

The SHORT WAVE Magazine

VOL. XX

MAY, 1962

NUMBER 3

hallicrafters

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S-120

This new economically produced Receiver combines the current hallicrafters styling with functional design throughout.

FEATURES

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FREQUENCY COVERAGE

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FEATURES

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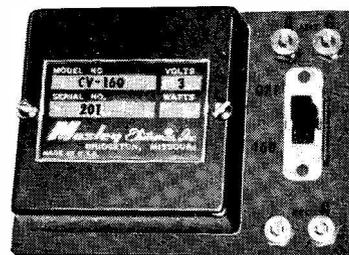
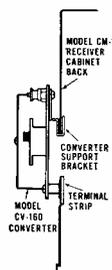
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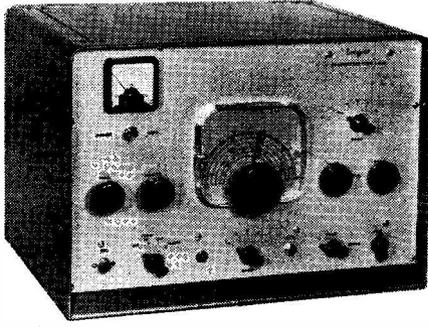
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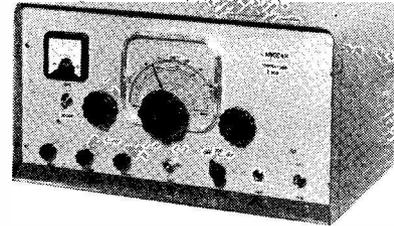


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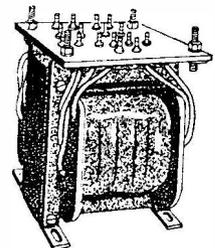
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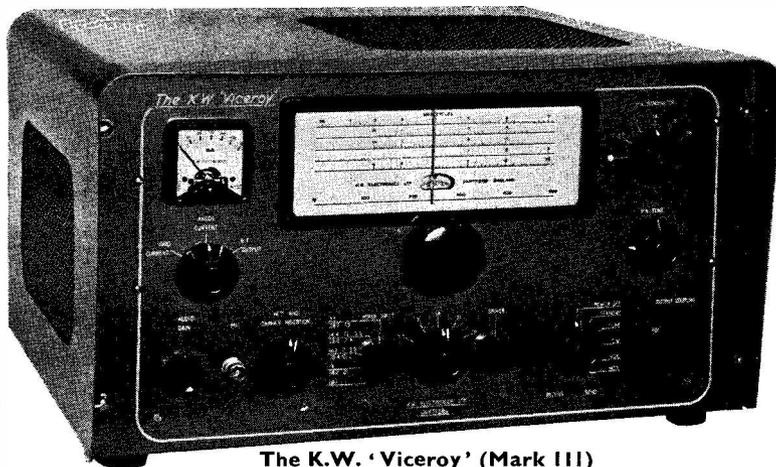
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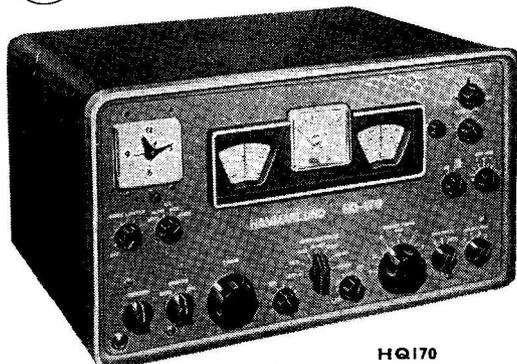
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AUTHORS' MSS

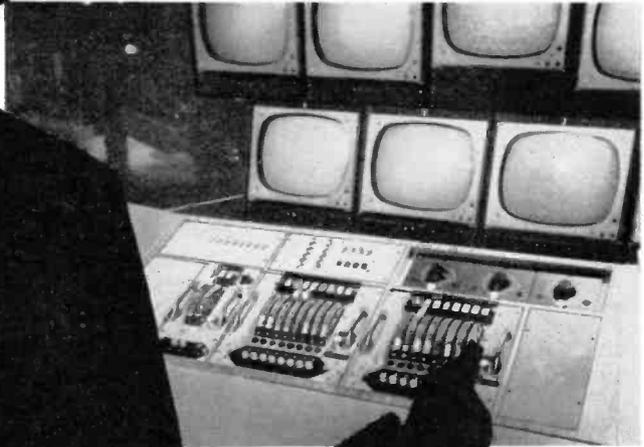
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Quadrant faders of a new type, specially developed by Painton in conjunction with the B.B.C., are now at work at the B.B.C. Television Centre on Vision Mixer Control Panels in Studios 3 and 4. These faders incorporate printed circuitry techniques and the new Painton sub-miniature type 70 resistor in order to meet the stringent size limitations imposed.

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The SHORT-WAVE Magazine

E D I T O R I A L

Purpose *It is often asked: "What do radio amateurs do?"— though more often the questioner, wishing to show that he has some understanding, will use that detestable word "ham"— and when it is explained that what they do is to equip a radio station for the purpose of communicating with other amateurs, the immediate next question is: "What do they talk about?" Then, when it is explained what they may not discuss over the air, the questioner gives the impression of wondering what on earth there is to be got out of Amateur Radio.*

Well, as we all know, there is a great deal, and it hardly needs explaining here. But answering the original question more thoughtfully, what amateurs really do is to study the art and teach themselves the practice of radio communication, together with all that pertains to it. They are engaged in the greatest and most absorbing technical hobby of the age, which for a large proportion of them is also their profession — and we are glad to have known, through SHORT WAVE MAGAZINE, many such who, having started as SWL's and then becoming licensed, are now doing important work in the radio and electronics industry.

Apart, therefore, from the purely hobby aspect — which is the immediate interest of probably the majority — Amateur Radio is also a very potent factor in the important field of technical education. SHORT WAVE MAGAZINE may claim to have made, and to be making, a large contribution in this particular direction.

Hence, in total it can be said that Amateur Radio is not only a fruitful, permanent and constantly-replenished recruiting ground for the industry and the radio branches of the Services; it also means that the nation has in its midst a body of people, drawn from all sections of the community, who are well informed on the science of radio communication.

Accepting that this is a fair statement of fact, it follows that Amateur Radio needs no further justification, and that radio amateurs as a body fulfil their purpose merely by being as they are — they do not need to prove their value nor to justify their existence to anyone. It is only necessary that the facts should be re-stated from time to time. And that is one of our functions.

*Austin Fobyl
G6FO.*

Some Two-Metre Front Ends

TRANSISTOR AND NUVISTOR

THE circuits shown here are for VHF converter RF stages, designed to achieve high gain as pre-amplifiers, and they will therefore be of interest to those keen on experimental work and looking for new circuits to try.

At Fig. 1 is an RF amplifier using the Mullard AFZ12 VHF transistor, in the grounded-emitter configuration. It can give a stage gain of about 11 dB, with a bandwidth of 5 mc, having a noise figure of 3.9 dB. As shown in Fig. 1, the circuit is suitable for a 75-ohm input (from the beam) with the same output impedance (into a mixer stage, by link coupling).

To prevent feedback effects and possible instability, the decoupling must be effective (C3, C4), and screening should be provided between input and output sides; this is done by mounting a thin copper strip across the collector and base leads, and putting L1 above chassis, with L2 below.

Values for Fig. 1 are: C1, 3-30 μF trimmer, peaked mid-band; C2, 26 μF , for aerial matching; C3, C4, .001 μF , ceramic; C5, 15 μF , peaked for maximum output; C6, very small capacity, about 2 μF . L1 is 2½ turns, $\frac{3}{8}$ -in. diameter, 18g. enam., self-supporting and adjusted to resonance, with aerial tap a half-turn from the earthy end;

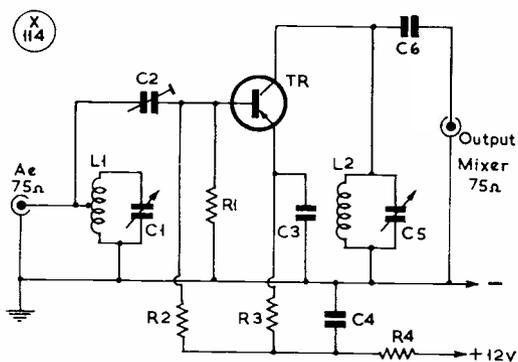


Fig. 1. Using the Mullard AFZ12 as a grounded-emitter RF amplifier on the two-metre band. See text for discussion and values.

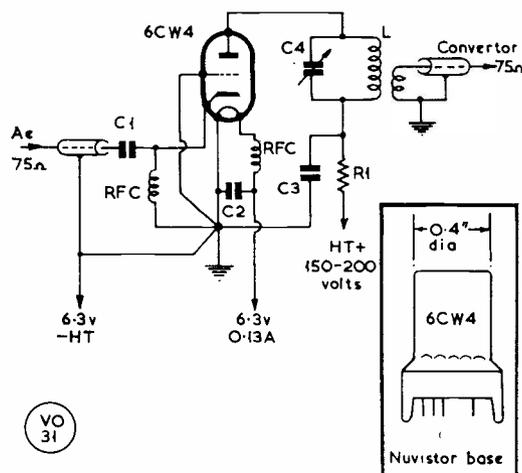


Fig. 2. The 6CW4 Nuvistor as a grounded-grid RF amplifier for two metres. It comes mounted on a special base and inset is a 6CW4 shown just about actual size.

L2 is as L1, but of 3½ turns. The transistor is the AFZ12.

This amplifier is based on design data by B. S. Cowle in *Mullard Technical Communications*, Vol. 6, No. 53.

Nuvistor Amplifier

The RCA Nuvistor type 6CW4 was designed for use as a neutralised RF amplifier in VHF circuits; it is a very "gainy" triode, with a high trans-conductance and a realisable amplification factor of 68. To achieve this, the valve is of very small physical dimensions—the inset sketch in Fig. 2 shows it just about actual size—with exceptionally low inter-electrode capacities, and it requires its own special Nuvistor socket.

In the circuit of Fig. 2, the 6CW4 is in a grounded-grid arrangement and, as suggested by the diagram, all earth returns should be brought back to a point as near as possible to the valve connector. Because the working plate voltage is around 70v., a fairly high terminal voltage would call for a 12K resistor at R1, with up to 200v. HT.

To get the utmost from the circuit of Fig. 2, naturally the usual principles of low-loss construction apply, with screening between input and output circuits. Values are as follows: C1, 100 μF ; C2, C3, 500 μF , ceramic; C4, 15 μF , peaked mid-band. R1, 12K, 1w.; RFC, grid, 20 ins. of 18g. enam., self-supporting (wound on pencil and sprung off); RFC, heater, 12 turns 18g., wound as for grid side. Coil L, 5 turns 16g. silver-plated, $\frac{3}{8}$ -in.

diameter, self-supporting, adjusted to resonate about mid-band with C4, link two turns over earthy end of main winding, with coax input into converter.

Another 6CW4 Circuit

In Fig. 3 we have a 6CW4 in a neutralised circuit, capable of giving rather more gain than the Fig. 2 arrangement—but, thereby, a little trickier to adjust. The neutralising arm is formed by Ln/C2, with L1 slug-tuned and resonated at mid-band.

Depending on how well the circuit is put together, there should be a distinct peak tuning effect on C4; this will become evident in the course of adjusting Ln, the slug of which has to be set so that C4 can be swung through resonance without the valve going “over the top.” The correct setting is when C4 can be brought to resonance with L1 without starting fierce oscillation; an 0-10 mA meter in the HT lead helps to show when this may be occurring.

Not only must Ln be itself screened, but in the construction the input and output sides should be arranged so that they are screened from one another. An easy way of doing this is to use a small chassis consisting of no more than an L-shaped plate mounted on the short arm of the “L,” with the valve fitted horizontally; on the valve-envelope side, have Ln in its screening can, together with L1, and the connection to C1 going through a ¼-in. hole in the chassis plate; on the socket side of the valve, mount C4/L2.

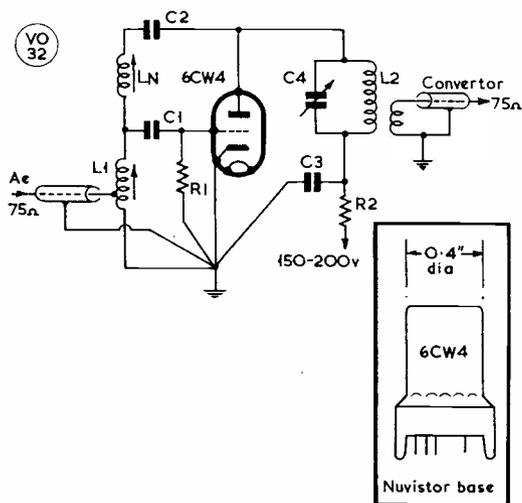


Fig. 3. The Nuvistor 6CW4 as a neutralised RF amplifier, capable of giving starting gain on 145 mc — see text for notes and values.

The values for Fig. 3 are: C1, C2, C3, 500 $\mu\mu\text{F}$, ceramic; C4, 15 $\mu\mu\text{F}$; R1, 47K; R2, 10K, 1w. L1 is 4 turns 18g. enam., ⅜-in. diameter, self-supporting, aerial tap 1½ turns from earthy end; L2 is 5 turns as L1, with a 2-turn link. Ln, the neutralising coil, is 5 turns 22g. enam. in a ⅜-in. diameter former with dust-iron slug adjustment, all in a screening can. Before commencing any adjustment of Ln, make sure that L1, with the aerial on, is in the band.

DISTANCE MEASUREMENT BY LIGHT

A new instrument called the “Mekometer” has been invented by Dr. Keith Froome, D.I.C., Ph.D., D.Sc., of the National Physical Laboratory, by means of which distances of a few feet up to several hundred yards can be measured to a very high degree of accuracy, of the order of a hundredth of a centimetre. The general principle of the Mekometer is that a beam of light is passed through a crystal of ammonium-dihydrogen phosphate, which is placed in the field of a UHF generator at about 10,000 mc. The light passed through the crystal is modified by a change of polarisation at the oscillator frequency; it is then directed over the distance to be measured, and reflected back again through the crystal. An examination of the polarisation change gives a measure of the distance travelled, to an accuracy approaching that with which the speed of light can be determined. The practical application of the Mekometer, as a portable measuring instrument, is to the precise and rapid checking of the dimensions of large and inaccessible structures, such as bridges, dams and high buildings, and the distances around areas like airfields.

ARRL HANDBOOK, 1962

The new 39th edition of the ARRL *Radio Amateur's Handbook* is now available from us, from stock, and is the recommended reference for all in any way interested in Amateur Radio. This edition is very well produced, with a lot of new material, and has been fully revised to bring it right up-to-date. It runs to some 740 pages, including about 100 pages of interesting and instructive American advertising, 34 pages of valve and semi-conductor data, and a comprehensive index to the 600 pages of text. The book is extremely well illustrated, with diagrams or photographs on practically every page, and covers the subject of Amateur Radio from the fundamentals through to the design, construction and operation of modern equipment for all amateur bands. The amount of incidental information in the *ARRL Handbook*—as it has been known for about 40 years—is as great as ever, and altogether it is one of those works of reference which no AT station operator can be without. We have just had a first delivery of this new edition from the U.S.A., so orders can be met immediately. The price is 37s. 6d. post free (library edition in buckram binding, 47s. 6d.). Orders, with remittance, to: Publications Dept., Short Wave Magazine Ltd., 55 Victoria Street, London, S.W.1.

TELESCOPIC AERIAL MAST

PORTABLE, 30 FT. OF HEIGHT

W. R. STEVERSON (G3JEQ)

THE telescopic mast described here was designed by the writer for portable and DX-pedition work, the idea being to have an easily-erected support for a half-wave wire for Top Band. It has proved invaluable under practical conditions in the field.

Its requirements were seen to be: (1) Light, and quickly erected; (2) Total telescoped length of not more than about 4½-ft., for stowage on roof-rack or in boot; (3) Strong enough to hold up, in exposed locations, 260 ft. of light stranded aerial wire at a height of about 30 ft.

Basis for the constructional idea is the fact that standard 17g. dural tubing is a sliding fit in ⅛-in. size differences, *i.e.* 1-in. tube slides into 1½ in., and so on.

Materials for Construction

A 4 ft. 6 in. length of 17g. dural tube should be obtained in each of the seven ⅛-in. difference diameters from ¼-in. to 1½ ins. To go with the tubing, seven "Jubilee" clips (as used for garden hose connections) are needed, in sizes 00-1A, to fit the tube diameters. A wooden peg must be made to go into the ½-in. top

section, to take two guy lines pulling against the aerial. Also required is a small, flat dural plate, having a central hole ¼-in. diameter, and with three equidistant outer holes, to attach centre guys. A 1½ in. rubber footing to cover the bottom of the base section completes the fittings.

Erection

Beginning with the top, smallest diameter, piece, each section is pushed up, sliding its respective jubilee clip down to within 3 ins. of the bottom of that section, to give a 3-in. overlap into the next length of tubing; the clip is then locked at that position. Successive lengths are pushed up in the same way, and when half-way up, the first three guys are made fast to the ground pegs.

Nylon-cord guys are used, each secured to a stiff-wire hook at the end for quick release from the dural plate. From the top of the mast, two guys against the aerial pull go the appropriate pair of ground pegs, which are driven slant-wise into the ground.

Having had some practice, the writer can get the mast up in three minutes, the time taken to telescope it being even less. The tubing is very light and, with the guys and aerial wire, a tidy and easily-handled pack can be made up for stowage.

Though it has not been tried, the mast should carry a simple two-metre beam quite satisfactorily, with three top guys just below the beam assembly.

RETRACTABLE BEAM SUPPORT FOR SINGLE-HANDED HOIST

THE general idea as illustrated on the page opposite is due to G3NQX (Hoghton, Lancs.), whose requirement was for a telescopic mast, carrying a Quad, which he could raise and lower single-handed.

By dividing the hoist into two separate and quite different operations, he has arrived at a neat and practical solution of the problem. As can be seen, the first operation is to swing up the ladder, on the upper rungs of which are carried the sleeves for the telescoping section; this can then be hauled up by the hoist manipulated from ground level.

If the upper (telescoping) section carries a beam head of any sort, when the assembly is lowered, this can be fitted, with a support under the top end of the ladder to hold the beam just clear of the ground. If the construction is kept light but strong, there is not too much out-of-balance weight for one individual with his wits about him to push the ladder section to the near-vertical till one pair of guys takes charge; it is then simply a matter of locking the foot of the ladder with the second bolt, and squaring up on all four guys.

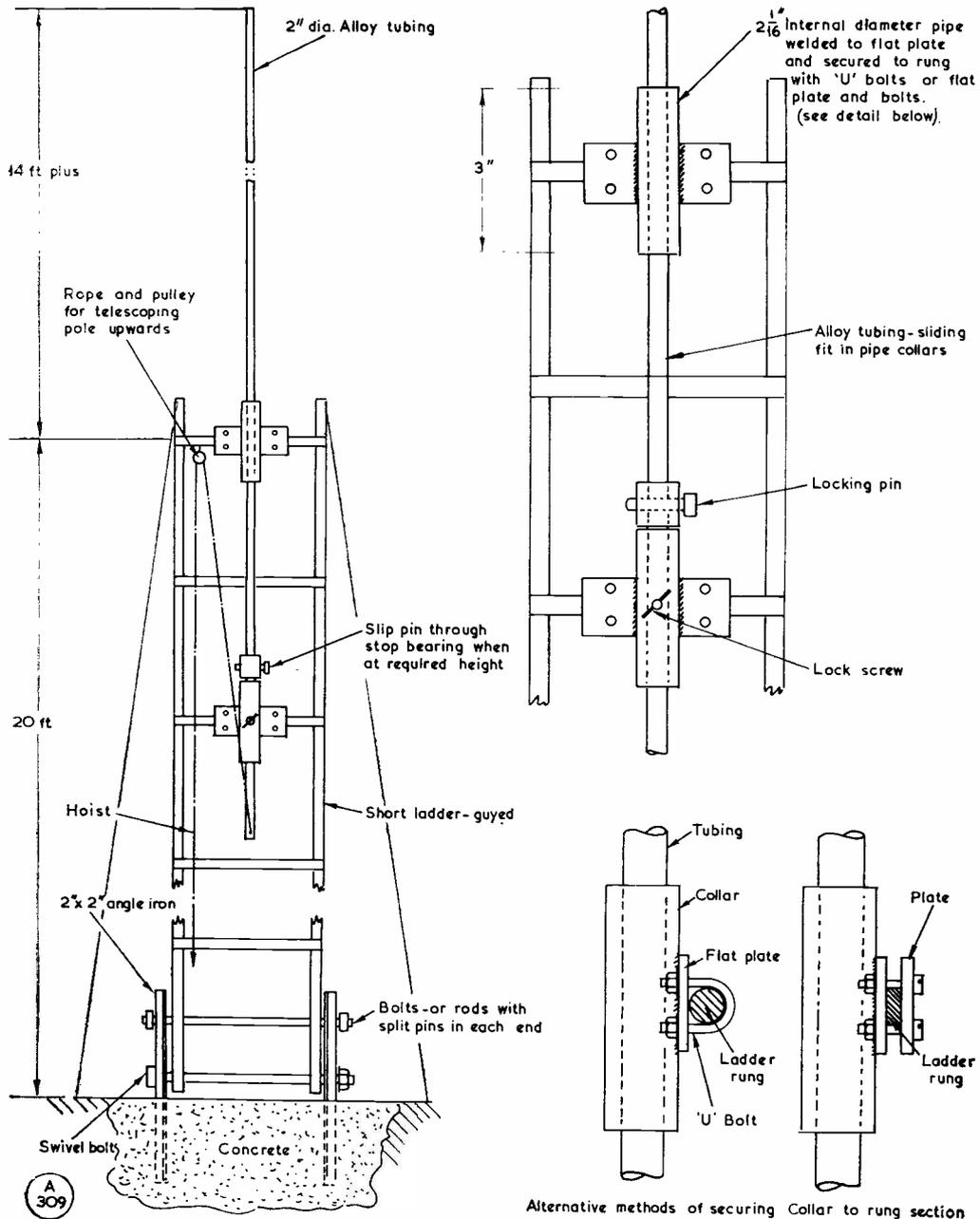
With the beam held clear of the top of the ladder, the telescopic section is hoisted and locked, as shown in the drawing. By use of the thumb-screw, the beam can be temporarily held at intermediate heights. With a firm base and proper guying, the ladder itself is

climbable, and adjustments can be made to the beam assembly with it lowered to within easy reach, while being, at the same time, at a reasonable height above ground.

Some further points are: According to G3NQX, U-bolts are easily made from ⅜-in. dia. mild-steel bar (obtainable from garages and ironmongers) by heating the appropriate length to redness in an ordinary fire, bending by tapping round the required diameter pipe held in a vice, and then cutting the thread with a die after bending—this die could be a hefty nut, worked on with a spanner, the job being done with the metal hot. For the intermediate heights, the telescoping section should have dimples drilled at intervals, into which the thumb-screw will engage. Rotation of the whole assembly is, of course, possible by making the lower stop "solid" on the pole by means of the pin right through, with the thumb-screw slacked off. And this is just what G3NQX does.

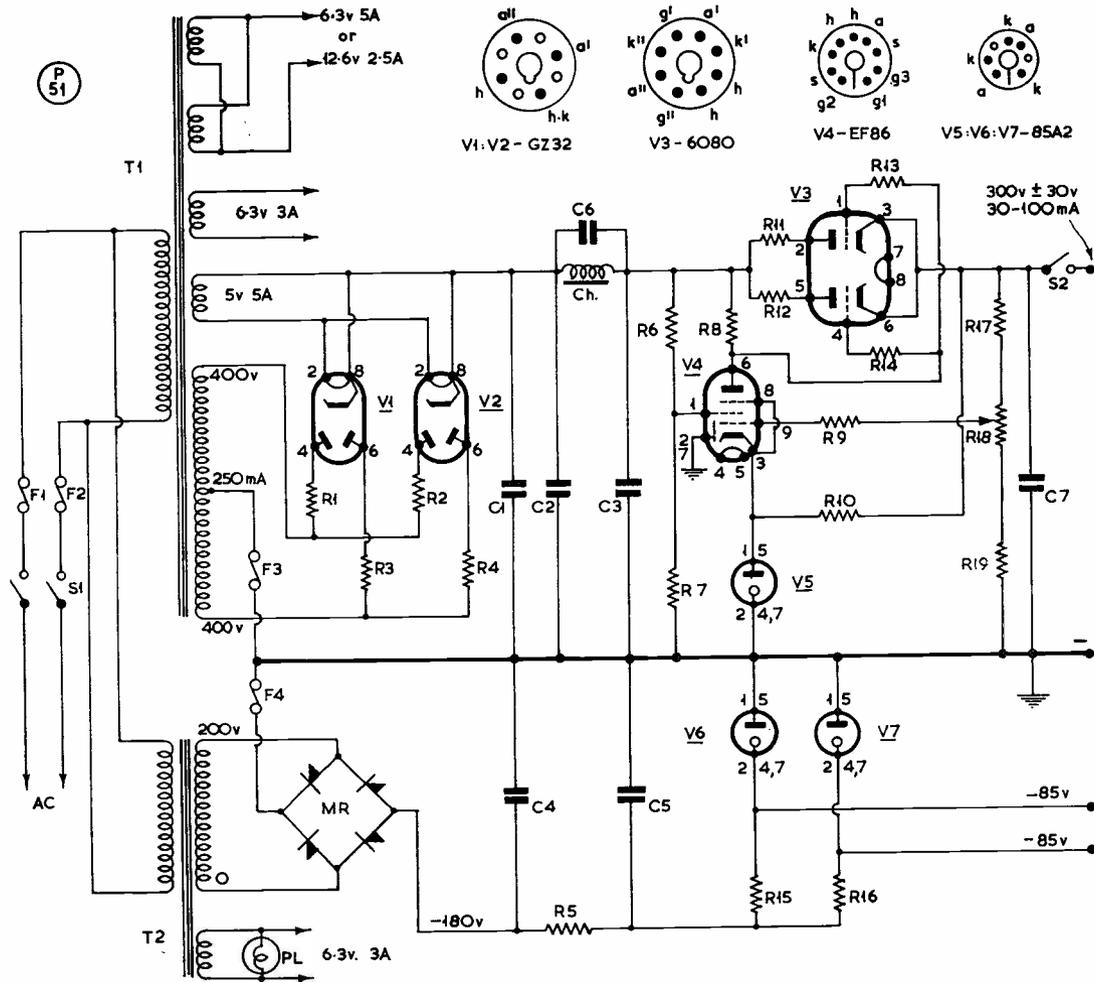
Apart from the fact that the assembly can be easily lowered to ladder height in windy weather, this facility is also helpful in placating planning authorities and neighbours who might be hostile, in that it can be shown that the beam is only raised to full height for actual operations, which are mainly after dark.

A possible improvement to this general design would perhaps be to make the ladder a foot or two shorter, and the alloy tube that much longer; then, when the tubing section is fully retracted, the bottom of the tube would rest on the concrete plinth, with the beam head above the top of the ladder.



This drawing is almost self-explanatory. It shows a short ladder (which, if not available, could be built for the job) supporting a telescopic mast section through a simple bearing system. First, the ladder is swivelled up into position and locked upright by slipping in the top bolt; then, the telescopic section is hoisted. This top length could carry a light beam without guying, as it could easily be lowered in high winds. For a heavier beam and a longer top section, masthead guying would be necessary; this could be by 200 lb. nylon cord, the guys falling slack when the beam is lowered.

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Circuit diagram for a voltage-regulated power pack, which will give 30-100 mA at any set voltage between about 270 and 330 volts. R18 is the voltage control, and the arrangement of the circuit is such that the terminal voltage holds steady under wide variations in current loading. For larger packs, giving greater outputs, valves of more suitable ratings will be required for V3 and V4 — see text. The -85v. bias supplies are sufficiently regulated for normal purposes, and the HT output is suitable for a wide range of applications for which a voltage-regulated supply is desirable.

Table of Values

Voltage-Regulated Power Supply

C1, C2,	T1 = 400-0-400v.,	250
C3 = 8 μF, 500v. wkng.	mA, LT's as	required
C4, C5 = 32 μF, 250v. wkng.	T2 = 0-200v.,	50 mA,
C6 = 0.25 μF, 250v. wkng.	LT's as required	
C7 = 32 μF, 500v. wkng.	MR = RM1 rectifiers	
R1, R2,	F1, F2 = 2 amp. mains fuse	
R3, R4 = 56 ohms, 5w.	F3 = 500 mA, HT over-	load
R5 = 4,700 ohms, 5w.	F4 = 100 mA, overload	
R6, R8 = 220,000 ohms, 1w.	S1 = DPST mains toggle	
R7 = 270,000 ohms, ½w.	S2 = SPST HT toggle	
R9 = 1,000 ohms, ½w.	V1, V2 = GZ32 (or 5V4	near equiv.)
R10 = 47,000 ohms, 6w.	V3 = 6080, or 6AS7,	CV2984, A1834
R11, R12 = 10 ohms, ½w.	(or similar twin	triode to pass
R13, R14 = 1,200 ohms, ½w.	100 mA)	
R15, R19 = 10,000 ohms, 1w.	V4 = EF86	
R16 = 4,700 ohms, 1w.	V5, V6,	V7 = 85A2, or QS-1209
R17 = 22,000 ohms, 1w.	PL = 6.3v. pilot lamp	
R18 = 50,000-ohm pot' meter, w/wound, 1w.		

**VOLTAGE-REGULATED
POWER SUPPLY**

WITH STABILISED BIAS LINE

THE circuit shown here enables any current between about 30 and 100 mA to be drawn at a fixed voltage which can be set within the limits 270-330 volts by the potentiometer R18. That is to say, any variation in current drain within the range given will result in negligible change in terminal voltage. Regulation is obtained by a type of feed-back circuit, around V4, and, quite apart from any limitation due to the current rating of the main HT transformer T1, the milliamp. output is dependent upon the

characteristics of the twin-triode V3.

It follows from this that the circuit can be adapted for other ratings, and a greater range of control, by suitable selection of V3 and R17-R19. With higher voltages, the insulation of V4 would become a factor, *i.e.* it would have to be replaced by a valve rated for higher working voltages than the EF86.

Construction should be on a metal chassis, preferably with a protective cover, and if the unit is to operate on protracted runs of several hours at a

stretch, it should be properly ventilated. A good solid earth connection must be made to the chassis, and the mounting of the HT on-off switch S2 and the voltage-setting potentiometer R18 well insulated.

Voltage-regulated power supplies are not much used in amateur practice—but in these days of a requirement for a "stiff" HT pack, one such should be provided in every AT station. The application is as a stable, hum-free source of HT for VFO's, small modulators and SSB units, VHF apparatus, test gear and measuring equipment.

HARMONIC SUPPRESSION FILTER

DESIGN AND CONSTRUCTION

IN point of fact, the design and construction of what is known as a low-pass filter, implying a cut-off at around 35 mc—or giving suppression over a defined VHF area—is a highly complicated business, electrically and mechanically, where the filter is to be used on the output side of the transmitter to be operated on several amateur bands.

The whole thing becomes much easier if the transmitter is to radiate on one band only, and the filter itself is required merely to give general harmonic suppression. But very few amateurs run their transmitters as one-band only; at the average AT station, the Tx has to work on two or three bands at least, and on all of them good harmonic suppression is normally required. The solution is, clearly enough, to have a separate filter unit for each band. If such a filter is comparatively easy to put together, reasonably sure-fire, and appears to give the required results, there is no particular hardship in having to provide one for each band worked, because it can be arranged to change over automatically when the band is changed.

Design

Such a single-band design is shown in the diagram, and is termed a "half-wave filter." The particular configuration illustrated is derived from basic data given in the Transmission Lines section of the latest (39th, 1962) edition of the ARRL *Handbook*. As suggested by the sketch, coils L1, L2 should be mounted at right-angles, and a refinement is to screen them; in this case, however, half the capacity of C2 must be on one side of the screen, and the other half on the other, as separate condensers. Though the whole unit is low-impedance in characteristic, *i.e.* relatively low voltages appear across the condensers, these should be good-quality mica and rated at not less than 500v. DC working for 100-watt phone transmitters.

As regards constructional form, the simplest approach is a small meat cube or other similar tin box having a tight-fitting lid, provided with coax connectors at each end. By building up away from the coax connector mounted on the lid end, to

complete the circuit and the mechanical construction, you are left with just two bare ends of wire—one to push through the opposite coax connector, and the other through a hole beside it, in the far wall of the box; this is soldered to make the final earth-screen connection.

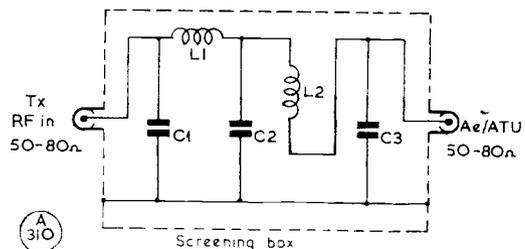
Values by band are as follows: *80m.*, L1/L2 each 2.3 μ H, or coil space $\frac{1}{2}$ -in. dia. by 1-in. long wound full of 18g. enam.; C1, C3 820 μ F; C2 .00164 μ F. For *40m.*, L1/L2 1.3 μ H, or space $\frac{1}{2}$ -in. dia. by $\frac{3}{8}$ -in. long, full of 18g.; C1, C3 390 μ F; C2 780 μ F. For *20m.*, L1/L2 each 0.57 μ H, or space $\frac{1}{2}$ -in. dia. by $\frac{3}{8}$ -in. long, full of 18g.; C1, C3 220 μ F; C2 440 μ F. For *15m.*, L1/L2 each 0.38 μ H, or space $\frac{1}{2}$ -in. dia. by $\frac{5}{16}$ -in. long, full of 18g.; C1, C3 150 μ F; C2 300 μ F.

Note that for each band, coils L1/L2 are equal, and dimensions have been calculated to make them self-supporting; they can be wound on a $\frac{3}{8}$ -in. former, with the length dimension carefully marked, and then sprung off. Alternatively, the actual turns are: *80m.*, 20 turns; *40m.*, 13 turns; *20m.*, 8 turns; and *15m.*, 6 turns—all half-inch diameter and of 18g. enamelled wire.

Though the condenser values look awkward, they are easily achieved by paralleling—in fact, some of the values given could not be achieved in any other way.

Application Notes

There is an appreciable insertion loss, which will vary depending upon how carefully a unit is constructed—but unless the whole thing is a complete botch-up, the loss should only be discernible as the merest flick on a sensitive S-meter at the receiving



Circuit and layout for a single-band aerial filter unit, capable of giving a high degree of harmonic suppression when working on that particular band. This being a simplified arrangement, a separate filter unit is required for each band worked—see text.

end. On the other hand, harmonic attenuation will be good, from about 30 dB at the second harmonic to almost total disappearance above the 6th—though this is subject to certain qualifications, depending on the “starting frequency” and self-resonances at VHF, too long to discuss and explain here and now. What it comes to is that if you are having BCI/TVI bother, it is well worth trying the harmonic suppressor for the band involved as a possible cure.

Finally, don't tune up from scratch with one of these units in circuit—it could be subjected to heavy

stresses when there is a severe mis-match. The procedure is to get everything on the nose with the filter out, and then couple it in, after which it will be necessary to re-adjust slightly on PA and/or ATU for resonance and maximum RF into the aerial. And if you are accustomed to doing I²R bench tests with calibrated RF meters and non-inductive resistors, it is interesting to make a few measurements, with and without the filter and into different load resistors, to find out whether the insertion loss is of any significance.

CONSTRUCTING OPEN-WIRE FEEDERS

AS a result of the recent discussion in these pages on doublets fed with open-wire line (see SHORT WAVE MAGAZINE, April, pp. 88-89), at many AT stations the problem of the actual construction of 600-ohm feeders is being tackled.

These notes suggest one approach which has been found very successful in practice. Taking the requirements as being a light, strong line, correctly and evenly spaced, easy and cheap to construct, and impervious to weather effects, the first move is to measure off roughly how long the open-wire feeder has to be to suit the site conditions. The line is made from an appropriate length of ordinary clear-plastic covered lighting flex, unravelled to form the two arms for the feeder. This flex is usually made up of 14/36's, and gauges 20g. for the stranded wire core, and 14g. overall including the plastic insulation.

From the chart herewith, it can be seen that using 20g., the wires should be spaced about 3 ins. apart to produce a 600-ohm characteristic. Actually, this is not a hard-and-fast value; the convenient spacings are 3-4 ins., using from 16g. to 22g. wire, for impedances of approximately 550-650 ohms. Enamelled wire lighter than 22g. is hardly strong enough in windy locations, and 14g. (for the wire itself) is unnecessarily heavy. Since lighting flex comes out at 20g. and the plastic insulation increases the tensile strength, as well as giving the necessary weather protection, it is obviously convenient to use it—particularly as it is cheap and readily available.

Spreaders

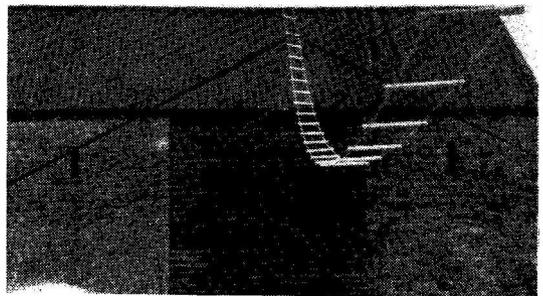
To maintain the spacing and produce a good-looking job, ideally the spreaders should be about 12 ins. apart along the line. But this depends somewhat on location, how long the feeder line is to be, and how it is to hang. Spreader spacing up to 3 ft. is acceptable if the feeder is to be held under a certain degree of tension—as, for instance, when the feeder-run has to be taken through angles to change its direction. Where a long feeder is to hang more or less loose, perhaps with only one lateral supporting line, it is better to use more spreaders.

The time-honoured way of making spreaders—used by practically everyone who ever put up a Zepp aerial before the last war—is from $\frac{1}{4}$ -in. diameter wood dowelling, cut (in this case) into 4-in. lengths,

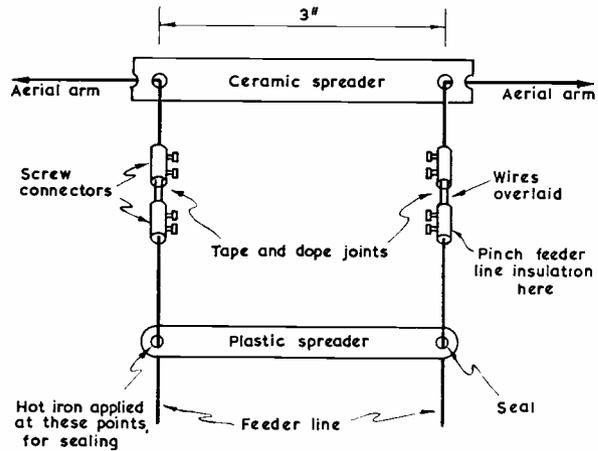
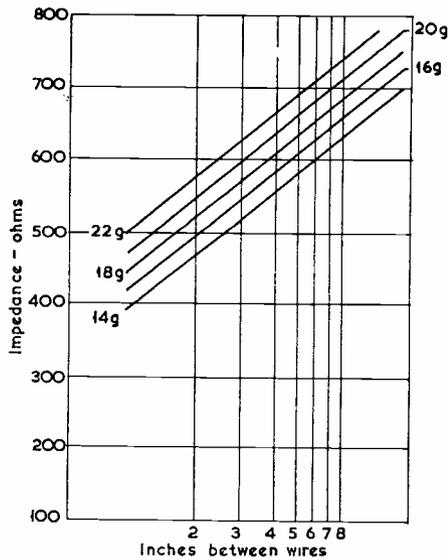
with holes drilled at 3-in. centres to take the wire. The pieces then being pickled in linseed oil or boiling wax. And a messy, smelly job it was, too.

Nowadays, an even lighter and just as convenient form of construction is to obtain some strips of plastic curtain runner—the type *without* a metal liner on which the polythene coating is formed—and cut it into lengths for drilling. This material is about 1s. a foot (depending on the shaping, which is not important for our purpose), cuts and drills perfectly, and is completely non-hygroscopic (does not gather moisture).

The spreaders are run on to the wires at the decided intervals and—since a plastic covered wire is threaded on spreaders of plastic material—they can be locked in position merely by touching with a hot iron—see sketch. So that the final job looks tidy and to make fabrication easier, the pair of wires should be stretched (across any available space) and the spreader positions accurately measured off before



A view of the 600-ohm open-wire feeder, at 3-in. separation on plastic spreaders as described in the text, in position. The lateral lines about half-way along are nylon cords, loosely secured to convenient supports, to prevent too much movement under windy conditions. The set-up as shown here has easily survived severe gales from all directions. (In this photograph, the continuation of the feeder above the roof is “lost” against the sky.)



Showing on left, in graphical form, the data for the design of open-wire feeders. For surge impedances of 550-650 ohms, which is a convenient range of values, separations of 3-4 ins. can be used with 16g.-22g. wires. On the right is one method, proved effective under practical conditions, for attaching the feeder line to a doublet (or Zepp) aerial. As explained in the text, the plastic spreaders are fixed in position by touching the insulation with a hot iron. Under tension, the screw connectors pull up tight to the ceramic spreader (or other similar insulator), which takes the pull of the aerial. Soldering is not necessary with this method of feeder connection.

the iron is applied to fix them. It is not necessary to be able to stretch the whole line in one piece to do this—it can be done section by section, the completed lengths being dropped from the window, or otherwise out of the way as the work progresses.

Aerial Connection

To connect the feeder to the two arms of the doublet, the centre of the doublet must be supported by a strain insulator (ceramic, pyrex, or two eggs in series—see sketch) to give the correct feeder separation, in this case three inches. The actual connection is made by screwed sleeves (of the sort found as brass inserts in “porcelain connectors,” as used for ordinary house wiring). With two such sleeves on each side, the feeder insulation is pinched under one screw (see sketch) and the aerial and feeder ends are overlapped by the length of the wires under the other three screws. Thus, a good “bite” is obtained between feeder line and doublet arms.

This screwed-sleeve method is entirely satisfactory for aerial jointing, and avoids the awkward business of trying to solder out-of-doors, or dragging the whole lot inside to within reach of the soldering iron. Finally, the joints are well doped for weather protection. The result is, or should be, a neat, strong job, which cannot be affected by weather conditions.

Where the feeder-run is a fairly long one it can be steadied laterally by lengths of nylon cord, tied through holes drilled in the middle of a few of the spreaders, and made fast to convenient fixing points above head level.

Weight and Cost

An open-wire feeder of a nominal surge impedance of 600 ohms, built exactly as described here, worked out as follows: For a run of 42 feet, with spreaders at 12-in. intervals, the total weight of the line was only 17 ozs., with a tensile strength equal to the breaking strain of the insulated 20g. conductors—say, 50 lbs.

The cost came to 6d. per foot run, made up of 15s. for the spreader material (obtained from a handyman’s “do-it-yourself” store) and 5s. for the wire. Another similar feeder-line, for a 32 ft. run under tension, with spreaders at 3 ft. intervals, only cost just over 2½d. per foot. The time spent on the 42 ft. job, from first to last, was about six hours. With only one lateral support line, the feeder has withstood gale-force winds; the tuning on the ATU remains the same whether the conditions outside are sunshine, rain or frost.

CHANNEL ISLAND MICROWAVE LINK

For the provision of ITA/TV in the Channel Islands, an interesting microwave circuit is to be installed by Pye Telecommunications, Ltd., from Alderney to Jersey. This link will be over Pye 6000 mc (5-cm.) equipment, working as a relay system for signals picked up in Alderney from the ITA station in Cornwall. The gear to be used is the Type PTC-M1000, which is tunable over 6575-7500 mc, with a transmitter output of about 1-watt, into a high-gain aerial system.

THE MATHEMATICS OF BAND SPREADING

CALCULATING THE CAPACITIES

M. A. SANDYS (G3BGJ)

Those interested in circuit calculations—and there are many—will find this article stimulating. The idea is to solve the problem, in this instance all-band VFO coverage, by the mathematical approach rather than by cut-and-try or guess-work.—Editor.

THE problem of bandspreading a tuned circuit is usually solved by the well-established methods of trial and error. All too often, however, the first choice of capacitor fails to meet the requirements. Then ensues the frustrating fiddling of condenser plates or coil turns. Yet a little preliminary arithmetic, by showing the order of capacity required, will eliminate this tiresome procedure. Finally, exact bandspread may be achieved by a pre-set capacitor in series with the bandspread capacitor.

Bandsread Formulae

Fig. 1 shows an LC circuit tuned to f_h (the higher band limit) and the same circuit with the bandspread capacity C_b across it, the circuit now being tuned to a lower frequency f_l (the lower band limit). Using the relationship that the capacity ratio is equal to the square of the frequency ratio we can write:

$$\frac{C}{C + C_b} = \frac{f_l^2}{f_h^2}$$

Solving for C_b gives:

$$C_b = C \frac{f_h^2}{f_l^2} - C$$

(1) or $C_b = KC$ where $K = \frac{f_h^2}{f_l^2} - 1$

Table I gives the value of K for the six HF bands. To determine the bandsread capacity it is only necessary to multiply the total circuit capacity across L by K. This presupposes that C is known. A rough estimate may be made by judging the capacity of C by the position of the vanes and adding any fixed capacity.

A more accurate figure may be obtained by substituting the coil inductance in:

(2)
$$C = \frac{10^6}{(2\pi)^2 f_h^2 L} \mu\mu F$$

f_h being the upper band limit in mc and L the inductance in μH .

If the inductance is unknown it may be determined with sufficient accuracy from the expression:

(3)
$$L = \frac{.2 N^2 d^2}{3.5d + 8l}$$

- where L = Inductance in μH
- N = Total number of turns
- d = Outside diameter in inches
- l = Length of winding in inches.

Having determined C_b , a conveniently sized trimmer larger than C_b may be selected (C_t in Fig 2) and in series with this is placed the pre-set capacitor C_p , adjusted so that the total variation of capacity is C_b .

The required value of C_p is found from:

(4)
$$C_p = \frac{C_b C_t}{C_t - C_b}$$

A pre-set condenser having a maximum capacity larger than this value should be selected. It is adjusted in conjunction with the main capacity C, which will require slight retuning after each alteration of C_p , until exact bandspread is achieved. If C_t and C_p are suitably chosen the possible range of bandsread capacity will be sufficient to allow reasonable errors in estimating C.

Practical Example

It is desired to bandsread an oscillator over the 7 mc amateur band. The tuned circuit has a coil consisting of 9 turns, outside diameter $\frac{1}{2}$ inch and length $\frac{1}{4}$ inch.

From (3) the inductance is 1.1 μH and from (2) the main circuit capacity is 455 $\mu\mu F$.

The required bandsread capacity is thus $455 \times 0.3 = 13.6 \mu\mu F$. A convenient size for C_t would be 25 $\mu\mu F$, requiring from (4) a series capacity of 30 $\mu\mu F$. A 50 $\mu\mu F$ for the pre-set, being easily obtainable, would be a suitable choice.

Assuming a minimum capacity of 5 $\mu\mu F$ and 3 $\mu\mu F$ for C_p and C_t respectively, the range of values which C_b can assume is approximately 2.5 $\mu\mu F$ to 16 $\mu\mu F$, allowing an error of 15% in estimating C—not a very stringent requirement.

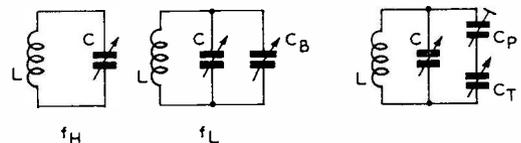


Fig. 1

Fig. 2



Fig. 1 and Fig. 2 illustrate the points made in the text. Exact bandsread can be achieved by adjustment of C_p .

Application to Amateur Band VFO

It is unfortunate that the band limits are not harmonically related, otherwise a bandspread VFO on a lower frequency would exactly cover the higher bands after frequency multiplication. However, a reasonable compromise is possible in certain cases without using complicated switching. The circuit to be described is for a transmitter covering 3.5 mc to 28 mc, the VFO being on 3.5 mc.

It will be noticed that the value of K for 3.5 mc and 28 mc is higher than for the 7, 14 and 21 mc bands. To cover the 3.5 mc and 28 mc bands therefore calls for quite a large capacity, which normally would result in cramping of the other bands.

The solution attempted at G3BGJ is to use a large capacity directly across the tuned circuit to bandspread the 3.5 mc and 28 mc bands, a pre-set capacitor being switched in series to give coverage of the other bands, as shown in Fig. 3. An added complication occurs here: When the short across C_n is removed by switch S (C_t being at maximum and the circuit tuned to the lower band edge) the capacity decreases by the difference between C_t and C_t and C_n in series. To retain the lower band edge in the same position a frequency compensating capacity of this value must be switched across the circuit (C_r in Fig. 3—see p.130).

$$\text{That is, } C_f = C_t - \frac{C_p C_t}{C_p + C_t}$$

The total capacity now being $C + C_r$, equation (1) is modified to $C_b = K (C + C_r)$.

$$\text{As before } C_b = \frac{C_b C_t}{C_t - C_b}$$

Solving these three equations gives:

$$C_b = \frac{K (C + C_t)}{K + 1}$$

$$C_f = \frac{C_t - CK}{K + 1}$$

$$C_b = \frac{K C_t (C + C_t)}{C_t - KC}$$

C_t is the capacity required to bandspread the 3.5 mc band. Having decided upon the approximate total circuit capacity, in this case $500 \mu\mu\text{F}$, C_t is found from (1) to be $500 \times .18 = 90 \mu\mu\text{F}$. (C_b being replaced by C_t for this purpose.) A $100 \mu\mu\text{F}$ condenser is an obvious choice, but will naturally cover more

than the band. Rearranging (1) as $C = \frac{C_t}{K}$, the

BAND megacycles	Value of K
1.8 - 2.0 mc	.235
3.5 - 3.8 mc	.176
7.0 - 7.1 mc	.029
14.00-14.35 mc	.050
21.00-21.45 mc	.043
28.00-29.70 mc	.125

Showing the values of K for the calculations discussed in the article.

circuit capacity required to give exact bandspread 100 is $\frac{100}{.18} = 555 \mu\mu\text{F}$. The coil inductance, from

$$L = \frac{10^6}{(2\pi)^2 f_h^2 C} \text{ is } 3.16 \mu\text{H} (f_h = 3.8, C = 555).$$

The coil to be used may be checked by (3) and modified accordingly.

To accommodate completely the other three bands, the largest value of K must be chosen, that is, .05 for the 14 mc band. Our intention, of course, is to bandspread the VFO from 3.5 mc to 3.587 mc, the value of K for these limits being the same as for 14 mc to 14.35 mc.

Substituting the values $C_t = 100 \mu\mu\text{F}$, $C = 555 \mu\mu\text{F}$ and $K = .05$ in the equations opposite gives:

$$C_b = \frac{.05 (555 + 100)}{.05 + 1} = 31 \mu\mu\text{F}$$

$$C_f = \frac{100 - 27.75}{.05 + 1} = 69 \mu\mu\text{F}$$

$$C_b = \frac{5 (555 + 100)}{100 - 27.75} = 45 \mu\mu\text{F}$$

Suitable capacitors for C_r and C_p are given in Fig. 3. It is possible to avoid the arithmetic, of course, by choosing capacitors so large as to cover all contingencies but a more compact unit results if the smallest possible components are used.

The extent to which the 7 mc and 21 mc bands are covered may now be determined by rearranging (2) as:

$$f_h = f_1 \sqrt{\frac{C + C_b}{C}}$$

Substituting $C = 555$, $C_b = 31$ and evaluating for $f_1 = 7$ and $f_1 = 21$ gives $f_h = 7.196$ and 21.588 .

The coverage of the 28 mc band is, of course, the

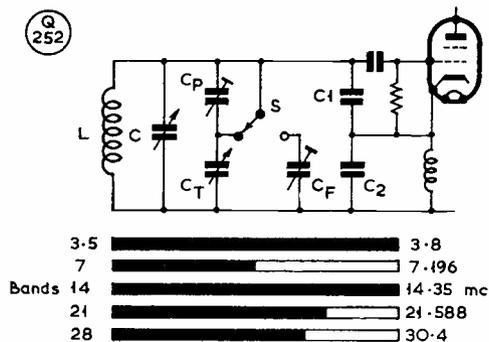


Fig. 3. Derived practical circuit, showing the bandsread obtainable on each of the HF ranges. For those who might like to check the mathematics, the values are: C, Ct, 100 μF ; Cp, 50 μF , pre-set; Cf, 75 μF , pre-set; C1, C2, .001 μF ; L, 3.16 μH . In the switching, one position brings in 3.5 and 28 mc, and the other position 7, 14 and 21 mc.

limits 3.5 to 3.8 multiplied by 8, that is, 28 mc to 30.40 mc. That quite a reasonable compromise is achieved is shown pictorially in Fig 3 above.

Setting Up

With switch S to the left and C_t at maximum C is adjusted until the oscillator is on 3.5 mc. With C_v judged to be at its approximate value and switch S to the right, C_t is adjusted until the circuit is again on 3.5 mc. C_t is then tuned to determine the bandsread on 14 mc. If too great C_v is reduced, if insufficient C_v is increased. These operations are then repeated until the 14 mc band is exactly covered and the lower band edge is unaltered by operating the switch.

In fairness to readers it should be pointed out that this bandsread circuit has not yet been tried by the writer, being the next modification to be made to a much-modified transmitter. It is to be hoped that readers who anticipate the writer's intention will find theory and practice in perfect agreement. In other words, let's see if the mathematics work out!

OPERATION OF BCM/QSL

The both-way use of the QSL Bureau we operate is confined to direct subscribers, *i.e.*, those who obtain SHORT WAVE MAGAZINE by post each month direct from us by subscription (36s, or \$5.25 U.S. for a year of 12 issues). However, the one-way service of the Bureau—which means the forwarding of cards received for individuals—is available to all comers by the simple process of their depositing stamped addressed envelopes, with name and callsign.

The advantage of the both-way service is that QSL cards are accepted in any quantity without limit for distribution *outwards*. Putting it another way: If you are not a direct subscriber, we can only send on to you such cards as may be received at the Bureau for you. If you are a direct subscriber, and indicate that you wish to use our QSL Bureau service, we not only accept your inwards-QSL's, but

we will also distribute all your cards outwards as well; all you have to do is to send them to the Bureau in batches, as often as may be desired. And you can also use "BCM/QSL, London, W.C.1."—which is a full and sufficient address—as the return-QSL address on your own cards. A similar service is extended to SWL's who, if they are direct subscribers, may also apply for a registered SWL number for over-printing on their own QSL cards.

Direct subscribers, whether licensed or SWL, are asked to note that they should intimate their wish to use the Bureau for the both-way service; this is for our own administrative purposes only, and involves no charge beyond the 36s. subscription. We cannot accept cards for distribution from readers who obtain the *Magazine* by casual purchase or local order; *any* reader can, however, deposit s.a.e.'s for the cards that may happen to arrive for him.

To allay any qualms or correct any misapprehensions (or misrepresentations) let it also be made clear that BCM/QSL has been operated to the satisfaction of all concerned for nearly 15 years, and that we are in exchange relations with QSL bureaux in all countries throughout the world.



The R.E.E. Telecomm VHF/AM portable radio-telephone Type TRT/2 is fully transistorised in both receiver and transmitter; is designed for single-channel working in the range 50-100 mc; the aerial is a $\frac{1}{2}$ -wave whip; and the power output 180 mW. The transmitter output transistor is a Mullard AFY10, and the power supply two 6-volt Mallory mercury cells.

SSB TRENDS

SOME REFLECTIONS ON PRESENT TENDENCIES

"VOX"

A FEW weeks ago, a remark was heard on the air to the effect that "the spread of SSB continues." Too true, unfortunately, in more senses than one. The increase in the number of SSB stations is notable and altogether splendid; but the other kind of "spread" from some of the badly-designed or badly-operated specimens is most regrettable.

It would seem that there is a category of amateur operator who remains true to type throughout his life. Impervious to progress, he clings to his earliest ideas with great tenacity, and manages to create the same kind of havoc on whatever mode he transmits. On AM phone, his doctrine used to be that "a little more modulation will beat the QRM"; so now, on SSB, he talks it up so that he can see all his meters jumping nicely. As before, he has won no advantage for himself; he merely makes things more objectionable for many other users of the band on which he is disporting himself.

"Talking it up" to the point at which a linear amplifier can no longer cope does *not* improve anyone's chances of getting through the QRM—it merely results in a whole series of distortion products which add up to a bad-quality and a *broad* signal. If you tune up the average SSB transmitter with carrier inserted, and the PA anode current is, say, 200 mA, then you *cannot* talk it up to that figure without running into distortion. A meter reading of 200 mA under speech conditions will imply an instantaneous figure very much greater than that, with a certainty of "flat-topping" and therefore spread.

This form of Keeping Up with the Joneses is misguided and anti-social. Why not take a pride in Keeping Down with the Browns, instead, and radiate a transmission that is a pleasure to copy instead of a pain in the neck for users of neighbouring channels?

Other Faults

Newly-arrived SSB transmissions on the bands (and here we are referring mostly to those from abroad) often leave a lot to be desired. To start with, many of them are unstable—a fault which is quite inadmissible. And we don't mean a slow drift on warming-up, but the kind of instability that comes from a really primitive VFO. These fellows can't hope to improve their transmissions except by a fundamental re-designing of the gear, and no amount

of telling-off will do any good as a short-term policy. However, many instances of bad quality *can* be reported on the spot, and if this is done in a helpful rather than a rude manner, can usually be put right there and then. One of the more pleasant aspects of SSB operation is, in fact, the readiness with which the average newcomer will listen to criticism and act on it.

Of course, distortion products are caused by many factors other than sheer over-modulation by the shouting brigade. "Loose" power supplies for driver stages and screen voltages are often at fault, but usually only on home-built gear. Fortunately for us all, most of the commercial rigs seem to be excellent in this respect; and when one hears the owner of a ready-bought outfit causing trouble, it is ten to one that all he has to do is to lower his voice or reduce the audio gain. Home-brewed rigs can, of course, be altogether excellent, and the better ones can compete with the best of commercial gear. But—we must face it—there are many that fall short. And so we hear our old friends, who in the past have inflicted upon us chirpy CW, key-clicks, 200 per cent modulation and the rest, still at it, and making themselves a nuisance on the newer mode—and so proud of having "built it myself."

Linears and Decibels

Here we are on a delicate subject . . . but it seems a pity that things have gone the way they have. Comparative figures concerning peak power, talk power, average power and all the rest have been thrashed around by all and sundry for a very long time. But it seems wrong that the inherent advantages of SSB transmission over AM have not been utilised in a different way.

We all know that 150 watts *input* will produce a more useful signal on SSB than on AM, and we had dared to hope, at one stage, that the change-over which was bound to take place would result merely in the gradual decrease in the number of carrier-waves throughout our bands. However, the terms of the licence being as they are, few people are content with their 150 watts input, and are using every possible means to boost it up. Since it is generally agreed that 400 watts PEP is now the magic figure, we hear G stations on all sides talking of their 600 watts input.

This is marvellous for them, it's true. Phone DX has reached a pitch that was never possible for G stations on AM. But what an opportunity has been missed. There could have been a general *reduction* in power, on account of the inherent advantages of the SSB mode, and no one would really have been worse off. But our old friends the Joneses have appeared on the scene once more, and everyone, it seems, has to keep up with them.

[over

More than 80% of all licensed U.K. amateurs
are regular readers of *Short Wave Magazine*

Well, if so many people think it's essential to go to 600 watts in order to gain that one extra "S" point, good luck to them. But when a man with 150 watts input is giving out an S9 signal, is there much sense in putting all that effort into making it S9 plus 6 dB? And if (as often happens) he gets a report of S9 plus 20 on the lower power, why go to all those lengths to make it S9 plus 26?

Of course, we know all the arguments: What about when the signal is *weak*—it's the difference between S4 and S5, or S5 and S6, that really matters. All right, then, all right—but don't leave that linear in for local working when you are *not* concerned with weak signals.

Incidentally, we have heard a lot of W stations carry out the test of "switching off the linear," and in many cases the difference was so small as to be undetectable. You may argue that if this is the case, then the extra QRM caused by the widespread use of higher powers will be negligible. And you may be right . . . but it seems a pity that a QRO race should be starting up at this time, when the adoption of a more efficient form of transmission by so many operators might have proved an opportunity for just the reverse.

Meanwhile, we feel that the fortunate ones are those who have kept down to 150 watts. A pair of 6146's, or 807's, and nothing in the shack above 750 volts, has something to commend it. More than one

person has already found, to his cost, that 1800-volt power supplies introduce considerable hazards and complications. And think what it must mean to some of the 1 kW American stations who now aspire to a considerable increase! To carry the thing to exaggerated lengths, we visualise a select number of 10 kW amateur stations—each with their own resident mechanic and maintenance man. (Indeed, there is a known instance in the U.K. where this has happened.)

Still, we must not link this up in any way with the benefits of the more general adoption of SSB by the phone fraternity. Already the increased comfort in the AM sections of 14 mc and 21 mc is noticeable . . . and the same even goes for the CW portions, since it is a fact that SSB has attracted far more dyed-in-the-wool brasspounders than AM phone ever did. The result of this, of course, is not too hard to see. As the accepted "SSB sections" become more and more crowded (and *how* crowded they have become, in twelve months or less!) it is obvious that the sidebanders will spread themselves downwards and occupy more and more of the remaining width of the phone bands. (That little colony around 14125-14130 kc is pretty flourishing already.) The AM stalwarts will have no cause—no *just* cause—to resent this. It will merely mean that "their" section of the band will be populated just as thickly as it used to be, but there won't be so many carriers. And surely no one can feel sore about *that*.

NOISE LIMITER FOR THE SX-28

IMPROVED CIRCUIT APPLICABLE TO OTHER RECEIVERS

THERE are enough Hallicrafters SX-28 and SX-28A ("Super Skyrider") receivers still in use to justify discussing a much improved type of series-limiter ANL circuit—particularly as this circuit (Fig. 2) could be applied to other receivers having a similar second-detector configuration (Fig. 1).

In the case of the SX-28/SX-28A receivers, Fig. 1 shows the shunt-type limiter (V10) as originally fitted. This is totally discarded, the items C53, R70, R24, R25 being removed, with the 6H6 itself. (Note that circuit element numbering is as in the instruction book issued with the receiver.)

New Limiter

The new limiter, using a 6AL5 (or B7G equivalent), must be mounted as close as possible to V7—no use trying to press the discarded 6H6 mounting into service, as it is right at the back of the receiver and the leads would be far too long. The new noise-limiter circuit is shown at Fig. 2, enclosed by the dotted line. It will also be noted that some re-adjustment of the circuitry round V7 itself is called

for, in that the original R27 is taken straight back to the junction of C37, C109.

Probably the easiest way to tackle the job is to fit the 6AL5 on a small aluminium bracket for a single-screw mounting between V6 and T2 (looking

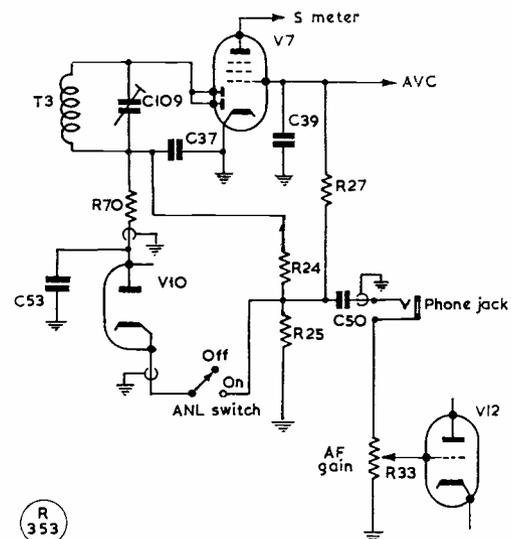


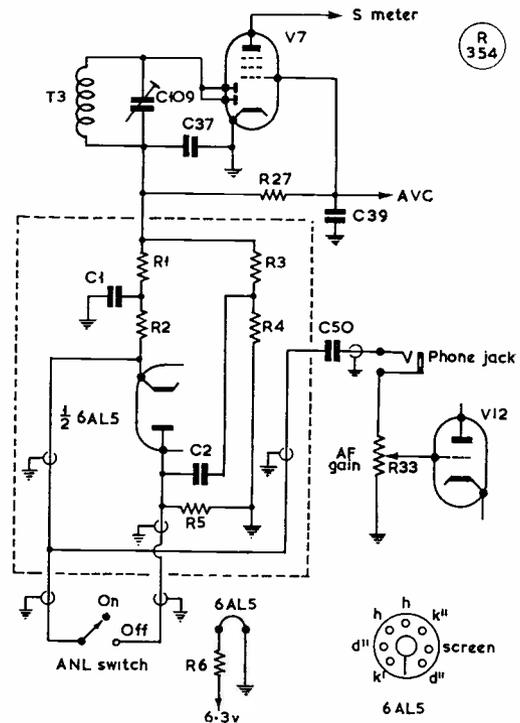
Fig. 1. Original shunt-type noise limiter, 6H6 diode V10, as used in the Hallicrafters SX-28/SX-28A Super Skyrider, operating between the 2nd detector V7 and the audio amplifier V12. The modifications are shown in Fig. 2.

Fig. 2. Re-designed noise limiter for the SX-28/SX-28A, using a 6AL5 in a series circuit, as shown inside the dotted line. Some circuit changes round the 2nd detector V7 have to be made (compare Fig. 1) but the new noise limiter can be mounted on a small panel with all its associated components. This type of limiter could be used with other receivers having a similar 2nd detector circuit arrangement. Values are given in the text.

down on the chassis) with the leads taken through the chassis cut-out for the tuning flywheel. There are only three such leads involved—the heater wire, and the connections to C50 and R27. The existing ANL switch can be used, this being on the front panel and above chassis level.

All the items associated with the new noise-limiter can be mounted on the aluminium bracket holding the 6AL5, and assembled before the bracket is fitted. The values are: C1, 0.1 μ F; C2, .02 μ F; R1, R2, 470K; R3, 82K; R4, 220K; R5, 2.2 megohms; R6, 6.8 ohms, a series resistor in the 6AL5 heater, required only when applying the modification to the SX-28/SX-28A. The leads to the ANL switch must be run in separate screen wires, and all connections kept as short as possible to minimise unwanted capacity effects.

While it is possible to carry out this modification merely "by inspection," *i.e.*, tracing the wiring involved and identifying the components to be dealt with, the less-experienced will probably need to have the receiver instruction manual by them for reference. For the 6AL5, equivalents available include the EB91 and D77, all on B7G bases.



BIG TV CONFERENCE

Through its Electronics & Communications Section, the Institution of Electrical Engineers has organised an important international television conference, which is to be held during May 31-June 7, in association with the American Institute of Radio Engineers, New York; the Television Society; and the British Kinematograph Society. It is estimated that some 1,500 delegates, no less, will attend, representing 23 countries. In addition to technical sessions under 19 different headings—including such subjects as Frequency Assignment, Industrial Applications, Transmitter Equipment, Space Problems, and Colour TV—there will be organised visits to manufacturers' plants and research establishments.

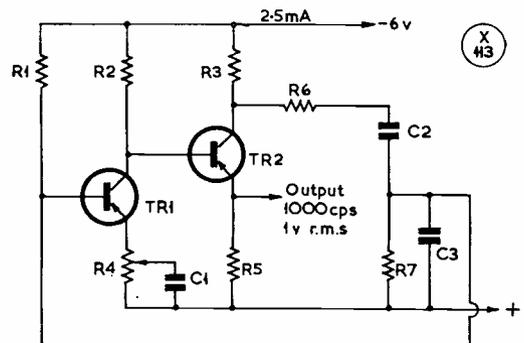
MATERIAL FOR PUBLICATION

We are always on the look-out for good articles on any subject of practical Amateur Radio interest, and we pay the highest rates for acceptable material, produced in accordance with our requirements—which were set out in detail in the May, 1959, issue of SHORT WAVE MAGAZINE. A note for the general guidance of contributors appears on the Contents page in every issue. At the other end of the scale, we are also prepared to accept, for re-writing as articles, "notes in own words" covering subjects likely to be of interest—but, of course, such material does not attract the highest rates of payment.

Photographs of amateur stations, equipment and

personalities are always required—either for general illustration, or for "The Other Man's Station" series. Photographs should *not* be described in a minute scribble on the back of the print itself—the descriptive notes should be on a separate slip, with some pencilled identification on the back of the photograph to connect it with the description.

Payment for all such material used in the Magazine is made by cheque immediately on publication



Circuit of a 1 kc oscillator unit, using two S.T.C. TK46C transistors. Frequency stability is constant over a wide range of battery voltages, output control being by R4. TR2 gives about 1v. r.m.s., and values are: C1, 50 μ F; C2, C3, .05 μ F; R1, 12K; R2, 3.9K; R3, R5, 1.8K; R4, 1K; and R6, R7, 2.7K. R4 is set to give a pure 1000-cycle tone.

DX COMMENTARY

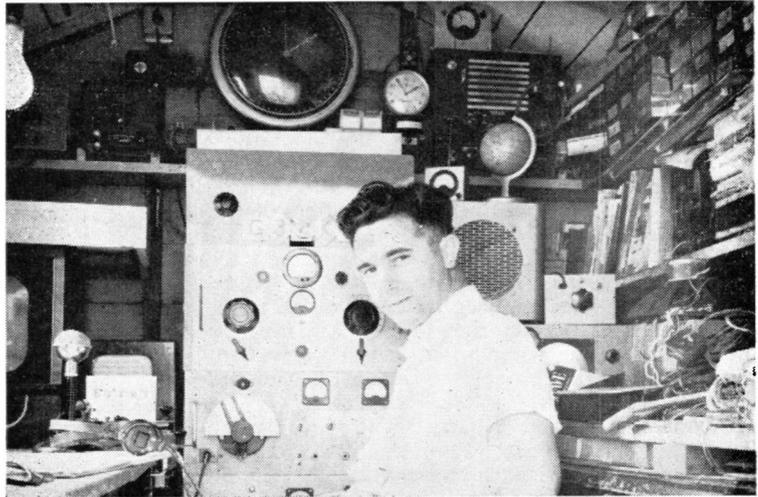
L. H. THOMAS, M.B.E. (G6QB)

THE period under review (roughly March 15 - April 15) got away to a flying start with good conditions on all bands, and plenty of activity. After about ten days things began to fall off, and the session finished with some really dull conditions, especially on 21 mc . . . about which more later. However, there is no lack of news and comment, and many of the 'chasers share the view that DX can be more pleasant when conditions are a bit off than when all the bands are bursting at the seams.

It is hard to distinguish seasonal variations from those due to the solar cycle, but it is pretty obvious that the belated arrival of Spring is responsible for (a) the temporary slackening of Top-Band DX; (b) a cooling-off on Eighty; and (c) a shocking influx of \$9 Europeans on Forty, where the earlier mornings and later evenings have shortened the real DX hours quite a lot.

One of the main topics for stray comment this month is Manners on the Air. Last month's brief note on this subject brought forth a surprising crop of remarks. All the Old Timers agree that "things aren't what they were"; and many of the newcomers are wondering what the bands were like in the "good old days" when polite operating was the general rule.

As a matter of fact, if you take a dispassionate look around, it is quite clear that exhibitions of bad manners are very rare—considering the terrific crowding on all bands. Maybe it is their very rarity that makes them so conspicuous when they do occur.



G3LKI

CALLS HEARD, WORKED and QSL'd

Generally, it is Contests and Pile-Ups that bring out the rudery. Sensible comment from G3IDG (Basingstoke): "I wonder if we do not sometimes take too serious a view of these antics. What with phone-CW, CW-phone, AM-SSB interference, over-modulated phone, T5 CW, swishers, BC in the amateur bands, TVI and sundry other pre-occupations, I think we're in need of a real belly-laugh now and again just to put things in their right perspective. After all, it's a hobby."

Agreed; it's only those who take the whole thing in such deadly earnest who can ever get worked up to such a pitch that their manners suffer. If you have the nice relaxed outlook that says "After all, I don't need to work this chap underneath this ghastly pile-up . . . let's see what else is on the band," then you'll never suffer from ulcers. Likewise, you'll never make the 300 mark! But maybe you will get a lot more fun and enjoyment from your chosen hobby than you would by

letting it take charge of you. Perhaps the full prescription for Happiness in Amateur Radio is this: You only need to work stations that you *want* to work. (If you are the type who wants to work everything that he hears, then you're in for some very hard, high-pressure slavery . . . and it's *your* look-out!)

DX Around the World

The DX-pedition, familiar as it is nowadays, is a phenomenon that has only arisen during the past ten or twelve years. Ten years back such a thing was a great event, duly publicised months beforehand; nowadays interesting sorties are undertaken quite lightly and with very little prior notice. So it often happens that they cannot be notified to readers before they actually happen. If we hear, for instance, around April 20 that someone is going to Phoney Island on May 20, that's already too late to catch the May issue, and all we can do is to comment in the June issue and say

that we hope you worked them. However, everything possible is done to give prior notice, with the proviso that many of them do not come off "as advertised."

The biggest one at present under way is the mammoth affair of Gus Browning, W4BPD. After a limbering-up spell from 3A2BW during April, he was scheduled to start from *Aldabra Is.* (VQ7) on May 1, or a few days later.

Two more that may possibly overlap into early May are *Serrana Bank* (KS4BF) and *Bhutan* (VU2US/AC5). The former is due after the HKØAB operation (which was timed for April 27); the latter, mid-April, for 10 or 14 days until April 22.

UAØKAR, on SSB, duly moved to *Franz Josef Land* and came up as UA3CR/UA1; he made a load of contacts . . . *Timor* seemed to be activated in a big way by CR10AB, but there was some little doubt about authenticity . . . *Wallis Island*, FW8AS, was also on SSB, but doesn't seem to have got into Europe.

Montserrat has been represented by VP2MV on 14 mc CW . . . VQ9HB is expected to show up from VQ7, quite independently from the W4BPD sortie; there was also some talk of signing VQ9HBA from *Agalega Island*, which could be a new one.

Cocos Island was in the news again, with talk of operation by TI2CAH/9 during mid-April; no news at the time of writing . . . Mike (G3JFF) will be on from *Tarawa (Gilbert & Ellice Is.)* as VR1M, May 4-8, and also May 28-June 4. Frequencies 14050 and 21050 kc, CW only, sited at the Government Wireless Station, as last year. Meanwhile, he has been active as G3JFF/MM, just north of Fiji. On June 12 H.M.S. *Cook* will be sailing back from Fiji to Singapore, whence Mike returns to the U.K. and signs G3JFF once more.

More details of the AC5 affair, from MP4MAH (Muscat): VU2US hoped to operate from the middle of April until the first week-end in May (but he closed on April 22). Was to sign AC5US if the permit came through in time; if not, VU2US/AC5. Others in the team were VU2ED. 2PS and

2TN, all from Shillong, Assam. Umrao, VU2US, is President of the Amateur Radio Society of India.

MP4MAH himself is the only active amateur in Muscat and Oman; he operates from a caravan at Yibal, with 100 watts and a 75A-3, mostly on 14 mc CW and AM, occasionally on 7 mc; he also holds the call VU2TA. Details of the Arabian Gulf phone sked on 7 mc are given, but as this happens on Sunday mornings, 1000-1130 GMT, it's no use to us! Ex-JZØHA is now in Qatar and will soon be active on all bands.

EP2BD (Abadan) writes to say that he hopes to be back on the DX bands soon, when his permit turns up; and he also has to get some sort of a beam up.

G3PAG (Leigh-on-Sea) sends details of VP8GQ's activities. Peter, of G3LET, used three calls—VP8EG, G3LET/VP8 and finally VP8GQ, all from Signy Island, South Orkneys, where he will be until about November 1963. All QSL's to G3PAG (139 The Fairway, Leigh-on-Sea, Essex); if IRC or s.a.e. are enclosed, the reply will be sent direct.

DX Shorts

Montserrat, a fairly rare spot, has become active with VP2MV operated by ex-VP6PG; and he is not just a bird of passage, but will be there for three years; he is also trying to get VP2MC interested again . . . MP4TAO (Abu Dhabi, Trucial Oman) has a KWM-2 and is often on 21 mc between 1100 and 1600 . . . MP4TAC is on AM, from same place . . . AC4NC, supposed to be AC3NC portable, has been worked by quite a lot of people in the last six months; but the real AC3NC is reported to be firmly in Sikkim, and inactive.

JT1KAA has been on 14050 kc CW, but at 0200-0300 GMT . . . W4OPM reports working JT1KDA, YK1AD and YA1EB, all on SSB . . . 5T5AD, Mauritania, is a good one on 14 and 21 mc CW . . . All the following known to be active on 7 mc: HM4AQ, VP2AD, ZK2AD, VS4RM, VS4RS, VR1B, TI3MM. (Not necessarily workable from

over here!)

The Caribbean travelling SSB-rig should have been in the hands of FM7WQ for three weeks or so. Next port of call unknown . . . A new station in Palestine (this country still keeps cropping up!) is reported to have been assigned the call ZC6UNJ . . . A weirdie heard in the States was PYØDX, giving QTH as St. Paul Island, or St. Paul Rocks. Beam headings all wrong, so forget it!

Top-Band DX

A very exciting season has just about petered out, although, no doubt, there will be stray Trans-Atlantic QSO's all through the summer. WIBB's latest summary deals with the appearance of EP2BK, who, after lots of patience and perseverance, worked VE1ZZ, WIBB, W2IU and WØVEH/VP9. Some of the other outstanding American stations heard EP2BK, but came on the scene a little too late and didn't make a contact. Bob, EP2BK, used 100 watts into a 21 mc Lazy-H aerial 75 feet high; needless to say, he also made numerous European contacts. Another impressive "first" was the QSO between HC1AGI and G6BQ on March 11 (0610).

EL4A expects to be on a little longer this season, with crystals on 1803 and 1827.5 kc, sent him

FIVE BAND TABLE

Station	21 mc	14 mc	7 mc	3.5 mc	1.8 mc	Countries Worked
GW3AHN	275	252	68	21	1	301
G2DC	263	271	142	101	12	298
G3FPQ	250	257	138	106	23	287
G3LHJ	189	136	47	23	11	199
G3NOF	183	160	18	24	1	219
G3IGW	127	126	99	51	23	183
G2YS	122	175	94	75	20	197
G3NFV	118	83	39	48	16	164
G3JWZ	77	107	62	52	9	132
G3IDG	61	49	23	17	9	90
G3NYQ	16	31	35	30	11	?
G3PEK	15	44	30	19	8	54

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

by W1BB. Finally, EP2BK's mail address is now Robert M. Snyder, Box 502, Springfield, Missouri.

G3IGW (Halifax) refers to the CQ Top-Band Contest on March 4, and the many remarks last month about clottedy on that occasion. He points out that the

W's who were in the contest were *not* observing the usual procedure for the Top Band tests—they were treating it as any other contest and listening on their own frequency. The "clever" operators on this side, says Mike, were those who listened carefully to see what procedure the DX stations were using before calling them. He made seven contacts across the pond, and his total score in the contest was 9136. Further note: LZ1KBA has been heard, around the LF end of the band.

G3PGN (Basildon) reports hearing W1BB and W2IU at 0325 on March 25; but he was on a TA Exercise net at the time, and although he could have worked them with ease if he had QSY'd, it was hardly the thing to do . . . G3PLQ (Salisbury) says G3PU is still getting across, but QRN on the American side is making things difficult. EL4A is still about, but having trouble with his kilowatt rig. G3ERN (Harlow) was still working W's and VE's on April 15.

Late Flash: One more piece of DX news: G3FPQ tried very hard to make it with HR3HH. On one occasion he heard him well, but couldn't get across to him; and then at another time HR3HH was hearing him, but G3FPQ couldn't copy his report, so didn't count it as a QSO. No doubt they will make it next winter!

All in all, it's been a pretty wonderful season for real DX on 160 metres.

Top Band — GDX and EDX

There's no shortage, as yet, of quite good long-haul contacts, and the amount of activity on the band is described by G3OLN (Cheltenham) as "quite fantastic." One of the peak periods seems to be around sunset, and there's undoubtedly more phone than CW just then. After that, things seem to quieten down until the hours of real darkness. Returning to G3OLN—at 1515 GMT he worked three CW stations as far apart as Sussex, Essex and Yorks, and one of his locals has been getting phone reports from HE and PA. G3OLN himself has worked 568 different stations on 160m. since last July, and, quite recently, 17 SSB stations were heard within an hour.

G2DHV (Sidcup) has hitherto made most of his Top Band contacts under the club call G3HEV/A or /P, but he hopes to be more active in future, making QSO's under his own call . . . G3NYQ (Ilkley) is having a house built, and is trying to lay on several 130-ft. lengths of copper as a radial earth for a 500-ft. end-fed aerial—that's the way to organise things! When at RAF Gaydon, he had a 270-ft. Windom working against a buried wire 130 feet long, and says there was just no comparison between that and a pipe earth; he thinks that for successful LF band work, at least half the effort should be expended in putting wire underground . . . and probably more than half the effort, seeing that digging is such hard work!

GM3KLA (Shetlands) puts up his Counties score, thanks to G3KBC (Cams.), GM3NXA (Perth) and GM3PBA (Dumfries); now he's looking out for DX-peditions this coming season.

And here is a really good one: **Isles of Scilly**, June 16-29. **GB2IC** will be operated by members of the City & Guilds College Radio Society. On Top Band they will be on AM, SSB and CW; they will also be on Forty and Twenty CW; and, finally, on Two, AM and CW. But the Top Band effort is the one that will keep them in demand, because of the WABC list and its inclusion of Scilly as a county. GB2IC is a call that Imperial College has held for special occasions for some time, and they have been allowed to use it on this Expedition. Full details, if you require any more, from G3OZF (Nottingham—*QTHR*).

G3OXI (Woking) jumps right to the top of the G3O--/G3P-- ladder with his score of 57 and 7; he says GC3LPV was recently on the band, working OK's, but harder to raise than they were.

GM3AXX (Glasgow) will be operating /A from near Drumna-drochit (Inverness) over the period May 14-25; and he mentions that GM3OTG is now active on 160m. from Aberfoyle (Perthshire).

Eighty Metres

This band is best summed up by comments from G2DC (Ring-

TOP BAND COUNTIES LADDER

Station	Confirmed	Worked
<i>CW and Phone</i>		
G2NJ	98	98
G3JEQ	98	98
G6QN	98	98
GM3OM	98	98
G3IGW	97	98
G6VC	97	97
G3APA	94	94
G3LWQ	90	92
G3NNO	83	91
G3OHX	79	84
G3NVO	78	85
G3OIT	74	85
G3OGE	74	80
GM3KLA	73	74
G3NNF	71	76
G3OQT	70	80
G3OLN	68	79
G3PDM	64	71
G3NLR	64	64
G3PGN	63	68
GW3CBY	59	73
G3MGI	56	63
GM3PBA	50	63
G4JA	49	61
G3PLQ	46	61
G3IDG	46	49
G3PEK	35	56
G3OHL	22	30
G3LHJ	13	28
<i>Phone only</i>		
GM3AVA	90	90
GM3OM	87	89
G3FS	85	85
G3NAA	65	67
G3NNF	63	65
G3NNO	54	71
G3OIT	26	52

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

wood): "Phew! What a cluttered-up band this has become. I know that we are always harping on the QRM in general, but CW users are having a tough time these days. The SSB boys seem to be OK, though." Jack, himself a CW operator, raised W's (all except 6 and 7); VE1-3; VO1 and 2; UM8KAA.

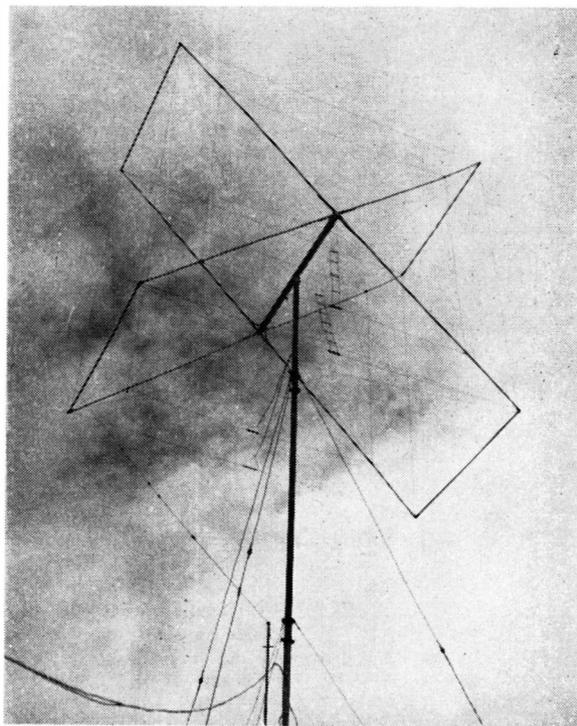
MP4BBW (Awali), reporting from the DX station's point of view, has now worked 30 countries on the band; but he finds it late opening, and noisier than usual, and now he has taken down his 80-metre aerial while awaiting the arrival of a 40/80-metre vertical.

G3NFV (Ashtead), using SSB, worked ZB1A, 5A3TQ, PJ2AA, KZ5LC and DL9VZ/SVØ. The rest of the habitual SSB gang worked a similar batch of DX, but things have fallen off quite a lot since the winter. However, in the case of this band, it is definitely a seasonal fluctuation, and there is every indication that next winter will be livelier than ever.

Late Flash: MP4TAO puts in an occasional appearance on SSB, and 9M2GB promises to show up some time. Meanwhile, the group of U.K. 'chasers on 3798 kc report working VP2AB, TI2HP, HV1CN, 3A2AH, 4X4OC, EA9, UG6, PZ1, PJ2, KZ5, VP7, YV, ZS6 and, of course, VE, VO and W. Most of this lot are in the evenings or late at night; early mornings still bring in good signals from ZL, and KP4CO has also been active. VO1DN has been S9 plus, even as early as 2130.

Forty Metres

One hears so many people saying "Forty could be the best DX band we have," that one wonders what the catch is. Simple—we haven't really got it at all... only a slice off one end. However, a few late nights or early mornings soon show what it is capable of. During the daylight hours, the less said the better; but at least it drains off a lot of ghastly signals that might otherwise be let loose on Twenty. It's always struck us as peculiar that there are so many chirpy T7 things on Forty, where one would have thought the construction of a VFO to give a T9x



Striking impression of the two-band Cubical Quad at G3LKJ, Torquay, who operates this assembly on the 10-15m. bands. Of all HF beam systems, the Cubical Quad is one of the most "gainy"—the difficulty is to keep it air-borne; the two- and three-band arrays tend to hold a lot of wind.

note would have been dead easy. Some of the phone stations are pretty peculiar, too...

G3NFV worked PJ2AA and PZ1AX on SSB; G2DC, on CW, raised MP4BBE, VP8GQ, W (all districts), VE1-3, VK2-4, ZL1-3 and 5N2JKO. His comment is: "What with the overcrowding, the weirdies and the numerous UA local contests that flood the band with sub-standard signals, DX working is rather hit-and-miss!"

G3OXI was surprised to raise PK4LB at 1115 GMT on March 28; the PK came back to a G who was calling CQ, but the G went back to a DL (!) and G3OXI nipped in quickly and got him. Earlier the same morning he worked PX1NN.

Twenty Metres

For the real DX, it seems that Twenty has been the band, and SSB the mode. However, the CW-fanciers have had quite a good time, too. First in the list is

GW3AHN (Cardiff). SSB brought him EA9AZ, EP2AT, HH2P, HS1W, K3GAD/KJ6, KX6AE, MP4TAO, M1SVZ, PJ2AA, TU2AK, UA3CR/FJL, VP2GAC, VQ1CJ, VS6EK, SM5ZS/ZC6, ZS6PC/ZS8, ZB2AD and 4X4DK—and if that isn't a nice little list, we've never seen one. (On CW he added VR4CV for another good one.)

G3FPK (London, E.10) also used SSB to the tune of BV1US, CT3AV, HL9KT, HS1W, HZ1TA, KG6, KH6, KM6CE, KR6, KW6DG, KX6BQ, M1, MP4TAO, OA4ED and 4HH, PZ1, SVØ, UA3CR/FJL, UA1CK/Ø (Tannu Tuva), VK9GP, VP2GAC, VP8GQ, VQ1CJ and 1DR, VR2BJ, XT2Z, XW8AS, XZ2SY, ZS6PC/8, 5H3GC, 9G1CN, 9M2's and 9Q5US. The same remarks apply! CW, in his case, brought in VP3MC, VP8GQ, VS1FZ and VU2TN.

G2DC stuck to CW, and in spite of Public Enemy No. 1 (the parked

jammer on 14100 kc), raised FO8AN, KH6, UJ8, UM8, UAØ, VU2MI, VR2EA, VP3MC, VP5MJ, VS9OC, VE1-8, W1-Ø, 5H5HZ, 5GC, 5R8AB, 8CQ and XE1FN.

G3NAC, who has moved to Wellingore, Lincs., before shifting to VS9-land, put up a temporary aerial and raised HZ1AB, M1SVZ, UA2, ZC6, ZB2AD and MP4BBW on SSB; MP4BDC on AM. G2HLU (Reading), on CW, collected ET2US, FP8BX and 5N2LKZ.

G3BHJ (Norwich) tried out SSB and raised CR6CA, HZ1AB, M1SVZ, OX3KG, UA3CR/FJL, UA9, VS6EK, VS9APH, XT2Z, 3A2BW, 3V8CA, 4X4DK and 5A3TQ. G3NFV weighs in with an SSB list including OX3KL, UL7HB, M1SVZ, KR6GF, VU2NR, KW6DG, VS6AE, HL9KT, TI2HP, 9M2DW, XW8AS, XT2Z, UA3CR/FJL, VQ1CJ, ET2US and ZB2AD.

G3NOF (Yeovil), also SSB, lists EA9AZ, EP2AT, HH2PW, HV1CN, JA2AEY, LA1LG/P, M1SVZ, MP4TAO, PJ2AA, TI2HP, UA3CR/FJL, UAØKAR, VK9GP, VP2AB, 5BP, 7BP, VQ1CJ, VR2DS, VS9's, XT2Z, YV, ZB2AD, ZE, ZS and 5H3GC. Heard, but not worked, were K6CQV/KS6, K3GAD/KJ6, K8YUW/KJ6 and UA1CK/Ø in Tannu Tuva.

Note the similarity of the better DX stations mentioned in the foregoing lists . . . a little variety now appears, from MP4BBW (Awali), whose SSB raised VP1WS, TI2RFT, 5N2JAH, HH2P, CR9AH, 9M2FX, CX2CO, TG9AD, VK3AHJ/VK9, YS1O, HM4AQ, CE2AN as well as most of the good ones figuring in the U.K. lists.

SWL Dave Gray (Co. Durham) supplies the following interesting gen. on some of the DX: VQ1CJ is an American civilian connected with Project Mercury (tracking) and can be found on Twenty SSB nearly every day, 1530-1930 GMT . . . EP2AT left Iran on April 8 and returned to WØQOJ, leaving the rig in the hands of EP2BQ, who is a ZL . . . ET2US works from a QTH 8000 ft. a.s.l. . . . W4WRK/MM, on SSB, is aboard the survey ship *Sonic*, at present

off the Libyan coast.

Fifteen Metres

The DX on Fifteen was not quite so plentiful as that on Twenty — except, perhaps, for GW3AHN, who always seems to find it on Fifteen. Not many months back we were saying that SSB on Fifteen was a dead loss compared with AM . . . Well, look at this lot, worked by GW3AHN on SSB: EP, HC1JU, HS1B, HZ1AB, KG4AO, KR6LJ, KV4, KZ5, PJ2AA, SVØ, TI2HP, UL7JA, VK, VP2AB, 2GAC, 5BP, 5CH, 7BO, VS6CL, 9APH, XE1ZE, XT2Z, YV, ZS6PC/8, 4X4DK, 5N2EBL. AM phone collected XE1CCK, HK3LX and PJ3AO; and CW was good for ST2AR, UH8, UL7, VP1WS, VP8GQ, VQ4, VS4RS, 6EM, 9MB, VU2JA, 5H3HD, 5N2's and 9K2AD. Those who lament that Fifteen is either full of W's or just dead should take a closer look!

G3NOF, also on SSB, raised EP2BB, MP4BBW, PJ2AA, TI2HP, VQ4, VS9 and XT2Z. G2YS (Rickmansworth) was on in the CQ Contest and raised XT2Z, VS9APH and SVØWT (Crete).

G3BHJ worked HZ1AB, UA4KED, VS9APH and XE1SE; G2HLU, on CW, lists MP4BBE, VP8GQ, VP9BO, VS9MB and several 5N2's. G3LHJ (Newton Abbot) worked AM with EL1H, HZ1AB, TT8AL, VS1FE, YV2CJ, ZD6RM, ZS4PB/ZS9 and other ZS's; CW fetched in DL9VZ/SVØ (Rhodes).

G3NWT (Sandiacre) was on AM and bagged a bunch of Africans, including 5N2's, ZD6RM, VQ5IS, 5H3IP, VQ2 and 4, ZE's and ZS's. G3FPK worked SSB with CR6CA, EP2's, HZ1AB, SVØWT, UL7JA, VS9APH and XT2Z; CW with EP2AF, UH8DA, VP3MC, VS4RS, VS9MB and YA1BW.

G2DC says that early in the month the band was wide open as early as 1000, remaining so until 2200, when KH6 showed up at the last moment to round things off. But latterly there has been nothing doing much before 1500, and not a lot after 1900. On CW he worked all States (including KH6 and KL7); EL2S, ST2AR, TT8AL, UAØGF, VU2GA, 2JA, 2XN, VS1FZ, VS4RS, VS9MB,

VP3MC, VP8GQ, XE1AX, 5H3HD, 5H3HZ, 9M2FS, VK1-7, ZL1-4.

G3NAC, from his temporary station, worked SSB with XT2Z, VS6CL, PZ1AX, VP8GQ, MP4TAO, VS9APH, 9G1CM and EP's; AM with VP7MP, PJ3AO, TI2HK, 6W8CE and 8CY, KZ5MS, ZD6HK and 6RM, HC2RM, EP, ZL, LU and a few others; and a solitary CW contact involved VP8GQ.

Ten Metres

Much as we should like to report this band as a flourishing concern, it is impossible to pretend that it does more than lie dormant at the moment. However, G3NWT worked ZS8I, 5H3PBD and VQ2BK; G3NOF raised KP4AVQ, KZ5WZ, TI2HP and LA8LF/MM (off Haiti) . . . but he *heard* W3, 4, 5 and 8, PZ, LU, PY, KP4, VO1 and 5A3. And that's all, except for short-skip, until next month!

DX News from Readers

Some of the following may cross-refer to DX items already quoted from other sources; some may be contradictory. However, as two opinions are usually better than one, we pass it all on.

From *GW3AHN*: VQ9HB on his way to Aldabra Is., whence he

TOP BAND LADDER

(Starting January 1, 1962)

(G3O-- and G3P-- stations only)

Station	Counties	Countries
G3OXI	57	7
G3PGN	53	10
G3PDM	53	6
G3OLN	50	8
G3PLQ	50	7
G3PPP	50	6
GM3PBA	49	8
G3PEK	48	8
G3PRM	47	9
G3ORH	44	10
G3OQT	39	14
G3PPU	38	7
GW3PHH	32	7
G3PHO	30	8
G3PJD	18	3
G3OHL	15	2

New Claims for this Table may be made at any time. Confirmations not required.

will be active on AM and CW . . . That Portuguese naval operator is already at Timor (CR10) and CW activity should be on by now . . . The AC5US situation has already been covered.

From *G3NOF*: ZA1B and CR10AV are both reported active on SSB, and ZS2MI (Marion Is.) is said to be due on the same mode shortly.

From *G3NWT*: Said to be at least *three* active VQ1's among the Project Mercury boys, all on Fifteen AM . . . 9Q5MF is "an unmistakable ex-G," but gives his QSL address as Box 777, Kuala Lumpur! States he has just moved there from Germany . . . what on earth goes on here?

From *G3FPK*: ZS6PC says he may not be able to manage his ZS9 trip until June . . . UA1CK's visit to Tannu Tuva came off, in bad conditions, complete with well-meaning but ineffectual "MC" . . . VK's were overheard saying that they were not calling at CR10, after all (but *see* earlier items).

From *G2DC*: Danny Weil remains in Tahiti until about May 10, planning to be very active with his full kW rig. When he moves off, his first stop will be Flint Is., then Starbuck or Malden Is. Much depends on weather, as anchorages are bad. Further plans: Penrhyn (Manihiki group), U.S. Samoa, Apia, Tokelau, Wallis Is. and Tonga. All QSL's to W8EWS . . . A well-known W has offered to finance a DX-pedition to cover TR8, TY2, TL8 and 5V; "feelers" have been sent to ST2AR and 5N2LKZ. Angus of 5N2AMS is on the way home for long leave, and will be returning in August.

Our Heading Picture (p.134)

G3LKJ is run by B. E. Symons at 23 Westhill Avenue, Plainmoor, Torquay, Devon, who started in the time-honoured fashion—first as an SWL, back in 1934 (with a school friend who is now G3ABU); after the war, he was held up by prolonged periods in hospital, and it was not until 1956 that he was able to get through the exams, which finally brought him G3LKJ. Active on phone and CW, and interested in all



OH3NY is operated by Matti Palvio, whose QTH is Ruotsinkatu 40, Riihimäki, Finland; he is a keen 160-metre operator, though in recent years the OH's have been kept off Top Band. Taking in all bands, OH3NY has made over 20,000 QSO's and holds various DX certificates.

aspects of Amateur Radio, WAC and DXCC are held, with 165C worked. The Rx is a vintage RME-69, with a modified RF-1 Unit as a pre-selector for 10-15 metres. The TV Rx is for checking on TVI, the precautions against which include a *pi*-tank PA, harmonic trap, coax link to ATU through an LP filter, with a Faraday screen on the ATU. The main Tx is for 10-40m., with parallel 6146's in the PA, modulated by a pair of KT88's; a separate 6AM6-EF80-6V6 arrangement covers Top Band. Aerials at G3LKJ are twin-feed dipoles for 20 and 40 metres, and a 10-15m. Cubical Quad—*see* p.137.

Miscellany

G2DC, having got his new Quad up after the gale damage, tried it out on the second leg of the ARRL Contest. He says: "Knocked off 700 QSO's, in spite of having visitors during the Sunday afternoon, which put me off for about four hours. Finished up with a total of 950—about 158,000 points."

G3FPK makes many and

various comments, which we will try to summarise. Conditions varied from "Whacko" to just plain "Ugh"! Nice openings to the Pacific in the "post-breakfast period"; Far East in the afternoons. Then the "QSY, old man, you are on *my* frequency" phenomenon: Norman says "Many of us are growing sick of these trans-continental round tables which go on regularly on a certain frequency . . . our approach now is that if we are using a frequency for a QSO and are asked to move, we reply 'No—we were here first; go and find yourself a clear spot.'" And quite right, too!

Still with G3FPK: Golden example of how not to handle a pile-up; a rare DX station showed his face on Twenty SSB and, of course, the expected thing happened. Instead of saying "Call 10 kc down, and G stations only on this call" or some-such intelligent operating, all the chap did was to say "One at a time, please." Really clever, that . . .

G3NWT is all with VK6AJ in his plea for really quick QSO's

when there's a queue; and the five-minute QSO for normal purposes would encourage brevity and make more contacts possible. So many of them go on for twenty minutes simply because neither station wants to seem impolite by cutting them short. Point No. 2: Stations that call CQ and say "Standing by for a long call" . . . the certain fate of anyone doing this is to find them half-way through a QSO with someone who gave them a short call.

Other points from G3NWT: GDY has been evident on both Fifteen and Ten; and the strange phenomena of (a) beams having to be pointed the wrong way, and (b) buzz or rumble or even a kind of Doppler effect on signals . . . could these possibly be due to the Van Allen belts, known to move at speeds sufficient to cause a Doppler effect? DM3IGY has been recorded (28 mc dead) with an echo almost as strong as the direct signal, and where the two overlap there is a constant modulation (100 cycles or thereabouts); and this at a time when there was no possibility of round-the-world DX. An absorbing line of country, this; is anyone else investigating it? Echoes on signals are always interesting; don't pass them by as just one-of-those-things. (And it occurs to us that we have often heard signals from VQ4 and 9Q5 that we have assumed to be W6's because of their "watery" sound . . . has anyone else noticed this?)

GM3IAA (Inverness) appreciates the peace and quiet of "bad" conditions. He heard VS4RM on 21mc and waited for the dogfight, but there was none. After the QSO he listened to the next CQ; no reply, which so amazed Jim that he wrote in his log "I don't believe it!" He also queries "HD3LB" . . . we have heard this one, and it's undoubtedly HK3LB. This brings us back to GM3IAA's contention that "these — bug keys" have made us a crowd of rotten operators, especially when the are (a) maladjusted, and (b) not handled properly. As a former professional telegraphist, Jim suffers much pain when he listens nowadays; and he also lams out at unintelligent RST reports (the first figure is only 4 if the second figure is also 4 or less) and the

complete misuse of BK procedure. (For a telegraphist there's only one consolation—the average CW operating is still somewhat better than many of the phone boys manage!)

G3PRU (London, W.3), all in favour of the G30 -- /G3P -- Top Band Ladder, suggests another one for the same group, in the shape of a competition based on countries, counties and prefixes for 1.8, 3.5 and 7 mc. It's a good idea, but as we have just returned the old Five-Band Table into print we can't tackle any more ladders just

yet. Maybe next year we could do a 1963 Marathon on those lines—and it would probably have to be for G3P -- and G3R -- stations.

The Ex-G Radio Club

The Ex-G Radio Club is for amateurs born in the U.K. and now domiciled abroad; so obviously active G's can't join. But they do issue a nice certificate to those who work six members of the Club, in four different Call Areas. To locate them, look for their regular net meetings, which are on Tuesdays (Wednesday, 0030

SHORT WAVE MAGAZINE DX CERTIFICATES

RULES

WNACA (Worked North American Call Areas)

Twenty-two cards to be submitted, for contacts with stations in ten U.S. Districts (WI-0); nine Canadian (VE1-8 with one 8 in Yukon, one in North West Territories); Alaska (KL7), Newfoundland (VO) and Labrador (VO). Contacts may have been on any bands, phone or CW. Operators in W, VE, VO or KL7 are not eligible for this Award (306 WNACA Certificates issued to March, 1962).

FBA (Four Band Award)

Cards to be submitted with confirmation of contacts with 20 different countries, each country to have been worked on four different bands. Any four bands will qualify, e.g. 160-80-40-20, or 80-40-20-10, or 160-40-20-15 — and so on. Entrant's own country may count as one of the 20 countries. (234 FBA Certificates issued to March, 1962).

WFE (Worked Far East)

Eighteen cards to be submitted for 18 different countries selected from among the following: C (China), C3 (Formosa), C9 (Manchuria), CR9 (Macao), CR10 (Timor), DU (Philippines), FI (French Indo-China), HL (Korea), HS (Siam), JA/KA (Japan), KR6 (Ryukyu Is.), PK1-2-3 (Java), PK4 (Sumatra), PK5 (Dutch Borneo), PK6 (Moluccas), UA0 (USSR in Zone 19), VS1 (Singapore), 9M2 (Malaya), VS4 (British North Borneo), VS5 (Brunei), VS5 (Sarawak), VS6 (Hong Kong) and XZ (Burma). All or any bands count. (65 WFE Certificates issued to March, 1962).

WABC (Worked All British Counties)

Sixty cards required, from sixty counties of the British Isles, all to have been worked on the 160-metre band since January 1, 1952. Counties to be as shown in any standard atlas, not "administrative counties" such as the three Ridings of Yorkshire, East and West Sussex, County of Bristol, and so on. Isle of Wight counts as Hampshire — not separately. Isle of Man does score separately, as do all the Channel Islands. Scilly Isles also count separately. For London the L.C.C. area scores as one County. (267 WABC Certificates issued to March, 1962).

WBC (Worked British Counties)

Open only to claimants outside the United Kingdom and Eire. Cards required from 50 different counties of the British Isles, worked on any band 3.5 to 28 mc inclusive, phone or CW. The definition of U.K. counties is the same as for the WABC Certificate above. (264 WBC Certificates issued to March, 1962).

PRA (Polar Regions Award)

Claimants must be able to show cards as follows: (a) Arctic—QSL's from six of the areas Alaska, Canada, Finland, Greenland, Norway, USSR all lying north of the Arctic Circle, Jan Mayen and Spitzbergen (incl. Bear Is. and Hopen Is.) — making eight possibilities from which the six cards can be derived. Also (b) QSL's from any six of the following eight Antarctic areas: Antarctica, Falkland Is., Heard Is., South Georgia, South Orkneys, South Sandwich Is., South Shetland Is. and Macquarie Is. Cards must not be dated earlier than January 1st, 1955, and contact can be on any band, CW or phone. (24 PRA Certificates issued to March, 1962).

MDXA (Magazine DX Award)

To qualify for this Award it is necessary to have worked 3 continents, 15 countries on 160 metres; 5 continents, 40 countries on 80 metres; 6 continents, 80 countries on 40 metres; 6 continents, 180 countries on 20 metres; and 6 continents, 90 countries on 10 metres. (Eight Awards issued).

CONDITIONS

Claimants in the U.K. are required to send all cards in support, by registered post with a check list, when making their claims. Overseas claimants (only) may send either (a) A check list, without cards, duly certified by the Hq. of their national Amateur Radio Society, or (b) An uncertified check list, from which all or any cards may be called in for scrutiny by us. In no case will any Award be issued without proofs we consider to be good and satisfactory.

Claims, enclosing return postage (five IRC's in the case of overseas claimants) for all the above-mentioned Certificates should be addressed "DX Awards," *Short Wave Magazine*, 55 Victoria Street, London, S.W.1

to us) on 3810 kc SSB; Saturdays at 2100 (14010 mc CW); and Sundays 1900 (14345 mc SSB). At the latest reckoning about sixteen G stations hold the Ex-G Certificate . . . and there are nearly 80 club members to choose from. This has the distinction of being one of the most active of all the clubs who meet only on the air, and a friendly welcome awaits newcomers. Their informal get-togethers, in which all DX stations are invited to join, are on either 21390 or 14270 kc (depending on conditions) every Saturday and Sunday between 1300 and 1400 GMT.

The Countries List

The list of Countries by Prefixes, published in January 1962 issue (pp.586-587) of SHORT WAVE

MAGAZINE is naturally the victim of sundry changes, and there are also a few corrections to be made. To bring it absolutely up-to-date, please make the following amendments:

Add the following:

- KG6 Marcus Island
- TJ8 Republic of Cameroon
- TY2 Dahomey (see TD8)
- UG6 Armenia
- VP2L St. Lucia
- 5V Republic of Togo

Amend the following:

- VS9 Sultanate of Oman & Muscat (see MP4M)
- ZS1, 2, 4, 5, 6 Republic of South Africa

Correct the following:

- UC2 White Russia (not UG2)
- 5T5 Mauritania (not 6T5)

Delete the following:

- FD French Togoland
- FE8 Republic of Cameroon

Add to list of obsolete prefixes

- FD French Togoland (now Republic of Togo, 5V)
- FE8 French Cameroon (now Republic of Cameroon, TJ8)
- FT4 Tunisia (now 3V8)

Treat the above as Amendment List No. 1; following lists will assume that these changes have been carried out.

Late Flashes

Gus, W4BPD, while operating from 3A2BW, struck the poor spell of conditions during the first week in April. He was astounded to find that it was really difficult to work the States, and even more so at the state of Forty. And he said "Eighty is even worse than Forty, with no amateurs heard at all!" The other 3A2's cheered

THE CERTIFICATE ISSUES

With another 43 of our DX Certificates issued since the January listing, it is interesting to note that, of all these recipients, the "smash hit" is made by Serge Kiknadze, UF6FB, of Tbilisi, Georgia, USSR. In a single application, he was able to include five valid claims—for WBC (No. 264 issued), WNACA (No. 306), WFE (No. 65), PRA (No. 24) and FBA (No. 233)—and he

remarks that if in UF6 they were licensed for 160m., he would have a go at a WABC as well! Looked at strictly in the Amateur Radio context, and giving credit where it is due, this is a masterly effort by UF6FB, more particularly as he includes PRA and WFE, two of the most difficult of our Awards for which to qualify—indeed, we are often told that they are virtually impossible unless the rules are changed.

It is true that it is hardly possible for any recently licensed operator to make WFE, because he will not have been on the air

long enough to have caught some of those difficult Far East prefixes before they disappeared, perhaps for good. However, WFE claims still come in, from old hands with a long DX record, and this alone justifies the rules being kept as they are.

As regards PRA, the other pretty difficult one, success depends mainly upon catching the Antarctic stations, which are constantly changing; but PRA is fairly certain to become easier as the years roll on, with the permanent population of the Arctic areas increasing and becoming more stabilised.

Short Wave Magazine		259 G3NNE (Wantage, Berks.)	WFE
DX CERTIFICATES		260 G3KMQ (Shaftesbury, Dorset)	No. 63 G6VQ (Kendal, Westmorland)
<i>The following have been issued since the publication of our last list, in the January, 1962 issue :</i>		261 G3PDM (Durham City)	64 W6CG (Temple City, Calif.)
FBA		262 G3PGN (Basildon, Essex)	65 UF6FB (Tbilisi, Georgia)
No. 226	W2EQS (Westwood, N.J.)	263 G3OWR (Grantham)	WNACA
227	W3AYS (Baltimore, Md.)	264 G3BJD (Seascale, Cumb.)	No. 299 DJ4HR (Duisburg/Hamborn)
228	OH2FS (Tapanila)	265 G3MEH (Old Coulsdon, Sy.)	300 G3CEG (Cheltenham)
229	DJ1UE (Oberhausen)	266 G3OGE (Beckenham, Kent)	301 G3NUG (London, N.W.7)
230	W6YC (San Francisco)	267 GI3NZZ (Kilkeel, Co. Down)	302 DL7BK (Hof/Saale)
231	W2K1R (New Hyde Park, L.I.)	WBC (Overseas only)	303 G3HIW (Ilford, Essex)
232	HA5FO (Budapest)	No. 253 W4RNP (Roanoke, Va.)	304 GM3ASM (Glasgow, S.4)
233	UF6FB (Tbilisi, Georgia)	254 W1CV (Lewiston, Me.)	305 LA5ID (Aasgaardstrand)
234	DJ4TZ (Landsberg/Lech.)	255 DM2AMG (Hohendodeleben)	306 UF6FB (Tbilisi, Georgia)
WABC (Top Band only)		256 ZE2JA (Borrowdale)	
No. 257	G3KBC (Waterbeach, Cambs.)	257 W8IBX (Columbus, Ohio)	
258	G3OLN (Cheltenham)	258 SM5BDY (Nykoping)	
		259 DL9KP (Duisburg/Hamborn)	
		260 LA5ID (Aasgaardstrand)	
		261 HB9NL (Bueron/LU)	
		262 VE1JX (Halifax, N.S.)	
		263 DL3TW (Holzminden)	
		264 UF6FB (Tbilisi, Georgia)	

Overseas claimants may send either (a) A check list, without cards, duly certified by the Hq. of their National Radio Society, or (b) An uncertified check list, from which any or all cards may be called in for scrutiny by us. U.K. claimants must send the relevant cards for each award. All claimants must include sufficient return postage for the cards and Certificate — five IRC's in the case of overseas claims.

him up by telling him that things were just about normal . . .

ET2US, now the only active station in Eritrea, is on 14 mc SSB with a kilowatt and several operators, all anxious to work everyone they hear . . . HM1AF, in Seoul, is on nearly every day at 2300 GMT on 21 mc CW. Could we work him at this time? Possibly worth a trial.

FY7YE will be operated by a

W4 and a PY8, starting soon, on 14295 and 21395 kc SSB . . . Yet another FP8 will be activated by K7AEJ, this time on 14 and 21 mc AM only . . . And, finally, don't overlook the Aran Islands expedition, EIØAB, on the air over the week-end of June 9-11; all bands, all modes.

And so to the sign-off and acknowledgments, due this month to W4KVX's *DX*, to the

WGDXC's *Bulletins*, and the NCDXC's *Dx-er*. Also, of course, to all our individual searchers and researchers. Keep up the good work and note the next deadline, **first post on Friday, May 11**. Address everything to "DX Commentary," *Short Wave Magazine*, 55 Victoria Street, London, S.W.1. For the July issue, deadline will be *June 15*. Good hunting, 73 and—BCNU.

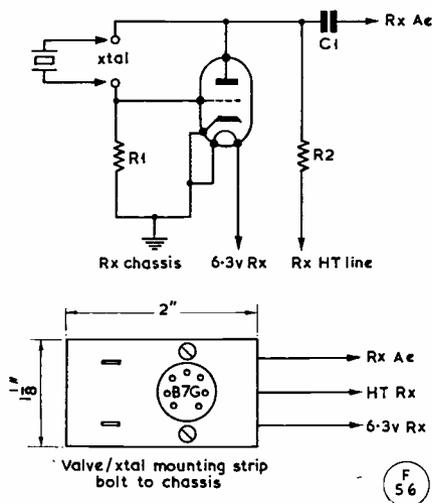
RECEIVER CALIBRATOR UNIT

FOR INTERIOR FITTING

ONE of the most useful practical aids to accurate tuning on the amateur bands is a crystal-controlled band-edge marker—not regarded as a separate exterior unit, to be switched on occasionally if the right connecting leads can be found, but built right into the receiver, with a push-button switch on the front panel, so that it can be brought in for a quick check whenever the band is changed.

The circuit herewith shows just about the simplest conception of this device. It can be mounted on a little panel with all its parts, inside the cabinet, and run from the receiver's own power supply.

By using a 1.75 mc crystal, band-edge beats will appear at 3.5, 7.0, 14.0, 21.0 and 28.0 mc—of course getting progressively weaker as the frequency goes up. It is for this reason that the size of C1 and the coupling into the Rx aerial terminal should be



The circuit for the calibration CO, and a suggested method of mounting, on a panel inside the Rx, from which the oscillator derives its power supplies. As a matter of interest, any active crystal will go off in this circuit—hence it can be used as a crystal tester and a CC frequency generator for Rx alignment. A blocking condenser of 200 μF may be inserted in the xtal plate lead, to keep HT off the crystal.

adjusted to give just an identifiable and not-too-loud beat on 28.0 mc—otherwise the Rx will be paralysed at the LF end of the range; however, this can be countered by reducing the RF gain towards zero when checking on Top Band or 80 metres.

There will be a number of subsidiary beats, generated at odd harmonics and by mixing with the BFO and the receiver's own oscillator. But these are easily eliminated as a source of error if the receiver calibration is known even approximately.

Accuracy will naturally depend on the crystal calibration, and for serious work it would be worth getting a Brookes certificated crystal. Values for the circuit are: C1, 10-100 μF , depending on Rx pick-up, and adjustable by using a few insulated turns round the aerial terminal rather than a direct connection; R1, 27K; R2, 100K; valve 6C4, or any similar B7G triode; HT, taken from the Rx HT line, via a pressel switch mounted as convenient; and LT from the receiver live heater supply.

SPECIAL-ACTIVITY STATIONS

During the summer months, it is customary for AT stations to be established in support of, or as an additional attraction at, local events such as fairs, fêtes, exhibitions, sports days and similar community efforts, at which the opportunity is taken to publicise Amateur Radio. We shall be very glad to hear of any such, and to give them advance publicity. The information required, which will be printed under the heading "Special-Activity Stations," is: Name of organiser (or organising body), callsign to be used and bands worked, whether a special card is offered for contacts made, and address for QSL'ing. The deadlines for the receipt of information, to appear in the following month's issue of *SHORT WAVE MAGAZINE*, are May 11, June 15, July 13 and August 17, addressed "Special Activity—Attention Editor."

MEANING OF "QTHR"

The unofficial but meaningful abbreviation *QTHR* is used to signify that "My address is correct in the latest *Call Book*." If you appeared in the "New QTH" page in any issue of *SHORT WAVE MAGAZINE* up to that of January 1962, you can take it that your callsign, name and address are included in the Spring Edition of the Foreign Section of the *Radio Amateur Call Book*, which is the directory to the radio amateur stations of the world.

SWL • • • • •

MODERN RECEIVER DESIGN — IMPROVING VINTAGE MODELS — SEARCHING FOR DX — READERS' NEWS AND VIEWS — THE HPX LADDER

MANY of our SWL readers would like to build their own communication-type receiver, naturally to an up-to-the-minute design, but they cannot face the complexities of the constructional work. This we can understand, for the building of a complete receiver is not a task to be undertaken lightly. Gone are the days of published designs for simple "bread-board" layouts, when all that one had to do was to buy the components, follow the diagrams, and eventually arrive at a receiver that duplicated the performance of the original.

Nowadays there is far more work involved in the drilling of a chassis, assembly of small pieces of metal into suitable screens, mounting of sub-chassis, and so on, than there is in the fixing of the actual components and wiring. And then there is the process of tracking the tuned circuits, IF alignment, and setting up generally—which, if not done properly, with suitable test gear, can vitiate the whole job, representing a loss of time and money.

Some of our more advanced and experienced SWL readers would doubtless be quite capable of tackling such an undertaking, but most of the followers of this feature are more like the famous but non-existent "average man," and will feel that they can go thus far but no further. It is proposed, therefore, to *discuss* here the design features of an ideal receiver for the average SWL, and, in future instalments, to describe in more detail the different parts and sections, so that readers can build a small piece at a time and use it *in conjunction with their present receiver*.

For instance—if you have an elderly HRO, R.107, R.1155, R.208 or something similar, the chances are that its performance on the HF bands will leave something to be desired, especially in the way of selectivity. However, it will probably give an excellent account of itself on, say, 3.0 mc or any frequency from there up to 7 mc. All that it needs is a modern front end . . . not the old-fashioned idea of a converter, but something using modern valves and ideas. If this new front end has a fixed (crystal) oscillator, then a certain

section of the tuning range of the receiver can be used as a variable IF, which becomes the main tuning control. And the tuned circuits of the actual "front end" (RF stage and mixer) can be treated merely as a pre-selector and operated in much the same way as one uses the aerial trimmer on the present receiver.

Having rejuvenated your old friend with a new front end, you can, later on, banish him temporarily by building a properly designed IF strip or double-IF section; later, you can add a product detector and BFO and, if you want to go so far, lattice-filter circuits to facilitate SSB reception. Add an output stage to this, and there's your old friend, still intact, disengaged and able to take on the new job of stand-by receiver while the new-fangled gadget gives up its teething troubles!

This is not quite the same idea as the old "unit construction," which was a really excellent scheme but wouldn't be too good now in view of the accepted necessity for keeping all the wiring short and well-screened. However, we think it will be possible to make a stage-by-stage conversion of any elderly receiver into something far more modern in conception, taking things easily and taking a lot of trouble over each step.

The Modern Layout

Receivers have undergone vast changes in even the last two or three years. These were discussed at some length in the January 1962 issue of *SHORT WAVE MAGAZINE*, pp.588-590, and so only a brief re-cap is called for here. Gone is the ideal of a massive receiver like the AR88, with two RF stages, mixer and oscillator, three IF stages, detector and BFO, and two audio stages. There are modern jobs one-fifth of the size and weight of the AR88 which will out-perform it, thanks to modern miniature



This impressive SWL layout is run by Chris. Gilroy at Delfryn, Sluvad Road, Panteg, Pontypool, Mon., South Wales. Inside he has receivers covering all bands LF-VHF, the big Rx on the right being an Eddystone 680X, beside the Grundig tape recorder, and outside he has an 86 ft. (yes — 86 ft.) mast carrying a Mosley TA-33 aerial assembly, at a total height of about 90 ft. Well, in the hilly country round Pontypool, one needs something of the sort! On 80m. phone, AM and SSB, the log shows some 53 countries heard, including KH6, ZK, ZL and VK — and very nice, too!

valves and, more than anything, improved circuitry.

The accepted idea for a very adequate receiver, these days, is something of which the line-up is one RF stage only (none at all in some cases), two or even *three* mixers in a row, of which the first is associated with a fixed crystal oscillator, the second with the main tuning oscillator, and possibly the third with an oscillator at quite a low frequency, feeding into the one and only true IF stage (as low as 50 kc). After this, you need only a product detector and its associated oscillator, and one audio stage.

With so many oscillators around the place, the trouble now is not instability, but "birdies" of all sorts! The frequencies have to be cleverly chosen so that beats between the oscillators (and between harmonics of different oscillators) do not cause a welter of spurious signals within the amateur bands. However, this difficulty can be, and has been, overcome.

The diagram on p.589, January 1962 issue (Fig. 3) shows the sort of layout we shall eventually be heading for. But, in the early stages, that "oscillator main tuning" control will be your own receiver's main tuning dial. Band-switching will be achieved by changing crystals, so that the same tuning range on the original receiver will be used for all amateur bands.

Fig. 1 shows the kind of frequency-range that has been used in many cases and proved to be satisfactory. A fairly high first IF is essential, to keep out image interference. Remember that the old ideal of a 465 kc IF meant that signals twice that frequency away from the wanted signal would break in if the front end was not selective enough to reduce the signal-strength of the unwanted one very greatly. Thus, one would tune in a signal on, say, 14200 kc and the local oscillator in the receiver would most probably be 465 kc on the HF side of it—viz. 14665 kc. This, in turn, would be beating with any signal 465 kc on its other side (15130 kc). Hence, on many older receivers with only one RF stage, strong signals from the 15 mc broadcast band could be heard in the 14 mc amateur band. Receivers with *two* RF stages (e.g. HRO and AR88) were needed to protect one from this nuisance, and they just about managed it.

Nowadays we make the first IF much higher, bearing in mind the conversions that are to follow it. With a first IF of, say, 3 or 4 mc, you will obtain sufficient protection from unwanted signals 6 mc away from the wanted ones by the use of one RF stage only—and you *can* get away with it with no RF amplification at all.

Remember this point clearly, then—that the high RF amplification of the older receivers was necessitated chiefly for the suppression of second-channel interference, which, in turn, was due to the use of too low a frequency for the first IF. Of course, they contributed a lot of selectivity at signal-frequency, also, but that can be provided later on—in the second or third IF—so long as we have a front end which is immune to the second-channel nuisance. Fig. 2 shows in rough diagrammatic form

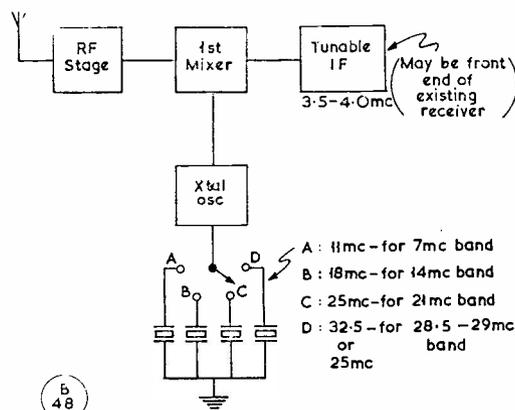


Fig. 1. A typical modern front end, using one RF stage only, a mixer with a crystal oscillator giving a number of fixed frequencies, and a tunable IF stage, which may be the first (RF-mixer) section of your existing receiver. The crystal frequencies and the tuning range shown will give bands 500 kc wide.

why the need for RF stages is reduced as the IF is increased. The "old" standard of 465 kc is compared with an arbitrary figure of 2 mc, assuming that the same response curve for the RF section applies in both cases. It will be seen that a second-channel station 930 kc away could produce a really strong interfering signal, whereas the same kind of interference at a distance of 4 mc would not cause any worry at all.

Of course, another reason for the old notion of using a lot of RF amplification was the fact that so many receivers were allowed to operate on "a piece of wet string" instead of a decently-designed aerial. Some of the modern specimens, *on a good aerial*, will out-perform the older jobs on all counts; but try using them with something round the picture rail and you would imagine the ancient receiver to be the better of the two.

However, there's no reason why one should continue to expect tip-top results without taking any trouble over the aerial. Why cut down on a few feet of wire and, as a result, have to include an extra stage (or even two) in the receiver?

Remember, too, that in the days when the AR88 and the HRO were designed (we keep harping on those two because they were among the best that became available over here on the surplus market) the RF valves were very different from those we use today. The original HRO used 6C6's; the war-time version 6K7's; and the AR88 employed 6SG7's. None of them particularly "hot" by modern standards. But if you improved the first stage by using a better valve, the receivers immediately became prone to cross-modulation, owing to the extra gain available.

Nowadays the better receivers start off with one RF stage using such valves as an EF80, an ECC84 in a cascode circuit, a 6BZ6 or one of the latest frame-grid valves such as an EF183. And you may even find them starting the line-up with a triode

SWL • • • • •

continued

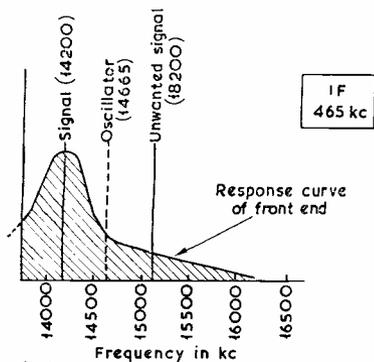


Fig. 2 a

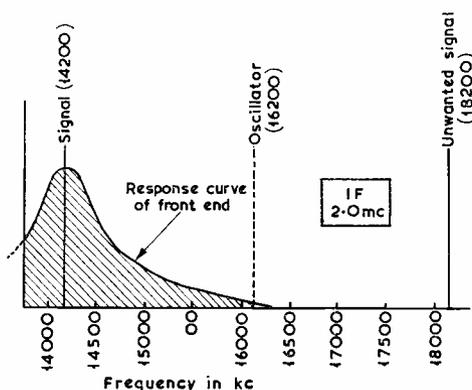


Fig. 2 b

Fig. 2. Comparison of response-to-image interference with IF's of (a) 465 kc, and (b) 2.0 mc. In the first case the unwanted signal, which will give an IF beat with the receiver oscillator, comes well within the response curve, or acceptance, of the receiver. In the second case, assuming the same acceptance, it will be well outside.

mixer, which may well be a Nuvistor (6CW4).

In the January 1962 issue (p.589, Figs. 2 and 3) we showed the block diagrams of the Minimitter MR-44/II and the K.W. Electronics KW-77. This month those of the Mosley CM-1 (Fig. 3) and the Drake 2B (Fig. 4) are given for comparison.

Both receivers use a bunch of crystals which allow the required bands to be covered, the 28 mc band in sections because of its greater frequency width than the others. In one case the sections are 650 kc wide, in the other nominally 500 kc (on a dial covering 600 kc). Both claim a sensitivity of 0.5 microvolt for 10 dB signal-noise ratio. Image rejection is stated as 35 dB down on the Mosley and 60 dB down on the Drake, and both claim extremely small frequency drift, even from initial warm-up.

All this has been an introductory discourse to clear readers' minds of the "old stuff" of the massive school, and we hope that the basically simpler set-up of these modern receivers will encourage more and more listeners to tackle the job of building their own, even if only in small instalments. The front-end is the obvious starting-point; a new front-end can be fed into an old receiver without any extensive de-gutting and will completely alter its performance.

So the next article, in the July issue, will deal with front-ends in some detail—but we hope that SWL's who have been enthused by what has already been said will go ahead and start experimenting on their own. Preliminary advice—don't save a few shillings on components. Use the best available, compatible with your budget. Start right away on a small chassis which you can incorporate, later, into your complete receiver as a sub-chassis. And, if necessary, start by making a front-end with just one crystal, so that you can at least cover one amateur band and compare the new with the old.

Motto for 1962—revive your friend with a new front end!

Top Band Converter

The Mosley CV-160 will be of interest to anyone wanting coverage of the 1.8-2.0 mc (160m.) amateur band, but whose existing receiver tunes from 80m. only. The CV-160 is a fully transistorised, self-powered, crystal-controlled LF converter with an actual frequency coverage of 1750-2000 kc, and is

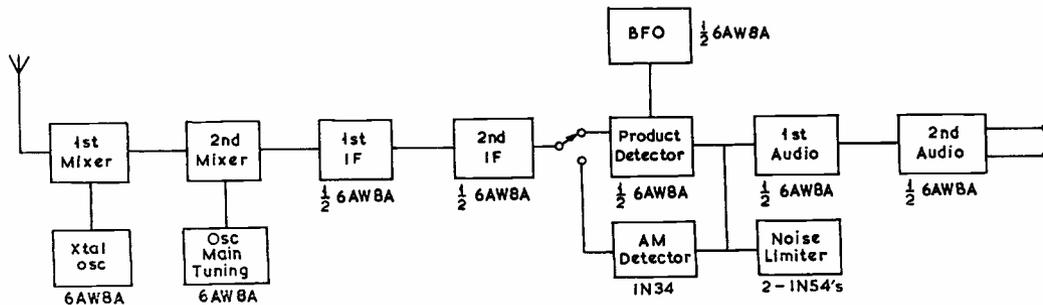


Fig. 3. Block diagram and valve line-up of the Mosley CM-1 receiver, which has no RF stage and uses 6AW8A's extensively; this is one of the latest RCA triode-pentodes, enabling dual functions to be built into the design. The sections of the 6AW8A are not always used in adjacent stages; for instance, one 6AW8A serves as 1st IF and 1st audio, another as 2nd audio and BFO. The CM-1 selectivity is achieved by three double-tuned band-pass circuits, and in addition two transformers are cascaded in the IF section.

B 49

B 50

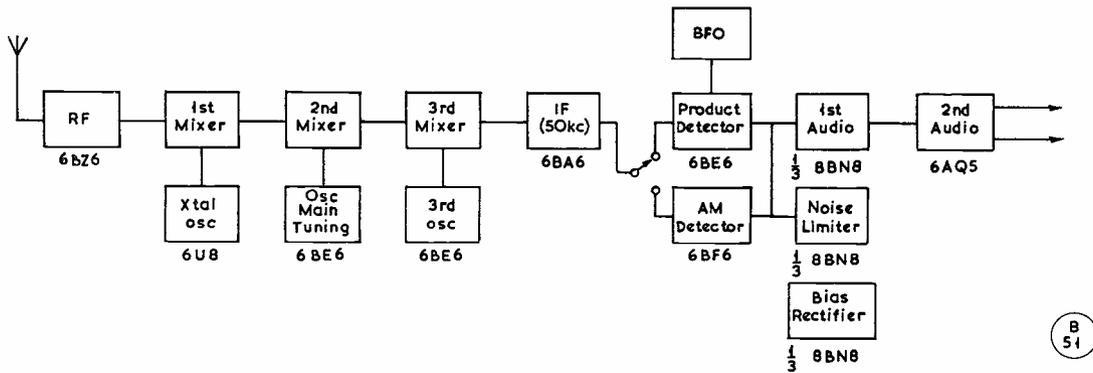


Fig. 4. Schematic of the new Drake 2B receiver, which has three mixers in a row for triple conversion. The first IF is 3.5-4.1 mc, and is tunable; the second IF is 455 kc; and the third 50 kc, with a fixed-frequency BFO and variable pass-band in the IF stage.

designed to work with any receiver which already operates on the 80-metre band, all tuning being done on this range.

Another interesting Mosley item for the SWL is their new RD-5 receiving aerial assembly, designed for peak performance on the 10-80m. amateur bands. It is the amateur-band counterpart of the SWL-7, which covers the SW/BC bands 11-49 metres.

Full details about these Mosley items can be obtained from: Mosley Electronics, Ltd., 15 Reepham Road, Norwich, Norfolk, NOR.54M.

SEARCHING FOR DX

The amateur-band DX-hunting SWL is a species all on his own. The initials SWL, as meaning "short-wave listener," give no idea to the uninitiated of what he does. After all, a man who buys a broadcast receiver and leaves it tuned to a station in the 19-metre band is a short-wave listener . . . but, to us, he's no SWL!

The true SWL is (almost literally, these days) searching for the moon. He wants a receiver that will dig underneath the powerful commercial stations and find the relatively weak amateur signals; and then he has to scrape around between the strong amateur signals (locals, and therefore of no interest!) looking for weaker ones still. Finally, in among these weak ones, there might conceivably be a third layer of still feebler signals which represent the ultimate object of his search—rare DX!

To receive and identify rare DX these days you need the following: A good receiver, fed from a good aerial; an aptitude for listening regardless of all the horrid noises that assail your ears when you first switch on; infinite patience; the ability to hang on like grim death to one signal, ignoring another one which, to the ordinary mortal, completely wipes out the one you want; a knowledge of the times at which various bands are liable to yield the DX you want; an acquaintance with some 300 prefixes; a photographic memory covering several hundreds of pages of your log (have you heard him before?)—and then some more of that patience.

Is it all worth it? Well, there's only one answer to that, by those who have been truly bitten by the bug. Only one thing would make us give it up, and that is the devotion of a few hours each week to study of the necessary fundamentals and licence conditions for the R.A.E. The Morse part can be studied *without* giving it up!

For the newer SWL's and those who have that kind of inferiority complex that makes them say "I shall never be able to hear all that DX," let us just pass on a few hints. We take it for granted that there is an adequate receiver, a pair of headphones and a good pair of ears to go inside them.

Yes—we said *headphones!* Real DX must be ten times harder to find on a speaker than it is with the old-fashioned "cans." They give peakier signals, shut out most of the extraneous noises, and the very fact of putting them on sharpens up one's powers of concentration.

Select your band—perhaps it's the AM phone section of the 21 mc band. Swing round it quickly, from 21150 to about 21350 kc, and note whether the band is (a) full of strong carriers; (b) full of jammers and commercials; or (c) apparently dead. If it's the latter, and you switch off and go back to the telly, then you're no true SWL. No band is so dead that you can assess that fact in a few seconds of listening. It may be the very night you want, with all the strong short-skip stations out of the way and nice little weak carriers coming up all over the place without any interference.

Right—you hear a station talking English so well that he's probably a G. Don't pass him by—what's he talking about? A few words may pass on the clue that he has a nice piece of DX on the hook. If *he* can hear him, there's little reason why you can't, so *hang on*. When he goes over you will at least know not only who he's working, but the fact that the distant station is now actually transmitting. He will probably be on or near the same frequency as the G. Is that him? Good—you have managed to cadge a ride, and been rewarded. (If you want a QSL from him, you'd better hang on, see what he's talking about, how well he is apparently being

received at the other end, and a few more details . . . for instance, if the G station is asking him for repeats and you are copying him solidly, he'll probably be interested to know that when you send your report.)

And so round the band. Someone calling CQ . . . too strong to be DX? Never assume that, for on many occasions, especially on Fifteen and Ten, the DX is stronger than the locals when conditions are reasonable. Hold on until he signs—you may be pleasantly surprised. And don't leave him then, for there may be some interesting stations going back to him. Again, thinking in terms of QSL's, suppose someone interesting does call him, and he doesn't hear them on account of skip or local conditions? Well, there are *two* stations that might appreciate your report: the caller because, although he didn't get through, he was getting out (to you), and the called, because, although he thought he'd put out a fruitless call, it wasn't anything of the kind.

What's next? A net, it seems—someone has just put it over to "so-and-so and the group." Well, at least it's worth finding out who else is in the group, even if you have to listen to a lot of uninteresting chatter before they all get in and have their say. (That's where the "patience" requirement comes in.)

Perhaps the band is noticeably improving, all stations becoming louder. If so, hold on. If it's doing the other thing, and obviously fading out, then that's your cue to go to the next band (lower in frequency, of course). If Fifteen is just fading out, there will probably be a lot of skirmishing on Twenty.

Whether you listen to Phone or CW, go for the weak ones and *hang on*. Especially with CW, you will get to know that elusive sound which proclaims a DX station. There's not always a clue like this, but Pacific stations, West Coast Americans and sometimes Far Eastern stations, often have a wavery, watery kind of note which betrays the fact that they are worth investigating, however strong they may be. This is more difficult to spot on telephony, although it's often there. Use the BFO to look after the carriers.

Don't swoop aimlessly about the band; start at one end and work methodically through it, using whichever direction you prefer for tuning. Stop and look in all the cracks . . . when you have two strong signals fairly close together, and your ears are reeling from the shock of hitting the first one, you may pass right over some weaker ones before arriving at the next "rock-crusher." Go back and look again!

One could go on like this for pages . . . but perhaps these few hints are enough to help you to improve your capabilities as an SWL. A good receiver is highly desirable, but it won't do the

SWL • • • • •

continued

listening for you . . . the important component is the one that fits between the headphones.

READERS' FORUM

Quite a few newcomers report this time, and we are glad to welcome them. *R. R. Loe (Colchester)* has done a major rebuild on an R.1155, starting with a grounded-grid RF stage and adding a second IF at 115 kc. *R. Adams (Shoreham)* runs an R.208 and feeds the IF into a home-built receiver tuned to 2 mc; a Q-multiplier and BFO are next on his list.

Dave Douglas (Epsom) has an Eddystone 870 and has eyes on a VHF converter; he, among many others, confirms "HB4FD" as being OK and says that the HB4 prefix is assigned to military stations. *Don Radley (London, W.10)* wants to know if any other readers would like to correspond on tape using *Morse*. This seems an excellent idea . . . anyone interested please write to him direct (85 Droop Street, Queen's Park).

B. J. Tarry (Culcheth) has an Eddystone 640 and a simple loft aerial, but hopes to appear in the HPX list next time. He complains about the 80-metre SSB nets, to which one can listen indefinitely without hearing any call-signs (many others share these views). *Vincent Lear (Wallasey)* is only thirteen, but has been interested for two years, and has now graduated from the family BC set to a CR-100 of his own; he is keenest on Top Band and 21 mc.

B. Curnow (Plymouth) says that for three Saturday mornings in a row he has heard all Continents before 0930 GMT; he joins the HPX ladder. *N. H. Maerer*



Father-and-son SWL station operated by Frank (right) and Richard Parkhurst, at 56 Cromwell Road, Yeovil, Somerset. Their receivers are a BC-348 and a K.W. amateur-band converter. The cards shown have all come in during the last six months or so.

(Sutton Coldfield) is another new "climber," with an S.840 and a 66-ft. wire only eight feet high. Nigel Hardy (Shepherd) is a 15-year-old who has been in the game for a year; he is an active operator in a CCF Network, apart from which he listens on Eighty, Forty and Fifteen (CW only).

A. D. Kirby (Doncaster) would like to correspond with another SWL of his own age (16). He is keenest on Eighty and Forty, phone, but he has heard some DX on Twenty with a two-valve TRF job; write him at 9 Osborne Road.

M. M. Herpels (Plymouth) started up in 1958 (at the age of 42) and is getting keener and keener (he says that six weeks of watching TV every evening, after having sold his receiver, drove him up the wall—and he now has an R.206 Mk. II!) A. Frater (Alston, Cumberland) has the distinction of living in the highest village in England (Nenthead, 1500 ft. a.s.l.). He runs a 52 Set and would like to hear from anyone who has modified one of them. (QTH: Overwater, Nenthead, Alston, Cumbs.)

Regular Correspondents

All the foregoing were newcomers; now for some of the old stagers. Bob Griffiths (Ventnor) comes back to the HPX ladder—on the top rung! He says that way back in January he had heard 260 countries on phone—218 of them on SSB! On Forty phone (including SSB) he has 156 countries; on Eighty, 99. And he's heard W-land on Top Band SSB, also . . . A. P. Tuite (Kidderminster) is a former operator of ZB2A—now runs a Super Skyrider and a 150-foot wire, but longs for the former AR88 . . . Ever heard of a KL7 in Zone 19? A. W. Nielson (Glasgow) heard KL7FLC, on a drifting iceberg near the North Pole, and collected his fortieth zone thereby! Other highlights included ZS6TE, HH9GR, VP2AB and

Correspondence from short wave listeners is welcomed for this feature, the next appearance of which is in the July, 1962 issue. Good photographs of SWL stations can be used and are paid for on publication; prints must be sharp, and should be accompanied by adequate descriptive notes. The closing date is May 31 and all mail should be addressed: "SWL," c/o The Editor, Short Wave Magazine, 55 Victoria Street, London, S.W.1. Please note that lists of calls heard are not required and cannot be published, on account of space.

many other choice ones on Eighty (with "an aged CR-100").

"Thank goodness the bands are picking up," writes P. J. Weyell (Richmond), but since he said that they have fallen right down again! Robert Hunt (Sheringham) wants details of the Citizens' Band organisation; this is an American ploy whereby licences are issued under severely restricted conditions. Bob Towers (Nottingham) heard a lot of UAØKAR (Dickson Island) on SSB, and had conflicting reports as to which Zone that was; we make Dickson Island Zone 18. (Incidentally, those who hung on to this station must surely by now have heard him signing /UA1 from Franz Josef Land, whence he has been causing pile-ups.)

R. K. Western (Torquay) is chasing the British countries on Top Band, and finds it interesting. Early Sunday mornings have provided some good DX (EL4A, EP2BK and the like) same band . . . H. G. Shaw (Heswall) has reached the magic figure of 600 for HPX, after despairing of ever making it . . . P. L. Ashley (South Croydon) recommends a tilted folded dipole (used to be known as the "T2FD") . . . Martin Pettit (Teddington) is getting going on CW and it won't be long before he appears on the CW ladder; he has also been chasing the Eighty SSB DX, but without much luck.

C. N. Rafarel (Poole) continues his DX TV reception—new masts, new aerials and now equipped for Band V, with Band IV to follow. He's watching for Auroræ and meteor showers! He will also be looking around the amateur 430 mc band . . . Geoff Douglas-Smith (London, N.6) asks whether the 7.1-7.3 mc band is used by amateurs outside this country. Yes, it is, in the Western hemisphere—including USA, of course. Also whether 27 mc is an amateur band anywhere. Well, that one used to be, but is no longer. Finally, do our authorities issue the same call under different prefixes—could there be a G3XYZ and a GM3XYZ? No—they don't, with the exception of certain special calls with a GB prefix, which sometimes duplicate calls already issued, but are short-duration licences only.

HPX LADDER

(Starting January 1, 1960)

Qualifying Score—150

SWL PHONE ONLY	PREFIXES	SWL PHONE ONLY	PREFIXES
R. Griffiths (Vetnor)	642	B. Pack (Frome)	233
H. G. Shaw (Heswall)	600	L. F. Meikle (Hexham)	230
A. W. Nielson (Glasgow)	514	R. Hunt (Sheringham)	224
R. J. C. Coats (Cowie)	494	N. H. Maer (Sutton Coldfield)	223
P. Weyell (Richmond)	457	M. Warrington (Burnley)	212
C. N. Rafarel (Poole)	446	C. J. Goddard (Warwick)	205
B. M. Crook (Abingdon)	402	J. Rigley (Donnington)	194
D. Edwards (Birkenhead)	400	G. Ferriday (Donnington)	186
M. T. Bland (Oakham)	361	S. Foster (Lincoln)	182
R. K. Towers (Nottingham)	346	D. S. Radley (London, W.10)	170
R. K. Western (Torquay)	344	P. Whipp (Enfield)	161
D. Gray (Easington)	307	A. T. James (Exeter)	156
H. M. Davison (Ashstead)	307		
D. Bell (Nottingham)	291		
W. J. Atherfold (Southwick)	261		
H. Warburton (Aldershot)	255		
P. Stevens (Wallington)	252		
R. Adams (Shoreham)	246		
L. Lumsden (Edinburgh)	246		
R. R. Loe (Colchester)	246		
M. Pettit (Teddington)	243		
R. Ashby (Hinckley)	239		
W. S. Teanby (Scunthorpe)	239		
B. Curnow (Plymouth)	233		

CW ONLY

R. K. Western (Torquay)	428
P. J. Weyell (Richmond)	365
H. Warburton (Aldershot)	332
R. Ferguson (Glasgow)	326
H. M. Davison (Ashstead)	324
W. Ferguson (Glasgow)	318
C. J. Goddard (Warwick)	221
N. A. T. Hardy (Shepherd)	170

(NOTE: Listing includes only those who reported for this issue or the March issue. Failure to report for two consecutive issues means removal from the list. Next list — July issue, continuing as above from January 1960.)

FOR THOSE WHO MAY BE SITTING

The Radio Amateurs' Examination this month—Good Luck, and may you neither baffle nor confuse the Examiner. He is only too glad to make out a "pass" slip for you if he possibly can.

JUST as this section was clearing for press, the Met. boys made a *gaffe* by forecasting continuing bad weather when, in fact, it turned out warm and bright, with clearing skies at night—just the sort of Wx situation we want for the development of good tropospheric conditions. At the moment of writing, it is not known what actually transpired, and all that can be said here and now is that there could have been a spell of improving VHF conditions from Easter onwards. Anyway, we shall see when the reports come in for next time.

For the period until this change in the weather at Easter, a glance at the barograph trace would be enough to suggest that tropo. conditions could not have occurred for more than short spells—all hills and dales, accompanied by miserably cold weather and the minimum of sunshine. The evenings of April 12/13 showed a temporary improvement, but activity remained low.

However, that is all in the past. The prospects now are very much brighter, and one looks forward to evenings with a few thin layers of stratified cloud in an otherwise clear sky, a high glass, and perhaps even that most telling sign of all for good tropospheric conditions—smoke rising straight up into the sky and then levelling out flat at the point where the temperature inversion occurs. If you should notice that effect, wherever you are, get straight home and go on the air, for the two-metre band will be wide open.

More Beacon Stations

Of course, the best check on conditions, over the U.K. at least, is given by one of the beacon transmitters, particularly if you are at such a range that normally you do not get much of a signal from GB3VHF (or GB3CTC); at A.J.D.'s, GB3VHF is a poor signal compared with some of the London-area stations; hence, when GB3VHF is good and strong, it is a sure indication that conditions are open to the south-east, probably as far as the nearer EU's.

There is now another 24-hour beacon transmitter in operation which should prove to be as useful

VHF BANDS

A. J. DEVON

**Conditions More Promising—
Another Beacon Transmitter—
GB2IC, Scilly Isles, June 16-29—
Notes, News and Comment—**

as GB3VHF on 144.5 mc. Under the direction of G3CZZ, a transmitter signing GB3CTC on 144.1 mc has been installed at the Cornwall Technical College, Redruth, Cornwall. The beam heading is north-east (thus covering the greater part of the land-mass of England) and the Tx runs 80w. input. The signalling procedure is long periodic dashes, with the call-sign sent on CW. It should prove to be an excellent conditions-marker—and, of course, like GB3VHF, can be taken as being a highly accurate frequency check as well. Reports on the reception of GB3CTC, anywhere, are requested, and should be sent to W. D. Old, G3CZZ, at the College.

For the 70-centimetre band, there is a beacon on 431.5 mc, signing GB3GEC, and operating from the G.E.C. Research Centre, Wembley, North London.

Those responsible for the provision of these beacons, and their regular operation (which involves maintenance and monitoring) are to be congratulated on doing a really useful and worth-while job for the VHF fraternity.

And, still on the subject of beacons, when the two-metre band is wide open into Europe, the TV station at Dresden (East Germany)

on 145.25 mc, radiating a vision characteristic, is an interesting and reliable marker—it can always be heard when conditions are really good for working into DJ/DL.

Coming Events

The eighth London UHF/VHF Convention takes place on Saturday, May 19, at the Kingsley Hotel, Bloomsbury Way, London, W.C.1, opening at 10.0 a.m. with

**TWO METRES
COUNTIES WORKED SINCE
SEPTEMBER 1, 1961
Starting Figure, 14
From Home QTH Only**

Worked	Station
55	G2CIW, G5MA
50	G3BA, G3NNG
43	G3KPT, G3LTF
42	EI2A
40	G2AXI, G8VZ
39	G3BNL
38	G3OJY
36	G3PBV
35	G3CO
34	G5DW
32	G3JYP
31	G3FUR, G13ONF
29	G2BHN
28	G3OAA
27	G3OSA
24	G5QA
21	GW3MFY
20	G3GSO, G5DS, GW3ATM
19	G3JWQ
18	G3HWR, G8VN
17	G3ICO, G3OBD, G5UM
15	G3FIJ, G3NPF

This Annual Counties Worked Table opened on September 1st, 1961, and will close on August 31st, 1962. All operators who work 14 or more Counties on Two Metres are eligible for entry in the Table. QSL cards or other proofs are not required when making claims. The first claim should be a list of counties with the stations worked for them. Thereafter, counties may be claimed as they accrue. Note: While new claims can be made at any time in the period from now to end-June 1962, all operators are asked to send in amended scores as often as possible, in order to keep the Table running up-to-date. After June 30, 1962 (with two months still to run to the end of the 12-month season), only amended scores from those already standing in the Table at that date will be accepted, unless they are new claims from operators licensed w.e.f. June 1962.

an exhibition of equipment ; after lunch there is a session of lectures and technical discussions on subjects of UHF/VHF interest. This is followed by the Convention dinner, which is the high-light of the occasion, leading on to what is described on the programme as "presentation of awards and prizes." The closure is at 10.30 p.m.

A strong committee ensures that this is always a good show, well supported by the VHF fraternity, at which personal contact can be made with keen types from all over the country. To attend the Convention only (the proceedings until the end of the lecture session) costs 3s. 6d. For the Convention and the Dinner, the all-in charge is 24s. 6d. Bookings should be made immediately through F. G. Lambeth, G2AIW, 21 Bridge Way, Whitton, Twickenham, Middlesex. He cannot guarantee Dinner seats for applications received later than May 16.

For years, VHF/DX has been looked for from the west—though many West Country operators would swear that most London stations never beam their way. Be that as it may, many beams will be

70 CENTIMETRES

COUNTIES WORKED SINCE

SEPTEMBER 1, 1961

Starting Figure, 4

From Home QTH Only

Worked	Station
18	G3KEQ, G3NOX/T
17	G3LQR
16	G2FNW
14	G3KPT
12	G3HAZ, G3NNG
11	G2CIW
10	G3JHM/A
9	G3LHA
8	G5UM
7	G3HWR
6	GW3ATM
4	G5QA

This Annual Counties Worked Table is reckoned from September 1st, 1961 and will close on August 31st, 1962. All operators who work four or more Counties on the 70-centimetre (430 mc) band are eligible for entry. Counties should be claimed as they accrue, and otherwise the rules are as for the Two-Metre Annual Table

headed in their direction during June 16-29, when members of the City & Guilds Radio Society, signing the exotic call GB2IC, will be on from the Scilly Isles, where the daffodils bloom long before they do in Cornwall. Because GB2IC will also be operated on other bands, and the Scilly Is. score with us as a county, schedule arrangements are asked for in order to keep things under control at the operating end. Write D. J. Beattie, G3OZF at G5YC, C. & G. R.S., Electrical Engineering Dept., City & Guilds College, Exhibition Road, London, S.W.7, to fix dates and times. Operation by GB2IC can be on CW or AM phone as conditions require.

Who's On, Where

With the opening of the VHF season, we shall be glad to revert to the practice of earlier years of printing calls-heard lists for the two-metre and 70-centimetre bands. To start with, these lists should be of calls *heard* only; they should not include stations within about 50 miles of the receiving point; the list you send in should be in strict alphabetical and numerical order, on a sheet quite separate from any report or claim for the tables, and this sheet should be headed with your call-sign, address and the band covered, with a note of the date area over which the list applies.

Those who have files of SHORT WAVE MAGAZINE going back to 1958-'59 can see how these lists were presented—except that in those days calls-worked were included. It is proposed that, to start with, at least, only *heard* lists should be published, as these are more likely to be of general interest. And, of course, in this context the offerings of our SWL readers will be welcomed.

As it is probable that this may be rather short notice for the compilation of calls-heard lists for the next issue, we will start showing them with July's "VHF Bands"—unless, of course, a sufficient number of lists is received by the deadline for the June issue.

Reports and Recordings

From up in Wilmslow, Ches., G3IUD writes to amend his

**TWO METRES
COUNTRIES WORKED**

Starting Figure, 8

- 20 G3HBW (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, LX, OE, OH, OK, ON, OZ, PA, SM, SP)
- 19 G5YV (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, LX, OE, OK, ON, OZ, PA, SM, SP)
- 19 G3CCH (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, OE, OH, OK, ON, OZ, PA, SM, SP)
- 18 G3LTF, G6NB (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, LX, OK, ON, OZ, PA, SM, SP), ON4BZ
- 16 G3GHO, G3KEQ, G5MA, G6RH, G6XM, PA0FB
- 15 G2XV, G3AYC, G3FZL, G4MW, GM3EGW
- 14 G2CIW, G2FJR, G2HDZ, G3BLP, G3FAN, G3HAZ, G3IOO, G3JWQ, G3KPT, G3WS, G5BD, G6LI, G8OU, OK2VCG
- 13 G2HIF, G3BA, G3CO, G3DKF, G3DMU, G3DVK, G3GPT, G3NNG, G5DS, G6XX, G8VZ
- 12 EI2W, F8MX, G3EHY, G3GFD, G3GHI, G3JAM, G3OBD, G3PBV, G3WW, G5SCP, G5SML, G8DR, GW2HIY
- 11 G2AJ, G2CZS, G3ABA, G3BDQ, G3GSO, G3IUD, G3JZN, G3KUH, G3LHA, G4RO, G4SA, G5UD, G6XA, OK1VR
- 10 G2AHP, G2AXI, G2FQP, G2HOP, G3BK, G3BNC, G3DLU, G3GSE, G3KQF, G3LAR, G3MED, G3OSA, G5MR, G5TN, G8IC, GC2FZC, GW3ATM, GW5MQ
- 9 G2DHV, G2DVD, G2FLX, G3FIJ, G3FUR, G3LTN, G4LX, G8GP, GC3EBK, GM3DIQ
- 8 EI2A, G2DDD, G2XC, G3AEP, G3AGS, G3BOC, G3EKX, G3GBO, G3HCU, G3HWJ, G3JHM/A, G3KHA, G3MPS, G3OHD, G3VM, G5BM, G5BY, G8SB, GW3MFY

placings in the Tables, as he is now at 70C in All-Time Counties and 9C in Countries Worked on two metres.

EI2A (Navan, Co. Meath) also moves in the Tables, and it should be noted that he is inland and about 30 miles north-west of Dublin. EI2A mentions the following as new stations heard on two metres: EI6AI, 145.8 mc, Co. Donegal; EI7D, 145.25 mc, Co. Dublin; GI3HJA, 145.8 mc, Co. Tyrone; GI3PKY, 145.6 mc, near Belfast; GI3OYG, 145.8 mc, Co. Antrim; and GD3IWP, 145.85 mc. EI2A says that the Cambridge Univ. team on Snaefell (*see* photograph) "worked hard under rather poor conditions." His own regular schedule with Louis, G3EHY, of Banwell, Som., continues with almost 100% exchange of reports, but generally conditions into the U.K. have been poor through the winter.

EI2W, who still signs for Co.

Dublin, has moved the home QTH to Dun Laoghaire, which is Erse for the place we used to know as Kingstown. (And if you look for Navan in Co. Meath, it may well be marked on any fairly recent map as An Uaimh.)

G3IOE (West Denton, New-castle) writes to say that his recent move of QTH does not appear to have helped much, as he's heard practically nothing so far—however, he was only using a dipole at the time of writing, while awaiting "planning permission" for the beam array at 40 ft.

From 'way down near Penzance, G3OJY is on again, but using temporary QRP gear. He intends to operate mobile, and static-mobile, from the high ground in that district. He is just off 144.1 mc (the GB3CTC beacon frequency) and will be on most evenings, also on Sunday mornings, and attempts to QSO from the London area would be welcomed—for those wanting skeds, his new QTH appeared on p.605 of our January issue.

Writing in for the first time, to stake claims, is G3OAA (Edgbaston, Birmingham), who is at 28C in the two-metre Annual; he runs QRP, the Tx arrangement being three 12AT7's used as osc.-multiplier, doubler and PA, the final input being 4 watts only; this is modulated by a pair of 6AQ5's, and the output goes into a slot-fed 8/8 at 30 ft. Here we have a nice example of what QRP can do with a gainy aerial system. G3OAA concludes with some kind remarks about the inspiration he derives from "VHF Bands" each month. Well, thanks, and it is pleasing to know that somebody gets something out of all the hard work . . . *(It is most important that readers should not encourage A.J.D. in this way.—Ed.)*

By an odd chance, the next letter, from G3LMG (Tavistock, Devon), also mentions that the first thing he turns to each month is "VHF Bands" *(watch it.—Ed.)*. The point that G3LMG makes is that in working /M on three trips from Tavistock to Hastings since Christmas, he finds that sticking to the Band Plan tends to deprive a mobile on a long journey like that of many potential contacts—

people just do not tune widely enough. There is a lot in this, and G3LMG remarks that the only solution would seem to be to have "a handful of crystals" for the various zones. The real solution is that when a mobile is known to be on and wanting contacts, the whole band should be searched to find where he is.

G3OSA (Wimborne, Dorset) has got on to the 10C rung in Countries Worked, and in the All-Time is at 37 counties with 199 different stations QSO'd. His Tx is now something better than the old modified SCR-522; the new line-up is 12AT7 osc.-multiplier, into a 5763, followed by a QV04-7, driving a QQV06-40A PA to 60w. input on CW, modulation being by series-gate control. The aerial at G3OSA is only a 5-ele indoor Yagi and his location near the South Coast makes it that much more difficult for him to work GDX. Therefore, his position in the Annual is all the more creditable.

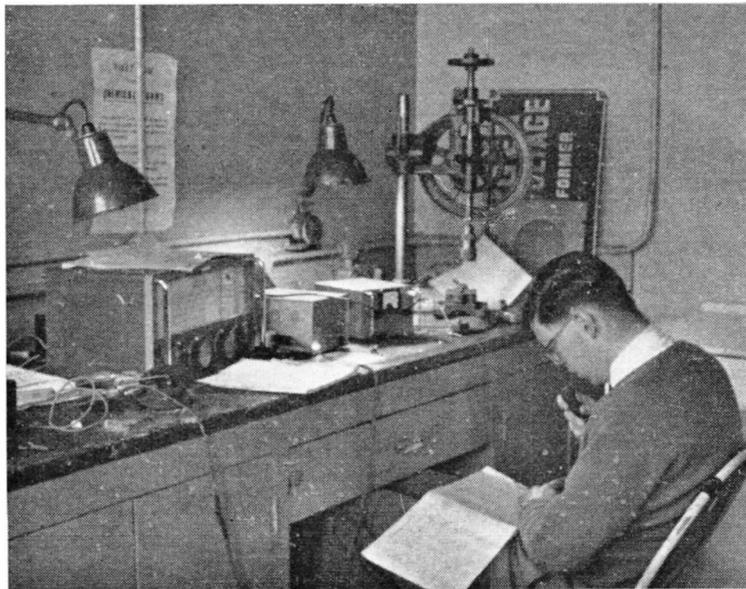
Yet another who is doing well with an indoor beam is G3NPF (Southend-on-Sea), who has a 4-ele

Yagi in the roof-space and only runs 20w. input. Yet he has worked 85 different stations since the beginning of January and gets into the Annual with 15C.

For G2DHV (Sidcup, Kent) activity on VHF is general, in the sense that he operates both fixed and mobile. From the home QTH, 252 different stations have been worked, and he has had ten confirmed mobile-to-mobile contacts on two metres, with different /M stations.

From Dedham, Essex, G3LQR reports activity on three VHF bands—two metres, 70 centimetres and 23 cm. For this last, he has a DET-24 tripling (which, says G3LQR, is very inefficient), and a ½-wave trough-line converter. Tests on 23 cm. are in hand with G3FIJ. at 5 miles, and the gear is being improved all the time. For the 70 cm. Annual, G3LQR is at 17C worked, with 20C for the All-Time. Having had gale damage, the 70 cm. array is to be rebuilt to 64-ele at 40 ft.

G13HXV (Belfast) is mainly interested in the 4-metre band, on



The Cambridge University Wireless Society two-metre station on Snaefell, I.o.M., was set up in the workshop of the Ministry of Aviation transmitter site on the mountain. Operating during the late March-early April period, they struck a period of very poor conditions. However, quite a number of interesting contacts were obtained (G3OYW is shown operating) and the Withers gear worked very well; the T.W. converter was used with an Eddystone 840C receiver as IF/AF unit, the aerial being a 6/6 J-Beam, which was fitted up with only 4 ft. of ground clearance. About 60 contacts were made with 35 different stations in five countries—but once again the sked with ON4BZ failed; GM2FHH was also on schedule, but no contact was obtained with him either.

TWO-METRE FIRSTS

G/DL	G3DIV/A-DL4XS/3KE	5/6/50
G/EI	G8SB-EI8G	23/4/51
G/F	G6DH-F8OL	10/11/48
G/GC	G8IL-GC2CNC	24/5/51
G/GD	G3GMX-GD3DA/P	29/7/51
G/GI	G3DA-GI2HML	29/6/49
G/GM	G3BW-GM3OL	13/2/49
G/GW	G5MQ-GW5UO	22/10/48
G/HB	G6OU-HB1IV	12/9/53
G/I	G5NF-I1KDB	14/6/59
G/LA	G6NB-LA8RB	29/6/53
G/LX	G5MR-LX1AS	23/7/55
G/OE	G3HBW-OE1WJ	4/1/60
G/OH	G3HBW-OH1NL	14/12/60
G/OK	G5YV-OK1VR/P	27/10/58
G/ON	G6DH-ON4FG	25/9/48
G/OZ	G3WW-OZ2FR	1/6/51
G/PA	G6DH-PA0PN	14/9/48
G/SM	G5YV-SM7BE	1/6/51
G/SP	G5YV-SP6CT/P	28/10/58
G/YU	G3GOP-YU1CW	7/5/61
GC/DL	GC3EBK-DL3VJ/P	22/3/53
GC/EI	GC2CNC-EI2W	8/10/51
GC/F	GC2CNC-F9OK	17/11/53
GC/GI	GC3EBK-GI3GXP	14/9/56
GC/GW	GC2FZC-GW8SU	16/6/54
GC/ON	GC3EBK-ON4BZ	4/3/53
GC/OZ	GC3EBK-OZ2FR	2/3/53
GC/PA	GC3EBK-PA0HA	16/7/55
GD/EI	GD3DA/P-EI2W	30/7/51
GD/GM	GD3DA/P-GM3DA/P	29/7/51
GD/GW	GD3DA/P-GW5MQ	28/7/51
GI/DL	GI3GXP-DL1SE	5/1/56
GI/EI	GI3QGB-EI2W	13/6/51
GI/GD	GI2FHN-GD3DA/P	29/7/51
GI/GM	GI2FHN-GM3OL	1/7/49
GI/GW	GI2FHN-GW3ELM	8/7/49
GI/HB	GI3GXP-HB9RG	7/10/60
GI/OK	GI3GXP-OK1VR/P	27/10/58
GI/ON	GI3GXP-ON4BZ	5/1/56
GM/DL	GM2FHH-DJ1XX	29/5/55
GM/EI	GM3BDA-EI2W	12/6/51
GM/HB	GM3HLH-HB1RG	4/8/57
GM/ON	GM3EGW-ON4BZ	21/11/53
GM/OZ	GM2FHH-OZ2IZ	18/6/57
GM/PA	GM3EGW-PE1PL	22/4/53
GM/SM	GM2FHH-SM6ANR	22/7/55
GM/SP	GM3EGW-SP3GZ	7/10/60
GW/DL	GW5MQ-DL4XS	22/9/51
GW/EI	GW2ADZ-EI8G	19/4/51
GW/F	GW2ADZ-F3LQ	14/5/50
GW/HB	GW2ADZ-HB1IV	14/9/53
GW/OK	GW2HIY-OK2VCG	6/10/60
GW/ON	GW2ADZ-ON4YV	13/5/50
GW/OZ	GW2HIY-OZ5AB	14/6/59
GW/PA	GW2ADZ-PA0HA	13/5/50
GW/SM	GW2ADZ-SM6QP	1/7/53
CN2/CN8	CN2AO-CN8MB	26/6/55
DL/OZ	DL6SW-OZ2FR	4/3/51
DL/SM	DL2DV-SM7BE	10/3/51
EI/DL	EI2W-DL3VJ/P	29/8/52
EI/F	EI2W-F8MX	9/8/56
EI/ON	EI2W-ON4BZ	21/9/51
EI/OZ	EI2W-OZ5AB	14/6/59
EI/PA	EI2W-PA0FC	10/10/53
ON/LA	ON4BZ-LA1KB	4/7/53
ON/LX	ON4TR-LX1MS	? ?
ON/OZ	ON4BZ-OZ2FR	3/6/51
ON/SM	ON4BZ-SM7BE	2/3/53
ON/SP	ON4BZ-SP6CT/P	28/10/58
ON/9S4	ON4UD-9S4BS	19/8/56

which he has now worked 5 counties and 4 countries, as well as holding several 4-metre "firsts" for GI. He proposes that we list distances worked on 70 mc, in order to encourage activity and get more people interested in 4-metre operation, and gives his best DX on that band as 185 miles. GI3HXV (*QTHR*) will be glad to fix skeds with any G's who may like to get in touch.

The I.o.M. Foray

Unfortunately, the C.U.W.S. party struck a patch of very bad conditions on two metres for their Snaefell expedition. Using Withers equipment and an Eddystone 840C as IF/AF amplifier, with a 6/6 J-Beam a few feet off the ground, their gear was accommodated in the workshop of the Min. of Aviation station at the top of the mountain. The duty-op. from the GD6UW group signed his own call with the appropriate prefix, and one of the hardest parts of the whole undertaking was for the operator concerned to get up and down the mountain; the two-metre station was opened at 3.0 p.m. daily, and kept on the air till there was nothing else to work. Contact between the Snaefell station and the base-party operating GD6UW was maintained *via* Top Band.

Their final log summary shows 60 two-metre contacts made with 35 different stations in five countries, with G2XK in Harrogate as best DX. None of the GDX/EDX schedules made produced any result, so Guy of ON4BZ was thwarted again! In his report, G3OYW mentions that it was not only radio conditions that were bad—the Wx was awful, too. The aerial had to be securely lashed to prevent it blowing away, it was iced-up more often than not and, to cap it all, the Ministry's station was struck by lightning! No damage was done to the amateur-band gear, but the G.P.O.'s line equipment was burnt out.

Well, even if the results were rather disappointing, the C.U.W.S. boys had a good try (and will certainly have learnt a lot)—anyway, we gather that they propose to repeat the attempt next year, all being well.

Point on Nuclear Tests

The American nuclear tests in the Pacific were just about starting when this went down, and it is interesting to see that one of the research objectives is to "find out whether a nuclear explosion 100 miles above the earth affects radio communication."

On this particular point, an article in the October 1959 issue of *SHORT WAVE MAGAZINE* ("H-Bomb Explosion Effects on Radio Communication") discussed in some detail the observations made in the Pacific area when the Americans carried out their 1958 tests. This article is worth re-reading in the present context, especially as the Americans are to explode a number of nuclear devices, over a longer period than before. Our VK/ZL *confrères* are well placed (if that is the right expression!) for observations on the amateur bands from HF to VHF—and no doubt in due course we shall be hearing of some odd results in the Pacific area.

Perhaps by the time this appears, the British scientific satellite UK-1 will have been got into orbit—the first attempt at a launch was frustrated by rocket engine trouble. UK-1 will be transmitting in the 136-137 mc satellite frequency band, using a solar-powered transistor transmitter running about 250 mW input. (*Later*: UK-1, named "Ariel," achieved orbit on April 26, and was reported to be functioning perfectly.)

And just to get us all back to earth again, those who are suffering from TVI may be amused to know that Prof. J. Edwards, the well-known authority on science and education, describes his TV Rx as "that haunted fish tank."

Conclusion

With the break in conditions, we hope to have some interesting results to report next time. And don't forget the calls-heard lists. The deadline for June is **Wednesday, May 16**—address it all to: A. J. Devon, "VHF Bands," *Short Wave Magazine*, 55 Victoria Street, London, S.W.1. We meet again on June 1st—till then, 73, and keep the Rx open for "Oscar II," due any time this month.

— INTO THE RALLY SEASON —

The first of this year's Mobile Rally events—at Trentham Gardens—will be over by the time you see this. Because we went to press before April 29, the report cannot appear until the June issue of *SHORT WAVE MAGAZINE*. Anyone who may have some photographs—good prints, and interesting subjects—taken at Trentham is asked to send them in right away, as we may be able to use them to illustrate the story.

In the list shown here, there are two additions to the Mobile Rally programme as already published, making it a total of thirteen events now to take place. There may be some others which have not yet been notified to us—we can only publish in this monthly list the Rally plans about which we are informed by the organisers concerned. For next month, the closing date is May 11.

May 6: Thanet Radio Society Third Annual Mobile Rally, at Cliffsend, Ramsgate, on cliff-top overlooking Pegwell Bay (A.256). Described as “an ideal spot for a family outing to the sea.” Talk-in will be by G3DOE/A on Top Band, and by G3BAC/A on two metres. Further information from: R. A. Bastow, G3BAC, 31 Canterbury Road East, Ramsgate, Kent.

May 20: Hunstanton, Norfolk, bucket-and-spade Rally and mobile D/F contest on Top Band, starting at 2.0 p.m. Organised by Peterborough Amateur Radio Society (hon. secretary, D. Byrne, G3KPO, Jersey House, Eye, Peterborough, Northants.).

May 27: Mobile Rally at Stockwood Park, Luton, Beds., opening at 2.30 p.m., with talk-in on 2m./160m. Organised by the Luton and District Amateur Radio Society; details from W. H. Burnet, G3GQZ, Ashtonville, Chalton, Luton, Beds.

June 17: West of England Mobile Rally at Longleat, nr. Frome, Som. Competitions and talk-in on LF/VHF.

June 24: Mobile Rally at U.S. Air Base, Barford St. John, Oxon., organised by Amateur Radio Mobile Society.

June 24: Yorkshire Coast Mobile Rally, Spa Royal Hall, Bridlington, East Yorkshire (new event organised by Bridlington and District Radio Society). Details from: I. Purvis, 10 Meadow Road, Bridlington, E. Yorks.

July 8: North-Eastern Mobile Rally at Bents Park Recreation Ground, South Shields (S.S. & District A.R.C.).

July 14: Southern Counties Mobile Rally, on Southampton Common. (*Note that this is a Saturday.*)

July 15: Harlow Mobile Rally, Harlow New Town.

July 15: Mobile Rally organised by Chiltern Amateur Radio Club at West Wycombe Estate, near High Wycombe, Bucks.

August 19: Annual Rally, Derby and District Amateur Radio Society, Rykneld Schools, Derby.

September 9: Rally organised by the Thames Valley Amateur Radio Transmitters Society.

September 16: Annual Lincoln Hamfest and Mobile Rally, organised by Lincoln Short Wave Club.

For the East Yorkshire meeting on June 24 (*see listing*) we are informed that there will be “facilities whatever the weather near the beach and sea,” with all the attractions of a seaside resort for the distaff side and the harmonics. The programme includes a driving competition, lecture on mobile interference suppression, raffles, and talk-in on Top Band and VHF. All the Bridlington boys need is the weather to make sure of an enjoyable occasion.

TELESCOPIC MAST FOR MOBILE

A recent development in the wide range of telescopic aerial masts produced by A. N. Clark (Engineers) Ltd. has been the fitting of a specially adapted 16ft. high model to the boot lid of a Ford Consul car. Although developed for the BBC for a special project, the equipment has wider applications, and will be of interest to amateur /M operators on VHF.

The requirements called for a mast which would extend to 16 feet, yet the aerial was to be usable with the mast retracted. Extension should be a simple operation, and no modification of the vehicle proper was permissible, although a spare boot lid might be used, leaving the original unchanged. The photographs show how this was accomplished.

The mast is pneumatically operated, the air pressure required being supplied by a hand pump, the handle for which can be seen on the offside of the boot lid. The entire nearside of the boot interior is free for equipment or luggage, the spare wheel (in the case of the Consul) being set in offside in the boot space. The feeder is left lying in random fashion inside and emerges through a rubber grommet in the



The retractable position for the Clark telescopic aerial mast, as fitted to a Ford Consul. The handle for pumping up the mast can be seen on the lid of the boot — see text for notes on the design and application. Extended view overleaf.

boot lid. When the mast is being retracted the feeder has to be worked back through the grommet, which in practice has caused no bother. Should it be required to gain access to the inside of the boot when the mast is up, the mast attachment and position enables this to be done without lowering the aerial. It will be seen that the mast is sloped towards the rear of the car. In fact, it could have been set vertically, but the appearance was so much improved by the backward rake that strict design necessity was waived in favour of the improved styling gained.

About 20 pump strokes are needed to extend the mast, although this will vary with the aerial weight being lifted. The aerial shown is the one actually used during testing, although obviously any type of aerial could have been fitted, subject to a maximum weight limit of 5 lbs.

Safety Precautions

It is not recommended that the vehicle be driven with the mast up! For this reason, the ignition key is chained to the mast control-valve screw, thus necessitating its removal from the control valve before the engine can be started.

Although developed to suit the Ford Consul, this telescopic mast assembly could obviously be fitted to any similar car with a fairly flat-topped boot lid. Had it been preferred, the hand pump could have been located inside the car, using fittings which are standard items in the Clark range.

The Clark telescopic assembly extended to its full height of 16 feet — it is not recommended that the car be driven under these conditions! The aerial support is quickly retractable, as shown in another view on p.153.



ON THE ISLE OF MAN WITH GD6UW

ANOTHER VACATION SAGA

I. SYKES (G3OYW)

AROUND Easter-time, for the past three years, members of the Cambridge University Wireless Society, G6UW, have made the journey to the Isle of Man in order to operate under what, to us, is rather an exotic call-sign — the GD prefix. This year the period of operation was from 28 March to 4 April. This was rather earlier than usual — but so was the Easter Vacation at Cambridge, which made it the only time possible.

Operation was, as last year, from two separate locations: One, the "home station," was set up in a boarding-house in Douglas, under the Club call-sign GD6UW. The other was on Snaefell — see "VHF Bands." Two separate stations were installed at the Douglas QTH. One was for 160 metres, using a Labgear "Topbander"; and the other for the HF

bands, with an LG.300. Three receivers were available; these were the Club's own Eddystone S.640, an Eddystone 910, and a new Eddystone 840C. The 840C was found to be a very good receiver; a little lacking in selectivity for the pile-ups created on 14 mc CW, perhaps, but it proved to be extremely stable and quite sensitive. These three receivers were alternated between the various set-ups until the best arrangement was found. Aerials in use at the Douglas QTH were a 264 ft. end-fed wire (used mainly for Top Band), a doublet, and a Mosley V3-Jnr. ground plane.

On 160 Metres

Results were at first rather disappointing, very few stations being worked in the first couple of days. Then it was discovered that although the transmitter seemed to be loading into the half-wave aerial, it was not doing so — all the RF was being lost in our ATU. When this was realised and put right, results improved accordingly — best DX being five OK's worked in quick succession, one coming back with RST-599. Many favourable reports were received on the Labgear Topbander modulation. In the end, some 120 QSO's were achieved on 160 metres. It might also be mentioned that Top Band was the only

frequency on which we could get a signal from the Douglas QTH to the two-metre station on Snaefell.

HF Band Working

The Labgear LG.300 performed magnificently, and this rig was the most successful of all three. No trouble was experienced either in operation or loading of the transmitter into the various aeriols. These were directly switchable from the operating position, and it was noticeable that the V3-Jnr., compared with the doublet, gave an increase in DX signals and a decrease on the Europeans. On 80 metres, both the long-wire and the doublet gave very good coverage.

In the end, over 700 contacts were made in 56 countries, best DX being VP8GQ, as well as ZL's and VK's. Most of the operation was on 20-metre CW and, as an aid to sorting out in the inevitable pile-ups, an audio filter was found invaluable.

All contacts are being QSL'd, and all cards will have been sent out *via* the bureaux by the time this



The GD6UW (Cambridge University Wireless Society) team at Douglas, I.o.M., March 28-April 4. Left to right: G3PNC, G3OYW (long-suffering landlady, whose ready co-operation made the visit so successful and enjoyable), G3NHL, G3MZM, with G3PIT and G3MDR at the rig, and SWL Kershaw (right). These chaps had a very good time — it being their third trip to the fastnesses of GD — and by the end they had knocked up 700 contacts with 56 countries on the HF bands (including VP8, ZL and VK), and about 120 QSO's on Top Band. A two-metre station was also operated from the summit of Snaefell—see "VHF Bands."

is in print. (Those who QSL direct with an s.a.c. will have got an additional card.) It was as well that it was only a week that GD6UW was over there, as on visits to some of the local amateurs it was amazing to find the amount of GD QSL'ing that goes on. One I.o.M. amateur said that he has to order cards in batches of 25,000!

Operators who shared the work were G3MDR, G3MZM, G3NHL, G3OYW, G3PIT, G3PNC, and SWL John Kershaw. Interests varied, and thus contacts varied from rag-chewing to QRQ operating on 20m. CW. All the operators concerned will be available next year, when it is hoped to arrange another such trip.

Finally, from GD6UW we should like to express gratitude to the various manufacturers — Stratton & Co., Mosley, J-Beams, T. W. Withers and Labgear — whose generous help made the trip possible.

"THE MEASUREMENT OF FREQUENCY"

In their "Notes on Applied Science" series, from the National Physical Laboratory, No. 28 is entitled *The Measurement of Frequency*. It describes shortly and simply the techniques which make possible frequency determination to laboratory standards. The starting point is the caesium unit, which is used to calibrate the quartz clocks. These in turn monitor and in effect control the frequencies used by MSF (on 2.5, 5.0 and 10.0 mc) and GBR on 16 kc, both stations being at Rugby. For local laboratory work, the N.P.L. also undertakes the calibration of resonators, and the design and construction of some typical instruments are described. For those interested in precise frequency measurement, from VLF into the microwave regions, *The Measurement of Frequency* is a source of authoritative information. It is obtainable from H.M. Stationery Office, York House, Kingsway, London, W.C.2 (and H.M.S.O. provincial sales offices) at 1s. 11d. post free.



G3NHL, of the C.U.W.S. group on a DX-pedition to the Isle of Man early in April, buttoning up something-or-other for the HF rig operated under GD6UW. The gear included a Labgear LG.300 with its PSU/Mod. unit, and various Eddystone receivers.

POINT OF VIEW

SATURDAY NIGHT AND SUNDAY MORNING

ALL the year round, except for a few week-ends of blessed quiet, our HF bands are filled by a shrieking mass of stations engaged in the business of "swopping numbers." In these circumstances a QSO means an exchange of call-signs, a signal report and a three-figure combination. Weaker characters sometimes waste a little time on "Good Morning" and even "73," but they have no chance of winning the contest, because the ruthless types, cutting out the courtesies, manage to tot up an extra five or six QSO's per hour.

Where are they all going, and what are they achieving? After the first hour of one of these efforts, one knows whether one is either getting out or not. Suppose it is the ARRL Contest, one of the oldest and most hallowed events: After working 30 or more W's and receiving an average report of S7 or S8, one can fairly assume that one can go on doing this until the supply of stations runs out. Long before that occurs, one will have been bludgeoned into a state of unconsciousness or insanity.

Who gets anything worthwhile out of all this? The DX bands are blanketed by a mass of bustling stations, none of whom has time to stop and talk to anyone. Mass-hysteria is just round the corner! No one will deny that these things are a test of operating ability, but what *kind* of operating is this? One can squeeze a number through in conditions under which it would not be possible to copy a message.

Contests, if they are to mean anything, ought to be based on the ability of the contestants to transmit and receive intelligible messages of some length, with



“. . . have been off the air for some years on a major rebuild here . . .”

marks deducted for omissions and errors. These hit-and-run affairs are mere tests of endurance, not of ability in the sphere of radio communication.

They were tolerable in the days when there were just two or three well-organised, world wide affairs each year. Now the whole thing has become farcical, with individual countries of no importance whatever on the world scene staging their own "Worldwide DX Contests" and everybody settling down to grind out the same old mad formula for the whole of yet another week-end.

Many, it is true, use them as a quick means of picking up some DX in the shape of another "new country" (which, by the way, probably is not a real country at all). But does anyone really think, deep down, that an exchange of a few figures makes a real "contact"? Does one know anything about the man at the other end—his name, his rig, anything at all? A return to sanity is overdue, and let QSO's be *contacts* once again.

B.B.

STOKE MANDEVILLE PARAPLEGICS

During July 22-29, the Tenth International Games for Paraplegics will be held at the world-famous Spinal Injuries Centre at Stoke Mandeville, near Aylesbury, Bucks. In connection with this event, it is proposed to establish an all-band Amateur Radio station, and to have an exhibition of books and equipment, particularly such items as can be used or made by the physically handicapped. The arrangements for the Games station—which will have a special-activity callsign—are the responsibility of K. Jones, G2FQW, 3/50 Shelley Road, Worthing, Sussex, who is himself a paraplegic and operates from a wheel chair. Further details of this interesting venture will appear in due course.

RADIO AMATEUR CALL BOOK

For the last 40 years, the only directory to the radio amateur stations of the whole world has been the *Radio Amateur Call Book*, published quarterly in two parts—the sections entitled "Radio Amateurs of the U.S.A." and "Radio Amateurs outside the U.S.A." These titles are self-explanatory, and are usually shortened to the "American" and "Foreign" editions. The former gives the callsign, name and address of about 240,000 amateurs in the United States and her possessions. The "Foreign" section of each edition covers the rest of the world, including the United Kingdom, and lists some 110,000 QTH's. For many years now, we have been *Call Book* agents for the U.K. and Europe, and it is our responsibility to keep the G-prefix section up-to-date. This is done by the regular compilation of new-QTH and change-of-address lists, airmailed to the Chicago publishers of the *Call Book*, and means that the U.K. listing is always the latest available in print—for instance, the current (Spring) issue of the Foreign edition includes, under the U.K. heading, all new G callsigns and changes of address notified to us up to January 1962. The *Radio Amateur Call Book* is regularly advertised in the Publications Department page in every issue.

THE OTHER MAN'S STATION

GI3IEO



THE station of GI3IEO—owned and operated by W. B. Johnston, 146 Ulsterville Park, Portadown, Northern Ireland—has been developed over a period of almost exactly ten years, to that shown here. The ticket came through in March 1952, and a start was made with QRP CW on 160-80m., using a 6V6 in the PA. After various other transmitters home-built to SHORT WAVE MAGAZINE designs (all of which worked very well), the first commercial venture was with a Panda "Cub" Tx and an Eddystone S.640 receiver.

Then having worked through a Panda "Explorer" and a Labgear LG.300, and progressing from the S.640 to an Eddystone S.680X, GI3IEO has ended up (temporarily) with a K.W. "Vanguard," and is full of praise for it.

At the moment, therefore, the shack accommo-

dates the K.W. "Vanguard," running 50 watts input, with a Ronette crystal microphone, and the 680X, the aerial system consisting of a K.W. trap dipole. GI3IEO is also on two metres, with a Withers converter into the 680X, a motorised 5-element wide-spaced Yagi beam with remote control and indication, and a transmitter with a QV03-10 in the PA, taking 10 watts. The two-metre side of the station complete is contained in the lower part of the operating bench, and change-over is by single switch control.

Apart from two metres, activity is mainly on the 10-80m. bands, and the objective is Sideband with a K.W. "Viceroy," in due course. Like all Northern Ireland AT stations, GI3IEO is advantageously placed for attracting the DX—and, with good equipment, he can hardly go wrong.

WOULD YOU HAVE KNOWN

That what is described by an American manufacturer as "a single-channel diagnostic audiometer" is actually a tester for hearing aids? It is recommended for use by professional persons described as "clinical audiologists"—a new variation on the old trick-cyclist theme, evidently.

THE ARC HARMONIC GENERATOR

Produced at the National Physical Laboratory, this is a remarkable new method (described as a fundamental scientific discovery) of producing radio waves up to frequencies of 700,000 megacycles, or about 0.4 mm. wavelength. Basically, the arc harmonic generator is a frequency multiplier, the principle of operation being somewhat as follows: An electric arc discharge is maintained in an atmosphere of argon at a very high pressure (several tons

p.s.i.). Power from an SHF oscillator at about 35,000 mc—say, 1 cm. wavelength—produces a field in which the arc operates, to generate harmonics of this frequency into wavelength regions for which no other means of generation at present exist. The immediate use of these new sub-millimetre waves will be to measure the velocity of electro-magnetic (radio) waves, to the highest accuracy. Other applications foreseen are in the study of atomic arrangement (the frequencies now being produced correspond to those of some atoms when bound together to form molecules), and of the arc discharges called for in controlled nuclear fusion.

The arc harmonic generator at the N.P.L. is due to original work by Dr. Keith Froome, of the Laboratory, who also developed the Mekometer, the new measuring device using light waves. He has been awarded the Wolfe Prize for 1961, worth £500, for his contributions in these fields—see p.121.

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.

G3PJI, J. E. Hoare, 4 Burns Road, Thornhill, Southampton, Hants.

GM3PML, D. B. Smith, Dalmara, Carslogie Road, Cupar, Fife.

G3PPZ, J. R. R. Smith, 5 Holly Grove, Blaby, Leics.

G3PRE, W. Armstrong, 24 Newbury Street, South Shields, Co. Durham.

G3PRP, R. G. Poole, 69 Oxford Street, Coalville, nr. Leicester.

G3PSU, P. R. Martin, 48 Thorold Road, Bitterne Park, Southampton, Hants. (Tel.: Southampton 54807.)

G3PTG, R. H. W. Gealy, 21 Newholm Drive, Wilford, Nottingham. (Tel.: Nottingham 89342.)

G3PTX, L. Buckley, 188 Compstall Road, Romiley, Stockport, Cheshire. (Tel.: Marple 2107.)

G3PTZ, A. Bensley, 25 Wimbourn Avenue, Grimsby, Lincs.

G3PUM, E. Troop, 22 Bradford Avenue, Bolton, Lancs.

G3PUW, S. Pennington, 6 The Limes, Bletchley, Bucks.

GW3PVC, O. T. Mooney, Electrical Section, R.A.F. Station, Valley, Holyhead, Anglesey.

G3PVD, G. Loades, 49 Coleridge Avenue, South Shields, Co. Durham.

G3PVH, D. J. Sumner, 33 Greenway, Horsham, Sussex.

G3PVK, R. P. Ellington, 132 Bridgewood Road, Worcester Park, Surrey.

G3PVL, C. F. Beech (ex-VK3AIC), 50 Andrews Lane, Formby, Liverpool, Lancs.

G3PVO, A. Day, 88 Upperthorpe, Sheffield 6, Yorkshire. (Tel.: Sheffield 344015.)

G3PVU, J. R. Hunt, 51 Sincil Bank, Lincoln, Lincs.

G3PWG, E. C. George, 82 Venner Road, Sydenham, London, S.E.26.

GW3PWH, A. B. J. Drewson (ex-ZC4TX Club), 2 Albert Place, Mumbles, Swansea, Glam.

G3PWJ, R. W. Fisher, 63 Swan Crescent, Langley, Oldbury, Worcs.

G3PWK, J. B. W. Braithwaite, 16 Jerome Square, Aldershot, Hants.

G3PWM, P. W. Martin, 4/11 Wyndham Crescent, London, N.19. (Tel.: ARCHWAY 4208.)

G3PWQ, A. Marven, 82 Barnsdale Road, Reading, Berks.

G3PWR, D. G. Marsh (ex-VS9ARM), 108 King George Road, Rossington, Doncaster, Yorkshire.

CHANGE OF ADDRESS

EI2W, H. L. Wilson, P.C., Granite Lodge, Lower Glenageary Road, Dun Laoghaire, Co. Dublin. (Tel.: Dun Laoghaire 82890.)

EI4C, H. W. Moss, Knocknamaddy, Ballybay, Co. Monaghan.

G2BHZ, E. F. Gadsden, Belclare, Belle Hill, Bexhill-on-Sea, Sussex.

G2DTO, N. Hales, 4 Westbrook Road, Thornton Heath, Surrey.

G2FZI, F. Hill, Irving Lodge, Keinton Mandeville, Somerton, Somerset. (Tel.: Charlton Mackrell 350.)

G2HFD, Dr. H. S. Reeve, 20 Lock Chase, Blackheath, London, S.E.3.

G2HIO, A. Walmsley, The Woodlands, Bath Lane, Moira, nr. Burton-on-Trent, Staffs.

G2KI, G. A. Spencer, 27 Lincoln Drive, Pyrford Woods, nr. Woking, Surrey. (Tel.: Byfleet 46722.)

G3AEF, D. J. Sole, 6 Blackthorne Road, Gee Cross, Hyde, Cheshire.

G3AKU, R. Harding, 31 Greendale Road, Bakersfields, Nottingham.

G3ATH, H. Pain (ex-G13ATH), c/o Officers' Mess, R.A.F. Station, Boulmer, nr. Alnwick, Northumberland.

G3CFQ, J. Howat, 28 Lilac Grove, Cantley 3, Doncaster, Yorkshire.

GC3EDX, M. N. Perrins (ex-5N2MNP), Ballagussad, Ballasalla, Isle of Man.

G3EFR, F. Simpson, 175 Bethune Avenue, Kingston-upon-Hull, Yorkshire.

G3EGG, W. L. Middlemiss, 67 Tollgate Road, Colney Heath, St. Albans, Herts.

G13IEO, W. B. Johnston, 146 Ulsterville Park, Portadown, Co. Armagh.

G3IKN, V. A. Stagg, 2 Jackson Close, Easthampstead, Berks.

G3JGR, Dr. G. S. Rockwood (4S7GS), The Rainy Hospital, Madras, S. India.

G3JJU, R. E. Hurst, 8 Bryanston, Blandford, Dorset.

G3JMO, A. L. Taylor, 8 Heythrop Drive, Acklam, Middlesbrough, Yorkshire.

G3KCI, A. H. Webb, 27 Grove Road, Luton, Beds.

G3LJW, L. D. V. Taylor, 13 Chylds Court, Coventry, Warks.

G3LMG, J. Spray, 1 The Retreat, Abbotsfield, Tavistock, Devon.

G3MNT, G. A. Farrall, 31 Springfield Road, Gatley, Cheadle, Cheshire.

GM3MXN, T. Sorbie, 99 Machan Road, Larkhall, Lanarks.

G3NGI, G. W. Davey (ex-DL2AU), 41a West Street, Marlow, Bucks. (Tel.: Marlow 1603.)

G3NMH, H. E. Perkins, 6 Haven Close, Stratton St. Margaret, Swindon, Wilts.

GM3NMN, R. H. Dunlop, 155 Napier Road, Glenrothes, Fife.

G3NPB, D. W. Blackford, Springfield, Haydon Bridge, Hexham, Northumberland.

G3OLW, J. G. Burnett, 34 The Ridgeway, Cleadon, South Shields, Co. Durham.

G3OSP, S. E. Plumtree, 46 Jervoise Street, West Bromwich, Staffs.

G3OXN, D. Swainson, 4 Grasmere Avenue, Spondon, Derby.

GM3PGX, D. E. Murgatroyd (ex-G13PGX), 23 King Street, Burghhead, Elgin, Morayshire.

G3XY, R. H. Webb, 22 Southbank Road, Kenilworth, Warks. (Tel.: Kenilworth 52679.)

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for June Issue : May 11)

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

IT is hoped that we shall have a good entry for the "League Table" Contest, on which to report next month. Clubs who entered for the first run (April 24-26) are reminded that their scores should be sent in with their activity reports in time for the next issue (see deadline above). As this affair gathers momentum—and we certainly hope that it will do so—we visualise greater activity on the air from Club stations who are equipped for all bands. It is the intention to keep to short-duration events and to give, where possible, alternative dates, as was done with the first one.

League Table—Second Contest

Round II is a Top-Band affair, since quite a number of Club stations seem to work Top Band and Eighty only. The rules are just as they were for Round I (see p.103, April 1962), with the following operating changes: *Dates*, May 22, 23, 24. *Times*, as before (1800-2100 GMT). Operation on 1.8 mc, CW or Phone, for contacts with as many U.K. counties as possible. Scoring—one point for each different county worked, only one station in each county to qualify for a score.

Claimed score with the activity reports, by the deadline of *June 15*, for the *July* issue. Three dates available, May 22, 23 and 24, but the scoring entry is restricted to any one of these days.

CLUB REPORTS

On May 8 **Bradford** will be visiting the city's Automatic Telephone Exchange in Manchester Road; on the 22nd there will be a talk on Amateur TV, by G3EKE; and June 12 is booked for a Treasure Hunt. **Dorking** have an informal meeting at The Wheatsheaf on May 8, and will be discussing Field Day plans on May 22.

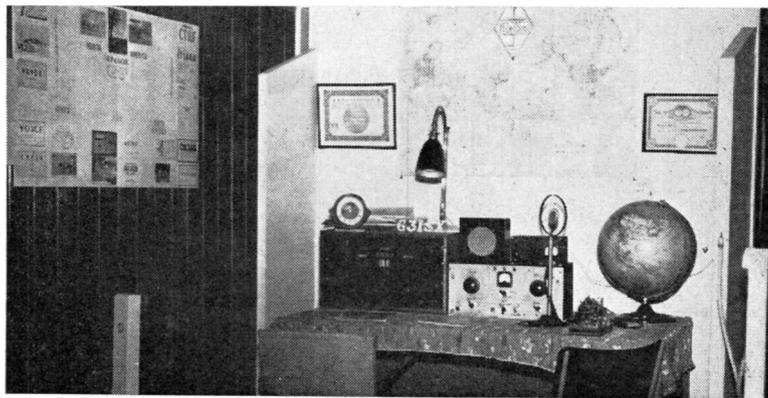
Greenford will be hearing about The Early Days of Radio, from G3BVV, on May 11, and will have a "Night on the Air" on the 25th. **Halifax** meet on May 8 to hear G5YV's talk on "Life on Two Metres"; on the 22nd they have a Ragchew, and

on June 5 a visit to Ferranti, Manchester (meet at the Beehive and Crosskeys 6.30 p.m.).

Harrow hold their annual Constructional Contest on May 25, and a Field Day *post mortem* on June 8. Alternate weeks they hold Practical Evenings, and R.A.E. instruction and Morse are also looked after. **Lothians**, who meet on the second and fourth Thursdays in the YMCA, South St. Andrews Street, Edinburgh, are booked for a talk on Commercial Test Gear on May 10, and Field Day briefing on the 24th. June 14 is the date of their Constructional Competition, and June 28 their AGM.

Northern Heights, who recently held their AGM, meet on May 16 to hear about Converters for Two and Four (G3OGV); on May 30 they visit Holme Moss TV Station, and on June 6 there is to be a lecture on Printed Circuitry (G3JKD). All meetings at The Sportsman Inn, Ogden, Halifax. **South Birmingham** will be having a talk about SSB, from G5BJ, on May 17.

Reigate are holding a Juniors' Meeting on May 5, and on the 19th the subject is Crystal Grinding, by G3FM. **Southgate**, on May 10, will hear a talk on The Problems of Radio Production, by G3KZR (Arnos School, Wilmer Way, N.14). **Wolverhampton**



The North Kent Radio Society is a very active group, members of which have made an appearance at several local events during the last few months. These have included a station signing GB3ENT at the Erith Show, and G3ISX (shown here) at the C.E.G.B. Generating Station, Belvedere for the Commonwealth Technical Training Week. They have also had a very successful "bucket-and-spade" party, and wound up their season with a visit to a London theatre supported by 70 members and friends. As the hon. secretary (C. J. Leal, G3ISX, 1 Deepdene Road, Welling, Kent) says "We at North Kent are feeling very proud of ourselves."

hold their first Two-Metre Field Day on May 6, followed by their Annual Dinner on the 7th. May 21 is booked for station visits and May 26/27 for the 420 mc Contest.

Chesham report that response to their poster scheme has been greater than was expected; membership has more than doubled in the first quarter of 1962, with the accent on youth. Associate members have been helping with the modifying and testing of various transmitters, and reports would be welcome on their 80 metre CW (May 5, 0830; May 10, 2200; May 19, 0830; and May 2, 2200). Also on their 160-metre phone (May 8, 1830; May 12 and 26, 1400). All times GMT; call-sign G3CLJ.

Newbury held their AGM and elected G3LLK

chairman and G3JTK secretary. Normal meetings are on the last Friday, 7.30 at the Canteen, Elliotts of Newbury, West Street. Visitors will be most welcome. **Plymouth** are now licensed as G3PRC, and are on the air Tuesday evenings on either 80 or 160 metres. At their last meeting the judging for the G5ZT Trophy took place, first prize going to G3LWJ for an SSB Exciter Unit, with Cyril Cummings (Z-Match) and Ted Fallon (GDO) as runners-up. Meetings on the first Tuesday at the Guild of Social Service building; other Tuesdays at the Clubroom, Virginia House Settlement.

Slade meet on May 4 (Power Transformers), May 11 (Visit to Edgbaston Observatory), May 18 (Radio Fundamentals Part II) and June 1 (Radio Controlled Models). As always, the Clubroom is always available to members, and meetings on Thursdays include informal discussions, Morse classes and operation of G3JBN.

Sutton Coldfield meet on May 10 to hear about Transistors in Transmitting Equipment, and on May 24 for a D/F event in Sutton Park. On June 2 they are active in the ICI Kynock Centenary Celebrations, at Witton.

York report that their Thursday evening meetings are going well, and their transmitter, G3HWW, has been working DX on 14 mc despite a bad location. Several tape-recorded lectures are booked for the future, and a talk by G3GJY on the Class-D Wavemeter.

Cornish held their AGM on April 4, and elected G2AYQ president, G3NKE chairman and G3PEP secretary; but the present secretary remains in office for another two months. The film "The Phoenix Tower" was shown, by courtesy of the BICC Film Library. **Cray Valley** meet on every fourth Tuesday at the Station Hotel, Sidcup. They, too, held their AGM recently; G3FBA is chairman and G3JJC secretary. They have a good programme of talks and visits for the coming season, and also hope to have their own station running, later in the season.

Peterborough, at their April meeting, heard about modern Direction-Finding from an Air Ministry electronics engineer. On May 4 they will have a practical demonstration of Top Band D/F (at Peterborough Technical College). May 20 is the date for a Bucket-and-Spade Mobile Rally, with D/F Foxhunt, at Hunstanton (2 p.m.). And on June 1 G3FUR will be talking about "A 40-valve Receiver."

Burnham-on-Sea are negotiating for a Clubroom, but meanwhile they continue to meet at the Crown Hotel. Next meetings there, both 8 p.m., are on May 8 and June 12, the latter being the AGM.

Crawley have recently had talks on the A.A. Communications Network (by the Communications Manager) and on Project Oscar (by G2UJ). Next meeting, May 23, when they will discuss Field Day arrangements.

North Kent meet at the Congregational Hall, Clock Tower, Bexleyheath, on May 10 for their AGM; following meeting on May 24. **South Hants** will be gathering on May 14, at Southampton University.

British Timken heard a talk, on April 3, by G3PBP (ex-ZD4CP, 9C1CP, ZD1RO) on his experiences

Names and Addresses of Club Secretaries reporting in this issue:

A.R.M.S.: N. A. S. Fitch, G3FPK, 79 Murchison Road, London, E.10.
BRADFORD: M. Powell, G3NNO, 28 Gledhow Avenue, Roundhay, Leeds 8.
BRITISH TIMKEN: J. B. Johnson, G3JJW, 44 Castle Avenue, Duxton, Northampton.
BURNHAM-ON-SEA: M. Lillington, G3JFY, 19 St. Mary's Road, Burnham-on-Sea.
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.
CRAY VALLEY: S. W. Coursey, G3JJC, 49 Dulverton Road, London, S.E.9.
DORKING: J. Greenwell, G3AEZ, Wigmore Lodge, Bear Green, Dorking.
ENFIELD: V. Croucher, G3AFY, 15 Nelson Road, London, N.15.
EXETER: S. Line, 46 Roseland Crescent, Heavitree, Exeter.
GREENFORD: E. Gray, G3CPS, 111 Ravenor Park Road, Greenford.
GUILDFORD: J. R. Barker, G3PDX, 35 Banders Rise, Merrow.
HALIFAX: G. Sunter, 24 Booth Fold, Luddenden Foot, Halifax.
HARROW: A. C. Butcher, 95, Norval Road, North Wembley.
HASTINGS: W. E. Thompson, G3MQT, 8 Coventry Road, St. Leonards-on-Sea.
I.H.H.C.: M. Allenden, G3LTZ, 16 Grovefields Avenue, Frimley, Aldershot.
LOTHIANS: T. Simpson, GM3BCD, 118 Braid Road, Edinburgh 10.
MANCHESTER: A. B. Langfield, G3IOA, 2 Rowland Street, Manchester 10.
MIDLAND: C. J. Haycock, G3JDJ, 360 Portland Road, Birmingham 17.
NEWBURY: G. T. Allen, G3JTK, 83 Huntshook Road, Tadley, Basingstoke.
NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax.
NORTH KENT: B. J. Reynolds, G3ONR, 49 Station Road, Crayford.
PETERBOROUGH: D. Byrne, G3KPO, Jersey House, Eye, Peterborough.
PLYMOUTH: R. Hooper, 2 Chestnut Road, Peverell, Plymouth.
PURLEY: E. R. Honeywood, G3GKF, 105 Whytecliffe Road, Purley.
R.A.I.B.C.: W. E. Harris, 4 Glanville Place, Kesgrave, Ipswich.
READING: R. G. Nash, G3EJA, 9 Holybrook Road, Reading.
REIGATE: F. D. Thom, G3NKT, 12 Willow Road, Redhill.
SLADE: C. N. Smart, 110 Woolmore Road, Birmingham 23.
SOUTH BIRMINGHAM: T. W. Legg, Flat 3, 80 Alcester Road, Birmingham 13.
SOUTHGATE: R. W. Howe, G3PLB, 162 Victoria Road, London, N.22.
SOUTH HANTS: G. J. Meikle, G3NIM, 34 Victoria Road, Netley Abbey.
SURREY (CROYDON): S. A. Morley, G3FWR, 22 Old Farleigh Road, Selsdon, South Croydon.
SUTTON COLDFIELD: L. E. R. Hall, G3IGI, 24 Calthorpe Road, Walsall.
THAMES VALLEY: K. A. H. Rogers, G3AIU, 21 Links Road, Epsom.
THANET: J. Barnes, G3BKT, 18 Grange Road, Ramsgate.
WIRRAL: A. Seed, G3FOO, 31 Withert Avenue, Bebbington.
WOLVERHAMPTON: J. Rickwood, 738 Stafford Road, Fordhouses, Wolverhampton.
YORK: N. Spivey, G3GWI, 80 Melton Avenue, Clifton, York.

CLUB PUBLICATIONS RECEIVED

We acknowledge, with thanks, the receipt of the following Club Publications: **South Hants** (*QUA*, April); **North Kent** (*Newsletter*, No. 55); **Southgate** (*Newsletter*, April); **Purley** (*Splatter*, April); **Wolverhampton** (*Newsletter*, April); **Reigate** (*Feedback*, April); **South Birmingham** (*QSP*, March); **Midland** (*News Letter*, April); **IHHC** (*Newsletter*, Vol. 1, No. 6); **Guildford** (*Monthly Natter*, March); **Enfield** (*Lea Valley Reflector*, Vol. 13, No. 9); **ARMS** (*Mobile News*, March); **Hastings** (*Natter-Net Notes*, March); **Surrey** (*SRCC Monthly News*, April); **Crystal Palace** (*Newsletter*, No. 77); and **RAIBC** (*Radial*, April).

abroad, illustrated by colour slides. **Reading**, for their April meeting, had a discussion on the wide variety of receivers found in amateur stations. The subject for the May meeting is How to Become a Radio Amateur; Palmer Hall, West Street, at 7.30 on May 26. All interested persons are invited.

Surrey (Croydon), with their AGM behind them, report another very successful year, and they re-open on May 8 with their Constructional Contest for the G3BCM Award. This annual event is at 7.30 at the Blacksmiths Arms, South End, Croydon.

At **Exeter**, the meeting-place is the YMCA, St. David's Hill, their next being on June 5 and July 3, starting at 7.30 p.m. A programme has been arranged right through until December.

OBTAINING THE MAGAZINE REGULARLY

Any newsagent, anywhere in the world, can obtain **SHORT WAVE MAGAZINE** to order through the usual trade channels. So far as readers in the U.K. are concerned, there should be no difficulty or delay, as we now supply by order to wholesalers all over the country, and any local newsagent should be able to get the *Magazine* through his usual trade supplier. Where there is any doubt, difficulty, delay, confusion or lack of interest (and unfortunately we have many instances of this brought to our notice), we can accept direct subscription orders at 36s. for a year of 12 issues, delivery being by post on the day of publication, the first Friday in the month. Orders, with remittance, to: Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1. The overseas subscription rate is based on \$5.25 U.S.

NEW QTH NOTE

To be sure of getting your call sign, name and address into the *Radio Amateur Call Book*—the only directory to the AT stations of the whole world—let us have your QTH (if a new licence), or change of address, without delay. This ensures publication not only in the "New QTH" feature in the *Magazine*, but also in the *Call Book*.

AMATEUR POPULATION IN ZS

While a lot of political balderdash is written and talked in this country about the *apartheid* approach of the Union of South Africa to its black-white problem, we can disregard any impact it may have on Amateur

Thames Valley met in April for a talk by G5WP on The Gay Twenties. Their May meeting was booked for the 2nd (prior to publication) with G4ZU lecturing on the FB5 Multiband Aerial—a joint meeting with several local clubs.

Wirral are leaving their present headquarters and moving to their new QTH: Boy Scout Headquarters, Harding House, Park Road West, Claughton, Birkenhead. Meetings will, as before, be held on the first and third Wednesdays, 7.45 p.m. (preceded by Junior Meeting at 6.30). The next few dates are May 16, June 6 and 20, plus a D/F Contest on June 17. Prizes for the Constructional Contest were awarded at their Annual Dinner, at which about 100 were present.

Manchester meet for Morse and R.A.E. matters on May 16 and 30; on the 23rd there will be a lecture; all at King George VI Club, Moston. **Thanet** recently held their Annual Dinner and Dance, which was attended by 92 people; the wife of the president, G2IC, handed over the Thanet Transmitting Cup to G3BKT, the secretary, and the Junior Construction Cup to Christopher Clarke, one of the youngest members.

Crystal Palace hold their next meeting on May 19, at which G3FZL, their secretary, will be talking on Oscilloscopes and Related Equipment. For **Midland**, forthcoming meetings are on May 15 (A Simple Transmitter, by Mr. Naylor-Strong) and June 19 (Your Receiver and You, by G5BJ).

Radio—like the fatuous adjuration not to buy South African produce, which has had far less effect on her U.K. trade than South Africa's own currency controls. Anyway, be that as it may, the radio amateur movement in ZS appears to be in a pretty healthy condition, judging by the latest S.A.R.L. publication, *ZS Call Signs*. Covering the ZS1-9 call areas (Cape Province to Bechuanaland), the total of licences in issue is shown to be about 2,550. In addition, there are some 300 registered SWL's. Of this amateur population, the South African Radio League has approximately 2,000 as members.

SIR JOHN HUNT VISITS G3PRT/A

On a recent visit to Cray Valley Technical School, Sidcup, Kent, Sir John Hunt (leader of the successful Everest expedition in 1953) was given a demonstration of Amateur Radio when he looked in on G3PRT/A, the school station. Actually, this took a bit of organising, as the visit was made at short notice, and no gear was immediately to hand. However, by the ready co-operation of K.W. Electronics Ltd., a K.W. Vanguard was made available and quickly collected, and a half-wave 80m. aerial as rapidly erected; with a 358X receiver, the station was got ready to go on the air about an hour before Sir John arrived; he stayed to hear some contacts made, including one with G5RA in his home county of Shropshire, and was most impressed by the coverage from G3PRT/A of some five countries and ten counties. Incidentally, G3PRT is held by 15-year-old C. P. Cadle, of 88 Lancing Road, Orpington, Kent, who is to be congratulated on his enterprise.

3F1F. MOBILE ANTENNA 160 to 10 METRES

For Amateurs and Short Wave listeners wishing to go Mobile without looking like a "Flag pole."

Four years actual preparation have produced this most efficient yet unobtrusive whip.

Mounting is recommended on the front off side wing of the car, as the basic antenna is in appearance a normal chrome telescopic whip.

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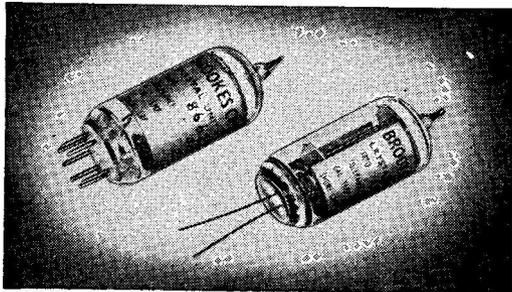
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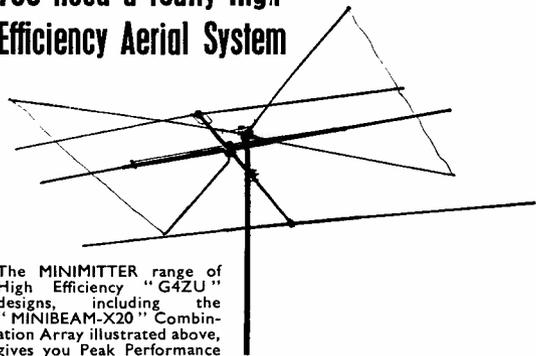
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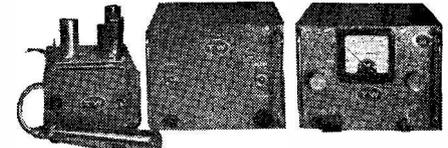
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WANTED: Eddystone 840C, 680X. **SELLING:** RCA books, 5s. each: *Receiving Tubes for Industry and Communications, Receiving Tubes and Picture Tubes, Photo-sensitive Devices and Cathode-Ray Tubes.*—Box No. 2623, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Suitcase Tx/Rx, Type A, Mark II; very good price paid for one of these outfits (the Mark II is preferred, three separate units), but other types considered. — M. Gee, 11 Whitehorse Lane, Stepney, London, E.1.

SALE: B2 rig, £9. Top Band CW Tx, £3. Drawing instruments, £2. Ilford Advocate camera, Aldis projector, tripod, exp. meter and accessories, £25. Prefer buyer sees.—Profaze, 28 The Vale, Southgate, London, N.14. (Pal. 7906.)

EDDYSTONE 680X mains transformer, 30s. o.n.o.? **AR88** mains transformer, 30s. o.n.o.? — A. E. Moffatt, 8 Lismore Road, Tottenham, London, N.17.

SALE: Walkie-Talkie TBY8, 28-100 mc, rechargeable PU, knapsack, phones, key, whip, handbooks, £10. Bendix TA-12B, unmodified, PU, handbooks, £7 10s. PU 234A, £2. Radio Filter FL8-A, 10s. RF-24B, 10s. Class-C Wavemeter, £1 10s. **WANTED:** Phones-type M15803-6 for AR88D. HRO manual and BS coils.—GI3HCP, 7 Prospect Road, Bangor, Co. Down. (Phone: Bangor 60251.)

WANTED, in good condition, a Transmitter/Receiver to cover 160, 80, 40, 20 and 15 metres. —L. E. Carter, Glenhurst, Lightpill, Stroud, Glos.

COMMUNICATOR 2-metre Mobile Tx/Rx with transistor power unit; cost £90; few hours' use only; will accept £65. **WANTED:** American VHF Converter, Type AM913/TRC, 100-225 mc, in good condition.—Box No. 2594, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

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WANTED: Handbook for HRO Senior Receiver, and details of a Q'Fiver. — Pearson, Willow Trees, Oak Hill Road, Sevenoaks, Kent.

£35. 150-WATT Phone/CW Tx, 6ft. rack, ex-£35. R.A.F. type. 813 final. 80-40-20-10-metre plug-in coils, including remote control VFO; excellent condition; moving QTH; buyer collects.—G3LYT, North Lodge, The Moat, Berkswell, Nr. Coventry, Warks. (Tel. Berkswell 2221.)

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WANTED: RME DB23 or Minimitter MC8. **SALE:** One TT21, £1; one QV06-20, 10s.; one QV03-10, 15s.; one SB/254m., 10s.; pair 6BW6, 10s.—Harrison, 28 Carmalt Gardens, Putney, S.W.15.

TCS Rx with manual, £6 (carriage paid). **WANTED:** Geloso 4/104, HRO B/S coils.—McIntosh, 8 Sirus Road, R.A.F. Northwood, Middx.

G2DAF Tx, phasing type, complete, valves, crystals, 898 dial, new components; needs alignment; £25. Delivered 75 miles.—B. Cheffings, Grimoldby, Louth, Lincs.

FOR SALE: Johnson Mobile Tx, 807 PA, 2/807 modulators, 10-80m., complete in 6 in. x 6 in. x 9 in. case; Johnson VFO in 4 in. x 3 in. x 4 in. case, £35 complete. One SSB C.E. 20A in first-class condition, £55. One Globe linear final, 4EL38 in G.G., output 400 watts, £35.—G3LB, 134 Whitcliffe Lane, Ripon, Yorkshire.

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FOR SALE: DX-1100U Transmitter, modified for SSB, CW and AM, little used, £30. Heathkit SB-10U Single Sideband Adaptor, brand-new, unused, £25; or £50 both items. Buyer collects.—G8JM, 48 Hawkdene, N. Chingford, London, E.4.

FOR SALE: SM Walkie-talkies, WS31, 40-48 mc, with accessories, £7 10s. SCR-300, 40-48 mc, some accessories, £6. WS-88 with accessories, £6. AN/PRC-10, 38-55 mc, miniature, some accessories, £12 10s. AN/PRC-9, 27-39 mc, miniature, less case, £10. Sub-units for R.209 and C.42 available.—Box No. 2625, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

QRT: 25-ft. steel mast, prop. motor, selsyn compass, 8-over-8 J. Beam and mast, new FM Yagi; VHF noise-generator; 2-metre CC Converter, 10 mc IF; QRO final, 4X500A in coax amp., 522 drive unit with QV0-40A; Williamson Amp. with Partridge O/P trans.; power unit, 300v, 200 mA, —150v. bias; 70 cm Rx, over 100 valves, Tx/Rx components. £50 the lot, or will separate.—Box No. 2626, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Cabinet, trimming tools for AR88.—Stocks, 5 Waingate, Rawtenstall, Rossendale, Lancs.

SALE: Command Set, 200-500 kc, 12v. and 28v. Gene's for same; 2-metre Rx DSH, 11v. less PU; 6v. vib. PU, 270v. 130 mA, 150v. 30 mA; Mod. transformer 807; (XTA12) 12v. Transistor PU, 250v. 90 mA, 150v. 30 mA. £17 the lot; will separate, buyer collect week-end.—G8BI, 20 Ravenfield Road, Welwyn Garden City, Herts. (Tel.: W.G.23676 after 6 p.m.)

SALE: K.W. Valiant, 160-10 metres and mains sp/pack, £26. Would take in part-exchange small 160m. mobile Tx.—G3NQX, 1 Gib Lane, Hoghton, Nr. Preston, Lancs.

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BREAKING HRO; your requirements, please: Chromed dial, 45s.; coils BS/GC, 21s. WANTED: AVO 8 or similar, v/voltmeter, audio oscillator.—G3IUU, 16 Stanbury Road, Bristol, 3.

FOR SALE: R.109 Receiver, good condition, £3 15s. Bendix modulator, Type MP28B, less dynamotor, new, £2. Will deliver 20 miles. WANTED: Geloso VFO 4/102, with dial, etc.—Chapman, 5 Penrice Road, Droitwich, Worcs.

MOBILES: Top Band Command Tx, brand-new and unmodified; also new Command Rx, 1.5-3 mc, heaters wired for 12 volts and v/control fitted, £14 the pair, plus carriage. 12-volt dynamotor for Rx, 30s.—Box No. 2627, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

URGENTLY REQUIRED: Manual for Eddystone S640 and S-meter for same; all letters answered.—B. Hamilton, 656 Crumlin Road, Ballysillan, Belfast, 14, Northern Ireland.

£200 OFFERED for Collins R-390-A Receiver. **FOR SALE:** RCA AR88 Receiver, v.g.c., £25. R.109 receiver with spares, brand-new, £5; BC-221, £14.—Wright, 4a Nepal Avenue, Atherton, Manchester. (*Tel.: 991.*)

HRO, 9 coils, power pack and speaker in matching case, £18; buyer must collect.—Morgan, 9 Selbourne Road, Leek, Staffs.

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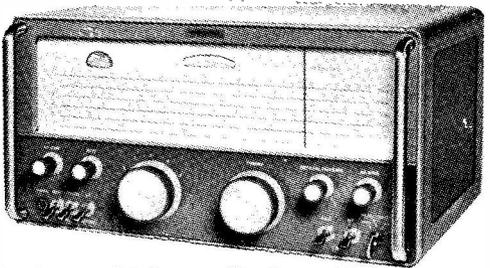
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