provided the system can be brought to resonance, it will radiate.

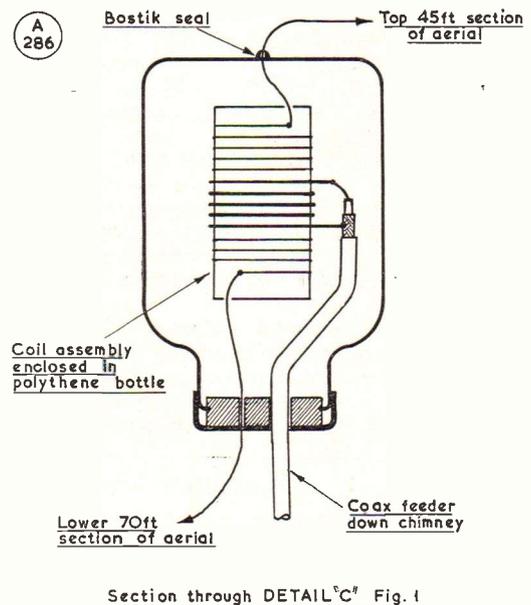


Fig. 3. Having matched in the loading coil, adjusted the link winding, and tuned the whole system to resonance, the RF ammeter (Fig. 2) is removed, and the coil assembly sealed into a polythene bottle, which can lie out on the roof indefinitely. Polythene bottles of the right size are chemists' or cycle dealers' ordinary stock.

RTTY Topics

SWEEPSTAKES CONTEST.

OCTOBER 21-23—

KEYBOARD MODIFICATIONS—

STATION NEWS—SOME

TECHNICAL NOTES

W. M. Brennan (G3CQE)

This feature appears in alternate months; the last was in our August issue, and the next will be in December.—Editor.

THE increase in RTTY operation throughout the world is reflected by changes in the "Annual RTTY Sweepstakes Contest" organised by the RTTY Society of Southern California. The contest originated when practically all amateur T/P activity was confined to North America, although participation in the contest was never limited to that country. In recent years it has become obvious that changes in the rules were necessary in order to encourage North American stations to spend time in searching for the increasing number of RTTY stations in other parts of the world. The result is that this month sees the start of a new RTTY contest in place of the old one and called the "World-Wide RTTY Sweepstakes" contest. The new rules are the outcome of much research by W6CG, W6TPJ, VK3KF and VE7KX. They are, perhaps, a little complex, but this is because the contests committee have had to allow for the fact that there are still thousands more RTTY stations in the U.S.A. than in the rest of the world, whilst at the same time ensuring that anyone anywhere in the world who takes the contest seriously can put up a good score. Copies of the rules have been sent to several U.K. radio T/P operators and a summary is shown here.

The "RTTY Sweepstakes Contest" always produces a high level of RTTY activity on all the HF bands, and this year there is promise of activity from all continents. It will be interesting to see if anyone achieves a WAC-RTTY during the period. RTTY

contests are unusual in that even the leading contest operators always seem to find the time to have a short yarn with the other man, giving the event a very pleasant "get-together" atmosphere. Whether you are contest-minded or not, this is a good chance to find out just how well that T.U. performs and, at the same time, make contact with some new stations.

T/P Keyboards

The August "RTTY Topics" carried a table showing the keyboard layout of the Creed Model 3, the Creed Model 7 and that of a keyboard which is common to the Teletype Corporation's Models 14, 15, 19, 26 and 28. Other makes of T/P, such as Siemens, Lorenze, Klienschmidt and so on have keyboards which are similar either to that of the Model 7 or to the American type. A few moments' study of this table will show that all the keyboards have a great deal in common. The alphabet, the figures 1 to 0 and the "?" sign are all selected by the same code element combination on each of these machines. In the case of the Model 3, all other characters are non-compatible with those of other machines. The Model 7 and the Teletype Corporation models, on the other hand, have much more in common and, in fact, there are only seven upper-case characters that differ in these machines, three of these being functional facilities which are rarely used by amateurs. It is unfortunate that some of the characters that cannot be used when a Model 3 is working to any other type of machine are quite useful ones. They are the full-stop, comma, both bracket signs, hyphen and the oblique stroke. Even the "+" sign often comes in handy, too. The Model 3 possesses all these characters, but they are so positioned in the typehead that they cannot be used.

The owner of a Model 3 can, if he wishes, easily remedy this by re-positioning the types in the type-wheel. Further reference to the keyboard table (on p.312, August SHORT WAVE MAGAZINE) will help here—for instance, the right-hand bracket type should be removed from its original position and placed in the position originally occupied by the "+" sign, which is then used to replace the full-stop type in the upper-case of Z position, and so on. In all, a total of eight characters can be moved so as to coincide with practically every other type of machine. Of course, to do the job properly it is also essential to re-label the key tops on the actual keyboard and, if necessary, the manufacturers can supply the correct

WORLD WIDE RTTY SWEEPSTAKES CONTEST

1. This will take place 0200 October 21 to 0200 October 23, times GMT, on the 3.5-28 mc amateur bands.
2. Stations may not be worked more than once on any one band, but can be worked again on another band to score. The same rule applies to countries (but not states) worked. KH6, KL7 and VO will be considered as separate countries.
3. A QSO will consist of message number, check (RST), time in GMT, and location.
4. Completed two-way RTTY contacts by stations outside U.S. will score 10 points—5 for "send," and 5 for "receive." Each country worked, excluding own, will count 200 points, per band.
5. Scores will be computed as follows: Two-way and one-way exchange points together *times* number American states worked, *plus* total country points *times* number continents worked. The sum of these two totals will be the final claimed score.
6. Logs, set out clearly to show all relevant information, should be sent (by U.K. entrants only) to: W. M. Brennan, G3CQE, 11 Hammond Way, Norwich, Norfolk, NOR.42R., to arrive by November 3 latest for onward transmission to the U.S.A.

(Note: These rules are abridged, and are as they apply to entrants outside the U.S.A. only).

key tops (as used in the Model 7), but it is not difficult to make a presentable-looking key top. At the same time, the owner of a Model 3 may wish to re-label the key tops that coincide with the "line feed," "carriage return" and "letters" signals for other machines. The writer carried out these modifications to a Model 3 two years ago, when almost all RTTY QSO's were with stations that were using American equipment; the resulting improved printing at both ends was well worth the three hours it took to make the changes.

The line feed, carriage return, letters shift and figures shift signals are the same for the Creed Model 7 and the Teletype Corporation machines. However, several operators of American machines take advantage of an optional facility whereby their machines can be adjusted to shift from figures to letters on the receipt of either the normal "letters" signal or a normal "space" signal. This has the advantage that such a machine will function correctly on the normal "letters" signal from either a Creed Model 3 or a Model 7. Also, of course, as most amateur T/P working makes use of letters rather than figures, it does mean that if after the receipt of, say, a full-stop in the text, the machine does not receive the "letters" signal due to QRM, only one word will be received in upper-case before a space occurs in the text and restores the machine to "letters" again. The Model 7 will remain on "figures" until it receives the correct signal. This can cause some confusion when the operator of a Model 7 sends some figures followed by a space and then further figures. Also, some U.S.A. operators seem to prefer to punch the space bar rather than the letters-key of their machines—leaving any Model 7 machine ploughing on in upper-case whilst its operator hurriedly pokes a finger into the works to lift a small lever that will bring it back to letters again. Such are the joys of RTTY!

Operating Notes

Two newcomers to RTTY are KZ5DS and KZ5GA, both operational on 15 and 20 metres. KZ5KR and KZ5JT are almost ready to take the plunge, too. The four of them should be able to provide very consistent activity from the Canal Zone. Africa is well represented on the activity list, too. ZS1FD is on 21090 kc most evenings at 1700 GMT and on 14090 kc at 0700 GMT. ZS1NE has a new Klienschmidt T/P and is also very active on 15 and 20 metres; he collected a nice "first" by working KR6MF on 20m. ZS1FD, who needs just Asia for his RTTY-WAC, was called away to breakfast just before this contact began! That first RTTY-WAC in Africa cannot be very far away now. A letter from

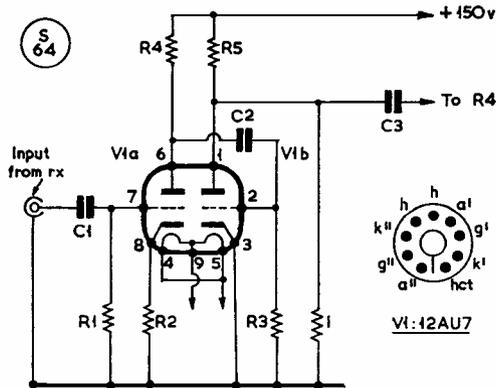
ZS6CR reveals that special RTTY licences are now being issued to ZS stations; the conditions are identical to those in force in the United Kingdom. ZS6CR is awaiting the arrival of a new transmitter and hopes to have it in time for the contest. ZE4JT has also received official sanction to operate RTTY. VK3KF reports that 5A5TB will be coming up on RTTY soon.

KG6AAY on Guam has a complete RTTY station—all but one relay for his FSK keyer; it is on its way to him and meanwhile he is printing many amateur stations. KR6MF and HL9KT are both providing Asian contacts to anyone who is on 20 metres at the right time. In Europe, DL3WUA has been working into the U.S. on 14095 kc in the early mornings, with fine "copy" both ways. Several DL stations have been printed on 3595 kc, but commercial QRM on and about that spot seems to prevent them from hearing G stations calling them. From G3EPL comes the information that LA6J, and an LA5 station, are looking for RTTY QSO's with G's on 80 metres. PAØFB has been carrying out tests with G3IIR on two metres, and at the time he was producing good "copy" at G3CQE, too. The writer recently had the pleasure of spending a few days with PAØFB, who, apart from his RTTY, SSB and VHF activities, also has a remarkably good set-up for receiving DX TV! (In one hour of viewing it was possible to see six different TV services.) Whilst there is a keen interest in RTTY in Holland, unfortunately there are few machines available. G3FHL reports exactly the same state of affairs for Denmark, too. Of course, the lack of suitable gear has always been the main obstacle to amateur RTTY expansion. However, it has proved in the end to be merely a matter of time before machines are unearthed and put to good use.

The present level of RTTY activity is the highest ever known by those who have been active on RTTY for several years. Every day new stations come on



PAØFB, Jan Adama, Waalsdorperlaan 42, The Hague, is as well known on RTTY as he is on VHF and SSB. The T/P gear is out of this picture, to the right of the raffle of tape.



The circuit devised by G3NPF (2 Edith Road, Prittlewell, Southend-on-Sea, Essex) to replace the first stage in the G3BST circuit shown on p.12 in our March, 1960 issue. It ensures hum-free operation since the iron-cored component in the original is eliminated. Note: The resistor marked "1" is R6.

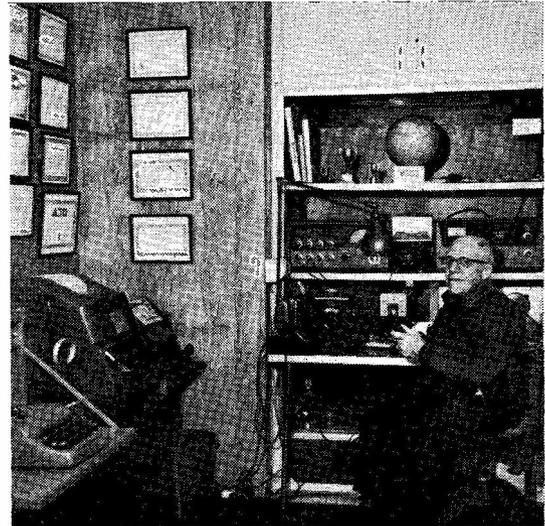
the air, and the next few months should be very enjoyable indeed for those of us who are not tied down to any particular band. Few people have unlimited time in which to enjoy their hobby, and so the ability to select and use the most effective band and method of communication at the time those leisure hours occur is a great advantage.

G3NPF (Southend-on-Sea), who keeps a regular Sunday morning schedule, 0830 clock time, with G2UK on 3750 kc, reports that he has modified his G3BST Terminal Unit as detailed in the July-August issues of SHORT WAVE MAGAZINE, with entirely satisfactory results—G3NPF says that it is a great improvement on the original circuit, which appeared on p.12 of the March 1960 issue.

Going back to this, G3NPF has also modified the first stage of that circuit, in the manner shown here.

In this, V1B is the clipper, the transformer T1 of the original circuit is eliminated (it was found to pick up and pass on hum), and the output at C3 is fed to R4, as in the original. V1B clips positive peaks and limits negative-going input signals because the anode voltage of V1B is limited by the potential-divider R5, R6. The receiver at G3NPF is an AR88LF, and he says that its operation generally is much improved by the modifications outlined here. The values for his circuit are: C1, C2, C3, .001 μ F; R1, 470K; R2, 1K; R3, 220K; R4, R6, 47K; and R5, 10 megohms. The valve is a 12AU7.

RTTY operators and all interested in the subject are invited to write in for this feature, the next appearance of which is in the December issue. Photographs of RTTY stations are also welcome, and those used are paid for on appearance. Address to "RTTY Topics," c/o The Editor, Short Wave Magazine, 55 Victoria Street, London, S.W.1., to arrive by October 31.



W6CG, Carl Schultz, of 5226 North Willmonte Avenue, Temple City, Calif., is a very keen RTTY man—indeed, he runs "RTTY Magazine," a useful monthly commentary on the subject of amateur T/P working, and having a wide circulation in the States.

G8AX writes to say that after battling with the Town and Country Planning people over radio masts in his garden, he was growing weary of Amateur Radio! Now, however, the acquisition of a Model 3 has given him a new interest. He has a copy of the Maintenance Handbook for the Creed Models 7 and 8 machines (available to anyone on loan), and would like to get hold of a copy of the Model 3 manual—*QTHR*.

Correction

In the previous "RTTY Topics" it seems that somewhere down the line a nought was omitted, and in the speed calculation on p.314 the figure in the equation should have been 3,000 r.p.m.; the final figure of 2,727 r.p.m. was, of course, still correct. Apologies for this error. Anyone finding the missing nought can keep it, as the Editor probably has boxes full of them!

That must be all until December. Good hunting in the contest—just nice time to empty the confetti box on the reperf., put a new ribbon on the 7B, and bring some more paper down from the attic before winter sets in!

ROYAL NAVY TO HAVE NEW COMMUNICATION SYSTEM

The General Electric Company Ltd. announces that it has received, and is working on, a number of Admiralty Development Contracts to provide a comprehensive new communication system for the Royal Navy. The work is being carried out by the Electronics Division of the G.E.C. Telecommunications Group at Coventry.

SCOUT RADIO EVENT — GB3BPH

In connection with the 4th International Scout Jamboree-on-the-Air (all bands, October 20-22) a station representing Imperial Headquarters and signing GB3BPH will be in operation from Baden-Powell House, West London, keeping continuous 48-hour watch on the DX bands for Scout stations all over the world. The installation and operation of GB3BPH will be the responsibility of G2CAJ of the 19th (Kensington) Scout Troop. Scout stations in the U.K. should look for GB3BPH on AM phone during the Saturday and Sunday mornings, on 40 and 80 metres. The international Scout station, VE3JAM, Ottawa, will also be on all bands 10-80 metres, using the general call "CQ Jamboree." Reports on working these or other Scout stations are requested by the U.K. organiser for the event, G3BHK (*QTHR*).

THE RADAR & ELECTRONICS ASSOCIATION

Two particularly interesting lectures in the winter programme of the Radar and Electronics Association are on Space Communication—the first on October 12, entitled "Systems and Equipment," and the second on November 9, "Orbits and their Economics." These lectures, held at 7.0 p.m. at the Royal Society

of Arts, John Adam Street, Adelphi, London, W.C.2, are free and open to all. Those interested in becoming members of the Association are invited to write to: C. W. Knight, Secretary, Radar & Electronics Association, 83 Portland Place, London, W.1.

NOTE ON SWR

In the jargon about feeder lines and standing-wave ratios, and the struggle to obtain an SWR of 1:1, it is worth remembering that, in fact, a 2:1 ratio represents a power loss of 11% only, or 0.5 dB. An SWR of 4:1 is a power loss of 36%, or 1.9 dB. So if you can get down to 2:1, don't break your neck for that half-decibel.

JODRELL BANK'S NEW ROLE

It is announced that because of the slow progress in getting the Fylingdales long-range radar station into operation, Jodrell Bank is to be diverted to the task of looking out for ballistic missiles "during periods of international tension"—which, presumably, means now. To fulfil this function, Jodrell Bank will join the early-warning chain stretching across Greenland into North America. So, when you pass that way, and see the dish near the vertical and headed about north-east, you will know what is going on.



The new Mechtronics constructional outfit is a kit of parts designed for use in the teaching of electronics. The student can assemble a great variety of fundamental radio and electrical circuits and study their working, with little demand on manual skill since soldered joints are eliminated; the assemblies are screwed or clipped together on a pegboard. The standard Mechtronics Set, Type 97-100, covers the revised G.C.E. syllabus and the kit contains a range of parts wide enough to enable the enthusiast to experiment on his own. The manufacturers are Griffin & George, Ltd., Ealing Road, Alperton, Middlesex.

DX COMMENTARY

L. H. THOMAS, M.B.E. (G6QB)

LESS than forty-eight hours after last month's Commentary was written and despatched, a most spectacular improvement in conditions took place. The long-hoped-for change arrived with a vengeance, and the HF bands really began to buzz, showing us that the rather dull time we had been having was due more to the seasonal conditions than to the state of the sun.

Several mornings from August 16 onwards gave really wonderful openings to the Pacific, and on the 17th, within a few minutes either side of 0800, we heard VR3L, FO8AK, FO8AQ, KH6EDY, VE6, VK, FK8AU, VR2 and some others. The KH6's were prominent for several days (all this on 14 mc, of course) and even the elusive KH6EDY (Kure) was working Europeans with great abandon. ZK1's joined the party later, and the band was a DX-chaser's dream for several mornings, with practically no short-skip QRM to worry about.

The 21-mc band lived up at the same time, and was wide open to all parts of VE and W from mid-afternoon onwards; and even this band gave some good Pacific openings in the mornings. G3JFF/VR2EA, on 21 mc, put in by far the strongest signal ever heard from Fiji—and that on a morning when there appeared to be nothing else on the band.

At the same time as these cheerful goings-on, the LF bands were also exceptionally good, with plenty of DX on 7 and 3.5 mc late at night, and also a noticeable lift in Top-Band activity and potentialities. In short, the DX season opened with a pretty loud report,



G3NWF

CALLS HEARD, WORKED and QSL'd

and though it may well have quietened down by the time you read these words, one knows that the possibilities are still there.

It is pretty obvious that for the next few years the summer period is going to be rather short on DX—but mobile and LF band activity helps to fill the gap, to say nothing of all the non-radio pursuits that take precedence when we *do* get a real summer. It is fortunate for all of us that winter conditions are usually so much better.

The major worry over the last few weeks has not been any shortage of DX, but rather a horrid profusion of unwanted garbage that all and sundry seem to be slinging into our bands. The LF end of 14 mc is, perhaps, the worst example . . . hard to believe that once upon a time one could settle on 14002, or 14005 kc, or wherever one liked, with a reasonable chance of a clear channel.

Nowadays it's only safe to start around 14030 kc and work upwards. Jingle-bells, parked jammers, disembodied carriers, even chunks of modulation with no apparent owner . . . they all seem to fall into the "low end of Twenty." All we can do, apparently, is to put our combined curse on the things and hope they will wither away.

Of all the symptoms of what one might call "uncivilisation," the jammer is surely the most objectionable and horrid. It is purely destructive and obstructionist; it is deliberately studied means of radiating the *worst* possible type of signal when most of us are worrying about how to improve our signal-quality; it is the absolute negation of progress and improvement. As an example of the modern "back-to-the-jungle" tendency, it is surely unbeatable—and we have the

charming Khrushchev to thank for it all. (And there we will stop, before we start finding some really rude words from the Dictionary of Bad Language and Abuse.)

DX Around the World

Not many expeditions to report—we are getting near the off-season for such activities, with the exception of W4BPD's proposed mammoth tour, early in the New Year.

Nice ones that have been on, and may still be there, include the following: *Solomon Islands*—VR4CV on 14 CW; *Tonga*—VR5RZ (VK4RZ) mostly 14 SSB; *East Pakistan*—AP5CP on 14 CW, most days between 1300 and 1600; *Mauritius*—VQ8BR on 14 SSB; *Marion Island*—ZS2MI on 14 CW; *Upper Volta*—XT2A on 14 CW; *Palestine*—SM5ZS/4U, on UN Territory, 21 mc CW; *Formosa*—BV3HPT, 14060 CW, 1200-1300 GMT; *Gilbert Islands*—VR1M (G3JFF), mostly CW, 14 and 21 mc.

Still more, either on now or projected for the near future: *Liechtenstein*—HB9MQ/FL; *Ustica Island*—IU1TA1; *Haiti*—HH2D on SSB; *Volta Republic*—TD8AMS (5N2AMS), probably until October 15; *Wallis Island* (FW8)—FK8AS hopes to operate, October 11-15 on CW and AM. *Kamaran Island*—VS9KAC has hopes.

That little list should give the keen searchers plenty to look for in the coming weeks, although some of them may have been and gone by the time you read this.

Other DX gossip from all over the world follows:—VKØVK was planning to work from Wilkes Land, Antarctica, on a ten-day dog-sled trip. He was due to show up on 7 mc around 1000 each day, using a hand-generator for power. Any contacts reported?

ZL3DX's proposed sortie to VR4, JZØ and FK8 has been cancelled . . . likewise no news about that perennial CR10 affair! XW8AL, mostly 14 and 21 mc AM, will be active October 7-20, then leaving on a business trip until December, after which he will be "permanently active" . . . K3HVN/PK, who has been

absent on business, promises plenty of action now, mostly 14310 kc SSB . . . Three VS9's and three G's promise activity from FL8 for two weeks in October—AM, CW, SSB.

TL8AC (Central African Republic) hopes to be on 21 mc with a two-element beam before long. AM only, but an SSB rig planned for the future . . . Iwo-Jima is on the air again, with KG6IJ working 14 mc CW; whether permanently or on a DX-pedition basis, not certain . . . Monaco goings-on: see separate paragraph further on.

Abu Dhabi (MP4D) and Muscat (MP4M) are undergoing a "status review" for DXCC purposes. They may possibly count as a couple of new ones, so don't pass them by (as if you would!) Jan Mayen is now represented by LA1LG/P, who will be there for several months before moving.

VP8GE (King Edward Point) active most days, 14 CW, 1610-1625 GMT . . . 7G1A may be returning to Mali to work again as 7G1A/TZ in two months or so . . . ZD8JP should be opening up again from Ascension Island any time now . . . Fernando do Noronha and Trinidade are to be activated by PY7YS, probably first week in November; AM, SSB, possibly CW, signing PY7YS/Ø.

VR1A and VR1C are inactive; VR1B busy on CW/SSB; VR1D and 1F both absent; VR1G on 14 mc AM; and VR1M (G3JFF) expected shortly. That's the story from the Gilbert Islands. VR1B is on 14080 CW and 14120 kc SSB.

(For most of the above notes, thanks and acknowledgments to the WGDXC *Bulletins* and to W4KVX's *DX*. Readers' own "DX Gossip" appears further on.)

The Monaco Story

We recently mentioned that 3A2DA had been worked by quite a few people, which caused G3CWL, who is licensed as 3A2DA, to write and point this out, also to suggest that a pirate was at work.

We have now heard from G3FPK, who is licensed as 3A2BT, reporting from on-the-spot with the full gen. Norman, G3FPK, says that the

chap who issues Monaco permits knows little about Amateur Radio and has made a bit of a mess of things; he re-allocated one or two calls (including 3A2DA) and caused a good deal of confusion, especially among the QSL organisations.

3A2AR, the call of an inactive local, was issued to a foreigner; 3A2AE was handed over to a DL; and 3A2DA to a couple of HB9's. To complicate things still further, G3CWL (who held 3A2DA last

P & Z TABLE

STATION	PREFIXES WORKED	ZONES WORKED
<i>CW Only</i>		
G2DC	458	40
G13NPP	456	40
G3ABG	431	40
G3WPP	384	36
G3HZL	379	40
G2BLA	327	39
GW3CBY	285	24
ZC4CT	273	33
G3JWZ	271	38
G3IDG	241	27
G3LZF	238	34
G2BP	234	32
VK6AJ	200	36
GW3MLU	198	31
G2HLU	154	25
ZC4SG	146	27
G3OQK	145	17
<i>Phone Only</i>		
G3DO	646	40
MP4BBW	475	40
G3NWT	400	39
G3GHE	400	39
GB2SM	370	37
G3MCN	352	38
G3LKJ	347	38
G3BHI	326	37
G3NFV	294	37
G3ABG	288	32
G3JWZ	173	36
G3HZL	140	26
GW3MLU	138	26
G2BLA	115	21
G2FQW	99	6
G3WPP	80	25

year) turned up! Regarding the argument about 7 and 3.5 mc—G3FPK says that operation is permitted on exactly the same bands as in the U.K.—except that Top Band is *out*. No power limitation, though it used to be 50 watts. Radio Monte Carlo has a fat second harmonic on 14280 kc, which makes a hole in the SSB section.

At the time of writing, 3A2BT was going strong, and needed fifteen more countries for DXCC. Final note: For future visitors, or for anyone wishing to renew an old call, the person to write to is: M. A. Crovetto, 3-ième étage, Centre Administratif, Rue de la Poste, Monaco. You have only to say you have a U.K. licence, and show it when you get there.

(Late Flash: G6LX, also writing from on-the-spot, confirms most of the above and says that he, G3FPK and G3CWL visited the D.G. of Telecoms. and explained how the policy of re-issuing calls was causing confusion. It has now been agreed that cancelled calls will *not* be re-issued except to the original licensee. There are fourteen local residents with 3A2 calls (not all active), and ten visitors have operated this year. All QSL's via 3A2AH, 6 Rue Gastaldi, Monaco Ville, who will help in sorting them out and routing them correctly. Our thanks to G6LX and G3FPK for this informative note.)

News from Overseas

Bryan Bisley, who now signs himself "G3OFI plus 20 other calls," sends his usual very meaty letter, part of which (concerning *Forty*) is dealt with elsewhere in this issue. He still has not received his OD5 licence, but he did operate as promised from MP4MAB and MP4QAO, both CW and SSB. He has re-applied for his DJØ call, also for licences in Aden, Cyprus and Kenya. From October 10 for about seven days he will be active from Qatar—SSB, CW and AM—the latter on 21 mc.

Other news from Bryan: Rundy of OD5CT/W3ZA has been on for a few days as MP4QAO and will also be using SSB from Addis Ababa, Ethiopia (no call-sign

information, though). On his way back he will be passing through FL8-land and will use FL8ZA about the same time that the RAFARS expedition visits there. MP4TAO operates from Abu Dhabi—owing to an error he was issued with an MP4T call instead of MP4D; this may be sorted out later.

Finally, Bryan says he has been in correspondence with W4BPD, pointing out that more than half the places he hopes to visit are quite impossible . . . three of the Trucial States he mentions are approachable only by helicopter or camel!

Pete of ZC4SG has been knocking off some good DX, and promises more Top Band activity in the winter. Nothing definite yet, but probably details next month.

VK6AJ (South Perth) lost his ground-plane in a gale (they have them there, too!) and his XYL averted what might have been a tragedy, or a comedy, with the milkman tearing into the place at high speed before daylight . . . he now has it up again after a long pause. Jeff runs a K.W. Vanguard with an "incredibly ancient BC-348" equipped with a Geloso front-end, and this tri-band ground-plane on the apex of the roof, with radials running down to the four corners of the guttering—a neat and efficient arrangement. He favours CW and says "it brings a satisfaction hard to understand by the phone-only brigade."

5A1TY in Tripoli closed down last spring, and Mike Townley, who was the operator, is now due to take the air from Cyprus as ZC4MT. To start with, he will be on low power—20 watts or so—but will QRO later on. Dipoles and an extended Zepp will do the radiating, but a tri-band Quad is a future hope.

Ian Cable of MP4BBW is still going great guns on 14 mc SSB, now holding the 200-SSB Certificate—probably the first in Asia. He says the band has been "extremely spotty," tending to close around 1900 some nights, with the long path to U.S.A. not open yet, and the Pacific long path rather poor. Sour note in closing:

"Operating tactics continue to deteriorate, but I can always go on two metres when some of the other boys get equipped . . . I should also be set up to sample both 40 and 80 some time in

TOP BAND COUNTRIES LADDER

Station	Confirmed	Worked
<i>CW and Phone</i>		
G2NJ	98	98
G3JEQ	98	98
GM3OM	97	98
G3IGW	97	98
G6VC	96	97
GM3COV	92	95
G3APA	92	93
GM3AVA	91	92
GM2HIK	88	90
G2CZU	86	89
G2DF	85	90
G3NFV	81	82
G3NPB	80	82
G3LWQ	79	88
G3MXJ	78	81
G3NNO	76	88
G3OHX	71	75
G3OSE	67	77
G3OGI	66	73
G3NNF	64	70
G3NJQ	61	62
GW3CBY	46	57
G3IDG	43	48
G4JA	40	53
G3PDM	3	43
<i>Phone Only</i>		
GM3AVA	89	89
GM3OM	87	88
G3FS	83	85
GM2UU	80	81
G3NPB	79	81
G2CZU	69	69
G3NBT	66	69
G3NAA	64	65
G3NNF	55	58
G3NOW	42	45
G3NNO	39	62
G3NFV	33	45

(Failure to report for three months entails removal from this Table. New claims can be made at any time.)

November."

Colin of ZC4CT writes to say that the Pergamos RAF Club station, ZC4PC, is now on SSB, with ops. ZC4CS, 4WD, 4CT and occasionally 4SJ and 4FB, the latter being on his second tour out there. No further news about the projected MP4 trip, but details by next month.

Top Band Topics

Best news of the month is that G3APA ran a very successful, though rather unpublicised, expedition from Sark, of all places. A few of those who have been waiting for this for several years missed the boat altogether; others, who didn't even try very hard, were lucky. (Your conductor happened across him out of the blue and got a QSO first call!)

G3JEQ was one of the lucky ones, and now joins G2NJ in the 98/98 bracket at the top of the ladder. G3JEQ himself ran a highly successful tour around GM and GI; he operated from every GI county and made 500 QSO's therefrom—a real marathon effort, on which he is to be congratulated. He took a lot of trouble over picking sites, and certainly whenever we heard him it was a cracking signal. Best place, he says, was on the eastern slope of the Mountains of Mourne, whence the signals certainly *did* "sweep down to the sea"—and beyond. So, after all this time and trouble, what better reward on reaching home than to run across GC3APA/A?

G3LKJ (Torquay) sends a funny story connected with Sark. The local phone net, including one or two mobiles in the district, had all given various excuses for "pulling out"—chores for XYL and even getting dressed—when GC3APA/A broke in on CW. Suddenly no one seemed to have the slightest reason for going QRT, and the net grew even larger! Even some of the mobiles managed to work him.

GM3COV (Caithness) sends a list of the terrific number of expeditions that have taken place this summer. Those he himself has worked total 25, since the beginning of May, and all from rare counties; those who neglect

Top Band in summer are missing a lot of GDX these days. GM3COV hopes to join up with GM3GUJ and activate Sutherland during October—and he promises to keep Caithness on the air throughout the winter.

G3JKY notifies us that Clifton ARS will be operating GW3OKY/P, probably from Brecon, on October 7 and 8.

G3IGW (Halifax) has now worked "the lot," but still awaits a QSL from Alderney. He remarks on the "wonderful revival in CW operation" . . . G4JA (Baschurch) compliments GC3APA/A and GD3EGF on their speedy direct QSL's . . . G3NVO (Middlesbrough) puts in a new and much-increased score, which he can only deal with at holiday times, and also sends pictures of his recent GM trip.

G3OSE (Hereford) has claimed his WABC and now stands at 67/77. He says his aerial is "a rather entangled mass of wire which is designed to be a dipole, with the centre 25 feet up in the air—it seems to load quite well." He is now building a transportable Top Band rig.

G3PDM (Durham) joins our ladder with the remarkable score of 43 worked, 3 confirmed! (Maybe some cards have arrived by now.) He took part in the

activity from GB3GM (Isle of Eigg) with 1000 feet of wire for an aerial; and from the home station he has worked OK's and many "rare" ones, thanks to the various portables and mobiles.

G3FS (Sidcup) operated as GW3FS/A (Cardigan) and found conditions very different from the home QTH, with more ship/shore stations around, and the band apparently opening somewhat later. Best QSO from GW was Forfar, but many stations were given a new county.

GM3AVA (Larport) compliments G3JEQ on his expedition, and also sends on kind words to GM3NLH/P, GD5UG/M, GM3OHX/P, GW3FS/A and especially GC3APA/A, for Sark. GM3AVA's own recent trip to Kincardineshire was very successful and he has just received a listener QSL from Dusseldorf, where his phone was 5 and 7.

GM3AVA had a bit of difficulty in finding where the "98 counties" come from, the one he had missed being the Scillies. This is quoted for the benefit of others who think we have counted one too many. (Scillies are *not*, of course, a true county any more than the Isle of Wight, but it's just one of those things—a nice rare and remote spot, included in the list for that reason.)

lover



The GM3NVO/P outfit when G3NVO (hat), G3NVN (right), G3NVV (phones) and G3OHX (who took the photograph) were in Roxburgh working GDX on Top Band. In four evenings, some 60 contacts were made, the aerial being a 300-ft. wire, with a kite-borne quarter-wave vertical flown when possible.

Finally, GM3AVA asks "When is a phone QSO not a phone QSO?" He has had cards from DX-peditioners who have used CW only, giving a report on his phone signal and with no indication that the phone was only one-way. Some stations apparently regard that as a phone contact . . . but that should not be. We like to think that the claimed phone scores on the ladder are for *two-way phone*, and we hope they all are. Please amend your scores if some of them aren't. (Likewise, CW QSO's must be two-way CW.)
G2NJ (Peterborough) h a s

worked *thirteen* portables or "expeditions" recently, including GC3APA/P on Sark, whom he worked twice! But as G2NJ has for a long time been holding the top of the ladder steady with 98/98, he has no fresh fields to conquer on Top Band. (Shall we start again from January 1, 1962?)

DX on the HF Bands

Both the 14 mc and 21 mc bands have been terrific during most of the period, with even 28 mc giving some worth-while openings at times, though not, as yet, across the North Atlantic. The

number and volume of the lists of DX worked shows the full measure of the improvement. And remember that these lists often have to be drastically pruned, so that only the "real DX" remains. (For instance, all LU, PY, VQ2, ZE, ZS, VK, ZL and often JA contacts are usually cut out—and, of course, W's and VE's are "out." But on 28 mc most of the lists are left as they are.)

To give some idea of what things have been like, we may as well mention that G3NOF's 14 mc SSB list included eighteen VK's; GM3JDR (same band and mode)

RULES: 1961 "CQ" WORLD-WIDE DX CONTEST

I. CONTEST PERIOD:

Phone Section: 0200 GMT October 28 to 0200 GMT October 30.

CW Section: 0200 GMT November 26 to 0200 GMT November 28.

II. BANDS:

The contest activity will be in the 1.8, 3.5, 7, 14, 21, and 28 mc amateur bands.

III. TYPE OF COMPETITION:

- (1) PHONE SECTION. (a) Single Operator.
- (b) Multi-operator, single transmitter.
- (c) Multi-operator, multi-transmitter.
- (2) CW SECTION. (a) Single Operator.
- (b) Multi-operator, single transmitter.
- (c) Multi-operator, multi-transmitter.
- (3) Inter-Club.

IV. EQUIPMENT:

There is no limit to the number of transmitters and receivers allowed and competitors may use the maximum power permitted under the terms of their licence.

V. SERIAL NUMBERS:

- (1) Phone stations will exchange serial numbers consisting of 4 numerals, the first 2 being the RS report and the last 2 their own Zone number.
- (2) CW stations will exchange serial numbers consisting of 5 numerals, the first 3 being the RST report and the last 2 their own Zone number.
- (3) Stations in Zones 1 to 9 will prefix their Zone number with zero. (01, etc.)

VI. POINTS:

- (1) Contacts between stations on different continents will count 3 points.
- (2) Contacts between stations on the same continent, but not in the same country, will count 1 point.
- (3) Contacts between stations in the same country will be permitted for the purpose of obtaining a Zone and/or Country multiplier but no QSO points are credited.
- (4) Only one contact with the same station is permitted per band.

VII. MULTIPLIER:

Two types of multipliers will be used.

- (1) A multiplier of 1 for each Zone contacted on each band.
- (2) A multiplier of 1 for each Country worked on each band.

VIII. SCORING:

- (1) The score of each Single Band is the sum of the Zone and Country multipliers for that band, multiplied by the total contact points on that band.
- (2) The total All-Band score is the sum of the Zone and Country multipliers on all bands, multiplied by the sum of the contact points on all bands.
- (3) Those sending in logs for a Single Band are eligible for a Single Band award only. If a log is sent in for more than one band, indicate which band is to be judged, otherwise it will be judged as an All-Band entry.
- (4) A station is not eligible for more than one award.
- (5) Single-operator contestants must show a minimum of 12 hours of operating time to be eligible for an award. If a contestant operates more than one band and wishes to be judged for a specific single band, he must show a minimum of 12 hours on that band.
- (6) Multi-operator stations must show a minimum of 24 hours of operating time to be eligible for an award.
- (7) Multi-operator stations will only be judged on the basis of an All-Band score.

IX. ZONES and COUNTRIES:

The Zone map and the ARRL and WAE country lists will be used as standards. The continental boundaries used for WAC will also be recognized. Should any question arise as to the positive location of a station, the official definition will be final.

X. AWARDS:

Certificates will be awarded in each section as follows:

- (1) To the highest scoring Single Operator station on each Single Band in the following areas:
 - (a) Each call area of the United States, Canada and Australia.
 - (b) All other countries.

- (2) To the station having the highest All-Band score (more than one band) in the following areas:

- (a) Each call area of the United States, Canada and Australia.
- (b) All other countries.

- (3) Awards to multi-operator stations will only be made in the No. 2 ruling.

XI. SPECIAL AWARDS:

In addition, there will be a number of special awards, consisting mainly of challenge trophies.

XII. DISQUALIFICATION:

Violation of the rules and regulations pertaining to Amateur Radio in the country of the contestant or the rules of this contest will be deemed sufficient cause for disqualification.

XIII. LOG INSTRUCTIONS:

- (1) In keeping a log, fill in Zone number and Country, only first time it is contacted.
- (2) Use a separate sheet for each band and a separate tally sheet or report form.
- (3) Keep all times in GMT.
- (4) All contestants are expected to compute their scores. Logs should be checked for contact duplications and proper point credit before they are submitted.
- (5) Make sure name and address is clearly noted on each log. Print or type.
- (6) Each contestant must sign a pledge that all rules and regulations have been observed and that the report is a true one.
- (7) If official log forms are not available, use a duplicate form, size, 8½ ins. x 11 ins., ruled 52 contacts to the page.

XIV. DEADLINE:

All logs must be postmarked NOT LATER than December 1, 1961 for the Phone Section and January 15, 1962 for the CW section. In rare isolated places the deadline will be made more flexible. Send logs direct to:

CQ Magazine, 300 West 43rd St.,
New York 36, N.Y., U.S.A.
(Att: Contest Committee).

14 mc DX WORKED

CW

ZC4SG: TF5TP, KV4AA, HP1IE.

G3LPS: ZD7SE, FY7YI, CR7IZ, LX3QX, KV4CI, 5U7AC, 6O1LB, HH2LD, LU1ZN, KL7PJ, CE3JC, KH6EDY, PZ1BT, PY7LJ, HP1IE, MP4QAQ.

G2DC: DU7SV, EP2AF, FO8AC, 8AQ, JA2-3, KH6EDY, KH6's, TU2AL, RAEM, UPOL8, UA1KED, VP5MJ, VP8FC, VR2DK, VR5RZ, VS8FL, VK9RH, XT2A.

G3WPP: ET3AZ, HP1IE, KH6DKA, 6J, U8KAA, VE8BC, VK, ZK1AK.

G13NPP: CO6AL, FO8AQ, FP8BD, HM4AQ, KG6AJS, KW6DF, VK0FZ, VR5RZ, XT2A, 6W8BL, 7G1A/TZ.

GW3AHN: LA7RF/M/VR4, UA1KED, VR5RZ, XT2A.

SSB

GM3JDR: CR6CA, CX8BM, EL2AC, 2N, HK2YO, HM4AQ, JA/KA, KG6AJS, 6AKZ, 6NAB, 6JJ, K4LCP/KG6, KH6's, KL7's, KM6BU, KR6GH, 6KS, 6LF, 6USA, K6CQV/KS6, KX6BU, 6DB, KW6CGA, 6DF, MP4MAB, VE8, VK, VS6EK, VU2NR, 2RX, YV5AFK, 5AQR, 6BR, ZK2AB, ZL, ZS, ZS3E, ZS7P, 5U7AH, 9G1CW, 1BF, 1DP, 9M2DB.

G3DO: EA6AZ, HM4AQ, HS5OSQ, JA/KA, KC4USV, KC6BH, K6CQV/KS6, VR5RZ, VR6AC, VS9APH, XE1AB, 1CV, 1FB, YN1CK.

MP4BBW: YV9AM, IT1RIF, EI6F, 5U7AH, PJ2AA, HC1FG, EA6AZ, YS1MS, HK2YO, VR5RZ, YN1CK, CE3RY, TG9AD, KZ5LC, 7G1A/TZ, HS1X, DU1GF, HM4AQ, HC1KA, HS5OSQ.

G3NAC: KH6AWS, KG6AJB, KL7FAY, KV4AA, UF6FB, VQ5FS, VS9APH, ZS6AL.

GW3AHN: EL2G, HM4AQ, KB6BR, KG6JJ, KH6EDY, KR6KS, 6QW, MP4MAB, 4QAO,

OD5CW, PK1SX, TG9AL, VR5RZ, VR6AC, VS9APH, VU2RX, XE1CV, ZD6PR, ZK1BS, ZK2AB.

G3KNU: EA8BA, HZ1AB, CX2CO, YN1CK, HC1KA, HK2YO, T12RT, YV5AY, VP5BL, OH0NC.

G3NWT: HZ1AB, HM4AQ, UF6FB, UO5PK, YU2DB.

G3NOF: CE3DZ, 3DY, 3HZ, CR6CA, KB6BR, KG4AE, KG6AJB, KH6AWS, 6DLW, KR6KS, KW6DB, OD5CW, PJ2AA, T12HP, VK7A1, 8OW, VP5BL, VP7BX, VU2RX, ZS3E, ZS7P, 7S, 6W8BP, 9G1BF.

21 mc DX WORKED

CW

ZC4SG: 5U7AC, EL4YL, 6W8BL, 6O1MT, 4S7RN, YN1AA, MP4QAQ, 9K2AD, EA9AY.

G3LPS: SL5BA/SU, VQ5IB, 5IG, ZD6RM, EL4YL, 5U7AC, YN1AA, 9M2FK, 7G1A, V51FZ, 9K2AD, VP5GT, VQ3HD, JA's.

G3NFV: VR2EA, 9K2AD, YA1BW, VS9AAC, SV0WZ.

GW3AHN: CR7IZ, EL4YL, HK3VV, KH6EDY, LA7RF/M/VR4, LU1Z, MP4QAQ, VQ5IB, VR2EA, V51FH, VU2XG, ZP5LS, 5N2AMS, 2IND, 2KHK, 2LKZ, 5U7AC, 7G1A, 7G1A/TZ, 9M2FK, 9Q5US.

G2VY: PY4OD, 4AZ, ZP5CF, YN1AA, VQ2CZ, 2MS, VS9AAC.

GW3IOI: CX2BT, EL4YL, JA's, KH6EDY, KV4CI, VP5MJ, VQ3HZ, 5IG, VS1FF, 1FH, VS9AAC, VU2BK, YA1BW, YV5ANT, 5N2JKO, 6O1MT, 7G1A/TZ, 9K2AD, 9M2FK.

G5MD: KW6DG, VK9RR, DU1FM, YA0EH, VS6EC, VR1B, VR2EA.

G2DC: JA 1-6, JA8, KH6EDY, OD5CT, 5LX, VU2BK, 2XG, VQ2EA, VQ8BC, V51KF, VS6EC, VS9ADA, 9AAC, YA1BW, ZS7S, 4S7RN, 5R8BI, 6W8BL, 7G1A/TZ, 9M2K.

ZC4CT: EL4A, CE1AD, VQ8BC, VS9AAC, VU2BK, 3A2AE,

AM Phone

G3NAC: CR6, CR7, CX6BM, HC1HH, HH2CL, HK1AUK, 4EB, KG4AO, OA4GR, PZ1BK, 1BW, TT8AB, VP3RW, 3YG, 3EFG, VQ5IH, VR2DS, VS9MB, VP6JK, YN6HH, ZS3LW, 4S7GE, 7LM, 7YL, 6W8CS, 8CY, 9M2CL, 2DW.

G3NOF: CR6AT, FB8XX, HR1MM, JA7UJ, OD5CU, PK2HT, VS9AAC, VU2BK, ZC4JB/P, 4S7YL, 5A2CX, 5N2AMS, 2BRG, 2DMS, 9M2AE.

G3NWT: FB8XX, FR7ZD, TA2AR, 3A2AE, PK2HT, VS5GS, EL6E, VR2DE, H18DGH, 5N2ATU, 2BRG, VQ3-4-5, 9M2AD, 2DX, VS1KY, JA's, VS9AGA.

G3NOT: CR7EA, EL0J/MM, H18DGC, JA's, UA0SK, VQ2BK, 2IW, VQ5IB, VS1HT, VS9AGA, 9AAC, 5N2ATU, 2DMS, 9G1CC, 9K2AY, 9M2AE, 2CL, 2DX.

GW3IOI: EA8CR, JA1FKY, 2AEY, OD5CS, VS9AGA, VS9MB, ZD6RM, 5N2AMS, 2ATU, 2BRG.

ZC4CT: MP4BDC, VS5GS, VS9AGA, 3A2BT.

SSB

GW3AHN: CE3CZ, CR6CA, FB8CM, KG1AA, 1GD, KZ5SW, OA4DI, PZ1AX, ZP5IT, ZS3E, 5N2AMS, 5U7AH, 7G1A/TZ, 9G1DP, 9Q5US.

G3NOF: HP1GP, 5N2AMS.

G3DO: KG4AO, KZ5DS, 5WS, OA4J, VP5CH, 6O1DRS.

28 mc DX WORKED

AM Phone

G3NOT: CR7EA, VQ2CH, 2BK, VQ3PBD, VQ4HX, ZE2JA, 2JD, 2JK 4JE, 8JZ, ZS1MW, 1NL, 6AYI, 6AJH, ZS7L, 4X4MH, 5A2CX, 5N2ATU.

G3NOF: VP5LG, PZ1BN, VQ2BK, VQ3CH, 3PBD, VQ4HX, ZS6EU, 5N2ATU.

G3NWT: VQ3PBD, 3HX, VQ4HX, LU2HAC, 9Q5WR, ZS7L, 5N2BRG, VQ2, ZE, ZS.

G3LJ: CR6CA, EL6F, UD6ADN, VQ3PBD, YV5AGM, 5A2CX.

listed eight KH6's and commented "also 29 KL7's!"; and G2DC mentioned six KH6's on 14 mc CW and nine JA's on 21 mc CW.

In short, an excellent month all round, and ample compensation for the dull period we have been through. And now follow some comments on the HF Band DX, direct from the correspondence.

DX News from Readers

G3NOF (Yeovil): VP5BL/5 will be on SSB and CW from the Cayman Islands, September 30 to October 6 (you *might* just catch them!); and the RAFARS expedition to FL8 is due October 4 to 15.

G2DC (Ringwood): AC3 once more possible—VU2RM plans a visit there and possibly to AC5 . . . UA1KED pops up a bit more frequently and his signals seem better. Logs are being handled by RAEM . . . W2BIB hopes to be operating by late September from HV1CN, and also signing SMOM/1 (Sovereign Military Order of Malta), which is mysteriously being bandied about as a "new one" . . . XT2A very active from Volta Republic on LF edge of 14 mc—best time for G's is 1730-1830 . . . Pacific—conditions can be very good between 0730 and 1000, stations to look for including KJ6BV, VR5RZ,

VK9RH, VR3L (and by the time you read this VR1M should also be on) . . . and the latest reported new one is FZ8PF from Crozet Island, said to be T8 on 14 mc.

G3NWT (Sandiacre): Conditions, even for SSB, seem better on 21 mc than 14 mc; KA5AS was S8 on one band, S1 on the other . . . TA2AR has been active on 21 mc phone—seems genuine . . . ZS9G, JZ0PM and FB8ZZ also heard . . . HM4AQ was a bit vague about prefixes and said he was looking for GI7, 9 and 0! . . . The SM5 portable in Egypt is now signing /4U again . . . VQ3HH active on SSB.

GW3AHN (Cardiff): Pacific

path again open on 21 mc. but used by very few (however, he was pleased to get VR2EA and KH6EDY, the latter being his 270th country on 21 mc—very fine going!) . . . 14 mc has been good at breakfast time, with VR5RZ and VR6AC among the outstanding signals on SSB . . . 7G1A/TZ, from Mali, was very active on CW and SSB, 14 and 21 mc, operating first-class and QSL's very prompt . . . 5N2AMS still hopes to work from Dahomey and Gabon, but the paperwork is slow . . . TR8AA (Gabon) has been on 21 mc AM and CW . . . XT2A seems to be genuine, but why the funny call? Should it be TX2A? (*Late Flash*: No—probably TV2A.)

G3KNU (Scunthorpe): SSB operation around 14125 kc is really catching on, and some good DX such as VP5BL, VP2, PJ2, HK, YV and such is all workable without any W-QRM . . . KV4AA is now an outstanding SSB signal on 14 mc, causing big pile-ups most evenings.

G13NPP (Dungannon): XT2A gets so near the band-edge that he

often drifts right out! VR5RZ is prolonging his stay on Tonga, but will probably be gone before this appears . . . HKØTU cards have been sent out, and it appears from them that only four previous landings have been made on Malpelo Island (1.35 miles by .37 miles and no plant life).

G2VV (Sunbury): Worked VE3EWY, who proved to be our old friend VE3BWY at his "summer location" . . . The 21 mc band has been quite exciting lately, but a pity it's such a late starter in the mornings . . . W6 and 7 very easy at times, and K7BCD (Arizona) was a new one. Most replies to CQ's come from W5's.

GM3JDR (Sutherland): "Have worked 154 countries on 14 mc SSB since March 7 . . . it took me about eight years to work 150 on CW, so SSB *must* have something!" He now uses a ZL-Special directed towards the Pacific—and the list of DX worked speaks for itself.

Eighty and Forty

There has not been a lot of comment on the Eighty-Forty set-up this month, chiefly because of the tremendous activity on the HF bands. But the LF bands are improving rapidly and some real DX will undoubtedly result during the winter.

G3PDM (Durham), our latest-licensed correspondent to date, started up on Top Band and decided to try doubling in the final; it worked, and got him around Europe on Eighty; so then he tried quadrupling, and was pleased to get 599 from many G's and to work 15 countries. The next step is octupling (if that's the word) on to Twenty!

G3GSI (Heathfield) has already worked ZL on *Eighty* SSB, early morning—so things are waking up there.

G3NYQ (Ilkley) comments on the 579 signals on Forty from VK2BA, with VK5KO close behind; also PY5OF, 5N2LKZ at 1900, SVØ, VP9, HK, VE and W—though he can't work them as yet with his 40 watts. But he has had a QSL from KV4CI for a contact some time back with 20 watts only.



G3NMQ (left) and G3KXI when working in Turkey recently, endeavoured without success to obtain a local licence to set up a joint station. There are apparently considerable difficulties in getting TA permits.

G3PDH (Cleethorpes) started up early in August and within six days had worked UA9, PY7, K2, 3A2, VP9, K1 and W3, all on Forty with 30 watts to a 50-ft. wire only 10 feet high—shows what can be done.

SWL Peter Day (Sheffield) says that Forty is best between 2030 and 2300 GMT, and signals very consistent. VK5KO is a nightly feature, always 559 or better from 2130 onwards. Others heard: VKØTC (2150 and 2245); ZS6AUL (2100); VP2SH (2235); VK2BA and 2BZ (2100-2300); KV4CI (nightly, looking for Europeans); FG7XF (0017) and VP4TR (2210). And SWL Day adds that Eighty is "picking up," with the W's coming through on SSB round about 2330 with fair signals.

The Marconi Anniversary

December 12 is the sixtieth anniversary of Marconi's first Trans-Atlantic wireless communication, and will duly be celebrated from two historic spots. The Newfoundland Radio Club, as already announced, will operate

LF BANDS TABLE

(Countries Worked)

Station	1.8 mc	3.5 mc	7 mc
G2YS	20	73	93
G3FPQ	19	85	134
G3IGW	19	51	95
G3NFV	16	12	27
GW3CBY	14	31	51
G2DC	12	94	128
G3NYQ	11	12	27
G3NNO	10	23	24
G3FXB	9	78	152
G3JWZ	9	52	62
G4JA	9	41	57
G3NYA	9	23	32
G3IDG	9	16	21
G3DRN	9	13	42
G3NPB	9	8	21
G3HZL	8	44	81
G3OQK	7	5	23
G2DHV	5	25	33
G2FQW	1	4	33

This Table derives from Countries Worked. Order is based on band in first column, changed monthly.

from Signal Hill, St. John's, with the call VO1MSA, from 1930 GMT on December 9 until the same time on December 17, all bands from Ten to Eighty, phone and CW. Meanwhile, the West Cornwall Radio Club have been assigned the call GB3MSA, and they will radiate from the actual Marconi site at Poldhu, Cornwall, from December 9 to 17 on the same five bands.

Special QSL cards will be issued for both stations, and naturally both Clubs hope to make as many contacts as possible over the period. It is a unique commemoration of sixty years of progress, and both Clubs are to be congratulated on their enterprise in arranging the event. (Aerials, wavelengths and mode of transmission are all a bit different from those employed in 1901!)

Our Heading Photograph (p.412)

M. Bond, G3NWF, Coed-Bel, Lublock Road, Chislehurst, Kent, has a fully transistorised 10-watt transmitter on 40 metres, which has given him good contacts not only in the U.K., but over Europe as well.

The line-up is TK252A CO, TK252A driver, and a pair of TK202A's in push-pull in the PA. These are all Standard Telephones silicon HF transistors.

Miscellany

ON4IB (Bruges) confirms that ON5's are being allocated now, with more expected after the September examinations. He himself has worked 74 British counties (1240 different G stations)—all on *Forty CW*.

G3NXY (Southampton) has

embarked on the DX bands after being exclusively on One-Sixty for eighteen months. Rockbound on 7025 kc, he doesn't think much of pirate broadcasters, but even less of amateur phone stations coming right down to 7010 kc . . . G3NYA (Sutton Coldfield) increased power to 30 watts just as conditions seemed to deteriorate! But he raised 3A2BT on Forty and put his score up a bit; and he comments on the LJ and PI prefixes as "good for WPX."

G3IDG (Basingstoke) hazards a guess at the "most elderly Old Timer" in the U.K. and suggests that it might be G6GM. He also wonders who holds the record for the number of QSO's, and mentions VK4EL's claim to 42,286 a year ago; SM5LF recently told him he was having his 30,796th! Finally, he wants to know the meaning of "55," used by sundry Continentals.

G3MDN (Leominster) thinks his call is being pirated by someone in the Birmingham area, and would like to be able to find out more . . . G3PES (RAF Locking) queries UW3AE—is it a special call like the GB3's? It seems to us that UW3, UW9 and UT5 are just overflows from the normal UA and UB sequence . . . G3LKJ says that he and G3LHJ have been using Ten for local work for some time and would like to explore it more for inter-G working. He will be looking over the band "more or less all day" on Sundays.

G3NWT points out that a disadvantage of SSB operation is that if both stations are strong and have their gains turned right back, a breaker has less chance of being

heard than would be the case on AM, where even the weakest carrier on the frequency attracts attention. And he suggests that the endless-tape CQ-caller is not a bad idea for Ten (when the band appears dead), but is a bit of a menace on populated bands.

G3OGO (Croydon) is out of hospital and warming up the rig again, very pleased to find conditions so good. He worked a W who informed him: "In the field outside I grow a flower called a gladiola . . . I spell"! He is pleased to find so many G3P's round the bands—makes him feel like an Old Timer.

GW3AHN has some pungent remarks to make about G's known to be using push-pull 813's and the like, and wonders whether anyone doing this expects to be taken seriously when he infers that he runs them at 500 volts to keep the power legal. There are some notorious cases at large, and we have always marvelled at the way they seem to get away with it. Maybe the Powers-That-Be will stage a big swoop—one day.

And so to the sign-off. Sources of news have already been acknowledged, so once more we can only say many thanks all round to our always-helpful correspondents. Next month we hope for an even better and brighter selection, and the deadline is first post on **Friday, October 13**. Address it all to "DX Commentary," *Short Wave Magazine*, 55 Victoria Street, London, S.W.1, and we will do the rest. Meanwhile (as your conductor opens his sixteenth year of writing this feature) he wishes you 73 and Good Hunting. BCNU!

QSL CARD PUBLICITY VALUE

The Corporation of Wolverhampton has decided that specially-designed QSL cards, advertising the Borough, and supplied free of charge to local licensed amateurs, would be good publicity for the town, its industries and its amenities. To this end, a print order of 9,000 cards—in an attractive design in green and black, carrying the Borough crest and some notes on Wolverhampton as well as the usual QSL report data—has been put through, under 14 different call-signs, for the operators eligible. The hope of the Town Clerk of Wolverhampton is that these cards will go all over the world—as indeed they will.

VISIT TO AMERICAN SIDEBAND CONVENTION

We are asked by G3NUY (S. Almond, 265 Longley Lane, Gatley, Cheshire), in association with G3KGC (R. Morgan, 12 Sussex Ring, London, N.12) to say that they are forming a party of radio amateurs to fly to New York to attend the Convention and Dinner of the Single Sideband Amateur Radio Association, at the end of March next. The round-trip fare, by Pan-American, will be about £70, and the duration four days. Those interested (and it should be noted that AM operators will be equally welcome) are asked to get in touch with G3KGC or G3NUY as soon as possible.

Information on THE BOOK LIST

EACH month we publish titles and prices of a wide range of books, maps and manuals selected as being of most value and interest to the majority of readers. The selection is made carefully, because it is not possible to include everything available—though we can supply any technical book, British or foreign (on any subject, whether radio or anything else) to order if we are given some idea of title and publisher.

The list we show in each issue of SHORT WAVE MAGAZINE (see p.396) is necessarily of radio amateur interest only, and it is not possible in the space available even to outline scope or contents—nor can we do that here now on each book listed. But it is probable that notes on some of these books, particularly those new in the list, will be of value and interest to those wanting a reference to a fuller treatment on some of the great variety of subjects now covered in the literature of Amateur Radio.

All prices quoted are post free, by home or overseas (surface) mail, direct from us and normally from stock, either for individual or library orders. Inquiries and orders, with remittance, to:

**Publications Department,
Short Wave Magazine, Ltd.,
55 Victoria Street,
London, S.W.1**

The Surplus Handbook: This is an entirely new compilation in this field, by the publishers of the *Radio Handbook*, and Vol. I covers some 50 different American surplus equipment items—from the APN-1 to the TCS receivers—all these being in the category of "Receivers and Transreceivers" only. (It is intended that another volume will deal with transmitting equipment.) The treatment for each item is full circuit diagram, usually with values, and an illustration of the set; a useful valve cross-reference guide is included as an appendix. *The Surplus Handbook*, Vol. 1, is well produced, of 90 pages in large format, with numerous fold-out diagrams (some of which are 12 ins. long by 8 ins. wide), and costs 24s.

VHF for The Radio Amateur: One of the best of the new books, this is by Frank Jones, W6AJF, well known in earlier days as a member of the W6 writing team responsible for the West Coast publications, *Radio* and the *Radio Handbook*, the 15th edition of the latter still being, of course, one of the standard texts. In the present work, Jones deals fully

For Engineers, Amateurs and SWL's

with VHF—from 50 mc to 1300 mc—strictly in the up-to-date radio amateur context—covering propagation, aerial systems, transmitters, receivers, modulation, power supplies, pre-amplifiers and test equipment. There are detailed constructional designs for each of the five amateur VHF bands (we do not have 220 mc in this country, and U.S. amateurs are on 50 mc instead of our 70 mc), so that the bands of mutual interest are 144-430-1290 mc. Of particular importance is a chapter of 20 pages dealing with parametric amplifiers for amateur VHF receivers—a technique with which we have fallen behind in this country. W6AJF shows that with practice (and profanity!) these circuits can be made to work properly by the amateur and are well worth investigation, apart from being extremely interesting technically. *VHF for The Radio Amateur* is of 200 pages, 9 ins. by 6 ins., in 9 sections, very well illustrated in line and half-tone (circuits and photographs), and costs 28s. It is a publication in the "CQ Technical Series" and is sure to be a very useful reference for all actively interested in the VHF bands.

Foundations of Wireless: This is included here because it is the latest revision, reprinted, of a very sound book—it has sold nearly 200,000 copies, in four revisions and eight printings—by a well-known British author. As the title implies, it deals with the subject of radio generally from the point of view of the intelligent beginner who wants to obtain a good grasp of the fundamentals before tackling the more advanced literature. In other words, it covers the whole basic theory of radio and electronics, starting from the most elementary principles, and assuming no previous technical knowledge and with the minimum of mathematics. The new edition has a good chapter on practical transistory—many beginners nowadays start with transistors, rather than valves. The author has a lucid and uncomplicated style, and is easy to read. *Foundations of Wireless*, by M. Scroggie, B.Sc., M.I.E.E., is of 288 pages, illustrated by 277 line drawings and adequately indexed, in hard covers with wrapper, published by Iliffe's, and obtainable from us at 16s. 9d.

Amateur Radio Maps: We now have available, in addition to the revision of our own well-established *DX Zone Map* (11s. 9d. post free)—which is great circle centred on the U.K.—the second edition of the *Amateur Radio Map of the World*, a fine colour job

Newsagents anywhere in the world can get *Short Wave Magazine*
through the usual trade channels

on Mercator's projection, and costing 8s. 6d. These two Maps have been described previously, and it is only necessary to say that they are complementary to one another—between them, they give all the essential DX information (and much unexpected detail as well) for AT station operators and SWL's who want to be up-to-the-minute on DX. They are for wall mounting and, being very handsome productions, will set off any amateur station.

Radio Amateur's Handbook: Any discussion on books for the AT station operator must include at least a mention of the latest (1961) edition of the ARRL *Radio Amateur's Handbook*, tens of thousands of copies of which are sold throughout the world every year. Now in its 38th edition, the ARRL *Handbook* remains the standard guide and reference to the whole subject of Amateur Radio. Always up-to-date, it is, in the first place, practical; secondly, it is comprehensive; thirdly, it is accurate and reliable; fourthly, it is easy reading for radio amateurs; and fifthly, it is unusually well illustrated, with a good many more diagrams and photographs than its 700 pages. The coverage is general, through the whole field of Amateur Radio practice—from aerials to power supplies, and HF to UHF, including receivers, transmitters, modulators, test and measuring equipment, and operating practice. The price of the ARRL *Radio Amateur's Handbook* is 34s. 6d.—or 44s. 6d. in a *de luxe* library binding. This is not the sort of book you need to buy every year, but you should have the latest edition about every third year or so to keep up-to-date.

The Call Book: Readers should note that the two editions of the *Radio Amateur Call Book*—the world-wide directory of radio amateur stations, for which we are agents for the U.K. and Europe—are both again being published quarterly. Previously, the Foreign Section (or "the world outside the U.S.A.") was only appearing half-yearly. This reversion to the original arrangement will mean that the Foreign Section (which includes the U.K. listings) will be much more up-to-date than before. Details appear on p.396 in this issue, and as we have only been able to obtain somewhat limited supplies of the autumn editions, orders should be placed immediately.

Editorial Note: Readers interested in these or any other of our books should note that they are generally obtainable on loan through the local public library. They may not always be available on demand (except, possibly, in the reference libraries in large centres), but librarians will get copies on request, if given the title, the post-free price as quoted by us, and our address as the publisher or source of supply. They should be described as general interest technical books.

TRANSISTOR OSCILLATORS

The circuit shown at Fig. 1 will be of interest to those experimenting with transistors—it is for a 27 mc CO, for which a Mullard OC170 could be used, with an FT-241A (harmonic type) surplus crystal. About 4 milliwatts of RF output should be obtainable.

Values are: C, .01 μF ; C1, 20 μF ; C2, 20 μF ; C4, .01 μF ; R1, 200 ohms; R2, 680 ohms; R3, 9000 ohms. The coil tuned by C1 should have 15 turns of 18g. on a 3/8-in. diameter former, with a 2-turn link at the cold end.

At Fig. 2 is a self-excited oscillator for the 70 mc band, which will go off with a suitable VHF transistor—the OC170 is near its limit at this frequency, but there are other types (such as the new Mullard AFZ11) with a much higher frequency cut-off, which would work well. Values for Fig. 2 are: C1, 50 μF variable; C2, C3, 100 μF variable; C4, C5, .0015 μF feed-through type; C6, .01 μF ; RFC1, RFC2, 10 μH RF chokes; L, 3½ turns 16g. self-supporting, 3/4-in. diameter, slightly spaced, tapped at 2nd turn. Some experiment will be called for with this tapping point, and the voltages applied will depend upon the transistor available; with the OC170, the maximum collector voltage should not exceed -20v.

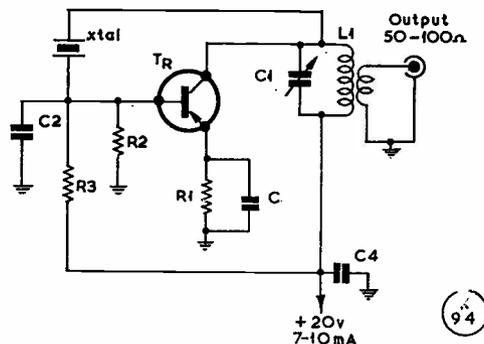


Fig. 1. A transistor crystal oscillator for about 27 mc, which will go off with an OC170 and an FT-241A type surplus crystal.

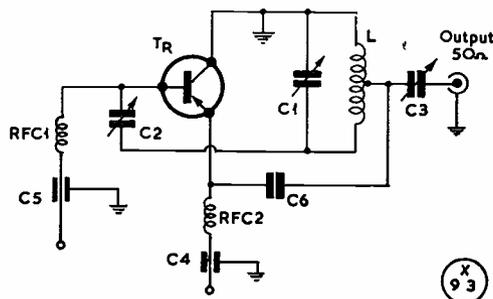


Fig. 2. Typical circuit for a 70 mc transistor oscillator, values for which are given in the text above.

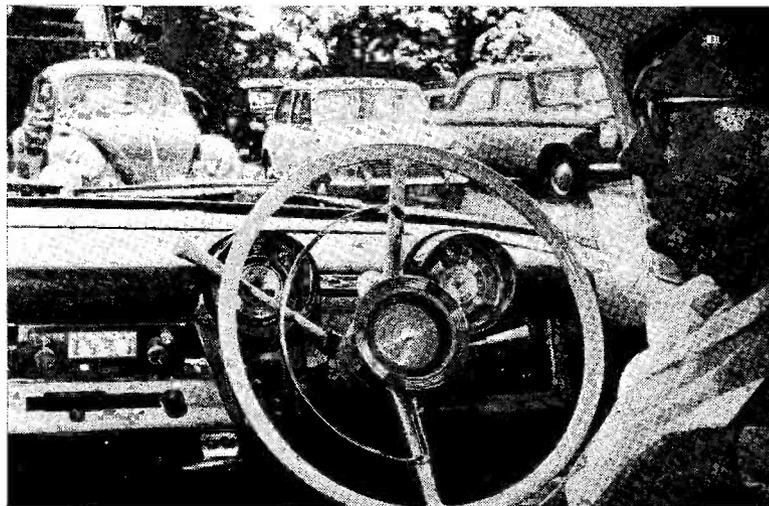
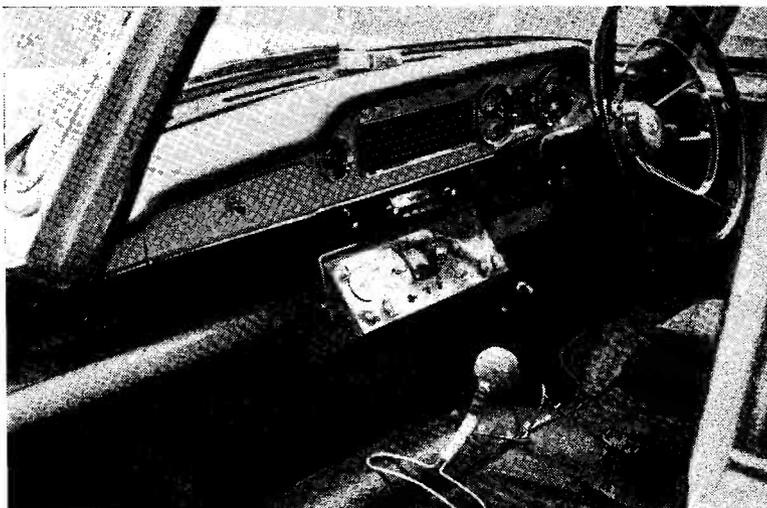


Among those present at the Stamford Rally on August 27 was G3OSS/M (London), who is sightless. Here he is being presented with his raffle prize by the Marchioness of Exeter. At left is Fiona McKenzie, xyl of G3OSS and his enthusiastic guide and supporter in his Amateur Radio activities.

(A G3KPO Print)

The 160-metre mobile layout shown by G3OGB (Ilford, Essex) at Woburn. It is a VFO/PA arrangement running 7 watts input, with a built-in converter feeding into the car radio receiver as IF/AF amplifier. This is a well-finished and engineered job. Note the swivel-type mounting, below the car receiver.

(A G3GMN Print)



Winner of the first prize for a home-constructed /M installation at the Woburn affair on September 10 was G3HRO (Bromley, Kent), who has a six-band transistor superhet receiver and six-band Tx running 55w. in the PA, with all-transistor modulator and power supplies. His car is a Vauxhall, and the equipment is very neatly fitted, while being fully accessible.

(A G3GMN Print)

• • • *The Mobile Scene* • • •

REPORTS ON FOUR MORE RALLY EVENTS: LUTON, HETTON, BUXTON AND STAMFORD — REFLECTIONS ON THE SEASON

AN interesting item in the *News-Letter* of the Midland Amateur Radio Society shows how some of the big Mobile Rallies affect business at the stately homes and other show places at which Rallies are held. According to the manager at Trentham Gardens, on the Sunday of the 1959 Mobile Rally there, 1,735 people paid entrance money, in 469 cars. On the Sunday after, the totals were down to 964 people in 192 cars. Similarly, in 1960, the Rally Sunday showed figures of 3,276 people in 761 cars, whereas the Sunday following brought only 1,200 people in 250 cars! The trend for 1961 at Trentham was exactly the same, there being a drop of about 60% in visitors on the Sunday after the Rally.

What this means, for Trentham at any rate, is that the management more than welcomes the prospect of the annual Rally, and will go to considerable trouble to co-operate with the organisers. It would be interesting if other Rally organisers, having had meetings at places where attendance records can be checked from the sale of admission, were to find out to what extent their event had affected business.

* * * *

The Luton & District Radio Society's first Rally venture, on **August 20**, was accorded a success. Held at Stockwood Park, Luton, Beds., 30 of the cars were fitted mobile, 24 of them being worked by G3JZW/A,



We don't know who he is, but he had a good time fidgeting about among the legs at the Woburn Mobile Rally.

(A G3GMN Print)

the talk-in station on 1925 kc; G3ADK, on two-metre talk-in, worked five mobiles. The prize-winners were G3OS/M (Gainsborough, Lincs.), for longest distance travelled, and the treasure hunt was won by G3MAY (London, N.15). The Rally arrangements were in the hands of G3MGY and D. Bavister, hon. secretary of the Luton D.R.S.

Attendance at the Hetton Show, Co. Durham, held on **August 26**, was about 8,000 people, of whom some 110 were actually identified as radio visitors. The organisers were G2TG, G3CKC, G3NSI and other members of the Houghton & District Radio Club, who had their own tent for operating G3CKC/A in the Show grounds. The radio tent was full to overflowing all the afternoon, and there is no doubt that Amateur Radio received a great fillip locally. The prize-winners were G3MYF/M (Otley, Yorks.), who got a 5-gal. drum of motor oil (!), and G3DMK/M (Hipswell, Yorks.), his prize being some power transistors; the home-constructor competition was won by G3MOU (Sunderland).

* * * *

Sunday, August 27

This was a big day in the Rally calendar, for there were two events scheduled—at Stamford and Buxton. The recorded attendance was roughly the same at both — 333 actually signed the visitors' book at Buxton, and the estimated turn-out at Stamford was 300, where they had 100 cars actually fitted mobile; the tally of /M's at Buxton was about half this. Both events were held in glorious weather, the Buxton affair being organised by the South Manchester and Stockport Clubs working in co-operation. The Rally at Burghley Park—the home of the Marquis of Exeter, who in his day was a world-famous athlete—was laid on by the Stamford Radio Club.

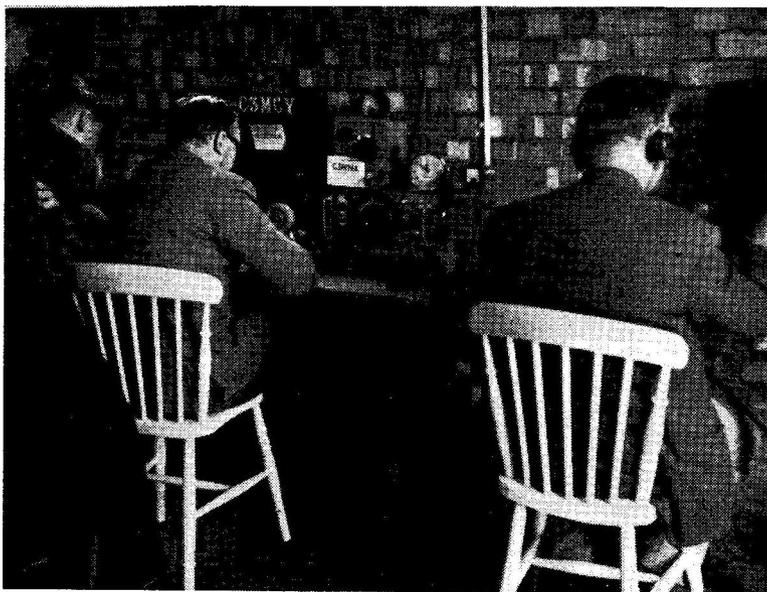
G6DN, for the northern event, managed to get some good local advance TV publicity, on both ITA and BBC, including a simulated mobile QSO with G2AUC/M. The Derbyshire Police and Fire Services co-operated with interesting practical displays at Buxton, and it was generally agreed that while there was plenty to see and do, there was also ample time for personal get-togethering. This is a very important feature of all Rally events, which organisers should never overlook. Prize-winners for the Stockport-Buxton mobile motoring competition were G3GJV/M and G3JCT/M; the treasure-hunt winners were G3LSL and SWL J. Gunson. From the organisers' point of view, this Rally is rated "most successful."

On the other hand—though their total attendance figures were quite good, and about 100 mobiles were actually worked by the talk-in stations (G3FUR and G3KWC/P on Top Band, and G2HOP and G3HES/P

on two metres)—the Stamford chaps describe themselves as “disappointed by the poor turnout.” They had planned for a total of about 200 cars (say, 600-700 people) in order to break even on the expenses, but unfortunately those figures were far from being attained. In the Stamford prize list, G3GWR (Dore, Sheffield) collected three firsts—for safety, best home-constructed 160m. /M installation, and the *concours d'elegance*. Other winners were G3HRH (VHF/M), G3OS/M (best 160m. commercial installation), G4JW /M (longest-distance contact on Top Band, 66 miles), and G3JXF/M (longest distance worked on two metres, 40 miles).

* * * *

It is fairly evident that, this year, saturation was reached so far as the number of Rally events organised for all-comers was concerned. The total number of such Rallies offered was no less than 23 (against 17 last year), and *all* of them in England, at that. It may be argued that because there are now so many more U.K. amateurs licensed /M there is scope for more Rallies—but this does not necessarily follow. Though the really keen mobileer, and those recently licensed /M and trying themselves out in the mobile field, will willingly travel long distances to what they feel should be an attractive event, the majority of /M's would not go to more than two at the most (“once you've been to one, you've seen the lot”), which in effect throws a greater responsibility on to the organisers of the big events. It can be taken that Trentham, Barford St. John, Derby, Longleat, Cheltenham, Beaulieu, Woburn and Buxton



The Luton boys had two stations — for Top Band and two metres — set up for their Rally on August 20. In this photograph, the operators are G3NGU, G3JZW and G3ADK. The two-metre gear was supplied by Withers Electronics.

are now established features of the mobile scene, as regards large-scale undertakings.

This does *not* mean that the smaller local-Club events are of no importance or have no value—it is just that they cannot expect to attract large crowds. And the main thing for organisers to avoid, at all costs, is the clashing of dates.

Anyhow, we are now at the end of the most interesting and successful Mobile Season yet experienced, and there can be no doubt that much credit is due to all Rally organisers, for it is largely through their efforts that more than 1,000 U.K. amateurs now hold mobile licences.

TAPE REPORTING BY SWL's

Arising from a suggestion put forward by G3NAU (Watlington), there is the idea that listeners, instead of making QSL card reports, could send transmitting stations a recording of their signals on a small 3-in. reel. The procedure would be for the SWL to offer the recording and, if it was accepted, the operator concerned would undertake to return the reel with his QSL card, and refund postage, which would be about 6d. These small “greetings” tapes are now generally available, and supplied in a box for sending through the post.

COURSES IN COLOUR TELEVISION

The courses already organised by The Television Society on colour television have been so heavily booked that repeats of the lectures have been arranged during January; they are to be given in the

Lecture Hall of the School of Tropical Medicine, Keppel Street, London, W.C.1, in the evening. The enrolment fee is one guinea for members of the Society, and two guineas for non-members. Early application for details and enrolment forms should be made to: The Administrative Secretary, Television Society, 166 Shaftesbury Avenue, London, W.C.2.

TAKEN IT AGAIN

When GM3CCT let his licence lapse, he found that, to get it back, he had to sit the R.A.E. and take the Morse Test again—there was no particular difficulty about this, because he has held a 1st Class PMG Certificate since 1927, was a sea-going radio officer for 26 years, and was with the Marconi Company for nearly 20 years. GM3CCT says “It was Rip Van Winkle all over again—everything was new except the fundamentals, never forgotten.”

TOP BAND EXPEDITION TO SHETLAND

GM3FSV/A ON BRESSAY

AUGUST 1961

O. Thomsen, B.Sc. (GM3FSV)

BRESSAY, off the mainland of Shetland (Zetland) lies some 600 miles north of London and is thus about the ultimate in terms of GDX on Top Band, though there are places in the Shetlands Group that are farther north even than Bressay.

At first sight in the pouring rain at 2200 BST on August 9 the /A QTH looked really hopeless. Next morning, however, the sun was shining and the overhead power-lines did not look so menacingly close, and although the sea was only about 50 feet away, the possibility was there of a near east-west dipole for Top Band. Permission was obtained from the adjacent householders to stretch wire over their property and to fasten it to the nearby fences.

Soon the landlord of our rented cottage paid us a visit and when I spoke of trying to buy some timber to make a mast he said that he was sure that he had some bits and pieces that might do if they were tied together. A boat-hook from a drifter, a mast from a Shetland skiff, a jib-boom from another boat and a piece of bamboo drift-wood, when all tied together with rope and wire, produced a mast 38 feet long. With much shouting of "To you," "To me" and such-like phrases this floppy pole was erected and held upright (more or less) by six guys of thin garden wire that had been brought for just this purpose. A dipole for Top Band was measured out and, after fastening the end of the halyard to the T-insulator—the current antinode was to be at the top of the mast, the highest point in the system—the aerial and feeder were hauled up very gingerly. Alas, when the ends of the dipole were being stretched out to form an inverted-V one leg carried away near the T-insulator. The halyard jammed and, despite repeated attempts to free it, just stayed stuck so there was no 160m. activity that night.

Next day with further assistance from the landlord, the next-door neighbour and my wife, the mast was lowered, fitted with two halyards, and re-erected. This time the droopy dipole was stretched successfully and GM3FSV/A was ready to operate SSB on Top Band from Shetland. (One hope was that, before the next-door neighbours got too hostile about the BCI, I would be well on my way flying back to Orkney.)

A check at 2100 BST showed the static level to be very high. The band seemed particularly noisy at about 1.9 mc, the frequency that it had been hoped to use, but it did seem a little quieter at 1.875 mc and a "CQ" on CW there produced G3OWR—and the struggle was on. This was the evening of Friday,

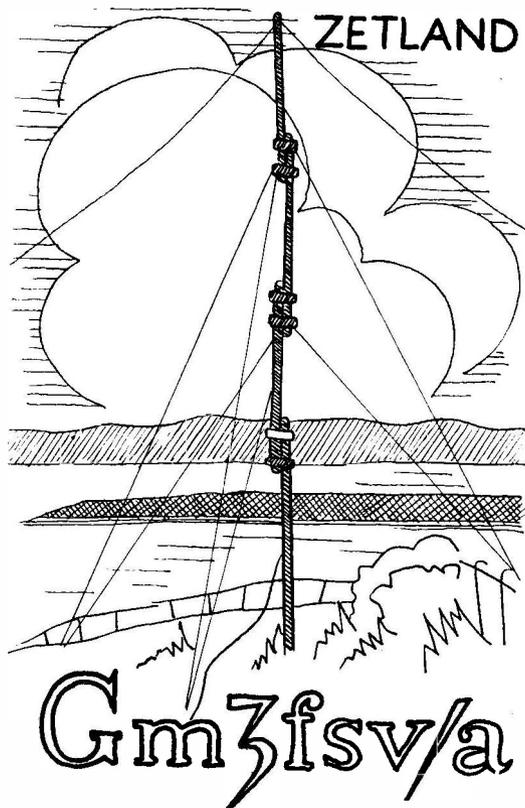
August 11, and I worked mostly CW stations, myself using SSB. GM3FSV/A was on for five nights all together and 150 contacts were made on Top Band, the most notable one being with G3NPU/M as he was motoring past London Airport. The first QSO on the Sunday night session, August 13, was with G3NNF who asked me to come on SSB, which I did. He told me after that he did not believe that it really was GM3FSV/A because the signal was so strong! (This was his way of making sure.)

Gear Used

The entire station including transmitter, receiver, power supply, aerial and guy wire, feeder, soldering iron and some spares fitted into a week-end case quite easily, but truth to tell was remarkably heavy.

The transmitter was a much-modified Edmunds exciter with five suppression crystals in the filter and a PA using a 6L6 in Class-B zero bias. This single-band transmitter was built two years ago specially for the expedition. It is rather old hat but works quite well. By doubling the VFO in the balanced modulator it was used on 80 metres for keeping daylight skeds with Orkney and Caithness.

The receiver was a home-brewed, crystal-controlled



A very good example of a home-made QSL card; an article on this subject appeared in our March 1961 issue. GM3FSV/A has sent out more than 50 of these cards for QSL's received for his Shetland expedition.

converter for 160m. and 80m. feeding a new type BC-453, the receiver originally designed and built for the trip being discarded in favour of the BC-453 arrangement. The performance of the receiver, considering its very small size, left little to be desired.

The power supply was transformerless on the HT side and gave 2/80 volt outputs and 560 volts. Silicon diodes were used and the regulation was excellent; even with substantial heater transformers it only weighed 9 lbs. It is intended to use more of these supplies at the home QTH.

A welcome visitor to Bressay was local GM3OGH, who spent a few hours with us until he caught the

last ferry back to the mainland of Shetland. One thing he said was that there was some opinion in Shetland that my trip would be fruitless as very little or nothing had ever been heard on the Top Band there. They must have been listening during the lunch hour.

The writer would like to thank all the operators who called GM3FSV/A, for without their support the trip would certainly have been fruitless. Perhaps one result of his expedition will be that some Top Band activity has been stirred up in Shetland—and then maybe he will get a chance to work that county, too.

Tripling to 70 Centimetres

USING THE QQVO2-6

THE circuit shows a tripler arrangement for getting from 145 to 435 mc, using low power only while obtaining a very reasonable level of RF output at the 70 cm. end.

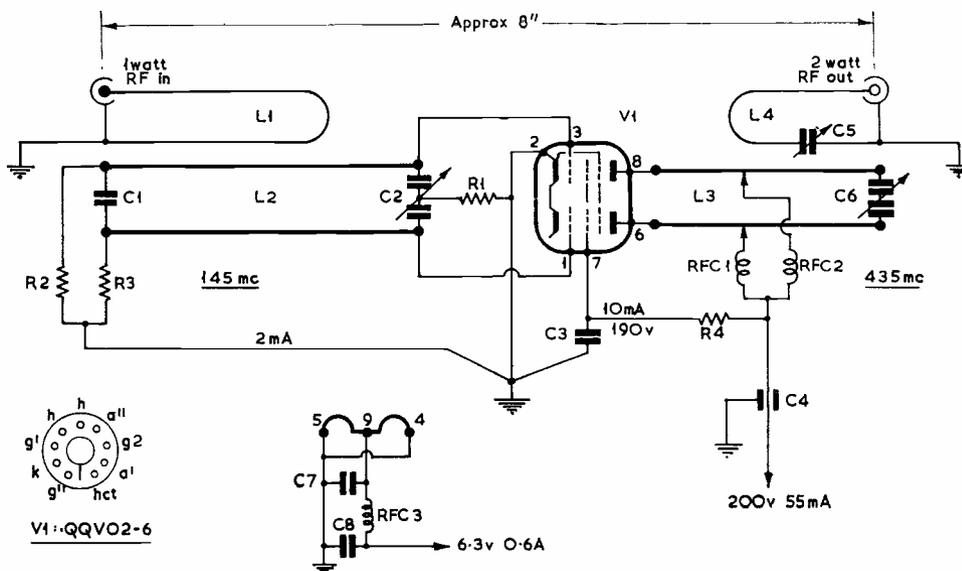
With a Mullard QQVO2-6 (RCA 6939) and the physical dimensions of the tuned circuits as given, the input (145 mc) side is quarter-wave, and the output (435 mc) side tunes half-wave. The actual sizes for these circuit

elements are given in the table.

On the plate side, RFC1 and RFC2 are connected at the voltage nodes on L3, which will come about half-way along the line; these chokes are each made up of 12 turns of 18g. enam., wound on a pencil and sprung off to be self-supporting. RFC3, the heater choke, should be 20 turns of 18g. on a small former 1/4-in. diam. by 1/2-in. long.

Constructional Layout

Since neither screening nor neutralisation are involved and the QQVO2-6 has all its connections in the base, by using a chassis about 8 ins. long by 2 ins. wide by 3 ins. deep, the valve can be mounted centrally but upside down, facilitating close connections for L2 and



T
331

Layout for a 145-435 mc tripler circuit, using the QQVO2-6. For quite a low DC input, a useful level of RF output can be obtained if attention is paid to the various points about this circuit discussed in the text. It should be noted that the HT feed chokes RFC1 and RFC2 are tapped in at a voltage node on L3. Having obtained resonance, the final adjustments are for bias, and the positioning of L1 with respect to L2, and L3/4.

L3—C2 can, in fact, be mounted right across the valve base with L2 connecting directly to the stators, and L3 should be soldered straight into the anode pins. With this form of construction and mounting, there should be a clearance of at least $1\frac{1}{2}$ ins. between the run of the lines and the chassis; this will involve standing the base of the valve up "proud" to obtain the separation.

The cathode lead must be kept short and thick, to a chassis bolt at the valve-holder, and all earthy connections made back to this point, particularly as regards C3, C7, C8 and the rotor of C2. Note that on the tank side, the rotor of C6 is not earthed, the condenser being used series-gap.

It will be found that the positioning of L1 with respect to L2, and of L4 to L3, will be critical for optimum results. If the anode chokes show any tendency to warm up, the voltage nodes can be traced on L3 with a pencil, with the tripler running; it will be found that at one point on each of the two arms of L3, there will be minimum disturbance in the plate meter, or in a small bulb across L4 coax socket—these are the points to which RFC1 and RFC2 should be connected. How-

ever, if good electrical symmetry is achieved, and the circuit is functioning as it should, the mid-points of L3 will be near-enough the voltage nodes.

Depending on the two-metre drive available, it would be as well to increase R2, R3 somewhat to get more bias voltage, up to a maximum of $-75v.$ on the grids of the QQVO2-6.

The other circuit values not already mentioned are: C1, C4, C8, $.001 \mu F$; C2, C6, $8 \mu F$ midget split-stator; C3, C7, $250 \mu F$; C5, $5 \mu F$ midget variable; R1, 100 ohms; R2, R3, 82K; R4, 1200 ohms.

INDUCTANCE VALUES

L1 — 140 mm. of 14g. silver plated, U-shaped to 15 mm. separation.

L2 — Two lengths, 87 mm. each, of 14g. silver plated, at 15 mm. separation. L1 to lie over L2, for adjustable coupling.

L3 — Two lengths, 87 mm. each, of 14g. silver plated, at 22 mm. separation.

L4 — 115 mm. of 14g. silver plated, U-shaped to 22 mm. separation. L4 to lie over L3, for adjustable coupling.

(Note: Tinned copper may be used if silver-plated wire is not available. If 12g. can be obtained, that should be used in preference to 14g. Some adjustment of these dimensions may be necessary to obtain resonance, depending on layout and constructional factors. 25.4 mm. = one inch).

USE OF BCM/QSL

Readers entitled to the both-way use of the QSL Bureau we operate—which means those who are on subscription direct with us—are reminded that packets of cards for distribution outwards should *not* be sent to our office in Victoria Street, S.W.1. The correct and only address for our Bureau, handling cards for AT stations throughout the world, is BCM/QSL, London, W.C.1, which is full and sufficient. Cards sent to our office involve us in double sorting, extra postage charges and distribution is liable to be delayed.

BBC VHF-SOUND STATION AT DOVER

The BBC's new VHF sound station at Dover broadcasts the Home Service on 94.4 mc, the Light Programme on 90.0 mc, and the Third Programme (with Network Three) on 92.4 mc, each with a mean effective radiated power of 3.5 kilowatts. The new station is of the translator type and operates unattended. It takes its signal from the Wrotham VHF sound station by radio and makes a direct frequency change on each channel without demodulation. The output of each translator unit is fed direct to a pair of 1 kW RF amplifiers working in parallel to ensure continuity of the transmission should a fault develop in either one of the pair. The outputs of the three pairs of RF amplifiers are combined and fed to the two halves of a directional aerial system mounted on the same tower as the local TV station aerial. The starting, operation, and closing of the Dover equip-

ment is completely automatic, and should any fault develop an alarm is arranged to call the BBC's resident engineer in the district.

MARCONI WEATHER SHIP CONTRACT

Following the completion of an extensive Air Ministry contract for the supply and installation of new radio communication and automatic direction finding equipment, and the modernisation of the radar on two ocean weather ships, O.W.S. *Weather Adviser* and O.W.S. *Weather Monitor*, the Marconi Company has been awarded a similar contract for a third weather ship. Like the previous two, this was formerly a frigate, and is at present H.M.S. *Rushen Castle*, although her name will be changed on commissioning to conform with weather ship nomenclature.

The Marconi equipment being installed includes four 1 kW independent sideband transmitters type NT201, medium-power transmitters designed for SSB and ISB operation, but with facilities for double sideband and CW working. Each is complete with a fully remote-controlled aerial matching unit for use with a whip aerial. The frequency range is 1.8-23 mc covered in five bands. The receivers being provided are eight type NS702, which are marine sets designed to comply with the latest international regulations, and meet the GPO performance specification for a general-purpose receiver. They provide continuous coverage from 15 kc to 28 mc, in ten ranges. In addition MF and VHF D/F equipment is being fitted.

MORE than quite a lot to discuss this time, so let's get right on with the story. Starting about August 26, a widespread and very stable anti-cyclonic condition began to develop, which eventually (by the evening of Friday, Sept. 1) covered most of Northern Europe—Scandinavia, across Germany to the Bay of Biscay, and from the northern part of G and GI right down to the Mediterranean. Just that state of weather affairs to produce a really good tropospheric opening on VHF—as practically everyone reading this must know by now. After a week of steadily improving conditions, as this anti-cyclonic area spread and stabilised, the culmination was reached during the Friday evening, with EU's literally pouring in from all parts, and workable right across from EI. Naturally, there was a correspondingly high level of activity, with considerable QRM, and many EDX contacts were lost, mainly due to the concentration of EU's at the LF end. It was also difficult for U.K. stations up the band to get their fair share of attention from the Europeans, who, by persisting to tune QLM, contributed to the congestion by encouraging G's to go LF in order to get contacts. This is a most unsatisfactory state of affairs, and needs correcting for future occasions.

The general weather picture during the period August 26 to September 1 was a succession of fine, hot days, with a high glass, followed by cool, clear evenings. By the 31st, the barometer at A.J.D.'s had reached 30.36 ins. corrected, anything over 30.0 ins. being rated as "high."

Many of the letters received reporting results during this opening suggest that it was "the best yet experienced on two metres." But this was not your A.J.D.'s impression at the time, and a check back through the records shows that, while it was very good and extremely interesting and exciting (particularly for newcomers to VHF), it did not quite equal the great opening of October 23-29, 1958 (reported in "VHF Bands"

VHF BANDS

A. J. DEVON

The Great Opening,

Aug. 26 to Sept. 2—

High Activity—Much EDX

Worked—

New 70 Cm. Distance Record,

G3JHM/SM6ANR, Aug. 31—

I.A.R.U. Contest Results—

G3BA Tops Annual Counties—

for November that year), when the stable condition lasted longer over at least as great an area. Anyway, what does it matter?—the point is that we got a wonderful break during the last week in August, and practically everybody able to be on either two metres or 70 cm was there to make the most of it. (Of course, there were the usual unfortunate few who, having booked their holidays in advance, missed out altogether.)

And, strictly in accordance with Murphy's Law, the area of good conditions started to contract on the morning of Sept. 2, so that by the time the I.A.R.U. Region I contest was due to begin, only the south-easterly part of the country remained under the tropospheric umbrella; the more distant G's were more or less out of the contest before it started, so far as EDX was concerned.

Some 70-cm EDX Results

Taking the 430 mc band first, we have reports from: G2XV (Cambridge), who worked 9 DX stations in the 24 hours from August 31; his list includes F9CQ, SM7BAE and three ON's. G3LHA (Coventry) shows a fine list of 70 cm stations, including DL3FR and F9CQ heard; DL3PR, F8MX/A and SM7BAE worked; and numerous ON4's heard or worked. G3LHA booked in 6 countries on 430 mc during the opening, running 80w. to a QQVO6-40A on 433.38 mc, with a slot-fed 8/8, the 70-cm receiver being a G3BKQ-type converter.

G3JMA (Harlow) raised SM6ANR, F9CQ (Paris), four ON's and PA0WAR. The latter a well-known VHF operator who has been active on both bands for many years. G3KPT (West Bromwich) gives SM7BAE, PA0WAR, F3LP and F8MX/A as heard on the 430 mc band. G3LTF (Galleywood, Essex) accounted for eight EU's on 70 cm, including DJ2YD, DL3YBA and SM6ANR, the latter himself being credited with 17 G's worked—yes, on 70 cm!

For the 70 cm band, it looks as if G3JHM (Worthing) and SM6ANR may have the new European distance record, 1104 km. (686 miles). This was previously held by G3KEQ/SM6ANR at 647 miles. It is just a question of whether anyone further to the south-west was also able to raise SM6ANR—he did *not*, as has been rumoured, work GW3ATM. On the evening of Sept. 1, G3JHM concentrated on the 430 mc band—his contact with SM6ANR was on August 31, at 2220 GMT—and at one time was hearing about 20 stations, including F8MX/A, DL3YBA and SM7BAE. For G3JHM, the session ended with 11 counties and three countries covered on 70 centimetres—nice scoring by any reckoning.

The Contest Result

It will be remembered that we offered to accept, as entries for a U.K. contest, scores made by G

stations in the I.A.R.U. Region I event over September 2/3. As already explained, conditions almost petered out for the contest period, so that we did not expect a very enthusiastic entry. For one thing, most people had already been working hard at the EDX while the band was open the previous few days and, for another, the G's from the Midlands to the North knew they would be practically out of it.

Anyway, the Table shows the contest story as we know it, and it is clear that G3LTF/P, from Bushey Hill, 8 miles south-east of Chelmsford, was still in the EDX zone for the contest period. With G3JMA, round-the-clock operation was maintained, and they are to be congratulated on a magnificent total, representing a lot of hard work. The actual bag included four F's, 36 DJ/DL's, 19 ON's, no less than 48 PA's, and OZ8EDR (evidently the OZ official entry station), at about midnight on the Saturday. This makes it 108 EU's worked, their other 45 QSO's being with U.K. stations. G3LTF/P ran 20w. only, to a 10/10 Yagi at 30 ft.

G3BBR/A, 6 miles south of Croydon, was running 50w. with a slot-fed 6/6 at 45 ft., and 53 of his 132 contacts were with DJ/DL, ON and PA. Two interesting contest QSO's for him were EI2W (Dublin) and EI9AK/M (Co. Wicklow), who turned out to be none other than G5ZT/M, over there on holiday (for the contest).

The third-high scorer, G2HIF/P, from a very good location 18m. south-west of Oxford, ran 15w., the beam being two 6-ele wide-spaced Yagis with open-wire feeders, and the mast height 45 ft. G2HIF used three frequencies, and had two receivers, with a separate receiving beam. He worked EI2A, who gives Co. Meath, EI2W and EI9AK/M. Keeping up more or less continuous operation, a check through his log shows that between midnight and 0700 GMT, 21 stations were worked.

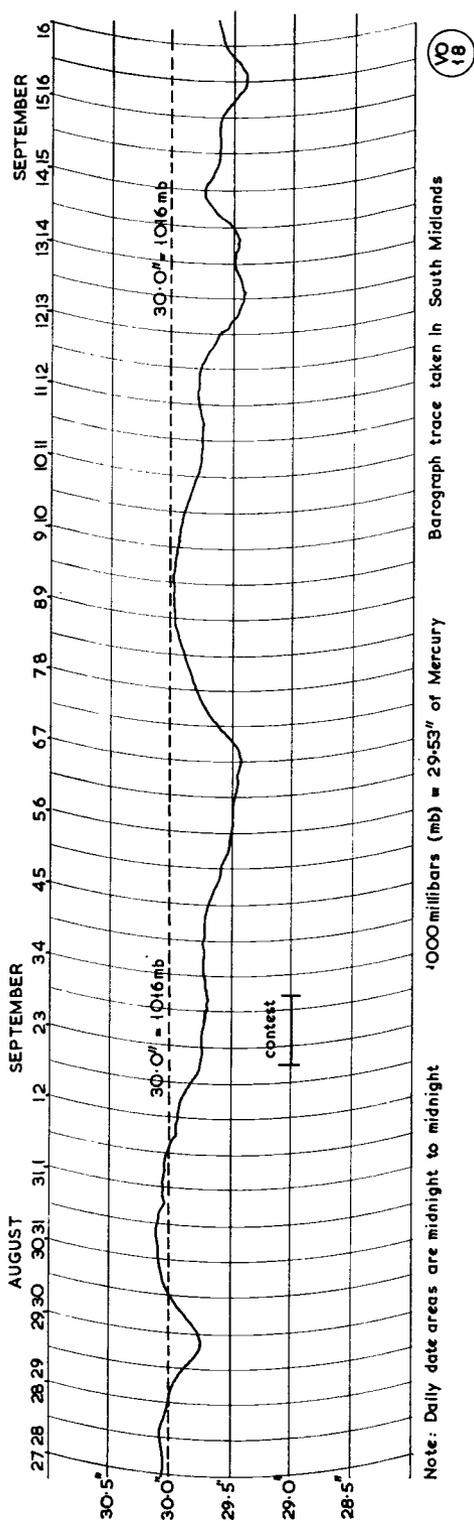
From further down the list, the effort of G5ZT (EI9AK/M) is, of

course, most praiseworthy. The call-sign was a special allocation, and the location a good one for working to the south-east. Running 7 watts only, the beam being a 5-ele Yagi on a short mast held to the side of the car, he gave some 30 U.K. stations their first contact for Co. Wicklow. Rather to his surprise, only four EI/GI's were raised, and it was evident that, so far to the west, conditions had gone off as regards working any real DX. G5ZT expresses himself as rather disappointed with the whole effort ("next time, I will camp on the cliffs of Dover"), but we think he did very well, and ought to be pleased with himself.

For his 12th place and 10,129 points, G5TN (Weston-s-Mare) made 71 contacts, all G/GW except for EI2W and EI9AK/M. He also did very well, because he was working from the home pitch with 20w. only, into a 6/6 slot-fed, and was out of the main area of good conditions.

Though the stipulated minimum of 25 entries (to qualify for prizes) was not received, in an unwonted burst of generosity the Editor has nevertheless decided to award small prizes to G3LTF, for making such an excellent score; to EI9AK/M, for making the band more interesting; and to G5TN, for putting in the best home-

I.A.R.U. VHF CONTEST RESULTS (U.K. Entry) September 2/3, 1961				
POSN.	STATION	LOCATION	CONTACTS	SCORE
1	G3LTF/P	nr. Chelmsford	153	47,407
2	G3BBR/A	nr. Croydon	132	31,228
3	G2HIF/P	nr. Oxford	130	21,369
4	G3FD/P	nr. Dunstable	88	17,308
5	GW3KMT/P	nr. Oswestry	107	16,467
6	G3EMU/P	nr. Folkestone	63	14,485
7	G3FRV/P	nr. Bognor Regis	97	14,421
8	G3OHF/P	nr. Buxton	72	13,714
9	EI9AK/M (G5ZT)	nr. West Glen, Wicklow	40	11,942
10	G3MDH/P	nr. Shaftesbury	83	11,820
11	G3OBD/P	nr. Blandford	81	10,881
12	G5TN	Weston-super-Mare	71	10,129
13	G3OXD/P	Turners Hill, Staffs.	68	7,524
14	G2AXI	nr. Basingstoke	53	6,908
15	G3BDQ	St. Leonards, Sussex	29	6,861
16	G3LTN	nr. Andover	50	5,639
17	G3OSA	Wimborne	35	3,035
18	G2DHV	Sidcup, Kent	12	2,281



station totals, in terms both of stations worked and points made.

Two-Metre Reports

Naturally, these are numerous and detailed this time, as they cover a longer period than usual of good conditions. It was not only that week of August 26-September 2 that gave the DX openings — there were shorter periods, right up to the dead-line and after, when the two-metre band was open for GDY.

G3LTF (Galleywood) says: "Conditions really were FB for a contest"—best QSO's in terms of distance were DJ3EA, at 736 km., down near the OK border; OZ8EDR at 706 km; and a number of DJ/DL's in the Hamburg-Flensburg area, at over 650 km. Between August 27 and September 9, G3LTF worked 154 EU's, including six SM's and 17 OZ's. On 70 cm. he has now worked six countries, and was working hard for an OZ during the big opening. The home-station outfit at G3LTF is, on Two, a 4X25OB PA running 150w., with a 10/10 at 40 ft., and a 417A cascode into an RG.44 tuning 4-6 mc, this Rx also having a panadaptor with a 200 kc sweep. On 70 cm., the Tx is a QQVO6-40A PA at 75w. input, with a 48-ele stack 38 ft. high, the receiver being A.2521 g.g. RF stage into a crystal mixer, with the RG.44 tuning 14-18 mc; eventually, the 70 cm. PA is to be a 4X150A. G3LTF also harks back to the Perseids MS period, when he worked SM 5 A K W, SM 5 A A S and OK2BDO, with OH1NL heard—the latter did receive G3LTF (also OE3SE on CW and SSB), but there was no QSO.

G 3 K P T (West Bromwich) worked six countries during the opening, and asks whether the EI counties score for our Tables—the answer is, of course, Yes. Many are the U.K. operators to whom EI2W has given both a county and a country.

G3JMA (Harlow) having concentrated on 70 cm., says he "only worked" OZ7WA, OZ8JV, some PA's and ON, and three GI's on two metres. G6XA (Leamington

Spa), who was on holiday for most of the big opening, has concentrated on two metres during the year, with highly satisfactory results from what he calls a "moderate QTH." Running 60w. to a QQVO6-40A, into a slot-fed 4/4 J-Beam at 35 ft., and with an ECC84 Cascode converter into an AR88, he has worked 63C in the year, and is now at 13C in the Countries table.

GW3MFY (Bridgend) moves well in the Tables, and comes in at 8C in Countries—a good performance from his westerly location. G3JWQ (Ripley) has done well in Annual Counties, and is also able to show a useful total for the new Annual. The same applies to G2AXI (Basingstoke), who got to 31C for the year.

And, after several years G6RH (Bexley) writes in again to revise his footings in the Tables and report results to date; he now runs 100w. and has a 7-ele Yagi at 30 ft.; the converter is a rebuilt CC job. With this layout, during the opening he raised LA8RB, six DJ/DL's, O Z 7 L X, SM6PU, SM7ASN, and several GDY stations; he also gives LA9T, GW3LAR/P, and GI's, '3FJA, '3GXP and '3OFT as heard. Quite a nice booking on the resumption of activity after so long off the two-metre band!

GC2FZC (Guernsey) heard OZ4AU and OZ4KO, working OZ7TW—who gave him a new country. DL1FF and DL6QS were also raised and, though not able to give the opening his full attention because of other commitments, GC2FZC did succeed in working 28S altogether.

G2CIW (Birmingham) was on holiday, so can only bring his claims up-to-date. G3CO (Hartley, Kent), in similar case, remarks that he can only hope for another big opening. G3DKF (Coventry) says that though he was raising the stuff on the opening, he was not increasing his scores much, as most stations had been worked before. G3OSA (Wimborne) finishes with 32C in Annual Counties—a nice result in the time, from a location rather on the edge of things.

G8VZ (Princes Risboro*) heard many EU's, all from countries previously worked, and was able to raise EI/GI most evenings during the opening, even though he still runs only the 12 watts; this was a disadvantage in competing for EDX through the QRM. Jack followed the G3LAR/G3HWR expedition across GW very successfully, working them at five of their pitches, and now only needs Suffolk and Northumberland to complete all G/GW counties on two metres. G3OHD (Petts Wood) claims for 33C in the Annual, but was away for the big opening. G5TN (Weston-s-Mare) shows how well he could have done if conditions had held up for the contest—he worked six EU's on the Friday night, including SM7BE for a very nice EDX item. G3EMU (Canterbury) says he concentrates on working PA's—well, he's about as near as it's possible to get to them! G3MDH (Hythe, Southampton) remarks that there are some 20 stations on two metres in that area, about ten of them quite active, and several on RTTY. G3MDH runs 25w. to an 832, with a slot-fed 4/4 only 15 ft. a.s.l., as his QTH is at sea-level. G4JJ operates /A from near Chesterfield when on two metres, and is now at 33C in the All-Time from that location.

Super New QTH

This applies to EI2W (Dublin), as most people will know, now back on again after an extensive re-fit—he has built a mountain shack on an open site, 1000 ft. a.s.l., and described as a dream-location for VHF by those who have seen it. At, any rate, during the four days the opening held for him, EI2W worked 169 different stations, including ten Europeans (his old friend ON4BZ, still looking for GD, among them) and six new counties. Over the contest period, by which time conditions had gone off a lot, 48 different stations were worked, with G3FZL and G5MA excellent signals from the London area. Harry gives EI2AG, 145-88 mc, for Co. Louth, as a new station to look for, and also mentions that, of his totals,

48 stations were new ones for him, indicating the great increase in two-metre activity.

Which brings us to Bob, G5MA (Great Bookham), who says simply: "I had a good time with the DX during the recent spell." While all the others were looking for EU's, Bob kept his beam north, and on Thursday evening, Aug. 31, worked six GI/GM stations—one of these being GM3BOC/A, a solid both-way CW contact, for that rarest of rare GM counties, Sutherland, of which GM3BOC/A is thought to be about the only inhabitant; he is G3BOC, up there on holiday from The Wirral and, to the good people of Sutherland, he is as a visitor from outer space. (You see what you miss chasing ON's and PA's when there is such rare GDX as this about!) Anyway, Bob did not turn his beam on to the EU's until he was quite sure all the GI's and GM's had gone to bed, working a few OZ's and SM's to top off the evening before he, too, went to bed (at 0310 GMT!). And in case you didn't know, G5MA is old enough to be the grandfather of many who will be reading these lines.

Louis, G3EHY (Banwell) reports that "for a full week, from Aug. 28 to Sept. 3, the continent of Europe was worked from G3EHY every day"—this, mark you, from a QTH in Somerset, further west than Bristol. He had a most exciting experience on Friday, Sept. 1: Looking over the band at 0800, he found it open, so slipped out a "CQ" — and thereafter continued to work EU's until the afternoon, including QRP DL's using only a few watts; Louis actually worked no less than 30 Europeans in daylight on that Friday, more, as he says, "than during all past openings put together"! There were very few G's on—it being a normal working day for almost everyone else—so once G3EHY started on this marathon, he couldn't get away from the DX stations calling him after each QSO! And very nice, too! As Louis suggests, it looks as if the two-metre band was actually open for EDX during a

continuous period of 24 hours, over the Thursday and Friday.

The G3LAR/G3HWR Expedition

This duly came off as planned during the first fortnight of Sep-

TWO METRES

ANNUAL COUNTIES

*Final Placings
for 1960-61*

Worked	Station
67	G3BA
63	G2CIW, G5MA, G6XA
58	G3KPT
56	G3NNG
54	G3HBW
53	G3BNL
52	G3JWQ
47	G3LAR, G8VZ
46	G3MTI
44	G3MPS
41	G3CO, G3GWL
40	G6GN, GW3ATM
39	G3OSS, GW3MFY
38	G3HS
37	G3OJY
35	G5ZT
34	G3NAE
33	G3OHD
32	G3KQF, G3OSA
31	G2AXI, G2BHN, G3HWR
30	G5QA, G5UM
29	G3OBD
27	G2CVV, G3GSO, G3OBB
26	G3JHM, G3MHD
25	GM3LDU
23	G3NNK
22	G3FIJ
18	G3KMT
15	G3ICO, G3OQH

This Annual Counties Worked Table closed at midnight on August 31st, and final placings for the year are as shown above. As usual, Annual Counties re-opened again w.e.f. September 1st, and scores to start the new Table off are invited. All operators working 14 counties or more are eligible—simply send a check list, with stations by counties, which can be added to as further counties accrue.

tember, to the great content of many, as they were able to penetrate the fastnesses of six of the southern Welsh counties. As they started out on this trip just as the great opening was beginning to contract. G3LAR/G3HWR encountered indifferent conditions and generally poor weather—they also had some difficulty with site-finding, as of the locations they had proposed to use (from map-reading) three were found to have police transmitters, one a TV link station and another had been selected for that purpose! However, other sites were found and a break-down of their log shows that in a total operating time of 46 hours under the GW/P call-sign, they had 259 contacts with 128 different stations, 115 of these QSO's being on CW and the rest on phone; 57S were worked on CW only, and 71S on phone. The transmitter ran 20w. in a QQVO3-10 PA, the converter worked with a modified Command Rx. and the beam was a slot-fed 6/6 at any practicable height up to 27 feet. An interesting point mentioned in the report is that the beacon station GB3VHF was audible at all their sites, from Monmouthshire right down into Pembroke-shire. Several home stations worked them in five counties—one being G3JR (London), using QRP and an indoor beam—and, all in all, G3LAR/G3HWR had a good time and feel that their trip was well worth while. They hope that others will undertake the same sort of tour (if only to give them the counties!), as there are a great many more stations they could have worked had they not had to QRT fairly early each evening.

And we are sure the thanks and the congratulations of the VHF fraternity will go out to G3LAR/G3HWR on their enterprise and fortitude.

Final Annual Counties

The placings for the year 1960-'61 appear herewith. Your A.J.D. had the feeling that perhaps G2CIW, G5MA and G6XA were sitting back a bit after they'd put in their 63C—it certainly looked

as if, for the first time ever, three operators would share the hot seat. Then, at the last moment, G3BA came steaming up and smacked in a 67C! So there you have it—Annual Counties topped by one of the highest scores ever made in a year's working, with a very strong entry for the table, itself a longer list than usual.

It will surprise nobody that Tom of G3BA (Sutton Coldfield) was able to make it. One of the most active of the Midlands VHF group, his quiet, well-modulated phone signal and steady fist on CW have made him very popular on the two-metre band, and he is also what is known as "easy to work." Tom runs 125w. to "an old QQVO6-40," his aerial array is a slot-fed 8/8 J-Beam at 35 ft., and his converter(s) are a Heathkit XC2 and another using A.2521's in the cascade stages. Incidentally, G3BA mentions the "Midland Lunch Session," every Monday to Friday, from about 1.15 p.m. onwards, when ten or a dozen two-metre stations, fixed and /M going back to the office, come up for a natter; callers-in and mobiles would be most welcome.

Though we already have enough claims to start the new Annual Counties table (w.e.f. Sept. 1), these are being held over till next month, as we are so tight on space. In the meantime, further claims should be made on the next deadline.

Numerous claims are also being held for the two-metre All-Time, which will be shown again at the next opportunity, and there is also now the suggestion that we put up a board for an Annual 70 Cm. Counties table (that running is all-time only). We shall be very glad to find space for this if we can kick off with, say, ten entries, with a minimum of 4C as the starting figure, and beginning like the other one w.e.f. Sept. 1. So, if you are on 430 mc, see what you can do about this, and let us have a claim.

Rest of The News

G3GDR (Watford) listened over 500-600 mc during the big opening,

and heard many DL/TV stations, some of which he was able to resolve by feeding the signal into his TV Rx. . . . By Sept. 5, G3OJY (Churt, Sy.) was one year old at that QTH, having worked in that time 230S in 37C and 7 countries; he hopes to start up again, from Cornwall, in December. . . . G3HWR (London, N.W.3) is on four metres with phone and CW, and has worked 12S on that band; he is also getting going on 70 cm, where the score is 9S in 5C, using QRP and a slot-fed 7/7, indoors. . . . G3NNG (Harwell) moves in all the tables, and now has 26 counties and 5 countries worked on 70 cm.; he is getting ready for 23 cm. . . . G3OBB (Christchurch) says: "Against great competition from the London stations, most of us down here managed to grab a few EU's"—and G3OBB worked OZ9OR in daylight on the 1st. . . . G3BDQ (St. Leonards) hunted OZ's exclusively on August 31, knocking off four, and hearing several SM's. . . . For "GM3IKO" on p.375 last time, read GM3IKD, and the band was 70 mc, which makes it a bit different! GM3IKD (Dunfermline) says that 4-metre activity is increasing up there, and that it is a good band to work. . . . After his journeys and adventures, G5ZT will be back /M on Haytor every Wednesday evening. . . . G3OBD (Poole) got a good dig at the EDX during the opening, with 22 EU's and two EI's worked.

And don't forget the Manchester Dinner Meeting on October 14; tickets 17s. 6d. from G3AGS (QTHR), and full details on p.373 of our last.

In Conclusion —

Your A.J.D. hopes devoutly that he has got all the main news covered, with apologies to several readers whose letters, dealing with many other points of interest, are being held for next time, the deadline for which is **Wednesday, October 18**. Address it all to: A. J. Devon, "VHF Bands," *Short Wave Magazine*, 55 Victoria Street, London, S.W.1. Thanks for listening, and with you again on November 3, all being well,

AMATEUR DIRECTION FINDING ON TOP BAND

AN INTRODUCTION TO D/F PRACTICE

H. WATSON (G3HTI)

Amateur direction finding is a useful, interesting and very practical activity in the Amateur Radio field. It gives considerable scope not only for the development of portable apparatus designed strictly for D/F operation, but also for amusing competitive events on what might be called the sporting side. With the great increase in /M working, the two activities can be combined to open up a new field of amateur operating interest—particularly because, as it happens, mobile working is mainly on Top Band and it is also on 160 metres that direction finding is most convenient. This article discusses basic D/F techniques from the amateur angle. In a forthcoming issue, we shall be running a constructional article, by one of the exponents of the art, on a portable receiver designed specially for D/F operation on Top Band.—Editor.

Experts in this field—please stop reading here! Anyone else who has ever had any interest in Direction Finding, please read on, and perhaps you will be encouraged to try your hand. With a little special equipment, a little skill and a lot of luck, the results can be surprising.

Receiver

Obviously a receiver is required. It must cover the frequency in use by the hidden transmitter, and be sufficiently sensitive to resolve the wanted signal so that it can be identified. There are two main factors to be borne in mind when considering sensitivity:

(a) It is not necessary to be able to read the signal 100%, as long as identification is positive,

(b) Most D/F aerials give relatively low signal input to the receiver for a given field strength, when compared with normal receiving aerials.

These two factors, being in effect opposites, tend to cancel out, with the result that sensitivity of normal standards will suffice. The receiver must also be portable. How to interpret this requirement depends again on two things: (i) Transport available, and (ii) Access to location of hidden transmitter.

An R.107 in the boot of a car has been used successfully on a D/F hunt! A "Command" receiver (or any other type commonly used for mobile work) will serve admirably, provided that the hidden transmitter is not too far from a road or track accessible to motor vehicles. There is, of course, plenty of scope for designing and building self-contained,

battery-operated receivers, intended for D/F work only, which can be carried by the operator, but the point is that these are not essential.

Aerial System

The antenna is the thing which determines the success or failure of the whole venture. It must have marked directional properties, and feed sufficient signal to the receiver to permit identification. Since it has to be rotated, and since D/F hunting often involves much jumping in and out of cars, it is helpful if the Rx aerial is made compact and easy to handle. A loop antenna has the necessary directional characteristics, but for maximum sensitivity it must be resonant, and coupling it to the receiver can be rather troublesome. Also, the loop must be of comparatively large dimensions for maximum efficiency, and therefore can be rather cumbersome.

A much more convenient form of aerial is one which consists of a tuned winding on a ferrite rod. For Top Band, the winding used by the author consists of 50 turns spread out along the whole length of an 8 in. x $\frac{3}{8}$ in. diameter rod and this is tuned with a 100 $\mu\mu$ F trimmer. Different dimensions of rod will require different windings, of course—and also possibly different values of capacitance—but as long as the parallel resonance covers the required frequency, it is not important.

To transfer the signal from the aerial into the receiver, a link must be wound over the centre of the tuned section. With 50 turns on the 8-in. rod, this consists of 10 turns, close wound. The link is coupled by co-axial cable to the receiver. The outer conductor of the coax must be earthed at the receiver, otherwise pick up on the feeder can mask completely the directional properties of the ferrite rod system.

The aerial gives maximum signal pick-up when the main axis of the rod is at right angles to the line of the signal path, and minimum or zero pick-up when the rod points directly towards the hidden transmitter. It is this minimum signal or *null* which is best to use for taking sights as it is much more sharply defined than the maximum position. In fact, if the rod is swung too quickly it is quite possible to miss the *null* altogether!

If the receiver is fitted with AVC, its use helps to make the *null* even sharper, by holding the signal at a more or less constant level throughout the major part of the arc, and thus accentuating the drop in signal at the minimum position.

Plotting Equipment

A hidden transmitter *can* be found simply by "riding the beam," but such methods require either genius or fools' luck. For normal mortals, a map is a necessity. The Ordnance Survey 1 in. to 1 mile Sheet is ideal, and though the linen-backed type are rather expensive, the unfolded paper copies can be obtained quite reasonably. As well as being cheaper than the linen ones, they are more convenient. The map should be fixed to a large board, so that the whole area of search is visible at one time, and bearings can be laid off on the map quickly and accurately.

[Cover

Before this can be done, though, the bearing of the hidden transmitter must be carefully taken by compass. A small prismatic instrument of the type used by the Services is about the ultimate in accuracy and ease of operation—they can be obtained from dealers in ex-Government surplus of the non-radio variety—but even the “toy” compasses fitted into such things as fountain pen tops could be used—though obviously the better the instrument, the more reliable the results.

To transfer the carefully-obtained bearing to the map sheet, a protractor and straight edge are necessary, and it is a great help to have two or three sharp pencils stowed where they cannot lose themselves.

Operation

With the simple equipment described here, any one bearing will indicate that the transmitter lies on a line drawn through the receiving point, and extended in two directions. That is to say, it may lie on either of two bearings which differ by 180 degrees. To determine which direction is the correct one, a second bearing must be taken from some point which does not lie on the line already determined. An inspired guess may give you the correct direction to take, but following “hunches” doesn’t always pay off, so the second bearing should be taken from a point somewhere at right angles to the original line, and four or five miles away from the start point, when a bearing should be obtained which will converge on the first bearing and indicate the approximate position of the transmitter. Accuracy in taking bearings and in plotting them on the map can determine the position of the hidden transmitter within half-a-mile or so with the first two shots taken. After that, move into the indicated area and repeat the process.

One final word about plotting bearings. All sightings with the D/F rod and compass must be made with a maximum of care and accuracy and the bearings transferred carefully to the map. Due correction must be made for magnetic deviation, and also for grid deviation, though this latter is not so vital as the magnetic deviation. At the time of writing, a correction of some 10 degrees is necessary, and since magnetic North is west of True North, this must be *deducted* from compass bearings before transferring the plot to the map sheet. One small, but vital point about laying bearings on a map using the grid lines as a reference is, of course, that the bearings should be measured from the N/S grid lines, not the E/W ones! Lack of success can usually be traced to such fundamental errors.

D/F hunting is necessarily a group “sport,” and the hunt can be made as difficult, or as simple, as is required, by limiting the range (though very short-range work is not the easiest) keeping to main roads (so that car-borne equipment is usable right up to the hidden transmitter) and also by regulation of transmission time. The easiest transmitter to find is the one which is radiating a continuous signal, preferably with distinctive modulation which identifies it from all the other carriers which are apt to float

about the band. If it is required to make the game as difficult as possible, the transmitter can be on for short periods only, and it becomes most difficult when the periods of transmission are at irregular and unknown intervals. It becomes absolutely impossible when the transmitter does not radiate a signal at all!

These few notes are offered after a very enjoyable season of D/F hunts, as the experience of a complete novice at the game, in the hope that others may be encouraged to try their hand.

AMATEUR RADIO EXHIBITION — 1961

The “Radio Hobbies” (Amateur Radio) Exhibition, under the management of P. A. Thorogood, G4KD, will be held as usual at the R.H.S. Old Hall, Vincent Square, London, S.W.1, during the four days Wednesday, November 22 until Saturday, 25—and, as usual, we shall be there, to welcome old friends and meet new readers. The official opening on the Wednesday will be by Mr. Henry Loomis, an unique personality who is director of the “Voice of America” set-up, on the air 24 hours a day in 35 languages through a network of short-wave broadcasting stations. The lucky-ticket prize this year will be a Hammarlund HQ-170 receiver.

CLEANING UP FORTY

The situation arising from previous comments (p.72 April and p.372 September) on this topic grows more interesting. We now have letters from Karachi and Peking arguing, in effect, that the decisions regarding the 7 mc band reached at the I.T.U. Convention in Geneva have no legal standing and are not binding on the Chinese and Pakistan Governments—because they refuse to accept them! The Chinese case is that they were “illegally excluded” from the Conference, while the Pakistanis say they made their own reservations about 7000-7100 kc, anyway. These are the sort of half-truth arguments which have about as much validity as those of the driver of an 8-wheel lorry who takes the wrong side of the M.1 because his vehicle is left-hand drive and it suits him better that way. The difference is that, in spite of his size, he can be quickly dealt with, whereas the only way we have (and it is by no means hopeless) of dealing with the Chinese, Egyptians and Pakistanis in the matter of 7 mc QRM is to make things as difficult as possible for them. This can be done by conducting CW QSO’s on the BC station frequencies, over-riding them with local phone working whenever signal level permits and, most important and effective of all, keeping up a steady flow of complaining letters. A new address to which to write is: Mr. Fang Chiung, Director, International Liaison Dept., Broadcasting Administration, People’s Republic of China, Peking. The other addresses are as given on p.72 of the April issue. The fact to remember is that no broadcasting station has the shadow of a right to be in the 7000-7100 kc band, and it is up to us to do anything we can to get them out. A concerted effort by the amateurs of the world would settle the matter in 48 hours.

THE OTHER MAN'S STATION

G3GKH

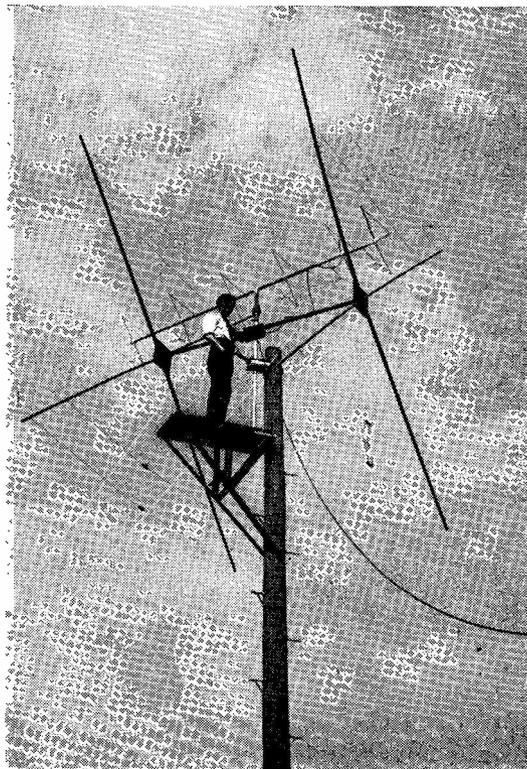
BEFORE he took out his amateur licence as G3GKH, Michael Johnson (9 Dene Close, Earley, Reading, Berks.) qualified, at the age of 18, for his P.M.G. certificate as a sea-going radio officer and, in his own words, "set off to see the world." After ten years of wandering—having been successively ZL3QC and HZ1XA/MM on the Saudi-Arabian royal yacht, *Al Amir Saud*, home port Djeddah—he settled down to a more regular assignment on the R.M.S. *Queen Elizabeth*, signing GBSS.

Though licensed G3GKH in 1950, due to the wanderings aforementioned it was not until 1958 that a regular station could be established, at a QTH then near Southampton; this ran 150 watts on 40m., with a pair of PT15's in the PA, and the aerial was "a long piece of wire."

The photographs show the new layout at the present QTH. As will be seen from the upper of these, a good aerial system—consisting of a 10/15-metre Quad and a two-metre beam array—is sprung from a stout, climbable pole, complete with platform and safety belt. The gear is accommodated in the living-room (by grace of charming xyl), the main transmitter being a Tiger 100, for 3·5-28 mc, with (at extreme left, in the TV cabinet) the two-metre Tx, running 50w. to a QQVO6-40A. The main receiver is a Halli-crafters SX-28, with a Cascode converter for 144 mc.

Under the desk is the master control unit, which supplies all power, QRP to maximum, for the two transmitters, giving also remote keying facilities, 100 watts of audio, CW/phone change-over control, and send-receive switching. The station is entirely relay-operated from a 24-volt DC supply, which also actuates the beam-rotating mechanism. Under the MCU is the main HT unit, switchable to either transmitter.

Work in hand includes a new transmitter for the 14-21-28 mc bands, having an xtal/mixer VFO and a QQVO6-40A in the PA, and also portable equipment



for two metres. G3GKH attributes his own early indoctrination into radio (which he describes as his only hobby as well as his profession) to the influence of G3IGW, with whom he shared a study when they were at school together in 1943.

NEW QTH'S

This space is available for the publication of the addresses of all holders of new U.K. call signs, 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.

- G130NW**, S. A. N. Magill, 67 Doagh Road, Newtownabbey, Co. Antrim. (Tel.: Whitehouse 2448.)
- G30SJ**, L. H. Parsons, 48 Tor View Avenue, Glastonbury, Somerset.
- G130YG**, J. Semple, 1 Shandon Park, Ballymoney, Co. Antrim.
- GM30ZB**, A. J. McKay, 25 Waterside Street, Kilmarnock, Ayrshire.
- G30ZS**, D. J. Marriage, 4 Bakers Lane, West Hanningfield, Chelmsford, Essex.
- G3PAC**, A. E. Brindley, 1 Pool Hall Road, Castlecroft, Wolverhampton, Staffs.
- G3PBE**, C. R. Morley, 15a Western Parade, Woodhatch, Reigate, Surrey.
- G3PCC**, P. Cadman, 13 Alderwick Drive, Hounslow, Middlesex.
- G3PCI**, S. E. Blomfield (*ex-VS2AL*), Forest Edge, Everton, Lymington, Hants. (Tel.: *Milford-on-Sea 428*.)
- G3PCR**, A. Bano, 81 Sharps Lane, Ruislip, Middlesex. (Tel.: *RUISlip 6055*.)
- G3PDA**, E. R. Downs (*ex-DL2RY*), c/o 3 Rusham Road, Balham, London, S.W.12.
- G3PDD**, J. Dolby, 30 St. Helens Crescent, Trowell, Notts.
- G3PDE**, D. M. Paterson, Merrieleas Cottage, Merrieleas Close, Chandlers Ford 5357.) (Tel.: *Chandlers Ford 5357*.)
- G3PDM**, P. G. Martin, 1 Western Hill, Durham City. (Tel.: *Durham 3766*.)
- G13PDN**, R. B. Harbison, Garvagh Road, Kilrea, Coleraine, Co. Londonderry.
- G3PED**, L. A. Crane, 114 Blythswood Road, Goodmayes, Ilford, Essex.
- G3PEE**, F. T. Sellen, Greenways, Norsey Road, Billericay, Essex.
- G3PEF**, Amateur Radio Society, R.A.F. Station, Uxbridge, Middlesex.
- G3PEO**, E. A. Fowles, 110 Fairview Road, Cheltenham, Glos.
- G3PEP**, W. C. Pitman, 8 Lansdowne Road, Falmouth, Cornwall.
- G3PER**, W. E. Delamere, 3 Braemar Avenue, Stretford, Manchester, Lancs.
- G3PES**, W. A. Sawyerr, Box F, Room 3a, R.A.F. Station, Locking, Weston-super-Mare, Somerset.
- GW3PEX**, L. France, 4 The Copse, Trefechan, Cefn Coed, Merthyr Tydfil, Glam.
- G3PEZ**, J. M. Gutteridge, 86 Fairmead Road, Moreton, Wirral, Cheshire.
- G3PFA**, L. G. Haigh, 45 Headlands Road, Liversedge, Yorkshire.
- G3PFC**, A. J. Rawlings, 43 Mackie Avenue, Filton, Bristol.
- G3PFE**, G. W. Spriggs, Police House, Ruskington, Sleaford, Lincs.
- G3PFH**, M. I. Blunden, 27 Western Road, Newhaven, Sussex.
- G3PFP**, S. A. Greenfield, 98c Palace Road, London, S.W.2.
- G3PFS**, D. G. N. King, The Hall, Stalham, Norwich, NOR.34.Z, Norfolk. (Tel.: *Stalham 229*.)
- G3PGC**, R. W. Armstrong, 91 Tiverton Avenue, North Shields, Northumberland.
- G3PGE**, G. Wilkinson, 151a Rochdale Road, Bacup, Lancs.
- G3PGL**, P. A. Cresswell, 305 Lordship Lane, Tottenham, London, N.17.
- G5BK**, Cheltenham Amateur Radio Society, c/o J. H. Moxey, 11 Westbury Road, Leckhampton, Cheltenham, Glos. (*Previously G3GPW*.)
- CHANGE OF ADDRESS**
- G2UW**, A. J. S. Wilson, L.D.S.Eng., 5 Allington Garden, Boston, Lincs.
- G2YS**, J. W. Swinnerton, 28 Nightingale Road, Rickmansworth, Herts.
- G3A00**, D. J. Birch, Fern Bank, Woodend Lane, Hyde, Cheshire.
- G3EGF**, T. Kellett, 20 Inner Circle, Bray Hill, Douglas.
- GM3FFQ**, W. Donaldson, Argyle Cottage, 21 Kirk Wynd, Clackmannan.
- G3GPE**, K. Smethurst. (QSL via Bureau only.)
- G3GPX**, P. J. Bartram, 7 Tindall Square, R.A.F. Station, Cottesmore, Oakham, Rutland.
- G3HS**, D. T. Boffin, 13 Highworth Road, Faringdon, Berks. (Tel.: *FAR 2225*.)
- G3HWO**, B. Taylor, 237 St. Richards Road, Deal, Kent.
- G3KGM**, D. MacLennan, 36 Ellerby Street, Fulham, London, S.W.6.
- G3KLP**, J. R. Young, 2 Stanhope Street, Greenside, Ryton, Co. Durham.
- G3KPO**, D. Byrne, Jersey House, 8 Hodney Road, Eye, Peterborough, Northants.
- G3LGS**, C. B. C. Hill, Windrush, South Drive, Tranmere Park, Guiseley, Leeds, Yorkshire.
- G3LNM**, R. Scrivens, 9 Oakmere Caravan Site, Hanley Swan, Wors.
- GM3LQH**, J. W. Hudson, 52 Park Way, Cumbernauld, Glasgow.
- G3LXG**, B. B. Wilson, 45 Rockliffe Road, Linthorpe, Middlesbrough, Yorkshire.
- GM3LYY/A**, J. T. A. Johnston (*ex-G3LYY*), 131 Glencairn Street, Stevenston, Ayrshire.
- G3MFV**, A. S. Frank, Heck Gill Farm, Birstwith, Harrogate, Yorkshire. (Tel.: *Darley 416*.)
- G3MLC**, K. B. Pearce, Sandford House, Sandford, Ventnor, Isle of Wight.
- GC3MWR**, R. T. Mills (*ex-G3MWR*), Hauteville, High Street, St. Aubin, Jersey.
- G3OCM**, D. A. Hills, 4 Bakers Lane, West Hanningfield, Chelmsford, Essex.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for November Issue: October 13)

(Address all reports for this feature to "Club Secretary")

SOON after the results of last year's **Magazine Club Contest** were announced, we received a number of suggestions for amending the rules in such a way that stations in the more remote parts might be encouraged to enter for future events. It was obvious that the method of scoring favoured clubs in densely-populated areas and that stations operating from the fringe would have absolutely no chance of a win, or even of making a high score.

One suggestion, for dividing the country into regions, came from G5ND, of the Blackpool and Fylde A.R.S., and although his original idea was thought too complicated to use, we have this year introduced a system which is the same in principle. The country is divided into five regions (not twelve, as suggested by G5ND), and the points scored for inter-Club contacts vary from three (for a QSO within one's own region) to six (for a QSO of maximum DX or difficulty). Four- and five-point contacts will be relatively easy, and frequently made; six-point QSO's will be scarce, but will reward (for instance) a Scottish station for a contact with the South, with Wales or with Northern Ireland.

It is hoped that these inducements will bring many more GM and GI stations into the contest arena. Meanwhile, a check over last year's figures indicates that it will still be very difficult for an efficient station in the Midland region to be beaten!

Full details of the scoring, the regions and the identification numbers for Clubs appear on pp.438-439. Clubs wishing to enter, and not included in the Identification List on p.439, may apply for a number as explained at the foot of the list.

Cheltenham report eleven candidates (out of fourteen) successfully through the R.A.E. and congratulate G3COZ, who carried out most of the instruction. GM5BK/P has been active from Scotland, and other individual members have been moving round the country with mobiles and portables. There are two D/F hunts to come, and the AGM and the Hobbies Exhibition will have kept the Club busy up to publication date.

Crystal Palace hold a Hi-Fi evening on October 21, the TVI/BCI talk scheduled for that date having been given by G3BCM during September. On November 7 there will be the usual Morse class and so on, at the QTH of G3IIR. **Derby** will be hearing all about Storage Batteries from an Exide representative on October 11; the event for the 18th is not yet announced, and the 25th is the date for an Open

Night. All meetings in Room 4, 119 Green Lane, Derby.

Halifax, having held their AGM on October 3, meet for a Ragchew on the 17th; on November 7 G3IGW will be talking to the SWL's on What to Find on the Amateur Bands—and he should know. **Mitcham** will be putting G3OCT on the air, on behalf of the Mitcham Boy Scouts' Association, during the Jamboree-on-the-Air, October 21-22, using both phone and CW on the HF bands.

Rhondda, a new name to these columns, meet on alternate Thursdays at the Royal Hotel, Trealew; they already have a CR-300 receiver, and are starting to build two transmitters, one for Top Band and the other for 10-80 metres.

Rotherham recently heard a talk on Top Band Topics by G3NEO; they are now compiling their winter programme and hope to arrange some exchange-visits and lectures with neighbouring clubs. **Sutton Coldfield** are also taking part in the Jamboree-on-the-Air (at Yorks Wood Camp Site, Castle Bromwich), and their October 12 meeting will be devoted to the necessary preparations. On October 26 they will hear a Tape Lecture by C. N. Rafarel on DX TV Reception, on which he is an expert.

Tees-side notify us in good time of their Annual Dinner, arranged for December 9 at the Corporation Hotel, Middlesbrough, 8 p.m. They have accommodation for up to 100, and tickets are now obtainable at 17s. 6d.; the secretary will be glad to hear from intending visitors. Meanwhile, the fortnightly meet-



ings continue at 132 Newport Road, next dates being October 6 and 20.

Acton, Brentford & Chiswick will be hearing about Receiver Design for SSB (by G3NEH) on October 17 at their usual meeting place—AEU Club, 66 High Road, Chiswick, W.4.

Barnsley held their AGM in September and elected G2BH president, G5KM vice-president, and G2AFV secretary. Their meetings will take place on the second and fourth Fridays at the King George Hotel, Peel Street, and one of their forthcoming subjects is the Construction of a Top Band Tx—in two parts, separated by a debate on CW *versus* Phone, and Home-Built *versus* Commercial.

Burslem continue to meet in the Town Hall on the third Wednesday; membership is increasing, and an interesting programme will be announced at the next meeting. Fifteen-minute Morse sessions are included at all meetings, and prospective new members are especially welcome.

Newbury assemble on October 29 to view the results of the Annual Constructional Contest, divided this year into two sections—Junior and Open. Visitors and new members always welcome at the Hq., The Canteen, Elliotts of Newbury, West Street. **Northern Heights** recently heard a lecture on Radio Astronomy; next meeting, on October 18, is a Pea-and-Pie Supper; November 1 is booked for a demonstration of Hi-Fi Equipment.

Thames Valley were addressed at their September meeting by VS6CJ, who gave a talk on Amateur Radio in Hong Kong, particularly interesting in connection with his six-metre activities out there. The annual Dinner and Dance will be held on October 21 at the Carnarvon Castle Hotel, Hampton Court—tickets available from the Secretary.

Peterborough wound up their summer season with a barbecue at their riverside site at Alwalton, with more than sixty consumers of the hot dogs from the camp fire. Winter meetings will be held at Peterborough Technical College on the first Friday of each month, starting on October 6 with a talk on D/F and Foxhunts; November 3 is the AGM, December 1 the Christmas Party and January 4 will be filled by a film show.

Sutton & Cheam will meet on October 17 at The Harrow, High Street, Cheam, to hear G2MI lecture on International Radio. The September meeting took the form of a talk on SSB by G3HQX.

Dorking gather at the Wheatsheaf on October 10 for their informal meeting, and at the Star and Garter on the 24th for a Film Show to which visitors and ladies are invited. A D/F Contest has been tentatively arranged for Sunday afternoon, October 8.

Bradford opened their new season on September 12, and on October 4th visited Baird TV Ltd. at Lidget Green; October 10 is Quiz Night, with G3EKE in charge; October 24 is booked for a Mullard Film Show. Meetings will be at 7.30 with a Slow Morse Class preceding them, if previously arranged.

Civil Service heard G2BCX's lecture on "Experiment in Sound" on October 3. On October 17 an informal meeting will be held, with GB2SM on the air and a tape lecture on Interplanetary Travel by

[continued on p.440

MCC—SIXTEENTH ANNUAL TOP BAND CLUB TRANSMITTING CONTEST

RULES

- Duration:** Saturday, November 11; Sunday, November 12; Saturday, November 18; Sunday, November 19. On each of these days between the hours of 1700 and 2000 GMT (twelve operating hours in all).
- Frequency and Power:** All contacts will be made in the 1800-2000 kc band only, using CW, with a power not exceeding 10 watts to the final stage. All reasonable precautions will be taken to avoid interference with other services using the band.
- Call Signs:** Where a Club has its own transmitting licence and call-sign, that call-sign is to be used. Clubs without their own call may use a member's station, provided that this is nominated as their official entry by the Club Committee.
- Calling:** Clubs will call "CQ MCC" and will sign off at the end of each contact with "AR MCC VA."
- Scoring:** Other Club stations may be worked once on each day of the Contest, and these contacts will count 3, 4, 5 or 6 points each time (see map and scoring instructions on p.439). Non-Club stations may be worked once only during the whole period of the Contest, and will count for *one point* only. Inter-Club contacts will be considered complete after an exchange of six-character groups comprising the RST, the letter indicating the geographical Zone in which the Club is situated (see map) and the Club's own identification number (see list and examples on p.439).
- Non-Club Contacts:** Contacts with non-Club stations, counting for one point, will be considered complete with the logging of RST and the other station's QTH. In these cases the Club's QTH, and not the identification number, should be sent.
- Logs:** Contest logs are to be neatly set out as follows: One side of quarto or foolscap sheets should be ruled into eight columns, with *name and call-sign of Club station on each sheet*, headed thus: Col. 1, *Date and Time*. Col. 2, *Call-sign of station worked*. Col. 3, *Outgoing six-figure group*. Col. 4, *Incoming six-figure group*. Col. 5, *RST out-going* (to non-Club station). Col. 6, *RST incoming* (from non-Club station). Col. 7, *QTH of non-Club station*. Col. 8, *Points claimed for contact* (see scoring instructions). Col. 8 is to be totalled at the foot of each page, and the running totals brought forward. The last page of the log should contain the following summary:
Total number of Club contacts; total number of non-Club contacts; total score. Comments on the equipment used, number of operators employed, general impressions and experiences are also invited, and should be added at the end of the log.
- Any Club station radiating a note consistently worse than T9 will be liable to disqualification.
- Logs, addressed to "Club Secretary," *Short Wave Magazine*, 55 Victoria Street, London, S.W.1, must be posted to reach us by Friday, December 1, 1961. The Editor's decision on the results will be final, and will be published in the January, 1962, issue of SHORT WAVE MAGAZINE.

THE MCC ZONES

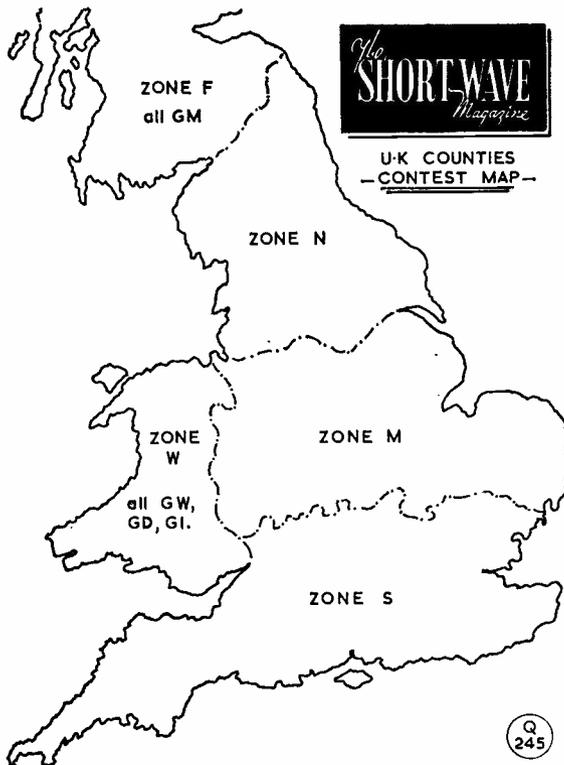
- Zone F (Far North):** All GM Counties.
- Zone N (Northern):** Northumberland, Durham, Cumberland, Westmorland, Lancashire, Yorkshire.
- Zone M (Midland):** Cheshire, Derby, Shropshire, Stafford, Hereford, Worcester, Warwick, Nottingham, Lincoln, Leicester, Rutland, Northampton, Bedford, Huntingdon, Cambridge, Norfolk, Suffolk.
- Zone S (Southern):** Cornwall, Devon, Somerset, Dorset, Gloucester, Wilts., Berks., Hants., Oxford, Bucks., Herts., Middlesex, Surrey, Sussex, Kent, Essex, London.
- Zone W (Western):** All GW and GI counties, and GD (I.o.M.). GW includes Monmouth.

Scoring:

- Contacts between Zones S and M, 4 points.
- " " " S and W, 5 "
- " " " S and N, 5 "
- " " " S and F, 6 "
- " " " M and W, 4 "
- " " " M and N, 4 "
- " " " M and F, 5 "
- " " " N and F, 4 "
- " " " N and W, 5 "
- " " " F and W, 6 "
- Contacts within one's own Zone count 3 points.
- Contacts with non-Club stations, in any Zone, count 1 point.

Examples:

Scarborough works Medway: Scarborough signs N69, Medway signs S46, and both claim 5 points. . . . Aberdeen works Port Talbot: Aberdeen signs F01, Port Talbot signs W56, and both claim 6 points. . . . Reigate works Leicester: Reigate signs S64, Leicester signs M41, and both claim 4 points. In all QSO's, the Zone letter precedes the Club number, following the RST report, e.g., "579M41," or "569N36."



IDENTIFICATION NUMBERS FOR CLUBS IN "MCC"

- | | | | |
|----------------------------------|-------------------------|----------------------------|--------------------------|
| 01 Aberdeen | 28 Exeter | 57 Preston | 78 Stourbridge |
| 02 Acton, Brentford and Chiswick | 29 Grafton | 58 Purley | 79 Stroud |
| 03 Ainsdale, Lancs. | 30 Gravesend | 59 R.A.F. Kinloss | 80 Surrey (Croydon) |
| 04 Aldershot | 31 Greenford | 60 R.A.F. Watton | 81 Sutton and Cheam |
| 05 Bailleul, Hants. | 32 Grimsby | 61 R.A.F. LittleRissington | 82 Thanet |
| 06 Barnet | 33 Harlow | 62 RAFARS, Locking | 83 Torbay |
| 07 Barnsley | 34 Harwell (A.E.R.E.) | 63 Ravensbourne | 84 Wanstead and Woodford |
| 08 Belfast | 35 Harrow | 64 Reigate | 85 Walsall |
| 09 Blackpool | 36 Hartlepoons | 65 Ringwood, Hants. | 86 Wellingborough |
| 10 Blackwood, Mon. | 37 Hastings | 66 Rugby | 87 West Lancs. |
| 11 Bradford Grammar School | 38 Henlow | 67 Salisbury | 88 Wirral |
| 12 Brentwood | 39 Kingston | 68 Scunthorpe | 89 Wolverhampton |
| 13 Bury | 40 Leeds University | 69 Scarborough | 90 Wolverton, Bucks. |
| 14 Catterick | 41 Leicester | 70 Sheffield | 91 Wrexham |
| 15 Cheltenham | 42 Leven | 71 Slade, Birmingham | 92 Yatesbury, Wilts. |
| 16 Chester | 43 Lincoln | 72 Southampton University | 93 Painton, Northants. |
| 17 Clifton, London | 44 Liverpool | 73 South Birmingham | |
| 18 Cornish | 45 Macclesfield | 74 South Shields | |
| 19 Coventry | 46 Medway | 75 Southport | |
| 20 Crawley | 47 Mitcham | 76 Stevenage | |
| 21 Crystal Palace | 48 Morecambe | 77 Stoke-on-Trent | |
| 22 Danbury, Essex | 49 Newbury | | |
| 23 Deal | 50 North Kent | | |
| 24 Derby | 51 Northern Polytechnic | | |
| 25 Dowty, Glos. | 52 Nottingham | | |
| 26 East Kent | 53 Norwich | | |
| 27 Edgware | 54 Overstone, N'h'mton. | | |
| | 55 Plymouth | | |
| | 56 Port Talbot | | |

Note: This list includes all the Clubs participating in "MCC" for the last five years. Other Clubs desiring to enter for this year's event should write in for a serial number, enclosing a stamped addressed envelope, before October 13 for publication next month. Letters should be addressed "MCC", Short Wave Magazine, 55 Victoria Street, London, S.W.1, with an s.a.e.

G2WS. November 7 is the date for a lecture on satellite communication by G3FZL, entitled Intercontinental Communication on Ultra High Frequencies. Visitors welcome at all meetings if they will notify G3JUL (*KENington 6371, Ext. 318*).

Clifton held their AGM on September 8 and elected G3FVG chairman, G3IWL secretary and SWL N. Moore treasurer; on October 6 they will be hearing from G2UJ about Oscillators, and on

November 3 Mr. D. Bennett will talk on Travels in Yugo-Slavia. **Cornish** met in Falmouth on September 6 and discussed the proposed station at Poldhu to celebrate Marconi's Sixtieth Anniversary (see "DX Commentary" for further details). They were also due to meet (again at Falmouth) on October 4.

Crawley will be together on October 25 for a Surplus Equipment Sale conducted by their secretary, G3FRV. Recent events have included a Mobile Evening, held in August at the Hog's Back, with support from many local clubs. G3PHG is a recently-licensed member, and several more are taking the October R.A.E.

Harrow meet every Friday, 8 p.m. in the Science Labs. of Roxeth Manor County School, Eastcote Lane, South Harrow; visitors are welcome to all meetings, and G3EFX goes on the air from 2030 until 2200. On October 13 three members will talk on Getting Started on Two Metres, and on the 27th there will be a Film Show.

Kirkwall is a newly-formed Club, the first meeting having been held in September with a very encouraging turn-out. A group of local licensed amateurs started the project, but it is hoped to provide something of interest to all who are keen on Radio and Electronics. Lectures and constructional classes for beginners have already been organised, and the local Evening School will run both technical and Morse classes for R.A.E. Radio model control is also to be followed up. See panel for secretary's QTH.

Manchester, now with a membership of over 80, is holding a Home-Built Equipment Competition, to be adjudicated on December 13 at the AGM. There will be six prizes, three for adults and three for junior members, and it is hoped to make this an annual event. October 4 and 18 are booked for Theory, Morse and "general activities"; October 11 is Practical Night; and on October 25 there is a lecture on Mobile Operation by G2AKR.

North Notts. held their second AGM in September and elected G8ON president, G3OZN secretary and

Names and Addresses of Club Secretaries reporting in this issue

ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, W.3.
 A.R.M.S.: N. A. S. Fitch, G3FPK, 79 Murchison Road, London, E.10.
 BARNSELY P. Carbutt, G2AFV, 19 Warner Road, Barnsley.
 B.A.R.T.G.: Dr. A. C. Gee, G2UK, East Keal, Romany Road, Oulton Broad, Lowestoft.
 BRADFORD: M. Powell, G3NNO, 28 Gledhow Road, Roundhay, Leeds 8.
 BRIDLINGTON: H. Mills, G3AJB, c/o 28 East Rd., Bridlington.
 BURSLEM: W. Luscott, 36 Rothsay Avenue, Sneyd Green, Hanley Stoke-on-Trent.
 CHELTENHAM: J. H. Moxey, G3MOE, 11 Westbury Road, Leckhampton, Cheltenham.
 CIVIL SERVICE: G. Lloyd-Dalton, 2 Honister Heights, Purley, Surrey.
 CLIFTON: E. Godsmark, G3IWL, 211 Manwood Road, London, S.E.4.
 CORNISH: W. J. Gilbert, 7 Poltair Road, Penryn.
 CRAWLEY: R. G. B. Vaughan, G3FRV, 9 Hawkins Road, Tilgate, Crawley.
 CRYSTAL PALACE: G. M. C. Stone, G3FZL, 10 Liphook Crescent, London, S.E.23.
 DERBY: F. C. Ward, G2CVV, 5 Uplands Avenue, Littleover, Derby.
 DORKING: J. Greenwell, G3AEZ, Wigmore Lodge, Beare Green, Dorking.
 ENFIELD: V. Croucher, G3AFY, 15 Nelson Rd., London, N.15.
 GRIMSBY: P. Mason, G3NNN, 213 Clew Road, Cleethorpes.
 GUILDFORD: J. R. Barker, 35 Bandens Rise, Merrow, Guildford.
 HALIFAX: G. Sunter, 24 Booth Fold, Luddenden Foot, Halifax.
 HARROW: A. C. W. Biddell, G3GNM, 114 Kingshill Avenue, Kenton, Harrow.
 HASTINGS: W. E. Thompson, G3MQT, 8 Coventry Road, St. Leonards-on-Sea.
 I.R.T.S.: T. O'Connor, EI9U, 280 Collins Avenue, Whitehall, Dublin.
 KIRKWALL: A. B. Wylie, GM3MTS, 7 Garrioch Street, Kirkwall, Orkney.
 MANCHESTER: A. B. Langfield, 2 Rowland Street, Moston, Manchester 10.
 MIDLAND: C. J. Haycock, G3JDJ, 360 Portland Road, Birmingham 17.
 MITCHAM: M. Pharaoh, G3LCH, 1 Madeira Road, Mitcham.
 NEWBURY: G. T. Allen, G3JTK, 83 Huntshook Road, Tadley, Basingstoke.
 NORTH KENT: B. J. Reynolds, G3ONR, 49 Station Road, Crayford.
 NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax.
 NORTH NOTTS: E. N. Badger, G3OZN, 20 Tennyson Drive, Worksop.
 REIGATE: F. D. Thom, G3NKT, 12 Willow Road, Redhill.
 RHONDDA: A. Chapman, 23 John Street, Porth, Rhondda.
 ROTHERHAM: S. J. Scarborough, 25 Crawshaw Avenue, Sheffield 8.
 SOUTH HANTS.: G. J. Meikle, G3NIM, 34 Victoria Road, Netley Abbey.
 SOUTH BIRMINGHAM: T. W. Legg, Flat 3, 80 Alcester Road, Birmingham 13.
 SOUTHGATE: R. Pedder, G3NEE, 6 Greenhall Close, Cheshunt, Herts.
 SUTTON COLDFIELD: L. E. R. Hall, G3IGI, 24 Calthorpe Road, Walsall.
 TEES-SIDE: A. L. Taylor, G3JMO, 12 Endsleigh Drive, Middlesbrough.
 THAMES VALLEY: K. A. H. Rogers, G3AIU, 21 Links Road, Epsom.
 TORBAY: Mrs. G. Western, G3NQD, 118 Salisbury Avenue, Barton, Torquay.
 WIRRAL: A. Seed, G3FOO, 31 Withert Avenue, Bebington, Cheshire.
 WOLVERHAMPTON: J. Rickwood, 738 Stafford Road, Fordhouses, Wolverhampton.

CLUB PUBLICATIONS RECEIVED

We acknowledge, with thanks the receipt of the following Club publications: **A.R.M.S.** (*Mobile News*, August); **B.A.R.T.G.** (*News Letter*); **Crystal Palace** (*Newsletter*, August and September); **Grimsby** (*News Sheet*, August); **Guildford** (*Monthly Natter*, August); **I.R.T.S.** (*IRTS News*, August); **Mitcham** (*Newsletter*, August); **South Birmingham** (*QSP*, August); **Wolverhampton** (*News Letter*, September); **Hastings** (*Natter-Net Notes*, September); **Enfield** (*Newsletter*, August); **Southgate** (*Newsletter*, September); **South Hampshire** (*QUA*, August-September); **R.A.I.B.C.** (*Radial*, September); **Reigate** (*Feedback*, September); **North Kent** (*Newsletter*, September); **Grimsby** (*News Sheet*, September); **M.A.R.S.** (*News Letter*, July, August, September).

CLUB ITEMS IN BRIEF

Grimsby: October 12, AGM.
 Midland: October 7, Annual Dinner, Roebuck Hotel, High Street, Erdington, Birmingham.
 South Birmingham: October 17, Club Night on the Air. October 19 AGM.
 Southampton: Meeting, October 14, at Southampton University.
 Wirral: Junk Sale, October 18th.

G4GZ's BARGAINS

VALVES: EA50, EF50, 1/6. 6H6M, EB34, 6K7G, 2/-, 2X2, 6B8G, 12SC7M, EF36, EF50(S), 2/6. 6AL5, 6AM6, ARPI2, AR8, EAC91, EB91, EF91, EL32, TT11, VP23, Z77, 3/-, 1L4, 6C4, 6J6, EF39, 3/6. 6AC7M, 6SN7GT, 1626, 1629, DC70, DF73, DL70, 4/-, 6AK5, 6J7G, 6ST7M, 12A6M, 12K7G, 12Q7G, 12SJ7M, 35Z4G, 959, EBC33, 5/-, 3Q4, 6B8H, 6B16, 6F6M, 6K8G, 6SJ7M, 6SL7GT, 6X4, 5/6. 1S5, 1R5, 6AU6, 6BA6, 6/-, 12AU7, 12AT7, 80, KT33C, ECC81, ECC82, PY80, 6/6. 12AT6, 6L6G, 6Q7G, 6V6G, 12AU6, 12BE6, 12C8M, 42, GTIC, PCF82, PY83, VR150/30, 7/6. 2A3, 830B, 6AQ5, 6BW6, 6L7M, 12SQ7M, ECC84, EBF80, 8/6. 3A5, 6K8M, 6L6M, PCC85, 9/-, 50L6GT, EM80, 5R4GY, EL84, 9/6. 12K8M, DET24, EABC80, EC80, GZ32, VLS631, 10/-, 5763, 446A, ECL80, ECH42, 10/6. 805, 3E29 (829B) 25/-, Post/packing 6d. per valve. Free over £3.

SPECIAL OFFER for VHF men. EC80 (GGT 12 m/a pv.) original cartons, 3 for 20/- (P/P 1/6); 446A, 3 for 20/- (P/P 1/6).

AR88 Cer. W/change switches and screens, 18/6. Ceramic tube trimmers, 4 for 6/-. Smoothing chokes (10H 100 m/a), 3 for 21/-.

POTTED U.S.A. XFMRs. 230v. input; 32, 34, 36v 2A O/P., 17/6.

MC METERS: 3½" rd.fl. (2½" dial) 0-500 m/a, 0-30 m/a, 0-15v. AC (Ml. cal. at 50cps), 16/6. 2½" rd.fl. (2" dial) 0-1 m/a, 22/6. 2" rd.fl. 0-500µA, 17/6. 0-30 m/a (5 m/a basic), 10/6. 2½" rd. plug-in, 0-1500v. electrostatic, 19/6. 0-250µA, 22/6.

ET4336 TRANS. 190-250v. input. 10v., 10A, CT, 2½v. 10A CT twice, 35/-, BC905D Freq. meters, 145-235m/cs. NEW, boxed, 35/-, Res. Unit 231 (12, 50w. 80 ohm carbon res.), 15/-, Octal 4.6m/cs. xtals, 6 for 7/6. B9A moulded v/hldrs. with screens, 11/6 doz. Micalox ditto, 13/6 doz. Pyranol 10mfd. 2Kv. oil-filled, 27/6, 12v. 4-pin UX VIBRATORS, 3/9 each or £6 per box of 100. 25 PFD AIR SPACED CER. TRIMMERS, 3 for 5/-, 17/- doz. BSR MONARDECKS. New boxed, £7/10/-.

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SMALL ADVERTISEMENTS

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AIR MINISTRY have vacancies for **CIVILIAN RADIO TECHNICIANS** at R.A.F. Sealand, Cheshire; R.E.U. Henlow, Bedfordshire; and various other R.A.F. stations throughout the United Kingdom, for the servicing, repair, modification and testing of air and ground radio and radar equipment. Commencing salary (National) (according to age) is £630 to £810 p.a.; max. salary £930 p.a. Rates are subject to small deduction at certain provincial stations. Houses may be available for renting at West Kirby, some 15 miles from Sealand.—Apply to Air Ministry, C.E.3h, Princes House, Kingsway, London, W.C.2, or to any Employment Exchange, quoting City O/N.3057.

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WANTED FOR CASH: Good clean communication receivers and SSB equipment. Please state price.—Short Wave (Hull) Radio, 30/32 Princes Avenue, Hull. (Tel. 18953.)

QSL's and Logs by Minerva. The best there are.—Samples from Minerva Press, 2 New Road, Brentwood, Essex.

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WEBB'S LOG BOOK for recording signals heard and worked; 112 pages 9½in. x 8in., approved format, semi-stiff covers. Excellent value; 6s. 1d., post free, or callers 5s. 4d.—Webb's Radio, 14 Soho Street, London, W.1.

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SALE: CR-100, complete with manual, two pairs of headphones, two speakers (one Eddystone 3-ohm, other 600 ohm), RF-26 unit, with separate power pack, tuning 41-53 mc for use with above Rx, plus a quantity of spares and a long-play Morse instruction record. All in excellent condition; owner going abroad; offers? Buyer must collect.—Jones, 71 Prince of Wales Road, London, E.16.

WELL-KNOWN R.A.E. Course for sale, 70s. Modified Top Band "Command" Rx, highest offer secures. **WANTED:** Circuit of BC-348 Rx.—Box No. 2509, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SMALL ADVERTISEMENTS, READERS—continued

FIRST OF THE MOHICANS.—Offers near £48 for this brand-new transistor receiver.—Ellison, Bell House, Rowington, Warwick.

WANTED: National 1-10 Rx, with or without PSU.—Price and particulars to: T. Newham, 13 Warkworth Avenue, Wallsend, Northumberland.

LABGEAR LG.300, with matching power/modulation unit, perfect condition, and as new, £75. No offers.—Desmond, G5VM, 28 Bristol Street, Birmingham, 5. (Phone Midland 2258.)

FOR SALE: Eddystone 840A, excellent condition, BFO, pair phones, mains suppressor; reasonable offer secures.—Ring Huntingdon 344 any time.

HALLICRAFTER'S R44/ARR-5, 27 mc-145 mc, S-meter, AM-FM, B.F.O., etc., as new, £25. Manuals: BC-221, BC-342, BC-312, BC-314, BC-344, SCR-522.—Wright, 4a Nepal Avenue, Atherton, Manchester. (Tel. 991.)

RE-69 with DB20 Preselector, in original and almost new condition, full bandsread 10-160, complete with manual, £30. **AR77E**, very good condition and performance. £20. "Command" Rx's, Top Band model, mint, offers? M/W and Q5'er, new and unmodified, £5 each. All items plus carriage. Handbooks for BC-1147A and CR-100, 30s. each. **WANTED:** *CQ*, *QST*'s 1953 to date, manuals for Super Pro (BC-779, BC-794) and SP600 Rx's.—Box No. 2510, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

1155A with PU/Speaker, good condition, £7. **Newnes R/TV Servicing**, 7 vols. to 1958/9, £6.—Burton, 10 Gray Avenue, Murton, Durham.

AR77E, good condition, with speaker and hand-book, £22. Power units, all for 240v. mains, 350v. 125 mA, 6.3v. 4A. £4. 350v. 100 mA, 400/900/1300 5 mA, 6.3v. 4A. 4v. 1A (for 'scope), £6. 300v. 125 mA, 500v. 200 mA, 6.3v. 4A twice, 12v. ½A DC, £8. 310v. 220 mA, 620v. 200 mA, 6.3v. 6A, 12v. ½A DC, £7 10s.; first two on small chassis, fused and switched, with octal output sockets; last two on TU size chassis with panels. Intended to work as pair, so first has all switching; both fused, all well built and excellent condition. Motor-driven condensers, 1-10 µF, and pot. 24v. (3), 7s. 6d. each. Miniature relays 1½ x 1½ ins., 2P CO 700-ohm, 12-24v., 3s. Type 3000 relays, 3P CO, 12v. 500 ohm, 2s. 12AT7 (30), 2s. PTFE B7G holders, with cans, 1s. All carriage extra. Offers for part or whole?—G3MAB, Bank House, Baildon Green, Shipley, Yorkshire.

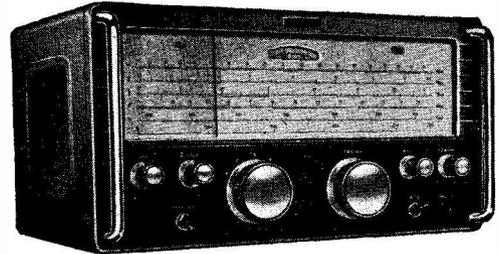
HALLICRAFTERS S-53A, similar S.107, 0.54-31 mc, 48-54.5 mc. BFO, noise limiter, variable sensitivity, bandsread. PWO, £17 10s. **WANTED:** 1000v. PSU.—Mann, 6 Farmhurst Way, Belfast, 5.

AVO Electronic Testmeter, £22 o.n.o.? Enclosed cabinet rack, £3. Collins Manuals: KWM-1, KWM-2, 32S-1, 75S-1, 75A-4, £1 each, post free. *QST* 1945-1955, 12s. 6d. per year, post free. Power supplies, dynamotors, transformers, chokes, Denco coils, components, cheap. Valves from 3d. each. FT-243 crystals, 2s. each.—G5SRP, Old Gaol House, Abingdon, Berks.

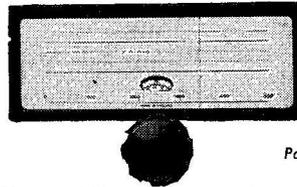
WANTED: Set of 705 kc (Command Rx) IF's, or last one only (7273); state price.—G3FW1, 30 Sherwood Park Avenue, Sidcup, Kent.

FOR SALE: Labgear LG.300, complete with Labgear companion modulator, power supply unit, and instructions; in very good condition; £80 or offer?—Box No. 2511, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

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SMALL ADVERTISEMENTS, READERS—continued

ELIZABETHAN Tx, 80-10m.. PSU. 650 volts at 200 mA, 300 at 200 mA, and filaments, £10.—G3JLB, 103 Whitehill Road, Gravesend. (Phone 4694.)

BC-348 with 85 kc third IF, NL. S-meter, PSU and manual, £10.—G3BAC, 31 Canterbury Road East, Ramsgate, Kent.

WANTED: HRO Senior Receiver, complete with coils. Please state price.—Goodall, Park Farm, Brailsford, Derbys.

SALE: 813's, £1 each. AVO all-wave oscillator, £3. BC-221 with charts and AC power supply, £10. Goodyear step-down transformer. 240-200 volts, 1.5 kW, new, £2. Commercially-built PA unit with 813 valve, £2; power supply unit for same, 1000 volts and grid bias, £3. Many valves, meters, condensers, resistors, etc.; state wants.—Walker, 20 Dalewood Road, Sheffield, 8. (Tel. 365318.)

FOR SALE: R.M.E. VHF Converter Model 152A, F144-148, 50-54, 27-29.7 mc, complete in metal cabinet with built-in AC mains supply, excellent condition, £16. **WANTED**: American VHF Converter, Type AM913/TRC, 95-220 mc.—Box No. 2512, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Ex-Army power supply unit No. 34, also 2.4v. Nife cell; state price and cond.—G3IIZ, 21 Waterside, Willesborough, Ashford, Kent.

SALE: AR88D in first-class order, hardly used; seller wants to buy motor car instead, so must sell to pay for it; price £36, plus carr.—G3NJQ, 50 Vicarage Road, Norwich, Norfolk.

840A, new condition; buyer to forward remittance, £28; collect as convenient (Essex). 10 in. wooden cabinet speaker, ex-BRT400, 35s., post free.—Box No. 2513, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Eddystone 740 Receiver, complete with speaker, good condition, £20.—Apply Colclough, 3 Barnbrook Road, Sarisbury, Hants.

R. 107 SW Receiver wanted by SWL; top price paid for set in mint condition.—Box No. 2514, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

HRO-60T with matching speaker and manual, unmarked, as new, hardly used, bought for stand-by receiver; offers? Barker-Williamson 51SB-B SSB Generator, brand-new, unused, cost £135. TA-33 JR. Mosley Beam, with CDR motor and indicator and cable; best offer over £25. AR88 main tuning gear mechanism unit. Pitch prop motor. Panda ATU, 160 to 10 in. model.—Write Box No. 2515, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

MULLARD Type "A" tape amplifier (high impedance heads), £5. Stentorian CX-5000 cross-over unit, 15s. 2v. Vibrapacks, 150v. 50 mA o/p, 10s. B7G crystals: 12,050 and 12,083 kc, 7s. 6d. each.

WANTED: Teleprinter (any type considered).—G3KEP, 30 Lyndale Road, Bingley, Yorks.

HEATHKIT DX-40U Transmitter and VF1U VFO, FB condition, with manuals, £25. Buyer must collect.—G3NSG, 2 Craven Street, Barnoldswick, Nr. Colne, Lancs.

MOBILE Tx Minimitter, 160-80-40 metres AM and CW, working, £12 10s. K.W. Transistor, 12v. power pack, 300v. 100 mA HT, £8. 19 Set rotary converter (converted to positive chassis), 25s.—Apply only after 8.00 p.m.: G3NXU, 18 Broadlands Avenue, Keynsham, Bristol.

SMALL ADVERTISEMENTS, READERS—continued

SALE: HALLICRAFTERS SX-24 Rx, 550 kc-42 mc, in good condition, £20. Carriage extra.—Beckett, 60 Roper Street, Whitehaven, Cumberland.
888A RECEIVER, mint condx., recently overhauled by makers, in original packing, manual, £75 o.n.o.? Post paid 50 miles radius. S.W.L. prefers general coverage Rx. — Screen, 117 Bright Street, Wolverhampton.

EXCHANGE good Norton "Domindator 88," 1956, for Eddystone 888A, Geloso, or other high-class receiver. Suggestions?—Ivin, B.B.C. Station, Ludlow (or Brimfield 240).

EDDYSTONE S.750 Receiver, scarcely used, due domestic upheavals, £45, carriage paid. Also pair 813's, £2. p.p.—Toulalan, Seamoor, Blunt's Lane, Crownhill, Plymouth, Devon.

SELLING: Interesting items at bargain prices. New solenoid-operated wafer switches, 25s. Generators. 12v. to 115-0-115v. or three-phase 400 c.p.s., 16S mA. 30s. Tx/Rx servo units, miniature gearbox type. 50s. Leeds and Northrup Galvo and meters, etc. Many more items. Callers welcome week-end.—Ince. 282 Whalley Range, Blackburn, Lancs.

2-METRE all-alloy beams: 10-element Yagi, 40s.; 5-over-5 Yagi, 45s.; both as new. 30-foot 2-in. sq. alloy mast, 40s. 60-foot of 1-in. alloy tube, 50s. 70-foot of 1½-in., 65s. 11-foot of 1-in. copper, 12s. 6d. Will separate; all used; carriage extra. **WANTED:** Set of coils for Eddystone 358 Rx, or complete defunct set. Also ASB8, Rx P.58, good 70 cm. Rx or converter.—Prices to: Briscoe, 311 Eton Road, Ilford, Essex.

HRO-5T. perfect mobile, BS coils, £20. Eddystone 840A, £25. National Rx NC-120, 10 valves, 5 wavebands, full coverage, £20. — 25 Manchester Mansions, London, N.19. (ARC 0020.)

COLLINS 3·1 kc mechanical filter, with 2 carrier crystals, £12. 600-watt p.e.p. 813 Linear, band-switched, £20. Brand-new 4/400A, £5. 304TL, £2. 5763 (2), 6BA7 (2), 5s. Used, perfect, 304TH, 20s.; 813's (4), 17s. 6d.; 6AG7's (3), 4s.—Marshall, G2MA, 57 Godstone Road, Rotherham, Yorks.

SALE OR EXCHANGE: R.208, 10-60 mc, unmodified, manual, exchange 160-80 metres Rx. R.107, 358X, etc., or £8; carriage paid.—Edwards, 6 Ellesmere Road, Culcheth, Warrington, Lancs.

WANTED: Good Transmitter to set up station covering amateur bands.—Particulars to Box No. 2516. Short Wave Magazine, Ltd., 55 Victoria Street, London. S.W.1.

HRO-Mx, PSU, LS, immaculate, many additional refinements. 7 coils, £28. Consider exchange photographic gear and/or Leica, W.H.Y.?—Box No. 2517, Short Wave Magazine, Ltd., 55 Victoria Street, London. S.W.1.

FOR SALE: Genuine AR88 S-meter, brand-new, complete with fitting instructions, 57s. 6d. (postage 1s. 6d.). Spares available for AR88D and AR88LF; send s.a.e. for list. BC-221F, less case, complete with crystal and blank calibration book, £9 10s. Halli-crafter S38, £10 10s. Both in new condition. BC-348 dial assembly, £1 10s. HRO power pack, 110v., £1 15s. Two Parmeko shrouded chokes, 8 Hy. 250 mA, 12s. 6d. each. Two 1 mA 2½-in. meters in slanting case, 15s. each. GEC Miniscope, £10 10s. Wobbulator attachment, £3 5s. Avantic Step 11 Preamplifier, £4. All items brand-new, unused. Carriage extra.—A. J. Reynolds, 139 Waller Road, New Cross, London, S.E.14. (Telephone New Cross 1443 after 7.30 p.m.)

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COLLINS TCS RECEIVERS , 1.5-12 Mc/s., Grade 'A'	8	10	0
Grade 'B'	5	10	0
P58 UHF RECEIVER , 280-650 Mc/s., 200-250 A.C. input ...	7	10	0
COLLINS TCS MOBILE POWER UNITS , 12 VDC to 220 @ 100 Ma. and 440 @ 200 Ma. ...	5	0	0
W1191 HETERODYNE FREQUENCY METER ...	5	10	0
KW VANGUARD , 80-10 mtrs., 50w. input with 6146 PA ...	47	10	0
LG300 RF SECTION , 80-10 mtrs., 813 final, new ...	35	0	0
PRI20V , 80-10 mtrs. 150w. al-a3. 200-250 A.C. ...	60	0	0
MINIATURE CR39/U xtals, size: 2", 1", 1/2", all fundamentals, few only, all in Mc/s. 8, 9, 11, 12, 13, 14, 15, 15.5, 16, 33.3333 ... each	1	0	0
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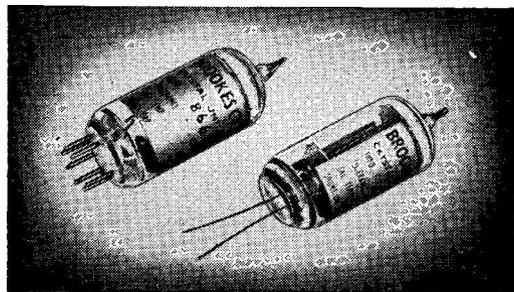
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SMALL ADVERTISEMENTS, READERS—continued

AR88LF, in good condition; will deliver up to 30 miles; £37.—Duke, 42 Gypsy Lane, Gt. Amwell, Ware, Herts.

SALE: Top Band Tx, 19-in. chassis, VFO, xtal, PSU, £14. Collins TCS, 12v., 1.5-12 mc Rx, realigned, £7. 3.5 mc Tx, 19-in. chassis, VFO, xtal calibrator, 6 watts, stabilised, £7. Delivery arranged Midlands.—Line, 68 Middle Park Road, Birmingham, 29.

G3NAC, posted overseas, has for sale: DX-40U, VF1U (this unit modified HLM), companion modulator in DX-40 case, over 180 countries worked AM 50 watts phone with this TVI-proof rig, £60. (See details *Short Wave Magazine*, June, 1961).—G3NAC, Glebe House, Bourton-on-the-Water, Glos.

HRO LF coil, new, 10s.; HRO vibrator pack, new, boxed, 25s. 522 Tx, mint, with all valves, rack shifter removed, 20s. Eight bamboo poles for Quad, 15s. 19 Set Vibrator/Rotary pack, 12v., as new, with plugs, 35s. Approx. 35 yds. 300-ohm feeder, heavy-duty, unused, 12s. 6d. Please add p. & p. — A. Hitchcock, 38 West Road, Spondon, Derby.

CR-100, excellent condx.; impoverished student must sell. Gift at £15. WANTED, urgently: Seventycem Converter.—A.1657, Marshall, Gomersal, Vicarage, Leeds.

KW VALIANT CW Model, 80-10m., 160m. conversion available. Offers? — Kelsey, White Road, East Hendred, Berks. (Tel. 346 after 6 p.m.)

51J2 COLLINS Communications Receiver, 30 bands 0.5-30.5 mc, in table cabinet, first-class condition, £185.—G3JNG, The Huon, Branksome Hill Road, Bournemouth.

METERS 0-100, 0-200, 0-250, 0-300, 0-500 mA at 7s. 6d.; 0-3 amp. RF, 6s. 358X valve check meter, 5s. 6d.; all plus postage, s.a.e. inquiries. WANTED: Panda Cub or similar. — G8UO, 12 Cartmel Road, Keighley, Yorkshire.

REQUIRED: 35-50-ft. lattice tower, or any 15-ft. Rex-WD sections; also 10/15/20m. Quad.—Le Moine, Laburnum, Chertsey Road, Chobham, Woking (Phone Chobham 483), Surrey.

HRO SIXTY, extra 21 mc coil, also plug-in product detector. All in brand-new condition; had little use. Present price over £350; accept £200 o.n.o.? Any trial.—G5FH, 17 Knottsall Lane, Oldbury, Birmingham.

IN EXCELLENT CONDITION: TR50XM Tx/Rx, 1.5 to 12 mc. with handbook and tuning charts, £28. Bendix TA12B Transmitter, £4. BC-348M receiver, unmodified, £10. Pair of BC-611 Handy/Talkies, £8. BC-453, brand-new, black crackle, unmodified, £4; s.a.e. for list of valves, meters, etc. Carriage extra.—G3JMU, 121 London Road North, Lowestoft, Suffolk.

FOR SALE: Eddystone Receiver, Type 840A, in mint condition, only 2 years old, £32 o.n.o. Carriage paid.—M. Parkes, 99 Vale Road, Mansfield Woodhouse, Notts. (Phone Mansfield 2125.)

WANTED: One or two TCS Transmitters, any condition considered.—Box No. 2518, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Manual, calibration book, male power plug, and DC9 (1000 kc) crystal unit, for LM12 frequency meter. Also require: Manual for Bendix Radio, combined power supply and modulator for MP28B. **SELL: Quantity of QST Magazines**; s.a.e. list.—Pyatt, 141 The Chantries, Coventry, Warks.

SMALL ADVERTISEMENTS, READERS—continued

WANTED: K.W. Vanguard or Valiant.—Price and particulars to: Francis, 66 Lincroft Crescent, Coventry.

GOOD QUALITY Rx required, preferably Gelson G209-R. 2-metre Tx, 832 PA, 5B/255m. modulator, 40 watts input, PSU, separate 500v., 300v. and 150v. bias supply, all relay controlled, separate filament transformer, three 2-inch square meters, aluminium 1/8-in. panel, 17 ins. x 12 ins. x 6 ins., value £17 10s., and cash offered for Rx.—Everley, Peel House, Fairfield Road, Uxbridge, Middx. (Phone 36989.)

TRANSMITTER for sale, sixty watts, bandswitched, TVI-proof, perfect working order, excellent condition, £15. Lancashire area.—Box No. 2519, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Labgear Top Bander, as new, £18.—Adamson, Flat C, 36 Gunter Grove, London, S.W.10. (Tel. Flaxman 5516.)

SALE: BC-342N, £17; RF-24, 12s.; RF-26, 15s. Class-D Wavemeter, £4. UM1, 30s. UM2, 50s. Ex-522 transformers, power packs, valves, modulators; carriage extra; list available.—G3GJR, 3 Boston Grove, Ruislip (Ruislip 5594), Middlesex.

COMMUNICATOR 2-metre mobile transmitter/receiver, perfect order, complete, £60 o.n.o.—Fenton, Niarbyl, Gay Bowers, Danbury, Chelmsford. (Danbury 518.)

FOR SALE: Wavemeter TE149, box spares, manual, £7 10s. Canadian 2v. vibrator unit, output 1 1/2v., 90v. or 180v. 35 mA, 30s. R.1147B, 20s. R.1155E, with output stage, Type N, S/M drive, separate power pack and LS, £7 10s. RF-26 unit, 20s. All with circuits.—Butler, Deva Edina, Whitchurch Road, Christleton, Chester.

840A, £33; 9 used 12AU7, 10s.; 6 RCA valve books, 20s.—Box No. 2520, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

RECEIVERS: HRO-M Senior with all GC coils and power pack, £20. BC-348 Rx, modified, internal mains power pack, £15; or exchange both for AR88 or SX-28.—T. Hall, 22 Queen Street, Maldon, Essex.

FOR QUICK SALE: Minimitter Mercury Transmitter, with LPF and modulation meter, mint condition; first offer of £40 or nearest.—Box No. 2521, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

VANGUARD Basic Kit, panel chassis mounted Gelson 4/104, valves, HT transformer; brand-new; details, offers over £12. Loads of gear, lists.—Trowell, 4a Clyde Street, Sheerness, Kent.

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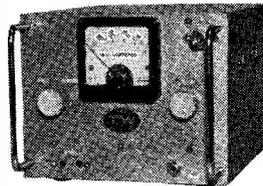
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