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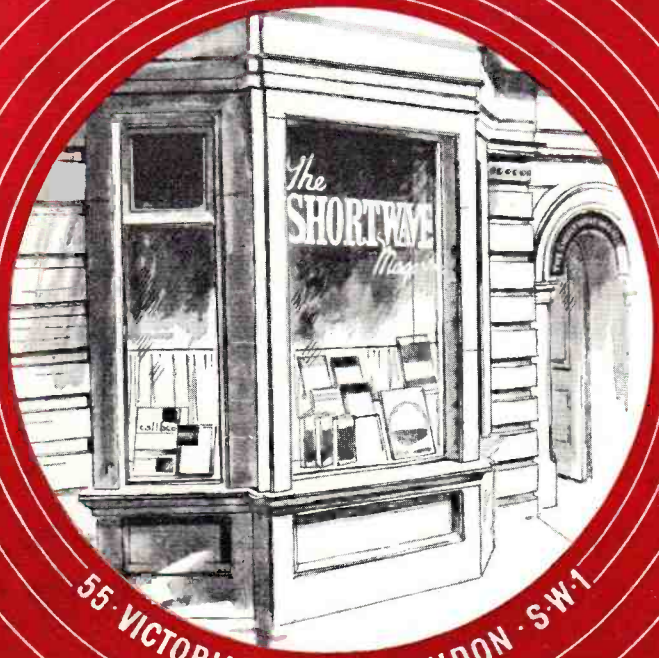
The SHORT WAVE Magazine

VOL. XXIX JUNE, 1971 NUMBER 4

for the radio amateur and amateur radio



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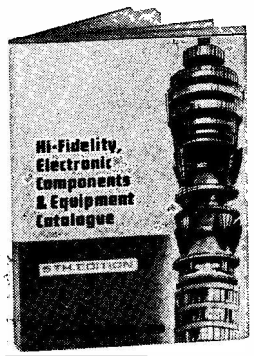

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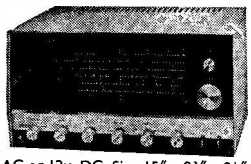

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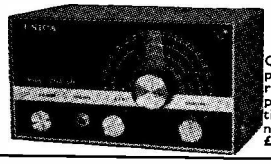

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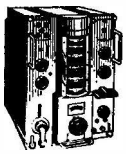

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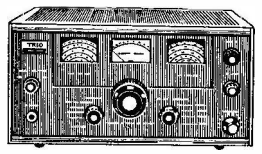

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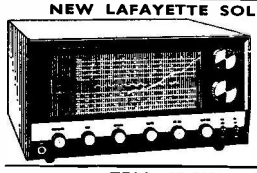

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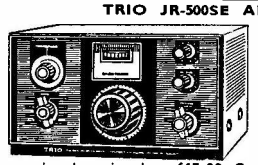

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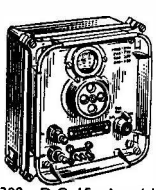

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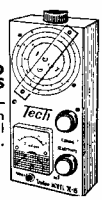

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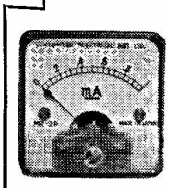

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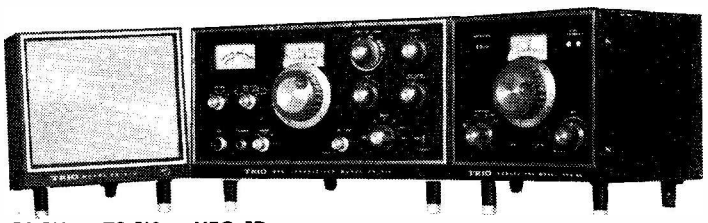

PS-510 — TS-510 — VFO-5D

TS-510 SSB Transceiver covers all ham bands from 3·5–29·7 MHz Emission SSB (A3J), CW (A1) Input 160W at 3·5–21 MHz ; 120W at 28 MHz. Antenna input imp. 50–70 ohms. Uses 14 valves, 2 FET's, 13 transistors, and 29 diodes. Circuits include VOX, PTT, amp. AGC, RIT, CAL, switching multimeter indicates Ip, RF, HV, ALC and signal strength. AGC switch terminals for external VFO, ALC and receiver input and output terminals. Size : 13 x 7 x 13⅜". **PS-510 power supply** for TS-510. Incorporates 6½" communications speaker. Frequency response 150–5,000 Hz. Size : 7½ x 8½ x 11⅞". **VFO-5D Variable Frequency Oscillator.** Frequency range. Bands, 3·5–29·7 MHz. Oscillation frequency 4·9–55 MHz. Output voltage 1v. Power : A.C. 12·6v. 8–mA ; D.C. 150v. 30 mA. Size : 7⅛ x 8⅝ x 7 9/16".

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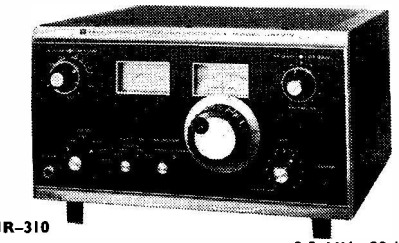

JR-310

JR.310 SSB receiver. Frequency range : 3·5 MHz–29·1 MHz in 7 bands. Output SSB CW. Power supply A.C 110–120v./220–240v., 6 valves, 6 transistors, 2 (FET's) and 19 diodes. Crystal controlled BFO for SSB reception. S meter, ANL and calibrator circuit switch are provided. RIT circuit. Power output 1w max. Size: 13 x 7 1/16 x 12 8/16.

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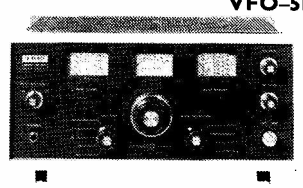

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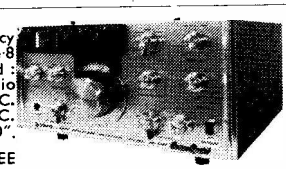

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JR-599 SSB receiver. All solid state. Frequency range : 1·8 MHz–29·1. MHz in 8 bands. Reception SSB, CW, AM and FM. Antenna input imp. 50–75 n.AF output more than 1w. 10 FET's, 1 IC, 30 transistors, 37 diodes, A.C. 110/117/220/240v. 50/60 Hz. D.C. 12–15v. Size : 10⅛ x 5½ x 12 7/32"

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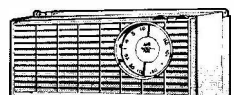

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INDEX TO ADVERTISERS

SHORT WAVE MAGAZINE

(GB3SWM)

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CONTENTS

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AUTHORS' MSS

Articles submitted for Editorial consideration must be typed double-spaced with wide margins on one side only of quarto or foolscap sheets, with diagrams shown separately. Photographs should be lightly identified in pencil on the back with details on a separate sheet. All drawings and diagrams should also be shown separately, and tables of values prepared in accordance with our normal setting convention—see any issue. Payment is made for all material used, and it is a condition of acceptance that full copyright passes to the Short Wave Magazine, Ltd., on publication.

E. & O. E.

FOR THE RADIO AMATEUR AND AMATEUR RADIO

The SHORT WAVE Magazine

EDITORIAL

Outdoors *This is the time of year when, even in the Amateur Radio context, there is much to be done outside and away from the station, like putting up new aerials or repairing the existing installation, visiting Mobile Rallies and working portable—either under contest conditions, or simply as a small party out for an enjoyable weekend with a radio flavour.*

It has always seemed to us that every Club should aim to have at least one independent camp outing during the Summer season. By this is meant an event of their own, unconnected with any contest or national field-day occasion. Of course, several Clubs do just this, and very successfully, too, but they are the exceptions.

There is also the solo enthusiast, who loads a tent, the gear and some essential ancillaries into the back of the car and strikes out to set up /P at some pleasant spot for a few hours on the air away from the home station, and the local QRM. Then there are the mobiles fitted with all-band /M gear—for them, the field of opportunity is wide indeed.

So much is possible in the way of on-the-air activity outdoors when we do get our Summer Wx that the opportunities should not be missed—after all, just at this time of year it is light from about 4.30 a.m. till 10.0 p.m, and work should not take up more than half those hours.

Of course, there will be those who will be quick to point that when we do get the long days of summer, what with gardening, painting the house and fighting off the tyranny of the grass, the difficulty is to find any time at all for radio! They don't need to tell us —we know exactly what they mean!

Austin Forsyth, G6FO.

WORLD-WIDE COMMUNICATION

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

AS this is being written, the G3KFE summer holiday is but a memory, the apple-blossom is just coming to its glorious peak, the first cricket-match of the season has produced its annual shattering effect on aged muscles, and the grass grows at a rate which can almost be seen from the deck-chair. What a combination to take the mind from the shack and the DX, particularly when the glorious spring weather has combined with a dearth of sunspots to give us a poorish month on the bands.

However, let us tear ourselves away from these prospects and look at the mail. Pride of place must go to a letter from G8EKA (Crayford), who is a dyed-in-the-wool VHF man. He turns your conductor's arguments of April CDXN neatly round on himself, and remarks that he would be ashamed to go on bands in the LF/HF areas, in view of the operating habits we all (or most of us) deplore. G8EKA has a point—but his argument that VHF needs more skill in technique, both technical and operating, does not altogether hold water in these times. It seems to G3KFE that he and G8EKA are in truth both sitting almost on the same bench in that both of us accept the problem of deteriorating operating standards, even though we have differing ideas on its cure. Nonetheless, all thanks to a VHF operator for such a thoughtful and civilised letter of disagreement.

Sunspots

It is fairly well understood that the decline in the sunspot number is faster than the rise from bottom towards the peak; and this seems to have been borne out in practice, with *Ten* being quite definitely a bit "iffy" even for those lucky fellows with both a beam and the time and inclination to use the band in the daytime. This has to some extent affected *Fifteen* also, and indeed *Twenty* has not been all it might have been, at least at the times when your scribe has been on. However, let us look at the reports, beginning at the HF end.

Ten Metres

G5ACW (Hillingdon) writes that he, together with his twin sons G5ARH and G5ARI, all made QSO's on 28·550 MHz, around 1454z, with VP2EZ in Anguilla, who will be there at least till the end of July. VP2EZ says that he will be using 21·2-21·3 MHz mainly, at odd times on weekdays, but primarily around 1800-2000z. QSL's *via* WA9VOZ, or by direct mail to VP2EZ, Anthony Green, Anguilla Police Forces, VSPO 643, Anguilla, BWI.

It has been a pretty poor month for G3DCS (Ipswich) who can only play wireless at weekends, and can either, as he puts it, tinker or operate; as Enver has been tinkering, little DX has been chased. The nature of his experimentation is possibly of interest, though, for operators who, for one reason or another, cannot put up any sort of outdoor aerial, in that he has been using his Joystick *indoors*, completely bereft of any feeder, and with the ATU right on the end of the stick. Only two CW QSO's were recorded on Ten in this condition, one being RD6DHD, and the other PY7OS; but operating with the normal aerial on the band gave a SSB QSO with OD5EP. Looking at the overall 14/21/28 MHz picture, as regards DX with an indoor aerial, G3DCS concludes that it is quite possible to span the world and have a lot of fun with an indoor aerial on these bands—this is providing one applies commonsense to the *operating*, and takes care to get the RF into the aerial. These devices always tend towards being, like the loaded whip, high-Q Loads which need careful matching in.

Now to G3ZAY (Petts Wood) who has been gently simmering on the sideline, waiting for a chance to air his present grievance, which would appear to be partly the operating technique of ET3ZU/A, and more the operating techniques of the half-dozen or so Italians who were all —simultaneously—trying to act as MC, collecting lists in competition with each other—at least that would seem to be the case since three lists were taken and only one of them worked—and generally fouling things up. Maybe what is really needed is for the DXCC to bar from credit, automatically, *any* station using an MC on the HF bands! Seriously, though, in the finish Martin did work him, along with 9V1QB and 9N1MM, during his morning before-breakfast sessions, which are all he can manage till exams are over for another year.

About all that G2DC (Ringwood) could find on Ten were Eastern Europeans and UA9's, since the best time for DX this last month was around 1000-1200z, when Jack has been hitting the garden with his customary spring-time energy.

Another one who has not a good word for Ten is G3DNF (Leeds), who considered the band hardly worth the trouble of tuning-up, albeit there were occasions when DX filtered through, in the form of 7Q7RM, ZS1ACD, TU2BW, UF6LV and JA2TOX/MM (in the South Atlantic off ZS). Incidentally, Gordon has just finished his first log-book, and on this basis reckons his new one should last him till 1999! One hopes, for Gordon's sake, that the QRM is not *that* bad!

G3NOF (Yeovil) has been having a visit from ZS1KZ, and working other ZS's from the G3NOF shack on an apparently dead band. Other bookings in the G3NOF log include CR6, 9J2, and 9Q5 stations heard on a dead band.

Fifteen

Let G4AAQ (Sharlston Common) have the stand first, Phil having at last made the transition from the pages of SWL and HPX to the ranks of the full transmitters. In the

shack all the SWL gear has been replaced by a Trio TS-510, which at present feeds a dipole, but he will, ere long, have a 2-element Quad. Phil has knocked up 53 countries on SSB, none of which were raised on CQ's—G4AAQ knows his way around!—and quite a collection of calls on CW as well. From the SSB list we note VP7BJ, SVØWEE, CT2BB, 5N2AAN, 9H1's, 5B4ES, MP4TDA, 4X4's, OD5BA, OD5CN, 9C9WB, 4Z4CD, ET3ZU, VU2IRA, IE1PUG, KR6JX, 5Z4MO, WA8VRB/HR2, PW4AP, KP4AST, HC1RF, PP2DLA, HK3FP, WA2HYX/8R1, WA4OVP/8R1, 7X2HS, ZS6OI, all W call areas, JA's and an assortment of other DX and EU calls. CW accounted for OA4QZ, CR7EY, HV3SJ, PX6FI, 7Q7RM and 29 other European prefixes. Quite a nice start.

G3UOL (Coventry) next, and Bill does not mention his mode, but lists his bookings as CR4BS, CT2BB, HBØTXG/P (G3RFH in disguise), IC1SEZ and IC1ZGY from St. Peter Is., JA1-6, JA8, LU's, TA3KE for an all-time new one, VE8RCS, VK1, VK2, VK3, VP2V1, VP8HZ, 5Z4DW and 9K2AL. Incidentally, Bill is going to Annapolis Royal, Nova Scotia for a month from July 28, and so, if he meets with any of the locals and can "work the oracle," may be heard from an unfamiliar quarter.

G2HKU (Sheppey) managed at least to see the rig despite the rival claims of gardening, pond cleaning, hedging and ditching, painting, roof repairing, work and living(!), and found UK9HAD a tremendous CW signal at 1600z. Ted has a gripe to add on the QSL front—persistently he gets envelopes addressed to G2HKU which contain his cards addressed on the card G3HKU—and even in QSO people address him as G3HKU and then correct themselves; as Ted says, he "knows the G2's are a dying race but there are still some of us around!"

Only a few European QSO's were recorded by G3NOF on Fifteen, although on some mornings around 1000 there have been openings to the Middle East. MP4BIX represented the only QSO of note.

Very patchy conditions are reported by G2DC, with the afternoons between 1400-1630z seeing the CW area of 15 metres invaded by commercial jingle-jangle signals all mixed up with Middle East and JA stations, and band closing times varying from day to day, W's being absent as early as 2000z sometimes and the few South Americans, as always, being the last to go out. CW was worked with CE2CR, KZ5MS, KG6JAR, LU5EN, LU8FBH, TY1ABE, UH8BO, UL7GW, UD6GN, VS6FE, XW8BP, 9Y4VU, all W call areas, VE1-4, VE7-8, VK1-4 and VK8.

G3DNF reports only new ones, his approach being along the line of disregarding those he has already worked. HI8FED, UJ8AB, TA3W, FYØBE, TI2LA, UD6CN and VE2DAD were raised; a most regretted Gotaway was PJ2RB.

The Quad at G3ZAY indicates Martin's main interest—Fifteen, on which KG6AAY, KG6JAW and VR4EE were heard and 9X5WJ, 7P8AB, VU9KV, WC4BBT, VS9MB, VS9MT, XW8BP and KX6IP worked. Martin is another who will be elsewhere in the next few months, operating from WA2DWE, WA2DWE/3, W3EGN and such—he has a job for a few days as "Amateur Radio counsellor" in a hobbies camp in Philadelphia!

That Joystick-with-no-feeder at G3DCS roped in 9H1Q, W9KTQ and W8WZ on CW, and on SSB PY2PE, PY1ZAD, PY2ERS, WB8ELS (who gave S9 plus as the report) and SVØWQ. The non-Joystick QSO's on the long-wire included CW with ZS6BAG, VE3AR and various W's. Incidentally, G3DCS has now a KW-2000 available, so there is some possibility of /A operation from his weekday QTH near Brookmans Park, although the nearby BBC main transmitter will be troublesome in the way of cross-modulation and spurii, to judge by a first look-round from there.

[over

SIX-BAND DX TABLE

(All-Time Post War)

Station	Countries	28 MHz	21 MHz	14 MHz	7 MHz	3.5 MHz	1.8 MHz
W6AM	349	149	161	349	145	119	7
G3DO	339	213	250	332	90	83	9
G2DC	338	181	311	329	169	116	20
G3NOF	320	205	231	310	38	67	4
G3LZQ	265	140	156	215	72	38	8
G3KMA	262	210	205	193	145	64	11
G3IGW	212	129	153	169	136	107	47
G3RJB	177	80	58	164	60	37	8
9H1BL	202	117	129	143	74	57	8
G3PQF	175	119	53	107	85	56	13
G3ZEM	110	—	—	108	28	32	13
G3DCS	130	26	82	77	28	24	10
G3YDX	148	85	83	72	81	76	17
G3IDG	131	77	97	55	27	18	12
G3XAP	122	44	75	53	77	31	13
G3VLX	67	7	14	34	20	33	19
G3ZCC	39	10	8	21	18	23	16

Note : Placings this month are based on the "14 MHz" column. Claims must be made at least every three months to retain a place.

Twenty

The band where the action is, most often; but also the band where the QRM is, just as often. Your conductor had every intention of taking a few early-morning looks during the month under review, but somehow always forgot to set the alarm-clock!

G3XTJ (Palmers Green) preferred to stay up late, and around or after midnight raised 8P6DR, CP6FG, OA4LM, CR4BC, HP1IE, FG7TI /FS7, HUØA (El Salvador in the WPX Contest), TGØAA, and TI2CF.

W4WFL/1, perhaps better known as WA2WOR, worked a few stations in the ARRL DX Test, including a couple of QSO's with G2DC, who, says Morgan, puts a thumping great signal into Hartford, Conn., W4WFL being on the ARRL Hq. staff as an assistant secretary.

CW seems to have been G3DCS's preferred mode on Twenty, and with it, Enver dealt with ZS6ME, IC1ZGY, G8VG/W3, ZD7GS, 9H1AQ, VE7AYN and most of the W call areas.

A list of gotaways as long as your arm comes in from G3ZAY, heard between 0600 and 0800z, and in many cases unworkable because of W6 and W7 QRM. They included: ZK1CD, ZK1BF, ZK2AF, ZL5AX, VR6TC, FO8CS, KH6EDR, many other KH6's, KB6CT, KS6DT, KG6AAY and KC6ES. However, the gloom was a little relieved by contacts with VU7US, ZL4OL/A, KS6CY, 5W1AM, KH6HJF, KH6HIF, KH6HHO, WB2DAK /KH6, JD1ABO, ZL's, VK's, PY, HC and others.

G2DC considers the 20m. band to have been as good as ever, provided you sort out the right time to play it; usually, the period 0600-0800z is the favourite, particularly as the Pacific stuff is to be heard at this time. However, the staunch CW operator is not as well served as of yore, and finds he must have SSB, a big linear and a beam at 75 feet to compete for most of the DX, although CW working around the world is still as easy as ever with 150 watts and a modest beam. The G2DC list includes, all CW, FG7TG, KH6IF, TY1ABE, UAØLX, UAØYN, VR2EK, VK2-8, ZL1-4, VK9LV (*ex*-G5RV), all W call areas and VE1-7.

For G3DNF the full list of 14 MHz QSO's during the period in question was: 9J2WS, HP1IE, 9Y4DS, 8P6DR, VP2VO, UK8MAA, VK2AHR and 3A2FB. Gordon might be just finishing his first log-book, but if its only contents are such as these, he can justifiably claim "quality not quantity" as the station motto.

Twenty for G2HKU seems to have been all-SSB this time, with contacts registered with IC1PUG (San Pietro), KP4YD, M1D, SV1FK (ZL2AAW on holiday on Kefalonia Is.), VK3AAR/M, VK3JS, PY1MCC, ZL1VN and ZL3SE.

As with most of our correspondents, G3NOF considers the best times for 20m. have have been the morning openings, with VK's around 0700, plus W6/7, KL7, KS6 and FO8. Evenings have produced the odd African for a QSO, while tea has been taken to the tune of Asians such as AP2AD, VU2HLU and YK1AA. Talking of YK1AA reminds us that the Arabian Net has moved to Sundays at 1900z on 14295, with either 7Z3AB or JY1 as Net Control, other stations noted including such as 9K2AL, 9K2AM, 7X2MO, SU1MA, ST2SA, YK1AA and FL8HM. Lists are sometimes taken, usually by one of the net 10 kHz higher, sometimes with CT2BB or WA3HUP helping. This net closes on or around 2100. If the QSL address of any station in the net is not known, the card may be sent to JY1 at P.O. Box 1055, Amman. JY1, incidentally, is also handling an "Arabian Nights Award" for working ten Arab countries since January 1 1971. (How *does* H.M. find the time for it—and *why* doesn't he get his callsign right! *Editor.*) G3NOF concludes by mentioning his QSO list—it includes such as CR4BC, KZ5BS, PZ1AX, TA6JB, VK2AGW /MM in the Bay of Biscay, VP2AA, VU2HLU, 5H3LZ, 6Y5GB, 9Y4VT and ZS's.

Forty and Eighty

Perhaps it is just the seasonal effect but the faithful still "plough the bands and splatter," in the phrase of G3XTJ.

G2NJ (Peterborough) still in search of the /MM signals, heard LA6KM/MM testing on 3·5 MHz CW, one morning at 1100z. For G2HKU there has been quite a bit of activity on LF, mainly *Forty*. Eighty gave an SSB QSO with EP2TW, while Forty produced SSB from HC6MJ, HK6BRK, VK2AVA, VK3ZL, YV4TI, ZS5XA and ZL4OL/A (Campbell Is.). CW was not neglected and was used to raise PY1DUB and CT2AK.

"Conditions surprisingly good for the time of year," is the report offered by G2DC on *Eighty*, with the rider that the morning period 0600-0730z has been the most productive. ZL's provide most of the DX interest in the mornings, including ZL4VF/A, Campbell Is., at S8 on SSB, albeit also workable on CW. Jack comments sadly on the increasing number of commercials invading the once-cherished bottom 10 kHz of the band, causing many stations to shift their CW out of this DX area. CW worked on *Eighty;* PY1ADE, PY2GGO, PY5OF, ZL3FZ, ZL4IE, ZL4VF/A, W1-5, W8-Ø. Turning to *Forty*, G2DC remarks that it is possible for anything to pop up during the hours of darkness or the first couple of hours of daylight. Most consistent DX signals were VK3MR (using a rhombic on Europe and another on the U.S.) and YN1CW, who is understood to have three stacked verticals phased. QSO's included such as PY1DUB, PY2EOO, PY2GGO, VK2AV, VK3MR, YN1CW, ZL1BBK and all W call areas.

Our only other correspondent in this area is G3DCS, who offers PY2GGO and IC1ZGY, both worked with CW on Forty.

It is quite some time now since last we heard from G8HX (Mansfield). Frank in fact has been far from inactive, but has remained on 7 MHz, and intends staying there for the foreseeable future. It may be recalled that the last time we heard of G8HX it was in connection with the TVI he had suffered with "piped TV" and the measures taken to avoid it. It seems that at long last the firm is doing something about the RF getting into their lines, and had arranged for G8HX to make some tests in conjunction with their engineers during the week following his letter. One hopes they relieve Frank of his problems, but it certainly is a bit much when the customers have to wait all but a year

for the company to cure their TVI! Changing to QSO's, the highlights on the 40m. band have been ZL4OL/A and JAØ, the QSL received from OH1TW/MM aboard a ferry in the Northern Baltic, and a QSO with a station signing LA5WN/JW5/AM, who claimed to be "in an aircraft cruising in a fiord on Svalband" and to be using a World War II transmitter—it was certainly full of drift. For good measure, the chap said he was at a Met. station!

QSL Matters

The DX-Pedition of The Month (DOTM) organisation handles cards for many stations, and QSL's for these operators should go to Box 7388, Newark, New Jersey 07107, U.S.A. DOTM put out regular bulletins giving listings of the new stations "on strength" and of the full crop for which confirmations can be offered. To obtain one of the bulletins, send a suitable s.a.e.—preferably the standard letter size 9½ by 4⅛ inches—to Box 17316, Raleigh, North Carolina 27609, U.S.A., enclosing two IRC's.

Limerick Radio Club's DX-pedition to Bere Island this year takes place over June 5-6-7, all bands 1·8-30 MHz, CW and SSB. Cards for this EIØDX activity should go to EI5BX.

Top Band county-chasers lacking a contact with Sark will be pleased to hear that for about the next *five months*, G3APA will be on Sark and active. QSL's may go to GC3APA direct at Caro Mio, Sark, Channel Islands, or *via* bureau.

G3UOL offers a QSL address or two, as follows: HBØTXG/P, or other of G3RFH's calls, QSL *via* G3LQP; TA3KE *via* VE3MR.

Most months sees an offering under this heading by G3NOF, and this is no exception, with *TA6JB* to DJ6ZB; *KS6CY*, Dept. of Education, Pago Pago, U.S. Samoa 96920. *VP2VV* to P.O. Box 207, Tortola, British Virgin Island; *5H3LZ* to G3USY; *MP4BIX* to MP4BBA or *via* bureau.

VP2VL on the other hand, wants his cards sent to WØDRE, c/o ARRL, 225 Main Street, Newington, Conn. 06111 U.S.A. LA5CI is going to Jan Mayen and will be operational as JX5CI; QSL's for him to Ivar Nygaard, JX5CI, Jan Mayen, c/o Norwegian Embassy, Reykjavik, Iceland. For LU2E, send the cards to LU2DKG. All the latter paragraph-full came from W4WFL/WA2WOR, to whom our thanks are due.

While in South Africa, at Springs in the Transvaal, Leslie Cooper, ZS6BDO /G5LC, has been running a KW-2000A with the KW-1000 linear, into a Mosley TA-33Jr. While out there as general manager of Telephone Manufacturers, S.A.—after he had already retired from business in the U.K.—ZS6BDO has been working DX round the world, much of it on CW, as he is a member of F.O.C., of which he has been president. In a month or so, ZS6BDO and XYL Iris will be returning to England, via IR, SV, OD5, ZC4 and YK1, to become G5LC again at Molesey in Surrey.

From G2HKU, we have *M1D*, to I1MKN; *JY9AA* to WA3HUP; *ZF1GC* to VE4XN; *HC6MJ* to DJ3JR. Not to mention that cards for G2HKU should *not* be addressed G3HKU!

Here and There

Changes in the Italian callsigns are listed up for us by W4WFL /WA2WOR. It seems the arrangement is as follows: The idea is to replace the "1" in the call by the number of the first digit in the postal code. Amateurs in Piemonte, Liguria, and Valle d'Aosta may use the prefix IP1 instead of I1, as the "1" is also the first digit of their post-code. The full list comes out as *IP1*—Piemonte, Liguria, and Valle d'Aosta; *I2*—Lombardia; *I3*—Veneto, Trentino Alto Adige, Friuli-Venezia Giulia; *I4*—Emilia; *I5*—Toscana; *I6*—Marche, Abruzzo; *I7*—Puglie, Basilicata; *I8*—Campania, Calabria, Molise; *IT9*—Sicilia; *IØ*—Lazio, Umbria; *ISØ*—Sardegna (separate DXCC country). The small islands will assume the following prefixes: Isole Toscane (Elba, etc.); *IA5;* Isole Ponziane (Ponza, etc.) *IBØ;* Isole Napoletane (Capri, etc.) *IC8;* Isole Eole (Filicude, etc.) *ID9;* Isole di Ustica *IE9;* Isole Egadi (Favignana) *IF9;* Isole Pelagie (Lampedusa, etc.) *IG9;* Isole di Pantelleria, *IH9;* Isole Tremiti (Tremiti, etc.) *IL7;* and the small islands around Sardinia *IMØ*. Amateurs not wishing to use the new prefixes may continue to use their old I1, IT1, or IS1 prefix. That should keep the WPX/HPX addicts quiet for an hour or two!

Talking of Italian prefixes, the changes listed above pose a pretty problem for chasers of the Worked Italian Islands certificate, to enable them to decide just where to apply the old and new prefixes! This award is aimed at stimulating activity on the islands as a help to IOTA award competitors, and is sponsored by DXOTC. Cards for QSO's, to the number of 9 for Italians, 7 from Europeans, and five for DX stations are required, *one for each island*, sent together with 25 IRC's (!) to P.O. Box 143, Palermo, Sicily.

An odd call which may be heard around ere long is G5NX/LA/MM, aboard m.v. *Torrens* taking G5NX on his 20th trip to VK. The "LA" is a commemorative suffix permitted by the LA authorities to G5NX personally. He will remain in VK till early October and will be heard on the bands in his *alter ego* of VK2BLN. G5NX is the owner of the Lakeside Hotel, Newby Bridge,

on Lake Windermere, and is a former sea-going operator.

G3KPO has been scratching around for the perfect retirement QTH for some months now, and in fact has at last found what he is looking for in the Isle of Wight, with two acres of ground and the all-important aerial masts growing in the correct spots (some people would call them trees!).

The YO's have their DX Contest on 3·5-30 MHz from 1800z August 7 to 1800 August 8, using either CW or AM/SSB. There are four categories of non-YO entry, namely single-op, single band; single-op, multi band; multi-op, single band; and multi-op, multi-band. The idea is basically of course to work YO's, but you may also work DX outside Europe, while DX can work Europeans other than YO. Score two for a QSO or ten for one with a YO. As the contest is both CW and Phone, it is permissible to work the same station once on each band and each mode provided there is a gap in time of at least one hour. Exchange RS(T) plus QSO number starting 001. If you want all the details for the purpose of entering, send a large envelope with a couple of IRC's to Romanian Amateur Radio Federation, P.O. Box 1395, Bucuresti 5, Romania. Certificates are the awards, in general, but the top scorer outside YO will receive a crystal goblet.

TOP BAND COUNTIES LADDER

Station	Confirmed	Worked
	Phone and CW	
G2DF	98	98
G3ADH	98	98
G3VLX	98	98
G2NJ	98	98
G2HKU	98	98
GI3WSS	97	98
G3YMH	69	93
G3LXD	64	83
G3KFE	61	86
G3XIV	?	63
	Phone only	
G2NJ	98	98
G3PQF	98	98
G3XDY	72	89
GI3WSS	67	83

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

We have often drawn readers' attention to the Cheshire Homes Amateur Radio Network fund (CHARN), first conceived by W. M. Clarke, G3VUC (at table) who, assisted by a small committee, has over the years collected hundreds of pounds for the most worthy cause of providing Cheshire Homes with Amateur Radio Equipment. Also in the picture are G5ZT (jersey) and G3IJQ (chair) an inmate of the Home at Cann House, Tamerton, Plymouth. The ladies are concerned with the day-to-day management of this Home.

Reference that note on p.150, May, about the trimaran *Chamaru*, W7TNA/MM, we hear from EI9W (Cork) that he is in regular contact on 14 MHz—also that the firm mentioned is receiving reports on reception and QSO's. On May 13, *Chamaru* was in approximate position 19°N, 36°W, heading for the Azores and then for Baltimore, Co. Cork—where no doubt EI9W (himself a yachtsman) will be on the quay to greet Cdr. Sturkey and his wife K7BGS. That should be about the end of June.

Now Top Band

A thin clip this month—usually it is far too fat for comfort! Nonetheless, this reflects pretty accurately the general state of play.

Elsewhere we mentioned the QSL address of GC3APA; it remains to say that the operating will be irregular, but in accordance with Ted's old habits, mostly between 2200 and midnight.

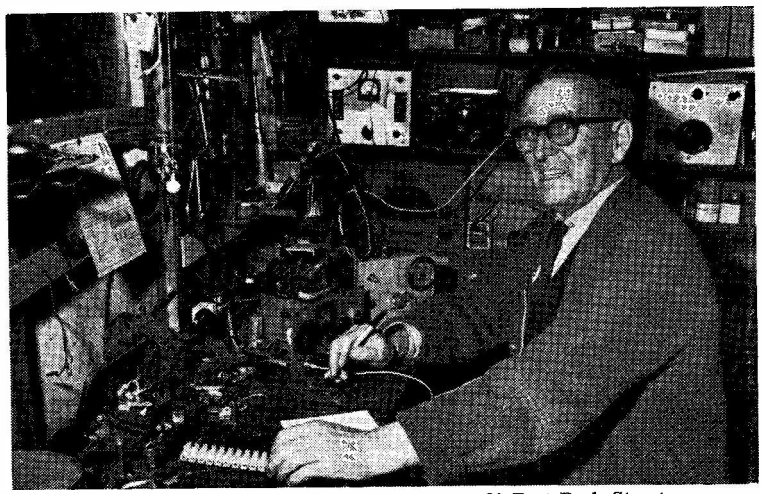
W4WFL/1 has been doing a bit of operation on 160m. from Hartford, Conn., with about 25 watts to an L-coupler and twenty feet of wire hanging out of the third storey window. To Morgan's surprise, this lash-up has been giving CW contacts at ranges of several hundreds of miles with quite respectable signal reports—next move is to work it over the Pond!

G3ORP (Maidstone) whose aerial system we discussed recently, offers another one, namely 166 feet end-fed with coax *via* a 300 pF variable capacitor, the flat-top being at fifty feet, plus four counterpoises of quarter-wave length—an aerial which is also resonant on Forty and Fifteen. During the month, this array has given Top Band QSO's with DJ4SS (Frankfurt), HB9ZE/P, DJ2ML, W1HGT (lost under a G "testing"), GM3SVK/A (Shetlands), GI5DX, GB3SK (St. Kilda), PY2BJH (twice), PY1MGF, PY2BKO, HB9ANW and OK1HAS.

W1BB sends his usual bulletin, and summarises the season now finished. W1HGT made 324 DX contacts with no less than 106 different stations. ZD8AY gave a lot of entertainment, and even got out as far as W2BP. The first San Andres Top Band operation was quite a success in spite of many difficulties. During the *CQ WW 160 Contest*, it is understood that CR8AG was operational, although it is not known if he registered many contacts. K6DDO heard OK1ATP but lost him in QRM—a W6-to-G contact on Top Band would be quite an achievement. W1BB indicates that, in correspondence with W6SAI, it is understood the reason for the recent changes in allocations over

there is to tie the West Coast U.S. and Alaskan Loran chain together directly, with a follow-up of closure of the 1850 kHz West Coast chain within a few days. KØDCF deserves some sympathy—after spending much time at his mountain cabin stringing out a Beverage aerial through the snow and on poles across a lake Tony came back to his shack and found it loaded up nicely. Listening on two nights yielded one signal the first night and a thunderstorm the next—but no QSO because he'd left the key at home!

On a more domestic note, we hear from G3HRW (Saltash), who had from October last year till March this, a 700-footer, end-fed, longwire. No sked contacts were made, but it was found possible to work consistently 300 miles or more in daylight. All coasts of G, plus GI and GM between 1000 and 1600. A card from GM3IAA indicated the latter had heard him at lunchtime on December 13 and called G3HRW without success, while 'HRW was working a GM in Fife. Using it for W/DX resulted in QSO's with W1-2. A few evenings later, around 1900 clock, on a CQ call HK4DF came back for a solid 20-minute QSO. VS6DO was also raised on a CW CQ call, twice; one wonders if this was the real one, so many indications having been given that the "VS6DO" heard in the U.K. was possibly not authentic. For receiver, Dick used an old CR-100 which has not even been revalved but just used "as is." The Tx is an ancient home-built job originally used as part of the /M rig. And all this just shows, once again, how it is the *aerial* that matters—not that many of us can put out 700ft. of wire!



A real ham shack—and G6QO, Harold Fearnley, 30 East Park Street, Morley, Leeds is a real old timer, first on the air in 1936 from West Ardsley, Wakefield, Yorks. It is a bit difficult to pin-point all the details in our picture(!) but we can say that G6QO had his full share of exotic DX in the early days, with over 6,000 contacts in his log. He says his present set-up is a shack-workshop-garage, all the gear being home-built. A salute to G6QO!

G3ZDY (Fareham) has clocked up six more new counties—Nairn, Scilly Is., Renfrew, Sutherland, Armagh, and Caithness—to lift his score somewhat. Another QSO was with ZD8AY which was marred by some idiot sending "best bent wire" while testing on the frequency.

Are you looking for Scottish counties? G3ZEM wants to know, as he and G3YUV are planning a trip during the second week in July, with both CW and SSB in mind. Write to G3ZEM at 47 Teesbrooke Avenue, Hartlepool, County Durham, as soon as you can, advising your preferences; once they are known an intinerary can be worked out to help as many as possible.

A new way of passing the time away on Top Band in 1971 is being tried by G3XTJ. Ed has achieved the 98/98 slot, and is very close to it on Phone-only. Since so much activity nowadays is SSB, Ed is trying to do the lot *on AM*, with an A.T.5. normally kept for Sunday-morning natters. That should keep him amused for years yet!

In Conclusion

That's it for this month. Deadline for next time is **Monday, June 7,** first post—and here are some deadlines following, all Mondays: *July 12, August 9, September 6.* These are actual closing dates to enable us to get the feature to press at the right time. Always address simply to: CDXN, SHORT WAVE MAGAZINE, BUCKINGHAM, which is full and sufficient. *73 de G3KFE.*

VISIT TO U.S.A.—G8VG, F.O.C.

As secretary of the First-Class CW Operators' Club, Bill Windle, G8VG, has been on a sponsored tour of the Eastern United States and the mid-West. He is one of the most senior members of the Club, having joined pre-War, not long after he was licensed in 1937. Since the re-start in 1946, G8VG has made some 31,000 contacts (all carefully documented) mainly on CW using a straight, or "pump-handle" key. Including R.N., Post Office (which means he can read "sounder") experience and service during Hitler's War, he celebrated 50 years of "pounding brass", as the old hands describe it, in August 1967. Now aged nearly 70, G8VG is as keen and as active as ever, devoting much of his time and labour to the affairs of the F.O.C. and its world-wide membership, in some 70 countries.

CLASSES FOR THE R.A.E.

As in previous years, commencing with the August issue we shall be listing those centres, up and down the country, at which courses of instruction for the Radio Amateur's Examination (Subject No. 55 in the City & Guilds of London syllabus) will be offered. Organisers are asked to let us have details—addressed "RAE", SHORT WAVE MAGAZINE, BUCKINGHAM—by July 9 for the August issue and August 6 for September. As the winter session starts about mid-September for the examination held in May 1972, it involves those concerned thinking about their arrangements now—though it does seem a long time ahead!

NEW *RADIO AMATEUR'S HANDBOOK*

THE new, 1971, Edition of the *ARRL Handbook*, as it is generally known, is the 48th in the series—meaning that it has now been extant for nearly 50 years, during which some 100's of thousands of copies have been sold throughout the world.

It follows the same general lines as its illustrious predecessors, in that it is a mine of useful information for the modern radio amateur, be his interest HF or VHF. Although much of the basic material is the same as in previous editions, revisions have been made where necessary to reflect up-to-date techniques.

Starting with fundamental theory for both valve and transistor circuits, succeeding chapters deal with the application of these devices to oscillator, multiplier and amplifier stages, including VFO's and transmitter designs ranging from a QRP transistorised 2-watter to a mighty pair of 3-500Z's in grounded grid rated at 2000 watts p.e.p. input. Simple modulators are described for outputs of up to 50 watts of AM, and mention is made of NBFM and PM systems.

Receivers are dealt with in great detail and designs for converters and complete systems are described. While the information given on methods of generating SSB is adequate for most purposes, it is noted that no mention is made of the so-called "third method" of generation. The procedures and precautions to be taken when adjusting and operating high-power linear amplifiers could well have been expanded, in this reviewer's opinion. In this Edition, considerably more emphasis is placed on the need for speech processing for all types of transmitter and several useful circuits are included. Comprehensive data are given on the construction and adjustment of transmission lines and antennae, and a separate chapter is devoted to wave propagation theory from HF to VHF.

For the VHF-only man there is plenty of meat, starting with a variety of pre-amplifiers and converters for all bands up to 1296 MHz. Both valve and transistor designs are covered and the VHF transmitting section includes valve and transistor gear with outputs ranging from a few watts up to the kilowatt level. For the mobile enthusiast, comprehensive details are given of antennae, power supplies and transmitting and receiving equipment.

The chapter on Measurements includes modern examples of such useful test gear as grid-dip meters, both HF and UHF, SWR bridges and output power meters, impedance bridges and transistor testers. The very complete index of valves and semiconductors has been extended to cover all modern types, including IC's.

Notable omissions are any reference to amateur TV, either slow-scan or otherwise, and EME and MS propagation techniques—admittedly somewhat esoteric topics more properly covered in the manuals devoted to VHF as a specialised subject.

All in all, the 48th *ARRL Handbook* is once again an essential buy for the modern radio amateur who needs a ready reference on the *practique* of Amateur Radio. It is certainly the most up-to-date manual of its kind available and, though the slant is naturally American as distinct from European, in the world of Amateur Radio this is of no real consequence, because the meaning and the thinking are the same on both sides of the Atlantic.

Of more than 640 pages of text and tabular matter, copiously illustrated—there are sketches, circuit diagrams or photographs on nearly every page—with a full index of some 13 pages, the price of the 1971 Edn. of the *Radio Amateur's Handbook* is £2·80 paper cover (or £3·60 in hard back), post free, from Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.—in stock for immediate delivery.

A.H.D.

TWENTY-FIVE YEARS AGO

Our first issue in the post-War period appeared in March 1946, with Austin Forsyth, G6FO, as Editor then, as he is now. The contributors to this early offering included A. J. Devon, a throw-up from the pre-war period, writing again on VHF (or Five Metres as it then was); H. A. M. Whyte, G6WY, starting "DX Commentary" as a regular feature (Ham Whyte has long since become VE3BWY); and L. H. Thomas, G6QB, who had several pieces in this first post-War issue. The "Month with The Clubs" feature was started and has appeared regularly ever since. The principal constructional article was "Two Valves for Ten", a 10-metre CO-PA Tx (still in working order!), designed for the only band we were permitted to use just at that time. Our advertisers included the name of Eddystone, still with us—indeed, they were also there in our pre-War issues, prior to 1939. The March 1946 SHORT WAVE MAGAZINE also saw the commencement of a short series of articles entitled "The Principles of Short-Wave Reception", by Tommy Thomas, G6QB—which proved so successful that subsequently the series was expanded and published in booklet form. We also started, in that issue, a series of practical articles on the cathode-ray tube.

The April 1946 issue of the *Magazine* featured an article, by the Editor, on the re-opening of Top Band, touching upon the DX results that had been achieved pre-War and discussing its potential for the future as a general communication channel across the U.K.—and even at that time reference just *had* to be made to the outstanding 160m. DX achievements of Stew Perry, W1BB, in the years 1938-'39. The constructional articles included, in this April 1946 issue, an RF PA for Ten using a PT-15, giving 60 watts RF output for one watt of drive and requiring no neutralisation. Another such article dealt with power supply units for the average amateur station. And so, over the years, it has gone on.

POINTS OF INTEREST

The next Jamboree-on-The-Air, the international Scout QSO Party, will take place over the weekend October 16-17, midnight to midnight local time in all countries. The U.K. national organiser is Leslie Mitchell, G3BHK, 28 Darwall Drive, Ascot, Berks.

* * *

Reference the note on p.166 of our May issue, G5OG has since been introduced to the House of Lords bearing the title of Lord Orr-Ewing. He comes of a well-known and much respected West of England family and should have many useful years to serve in the Upper Chamber.

DISCUSSING THE KW-2000B

NOTES AND COMMENTS ON AN ALL-BAND TRANSCEIVER DESIGNED FOR U.K. AMATEUR REQUIREMENTS

A SHORT time ago, the writer found himself in a position where he had to move out of his warm, comfortable, private, shack and share the functions of station, workroom and bedroom in another room—which, for various reasons, had to be the smallest of the three bedrooms. Space was then the problem. This resulted in a second decision, namely, that the separate transmitter, receivers and linear, plus the ancillary items and trailing wires, would just have to go, and be replaced by something both more compact and much tidier.

The old rig was disposed of though the Readers' Small Adv. pages in this *Magazine*—not, it must be remarked, without some pangs, particularly in the case of the KW-77 receiver, undoubtedly the finest tool of its kind to come the way of your correspondent in many years.

The new rig would have to be a transceiver, incorporating full split-frequency working facilities, not to mention having either Top Band or being of such a nature that Top Band could easily be organised into it. Furthermore, it must be suitable for CW operation. It came down in the end to the selection of a KW-2000B, with its attendant AC/PSU and outboard VFO-4B unit. This choice left room for the later acquisition of a linear should this be felt necessary as a result of the writer reverting to the habits of a few years ago and operating mainly SSB. At the same time, the flexibility afforded by the VFO-4B to the basic KW-2000B meant that, in effect, one had two receivers always available with which to marshal one's thoughts in the pile-ups, at the flip of a switch and without the necessity for unplugging headphones and transferring from one receiver, or any aerial switching. Not only this but, as was soon realised, in addition one had, in effect, two transmitters instantly available on the same switch—not to mention being able to forget the complications of a separate transmitter and receiver by operating, when conditions permitted, fully transceive on either the internal VFO, or the one in the VFO-4B.

The Transceiver Proper

This, of course, is the transceiver KW-2000B itself. Although it is externally considerably changed from its

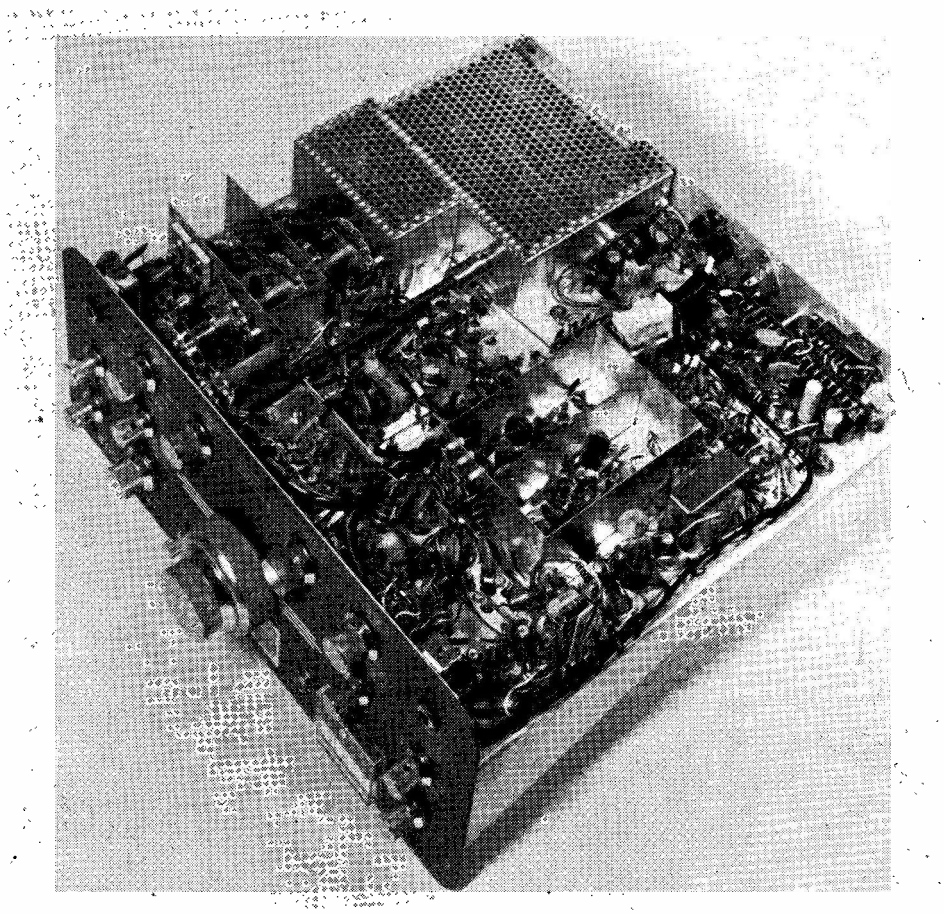
The KW-2000B complete with PSU and auxiliary VFO.

earlier KW-2000 and KW-2000A forebears, there is in the circuitry a strong family resemblance; and in styling it is somewhat of a throwback to the earlier generation of KW "separates" for SSB working.

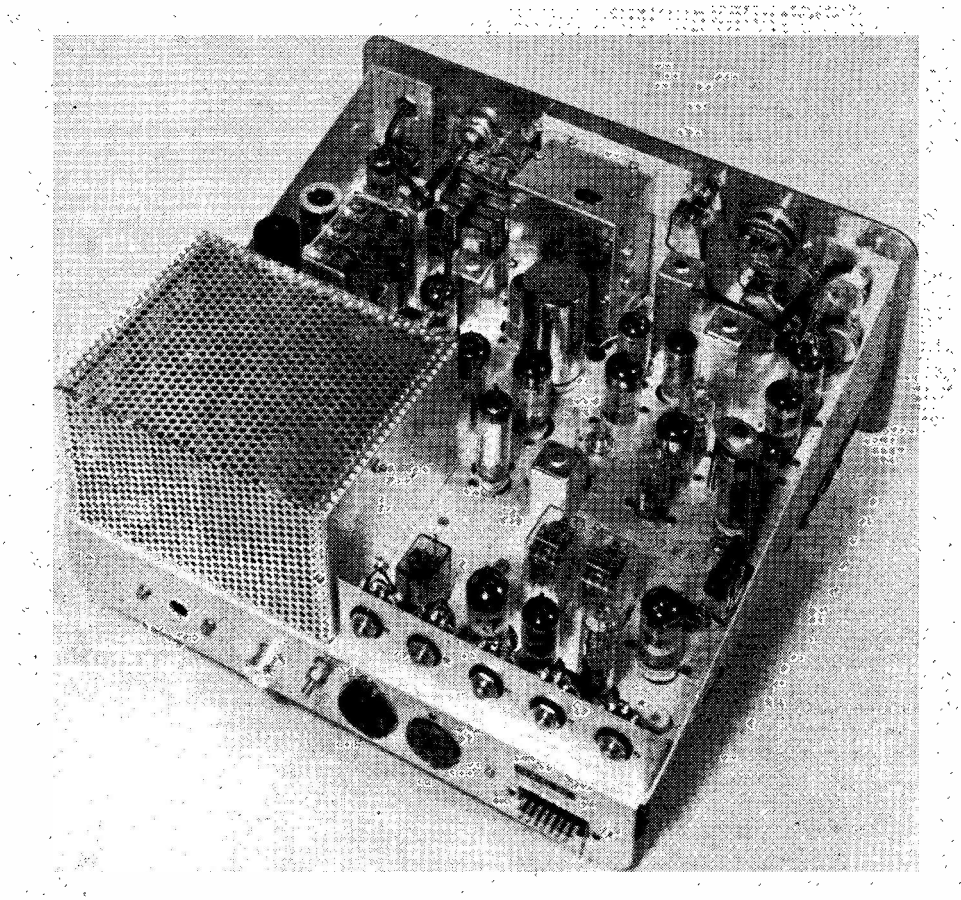
Apart from the new styling, the most noticeable thing about the front panel is the new and improved dial and two-speed drive on the tuning; the extra size of these two has also resulted in the use of a smaller meter and some re-arrangement of the controls. There are no concentric controls on this rig apart from the two-speed tuning drive. The finish is now in three shades of grey—a dark, matt surfaced front panel of about the depth of colour known in the Services as "Dark Admiralty Grey," being surrounded by a sort of bezel, part of the cabinet, in a very light shade of grey, while the main part of the cabinet is of a colour approaching "Light Admiralty Grey." This, with the panel markings in white, and aluminium knobs, gives a handsome, workmanlike and practical finish.

Lifting the cabinet lid (or better still removing the unit from the cabinet) gives an immediate indication of the standard of the workmanship that goes into the KW-2000B, not to mention the good electrical and mechanical design. Chassis surfaces and brackets are all matt finished and all the valveholders sit in elongated holes which allow ventilating air to circulate upwards from below. Underneath, one notes that the screens fitted here and there do not look like afterthoughts, with the possible exception of the one shielding the input terminals of the mechanical filter from the output pins—and this one is admittedly in a very awkward place for fitting.

The wiring is not strictly in accord with EQD standards but it is, one would think, just as good in its own way. Components which join together without benefit of a tag to sit on are invariably wired by use of the "Jenkins' spring" technique; the soldering is very good and says a lot for the standard of training of K.W. operatives. Layout is such that servicing or repair should be reasonably easy, bearing in mind that anyhow a transceiver is a mighty complex "box-o'-tricks." Wiring is liberally colour-coded to aid any future maintenance or modification. This is emphatically a user's instrument, in the best sense of the term, designed and built to be operated,



Under-chassis view of the standard KW-2000B Transceiver showing general construction.



Inside the K.W. Electronics KW-2000B Transceiver.

serviced and maybe even modified, as easily as is possible.

On the score of performance, countless satisfied users bear testimony. The transceiver under review is no exception. Sensitivity is a whisker up on the quoted figure on all bands, the stability is impressive once the initial few minutes of warm-up are through and the audio is clean and crisp-sounding. AGC is in operation at all times, which could be a bit of a nuisance on occasion, although it has to be admitted that your reviewer, who was a bit worried about this at first, has not, to date, lost anything on account of not being able to disable the AGC.

The transmitting function is as good. SSB reports invariably praise the speech quality and, always provided the microphone is unplugged and care taken not to run the mic. gain control too high, the CW note is extremely good, and nets the added "x" on the report quite frequently.

However, it must be emphasised that in *any* rig which uses an AF drive to give CW from a basic sideband circuit, there is always the risk that an excess of audio drive will result in a string of "whiskers" either side of the fundamental. To keep this risk as small as possible, the KW-2000B uses the *high* AF side for transmitting and for sidetone of 1500 Hz approximately, so that any overloading at the front-end of the audio chain giving harmonics is balanced by the fact that the second and higher AF harmonics cannot get through the mechanical filter.

Netting on SSB, of course, is child's play—one just tunes into the other guy and goes over to "transmit." Netting on CW tends to be a little more difficult at first, mainly because one cannot produce a netting signal as such. The ploy here is to centre the transceiver, and tune the chap till his signal in the receiver is just the same in pitch as the sidetone. One then uses the IRT facility (or the VFO-4B) to receive him at a lower beat-note if so desired, leaving the transmitter part still netted. As an aid to such netting, the sidetone note will be heard in the speaker or phones when the key is down, even though the rig is switched to "receive." Incidentally, the fact that the sidetone can be heard on either speaker or headphones when the latter are plugged in means that one can work CW with full monitoring.

As regards function control, the KW-2000B has an

Ext-Int-Vox switch as a front-panel control, receiving at the left and sending in the centre position. One can also control the transmitter by applying a short from a microphone pressel-switch or, alternatively, a short applied to two of the pins on the octal socket at the rear will perform the same function. Vox is available by turning the front-panel switch to this mode—and if the Vox position is used on CW, with the "delay" pot. turned fully counter-clockwise, one has key-controlled change-over, almost as good as true break-in working.

In either SSB or CW operating the main tuning dial is a delight, giving, if that is possible, almost too much bandspread, with very easy read-out. (The calibrator is now used to align electrically the VFO to the cursor, rather than physically moving the hair-line, as is the method on the older models.) The penalty of having this more sophisticated drive is paid for in two ways: first, in a rather smaller meter, on which the Top Band signal looks almost insignificant as to its anode current, albeit the meter is still clear enough to read. Secondly, the larger dial can result in the moving of the "PA Tune" knob on the front panel. However, this part, on which your reviewer had his doubts, proved in practice to be very smooth and free from backlash even though a bit "heavy" in feel as compared with the earlier models.

Electrically, the changes are minor. The VFO calibration has already been mentioned. ALC on the transmitter is now standard, and the valve line-up is a little different, with an extra stage appearing in the circuitry. The ALC and S-meter controls now extend from the back (*see* one of the photographs) rather than upwards under the lid. There is no provision for the fitting of a Q-Multiplier as a standard accessory for CW operation, although no difficulty would arise in this respect—none the less, in your reviewer's personal opinion this is a retrograde step.

The Power Unit

This is basically the same as before, although the low-HT line capability has gone up to cater for changes in the circuitry. The PSU has a back-panel on which the Hi-Lo power switch, the fuse, and the adjusting pot. for the PA standing current are fitted. It runs cool, and it does the job—what more can one ask? The speaker is mounted within the AC/PSU and shows no signs of any nasty rattles—and the speaker leads are also brought out to the octal socket of the transceiver, in case you want to run the KW-2000B in the car as a mobile.

The good test for the PSU of any Sideband transmitter or transceiver is its ability to respond when on CW, for it is here that the loading factor on the high-voltage line is most difficult. Speech peaks are very short indeed at full output but CW dashes, particularly at low sending speeds—as when working a W6 with echo delay—can be periods of sustained output which will bring the HT voltage of a poorly-regulated PSU down with a bump. Such malfunctioning units lead to the erroneous conclusion that CW is not practicable with a Sideband rig. Nothing could be further from the truth, of course, if the pack is properly designed. This is one of the best of its kind, if the RF output waveform and on-the-air reports are taken as the criteria. Correctly driven in accordance with the manual instructions there is no trace of bloopiness even on slow dashes.

The VFO-4B

This small unit is styled to match the KW-2000B, and carries inside it a replica of the internal VFO of the latter, fitted with the same dial and drive. In addition there is a function switch, giving the following facilities: Off, when the transceiver is working normally; Rx, which brings the receive frequency under the control of the outboard unit with the transmitter remaining at the setting of the transceiver dial; Tx/Rx, when the internal VFO is out of use and the VFO-4B controls the lot; and Tx, when the outboard unit controls the transmitter *and* the normal VFO the receiver. Your conductor would confess to a wish to have an extra position at which *both* VFO's are in operation on "receive," giving simultaneous reception at two points in the band—a facility only given, to the writer's knowledge, by the Hallicrafters SR-400 DX Adaptor, but which was, on the latter rig, found extremely useful at times.

A nice touch in connection with the K.W. VFO-4B unit is that the dial lights up only when it is in operation, this because while being powered by the KW-2000B it is controlled by its own switching and that of the 2000B. In other words if you have the VFO-4B switched to Rx the dial light is on while receiving and goes off as soon as the transmitter is switched, by Vox or otherwise, to Tx. The main-rig dial light is, of course, on as soon as the rig is switched up and remains alight all the time. The IRT facility of the main transceiver does not extend to the remote unit—but this is more or less redundant anyway when the outboard unit is coupled in. (It is only when operating the KW-2000B with the external VFO that one can appreciate the *finesse* involved in these operating facilities.)

As has been implied, the styling is to match the KW-2000B; but the case of the VFO-4B is of sheet, rather than the perforated material used for the KW-2000B and the AC/PSU. The frontal view is quite attractive, with the tuning dial flanked on the left by the Cal/Set knob and on the right by the function switch. Incidentally, an exercise was tried in calibrating both VFO's at one end of a band segment and noting how well they "tracked" with each other when setting either entirely by scale. The correspondence is very good, closer indeed than the actual calibration of either dial. One could quote a frequency and expect to be within less than a kilocycle of the true frequency on either, as measured on a Hewlett-Packard counter. Backlash on these dials is quite negligible.

Connection of the three units to each other is by preformed cables. The VFO-4B has its own cable which plugs into a multi-way socket on the rear of current-production KW-2000B's; older ones (and the earlier KW-2000 and KW-2000A models) can be fitted with a modification-kit to provide the additional connection for the VFO-4B.

The AC/PSU, or the DC one, goes in at another socket, and the key, external Tx/Rx switching and external contacts for a linear all appear at a third socket. The RF output is now by *Amphenol* UHF connector, which is the standard American TV connector—the advantage of this over the *Belling-Lee* one used on earlier models is mainly that it is a screw-in type. None of the connections can be mismated.

Arising from the fact that, in effect, the whole works is complete in itself, the equipment has been used away

from home several times for one purpose and another and it has been found that, given a resonant dipole and a mains supply, one could sit the rig on the back seat of the car, bring the units into the shack one at a time, plug in all round, tune up and be ready to go in less than seven minutes—ideal for a Club station, for instance, or the occasional /M foray.

On The Bands

This is where, when all the talk has been laid aside, the box is either made or broken. It has been used on all bands and in all modes, but mainly CW. It has performed more or less exactly as one would have expected, and your reviewer can honestly say his regrets are solely in the lack of built-in CW selectivity, and to the fact that his new station does not have a linear for Sideband working. Against that he can operate full-power CW and manage to pull them in; the SSB signal reports and tape-play-backs suggest the signal quality is even better than it was with the old Vespa. For Sidebanders the rig is as near perfection in the amateur context as makes no odds. The CW performance could be bettered on the "receive" side by the addition of a Q-Multiplier and/or an AF filter, although these extras are not available from the firm. Signal strength exchanges are as would be expected at this power level, which means "competitive," with a radiating system working correctly. And remember that any transceiver can only be as good as the aerial with which it is used when it comes to raising the DX that everyone else wants to work!

Conclusions

We like KW-2000B—your reviewer because it meets almost all his requirements and the XYL because it does not spoil her decor. What more can one say? Perhaps it is worth noting that more and more VE/W stations are coming up on the bands with K.W. gear—among all the choice they have over there of the well-advertised competitive equipment. Like the bigger K.W. Atlanta, the KW-2000B represents well-engineered British amateur-band gear, capable of holding its own in terms of design and performance against all comers.

HOUSING AN ATU

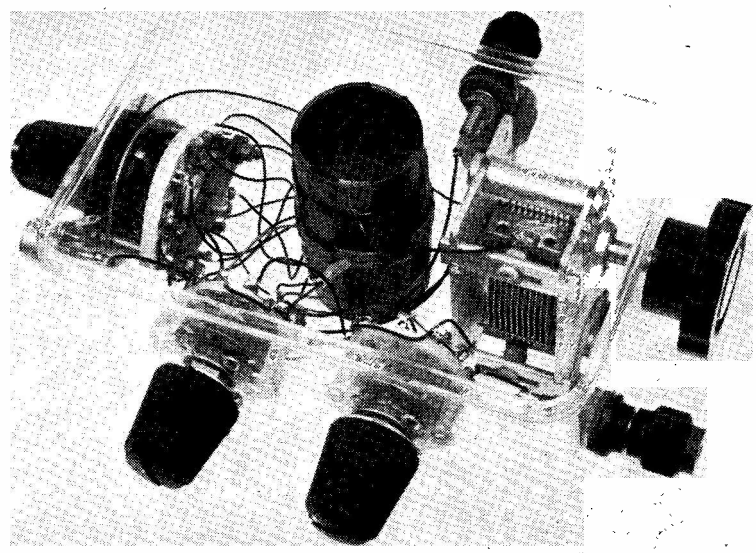
USING A PLASTIC CONTAINER

T. W. McSHEEHY (G3SJP)

THE successful production of a piece of home-made equipment is invariably accompanied by a feeling of achievement but in the majority of cases the original motivation was one of finance. Few radio amateurs can afford the commercial counterpart of their own rigs and they have Hobson's choice. Although it is possible to find many of the components in the proverbial junk box it usually proves more difficult to acquire a suitable cabinet or box to house the equipment. This problem is enhanced when the circuitry is particularly susceptible to the proximity of metal.

In fact, the author found himself in this position recently when deciding to build an ATU for 160 metres. There were many circuits in the literature but the one described by P. R. Cragg (G3UGK) in SHORT WAVE MAGAZINE for January, 1970, "Versatile ATU for Top Band," seemed to be most suitable. The purpose of this note is to describe an effective method of housing the finished unit—*see* photograph.

The ATU is built into a plastic "lunch box" purchased from the local ironmonger's for 15p. The general layout can be seen in the picture, which shows the box upside down. The lid of the box forms the base. The coil is glued inside the box with a contact adhesive and holes are drilled for the other components. Care is needed during the drilling process and it is advisable to use small diameter drills initially and gradually increase in drill size until the desired diameter hole is produced. An electric drill should *not* be used, because of making the plastic "gooey" round the drill tip. The inside of the box should be supported with a block of wood during the drilling process, preferably clamped to the wall of the box, to prevent distortion and subsequent fracture of the material. The plastic walls have proved to be surprisingly firm and no difficulties have been experienced in spite of switches which have a strong action.



TWO-METRE PORTABLE TRANSISTORISED TRANSMITTER

SUFFICIENT OUTPUT FOR INSIDE OR OUTSIDE WORK — XTAL OR VFO FACILITY WITH GOOD FREQUENCY STABILITY — DRIVE TO 70 OR 23 CENTIMETRES — FOR BASIC 12-VOLT SUPPLY

G. DIDELOT, F8TD ("Radio REF")

We acknowledge G. Didelot, F8TD—one of the senior F8's—writing in the February 1971 issue of the French "Radio REF" as the source of this interesting practical article. Translation from the original by A. H. Dormer, G3DAH.
—Editor.

THIS transmitter has been designed and built to meet the following specification:
(1) Provide sufficient power to drive a QQV06-40A in a fixed station amplifier,
(2) Provide sufficient power to drive a portable rig with a transistorised amplifier giving 20-25 watts output,
(3) Function as a medium power transmitter *per se*,
(4) Require only a 12v. battery for portable work,
(5) Function as VFO/Xtal over the band 144-146 MHz with good frequency stability,
(6) Provide CW and FM facilities,
(7) Enable the VFO to be replaced with a second xtal oscillator for spot frequencies.

To assist those who are not already familiar with this type of circuit, refer to the simplified block circuit diagram Fig. 1, which will give a clearer understanding of the function of each section than will the more detailed circuit diagram.

A quick examination showed that the output power required was of the order of 6 watts. In the event, with correct adjustment, this output was quite easily achieved without any of the transistors working at more than 60-70% of their ratings. As mains and/or battery operation was envisaged, two sockets are provided to which the appropriate supply can be connected. On the other hand, the send/receive relay and the netting switch for the VFO are both built-in and are used on all modes.

The cabinet has screwed angle frames and measures about 7in. x 10in. x 8in. It should be possible to fabricate something smaller, but in this case a great deal of the space is taken up by the VFO tuning capacitor and slow-motion drive, taken from an old HRO—but, in spite of the encumbrance, this slow-motion drive is used because of its exceptional machanical quality and because of the resetting precision which the dial permits, a precision which has been multiplied by ten by the fitment of a vernier to the original scale.

It has been stated often enough that the quality of a VFO depends in the first place upon the mechanical robustness of the construction, and this point is re-emphasised. It serves no useful purpose to consider a circuit of the highest electronic quality if the connections, the components and particularly the coil, vibrate under the slightest shake, or if the cabinet is deformed by the slightest effort. The measuring precision will be illusory and no method will permit compensation for the frequency variations thereby introduced.

The various elements of the transmitter are contained in screened compartments, of a thickness which allows the use of small self-tapping screws. The circuits themselves are made in various ways—on silver-plated brass for the VFO; oscillator assembly with 139·5 MHz mixer and first amplifier; and the three power amplifiers on Paxolin sheet with mounted eyelets for the modulator, the modulator amplifier and the auxiliary xtal oscillator. What is important is to avoid any radiation from the VFO or the 139·5 MHz oscillator and any risk of coupling between the various 145 MHz amplifiers which may lead to parasitic oscillation.

Let us now look at the circuit diagram Fig. 2. The 139·5 MHz oscillator starts off with a 46·5 MHz xtal in a Pierce circuit, the stability of which is well known. The collector side is tuned to 46·5 MHz with the aid of a slug coil and a small capacity of 4·7 $\mu\mu$F feeds a tripler stage of which the collector circuit is tuned to 139·5 mHz by another slug coil. A small capacitor of 2·2 pF

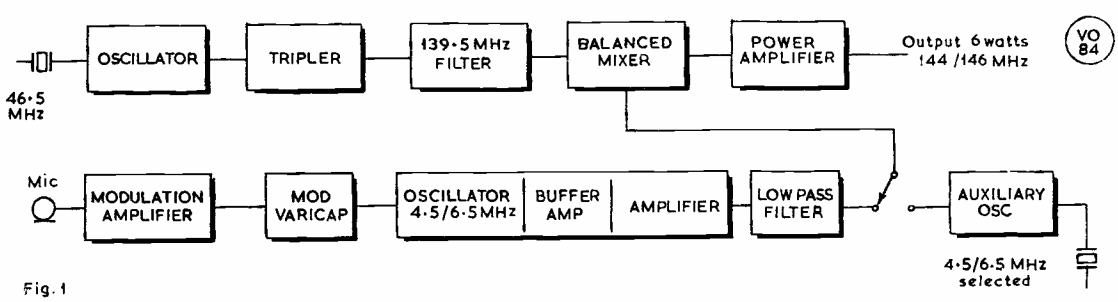


Fig. 1. Block schematic of the F8TD transistorised two-metre transmitter.

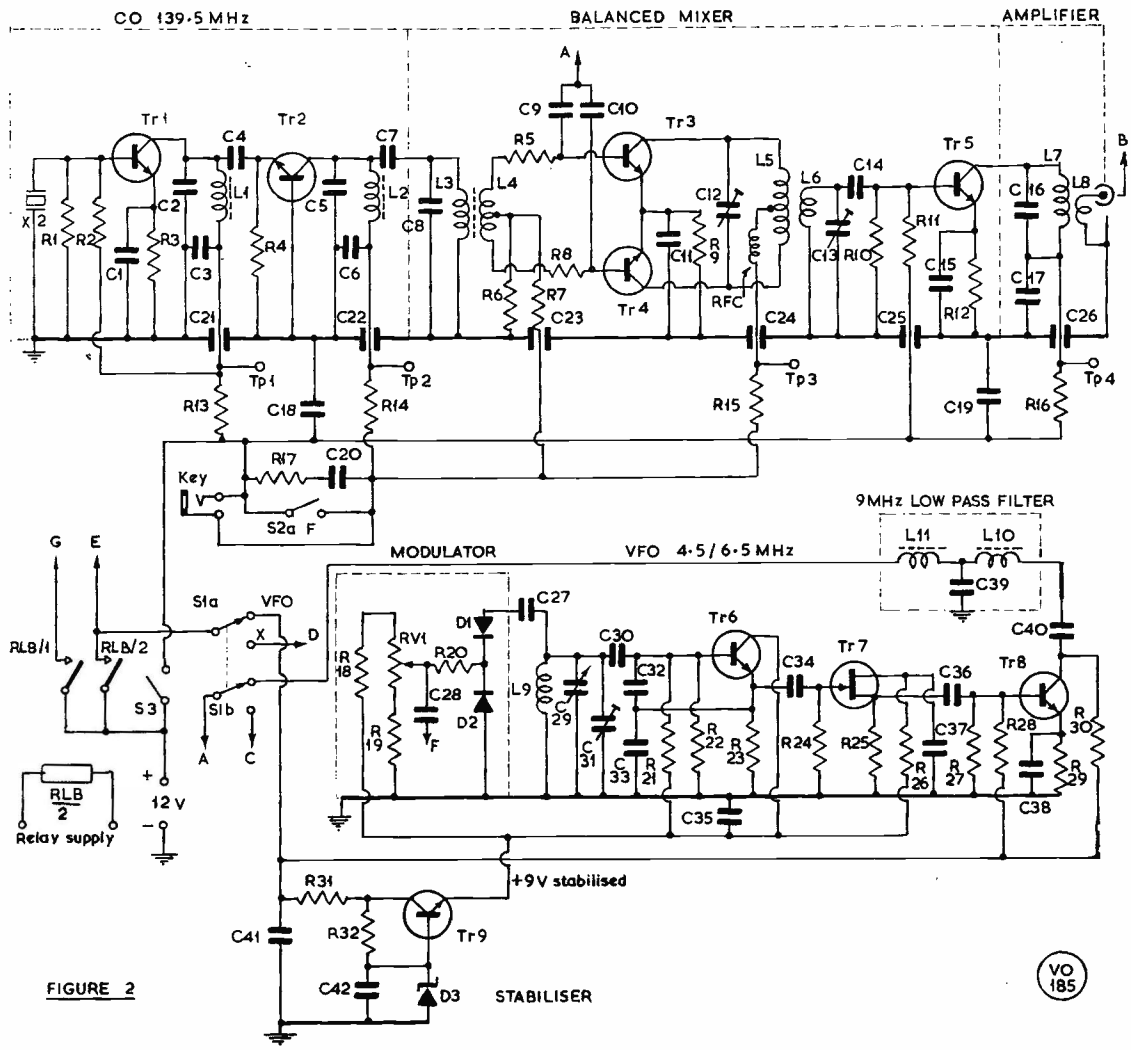


Fig. 2. Elements of the circuit up to the drive-output stage.

Table of Values

C1, C39 = 47 μμF
C2 = 18 μμF
C3, C6,
C17, C18 = ·01 μF
C4, C5,
C14, C16,
C34 = 4·7 μμF
C7 = 2·2 μμF
C8 = 6·8 μμF
C9, C10 = 27 μμF
C11, C15 = ·0047 μF
C12, C13 = 1-12 μμF, preset
C18, C19,
C28, C37 = 0·1 μF
C20 = 100 μμF
C21, C22,
C23, C24,
C25, C26 = ·022 μF
C27 = 5 μμF, s/m
C29 = 12 μμF
C30 = 30 μμF, s/m
C31 = 3-16 μμF preset
C32, C33 = ·002 μF, s/m
C35, C42 = ·047 μF
C36 = 5·3 μμF
C40 = ·001 μF
C41 = 5 μF, 12v. elect.
R1, R18 = 33,000 ohms
R2 = 27,000 ohms
R3, R13,
R14, R15,
R16 = 47 ohms
R4, R29 = 1,000 ohms
R5, R8 = 82 ohms
R6, R7,
R19, R21 = 15,000 ohms
R9 = 1,500 ohms
R10 = 5,600 ohms
R11, R20 = 22,000 ohms
R12 = 270 ohms
R17 = 100 ohms
R22 = 10,000 ohms
R23, R32 = 470 ohms
R24 = 100,000 ohms
R25 = 680 ohms
R26 = 2,200 ohms
R27 = 68,000 ohms
R28 = 47,000 ohms
R30 = 4,700 ohms
R31 = 22 ohms
RV1 = 47K potentiometer
X2 = 46·5 MHz xtal
D1, D2 = BA102
D3 = BZY63 zener
RLB = 12v. relay
Tr1,
Tr2,
Tr6 = 2N706A
Tr3,
Tr4,
Tr5,
Tr8 = BF173
Tr7 = TIS-34
Tr9 = BC108

feeds another circuit tuned to 139·5 MHz which is not otherwise coupled to the first and which provides a sufficiently effective filter.

The mixer is of the balanced type to avoid as far as possible the distortion of the output waveform and therefore the production of undesirable harmonics. After trying out various mixer circuits with conventional transistors, Fets and Mosfets, a return was made to the usual design. As can be seen, the 139·5 MHz beat is applied to the bases of the transistors by a balanced coil coupled to the 139·5 MHz filter. This coupling coil, L4, consists of a bifilar winding which should not present any difficulty; it is located at the cold end of L3 and wound over a thin plastic tube. The output of the VFO is also applied to the bases *via* the 27 $\mu\mu$F capacitors, and the mixer output frequency is selected in the collector consisting of the coil L5, tuned by a tubular ceramic capacitor, C12 Fig. 2, of which both plates must be insulated from chassis.

The amplifier is standard. The base-tuned circuit is inductively coupled to L5. A creeen prevents coupling between input and output.

Resistances of 47 ohms have been inserted in the various supply leads to the collectors in this assembly to permit easy measurements of current consumption without any modification to the connections.

It will be noted that the tripler and mixer are con-

Table of Values

Fig. 3. The RF Power Amplifier

C43, C48,		R38	= One megohm
C67	= 0·1 μF	R39	= 270 ohms
C44	= 56 $\mu\mu$F	R40	= 10,000 ohms
C45	= 33 $\mu\mu$F	R41	= 220,000 ohms
C46, C65,		R42	= 6,800 ohms
C66	= ·001 μF	R43, R47	= 47 ohms
C47	= 100 $\mu\mu$F	R44	= 10 ohms
C49, C50,		R45	= 3·3 ohms
C51, C52	= 10 μF, 12v. elect.	R46	= 0·33 ohms
C53	= ·0047 μF	R48, R49	= 3,800 ohms
C54, C58,		RV2,	
C61	= ·01 μF	RV3	= 10K potentiometer
C55	= *see text*	RV4	= 22K potentiometer
C56, C57,			
C60, C63,		RV5	= 10K log. potentiometer
C64	= min. variable	X1	= 4·5/6·5 MHz FT-243 xtal
C59	= 15 $\mu\mu$F	D4, D5	= IN914, or suitable diode
C62	= 10 $\mu\mu$F	Tr10	= BF173
C68, C69	= 470 $\mu\mu$F	Tr11	= TIS34
C70, C71,		Tr12	= BC109
C72	= ·001 μF, min. feed through	Tr13	= 2N2369, I.C.
R33	= 33,000 ohms	Tr14	= 2N3866, I.C.
R34	= 1,000 ohms	Tr15	= 40282, I.C.
R35	= 4,700 ohms		
R36	= 330 ohms		
R37	= 4·7 megohms		

Notes: R45, 3·3 ohms, can be made up using three 10-ohm resistors in parallel. R46 is of resistance wire, such as Eureka, rated at least one amp, wound into a self-supporting spiral. The relay is double-contact, rated 1 amp., with coil to suit operating voltage. Switch positions for S4 are: 1, RF watts forward; 2, RF watts reflected; 3, collector current 2N2369; 4, collector 2N3866; and 5, collector 40282.

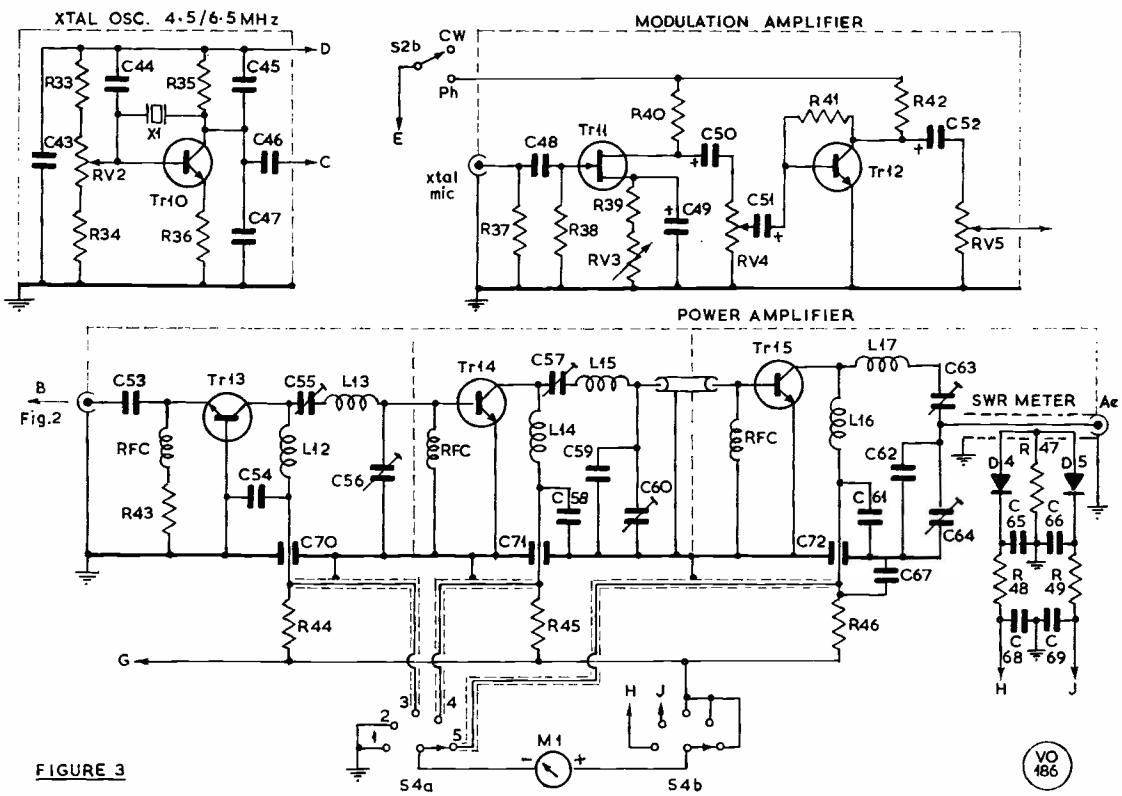
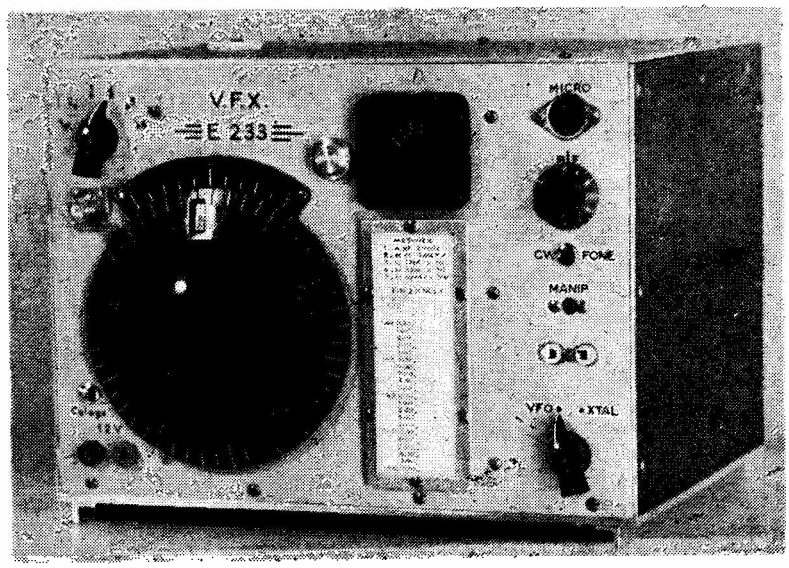


Fig. 3. The RF power amplifier, running about nine watts in the final stage.



General appearance of the F8TD two-metre transmitter—main VFO tuning is an HRO dial assembly.

nected to the 12v. supply by means of a key jack shunted by an ordinary RC filter and which may be short circuited for the NBFM mode by the switch S2a. The keying obtained by this method is very good, with virtually no chirp or spacer.

The VFO

The VFO is a Colpitts oscillator of which the merits are well-known but which is, nevertheless, very simple. It is hardly necessary to re-emphasise the conditions required for perfect frequency stability; it goes without saying that the components chosen must be of first-class quality, particularly those for the oscillating circuit. It is also recommended that the use of holders for the oscillator and buffer transistors be *avoided*, to eliminate the possibility of any variation of contact resistance in these devices, which are often of dubious quality. The transistor oscillator is followed by an FET buffer stage to which it is lightly coupled. To obtain sufficient drive for the mixer stage, this buffer is followed by a BF173 amplifier. A low-pass filter with a cut-off around 9 MHz at the output reduces considerably harmonics of the VFO. Finally, to ensure frequency stability, the supply to the oscillator and buffer is stabilised at 9v. by the BC108 transistor whose base voltage is fixed by a zener. As stated later, the supply voltage must also be stabilised if it is coming from the mains.

Modulation

The modulator consists of the classical Varicap across the oscillator circuit. Nevertheless, in order to avoid the variation of the supply voltage which may occur if only one diode is used, the circuit shows two indentical Varicaps connected back to back. The standing bias is derived from a resistance network across the stabilised 9v. supply, adjustment being by means of a miniature, screw-driver adjusted pot. of 47K. The modulating voltage is applied at the centre point of the two Varicaps *via* a capacitor of 0·1 μF, C28.

The modulation amplifier has been designed to give good quality from a xtal mike. If different types of microphone are used, it will be necessary to modify the circuit of the input stage, and probably to replace the FET by another transistor, perhaps BC109 for example. The variable resistance of 10K shown in the source circuit of the FET serves to adjust, for best aural results, the operation of the stage. The variable resistance of 22K controls the gain of the amplifier so that the deviation swing is correct at 145 MHz with the control at about 9/10ths of full travel. This makes it possible to reduce the audio voltage at the output by means of this pot. to give correct deviation at 432 MHz or 1296 MHz if one uses successive triplers for operation on those bands. The switch S2b (coupled with S2a mentioned above) cuts the supply voltage to the amplifier for CW operation.

[*over*

TABLE OF COIL DATA

L1 — 9 turns 18g. enam. close-wound on 4 mm. dia. former.
L2, L3 — 6 turns 16g. silvered copper, 10 mm. long, 4 mm. dia.
L4 — 2 x 2 turns cotton-covered enam., bifilar wound at cold end of L3.
L5 — 6 turns 16g. silvered copper, 12 mm. long, 6 mm. diameter, centre tapped.
L6 — 4 turns 16g. silvered, 8 mm. long, 6 mm. dia.
L7 — 6 turns as above, 10 mm. long, 4 mm. dia.
L8 — 2 turns 18g. enam., at cold end L7.
L9 — 18 turns 18g. enam. on 30 mm. dia. former, spaced one diam. and cemented.
L10 — 40 turns 18g. enam. on pot core, adjusted to 16·5 μH.
L11 — As for L10, but inductance adjusted to 22 μH.
L12 — RF choke, 18g. enam., close-wound on ½-watt resistor body.
L13 — 7 turns 18g. enam., 12 mm. long, 8 mm. diameter.
L14 — 3 turns 16g. silvered copper wire, 8 mm. long, 6 mm. diameter.
L15 — 5 turns as above, 10 mm. long by 8 mm. diameter.
L16 — 3 turns 14g. silvered, 8 mm. long, 6 mm. diameter.
L17 — As L17, but 12 mm. in length.
Note: Coils will probably require final adjustment for correct frequency coverage. One inch can be taken as 25 millimetres.

Auxiliary CO

The auxiliary xtal oscillator does not include a tuned circuit, and will work with any xtal frequency between 4·5 mHz and 6·5 MHz. FT-243 xtals are available with 25 kHz spacings which make possible the use of fixed frequencies in the two metre-band at 25 kHz intervals. This particular feature may be ignored if desired, the more so since the ability to modulate has not been catered for in this case. Apart from the space (already very limited) occupied by the board containing this circuit, one saves one switch (S1a-S1b) and the external xtal holder.

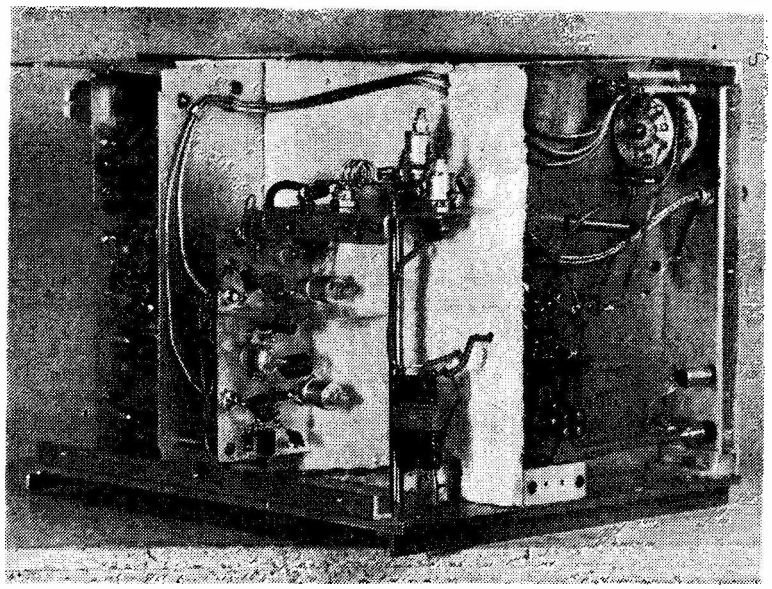
The PA Stage

The power amplifier comprises three successive stages. The collector circuits are series-tuned and permit an adjustment of the output impedance. The first two transistors are fitted with cooling fins although their operating conditions do not make this obligatory, but they give an additional protection against inadvertent detuning. The final transistor, which is of the type with the case fastened to the chassis by threaded nut and bolt, uses the silvered brass chassis as the heat sink, and to secure ready dissipation of the heat without heating up the other elements of the VFO, this chassis is fastened to the bottom of the cabinet by an angle bracket, which also helps to leak off the heat. The other sides of the compartment containing the power amplifiers are covered with $\frac{3}{8}$in. thick expanded polystyrene, so preventing the transmission of heat to other compartments, notably that of the VFO.

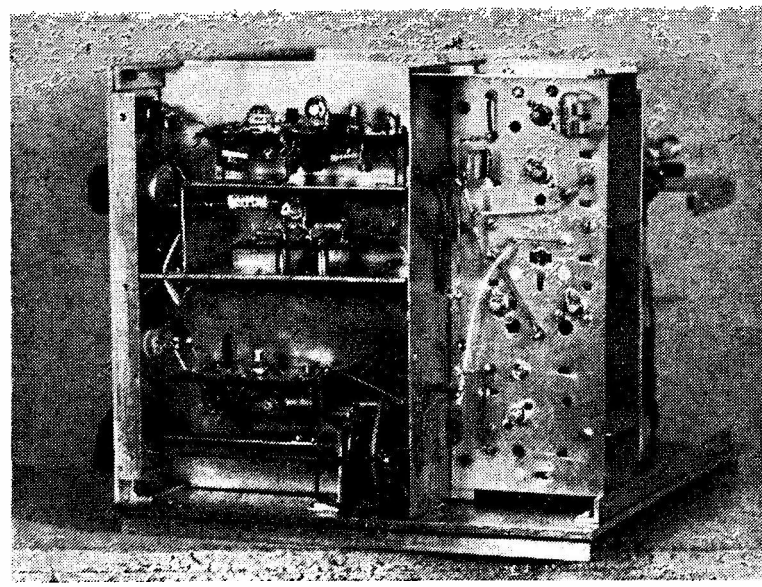
An SWR meter was originally fitted at the output of the final stage to protect the transistor in the case of failure or short circuit of the load, but tests have shown that this is not necessary in view of the operating level of this transistor. The increase of collector current produced by these untimely manoeuvres, although generally dangerous, does not exceed the value which the transistor can safely carry. (It would probably not be the same if one ran the transistor near the maximum values.) This SWR match has, nevertheless, been retained, because its use when the apparatus is connected directly to the antenna is obvious—and the same applies when adjusting the coupling to a valve amplifier. This accessory has been made very simply from a piece of 50 or 75-ohm coax (whichever is in normal use at the station) from which the outer covering is removed. The braided sheath is lightly compressed to free it from the central insulant and a short piece of enamelled wire is slipped between the braid and the insulant. This wire, bent in the middle and twisted to form a centre-tap has a total length of $5\frac{1}{2}$in. (twice $2\frac{3}{4}$in.), but this is not at all critical. One arranges to bring out the loop and the two ends through the braid, making sure that there is no accidental contact, and then reforms the braid over the insulant as before. The ends of the braid are prepared for soldering to earth and if necessary a small piece of sticky tape can be applied so that the braid does not retract on its own. The two ends of the braid must be connected to earth to ensure the correct match between the output circuit of the last amplifier and the coaxial output socket on the front panel.

The switching comprises on the one hand the send/receive relay which also applies operating potentials to those circuits under control of the main station operating switch. Be sure that the switch used has contacts capable of carrying at least one amp.

There is also a switch S3 on the front panel which applies operating potential to the circuits concerned with locking the VFO on to a received frequency on which one wishes to transmit. A double switch S1a-S1b allows the replacement of the VFO by the auxiliary oscillator. (The use of the double switch S2A-S2B has been explained previously.) Finally, S4A-S4B connected to an external 500 μA meter (arranged as a voltmeter) connects this instrument, with correct polarities, to each



View of the sub-chassis on the CO, mixer and amplifier side. On the small vertical board are fitted the 2N2369 and 2N3866 amplifiers. At upper right is the S4 switch assembly, the SWR circuitry and the send-receive relay.



Another chassis view, showing the general construction of the very neat F8TD two-metre Tx. The sub-sections of the circuit are assembled in separate screened compartments. Stable VFO drive output is given up to the 23-centimetre band.

of the collector test points in the power amplifiers as well as to the direct and reflected power lines of the SWR meter.

The HRO tuning dial does not permit direct calibration in frequency. It was necessary, therefore, to compile a table showing the 100 kHz points. For more exact intermediate setting, reference is made to a frequency curve drawn up by use of a calibrated frequency meter.

Adjustment

There is little to be said about this since the various circuits do not involve tuning elements other than those in the oscillator circuits. One point should be mentioned: Because of the proximity of the 139·5 MHz and 145 MHz frequencies one must be certain that circuits L5, L6 and L7 are tuned to 145 and not to 139·5 MHz. A reasonably accurate wavemeter is therefore necessary, as it is very easy to make a mistake!

As a verification of the normal functioning of the various stages one can check that the collector currents are near those established in the prototype and which are shown in Table I opposite.

In the case of mains operation the supply side *must* be stabilised—when using CW, in particular, the power drawn varies considerably and if the stabilisation of the supply is not good enough a chirpy note can result.

With an aerial connected, the tuning of the output circuit is performed by the adjustment of the two variable capacitors in such a way as to obtain maximum forward and minimum reflected RF power (an SWR of 1 : 1 should be fairly easily obtained with a correctly proportioned beam). On the first test, an impossible SWR (of the order of 9 : 1) was observed, as well as difficult and unstable tuning of the PA. By listening on the Rx, it was found that these parasitic oscillations were of diminishing power every 40 or 50 kHz on either side of the desired frequency—which was unacceptable, even though these parasitics were not audible at 30 miles.

Table I

Collector Currents measured on Prototype

Xtal osc., 46·5 MHz	4 mA
Tripler 46·5/139·5 MHz	2·4 mA
Balanced mixer	4 mA
145 MHz amplifier, BF173	5 mA
Total for VFO including oscillator, buffer, amplifier, resistance network, varicap and stabiliser	15 mA
Aux. xtal osc.	2 mA
Modulation amplifier	2·5 mA
1st power amp. 2N2369	12 mA
2nd „ „ 2N3368	120 mA
3rd „ „ 40282	750 mA
Total current on Phone	920 mA
„ „ CW key up	30 mA
„ „ CW key down	915 mA
„ „ for Netting	33 mA

All these measurements were made with a supply voltage of 12v. stabilised.

After various tests the effect was eliminated by connecting, into the earthy side of the coupling link to the grid of the PA, airspaced variable capacitor of about 50 $\mu\mu$F. With careful adjustment of this the SWR fell to nearly 1 : 1, the final became stable and the parasitics disappeared. This circuit is practically identical to that often used for inductive coupling of the antenna.

Tests carried out recently on 432 MHz starting with this VFO/xtal showed the frequency stability to be excellent, the observer (in this case F8OD) not reporting any difference of stability compared with the usual xtal exciter. The portable equipment not being finished, tests have not yet been made on 1296 MHz, but results already augur well for activity on that band.

ODD-SHAPED ANTENNAE

SQUARES, OBLONGS, DIAMONDS AND TRIANGLES — SINGLE-ELEMENT LOOP CONFIGURATIONS — PRACTICAL INFORMATION AND RESULTS

R. L. GLAISHER (G6LX)

WHILST the multi-element Cubical-Quad beam aerial is a well established alternative to the Yagi, the simpler single-element version is not very much used. This is surprising as the full-wave loop is a very effective bi-directional low-angle radiator having as many features which make it attractive for amateur use. As it has only one element, it can be suspended from an insulator at the apex (or from the top corners, depending on the shape used), and provided that the other corners are tensioned, no supporting bamboos or other spreaders are needed. Being low-Q devices, full-wave loops are tolerant as to exact dimensions, have a good frequency-to-bandwidth ratio, are easy to feed, and are not too fussy about their height above the ground.

During the past fifteen years, the writer has built and used many different kinds of single-element loop aerial on all bands from 10 to 80 metres. With the exception of the "diamond" loop, all have worked as expected and have consistently out-performed straight-wire aerials mounted at greater heights. This article summarises some of the results obtained and gives practial information about the design and application of single-element loops using the full-wave arrangement.

General Points

The quad-loop has a circumference equal to that of an electrical full-wavelength. This can be calculated from the formula. Length ft. = 1006 ÷ MHz and aerials cut to this length will normally be near-enough to resonate on or close to the design frequency, no matter which shape of loop is used. Within reason, almost any configuration can be adopted provided that the vertical-to-horizontal aspect, or *vice-versa*, does not exceed 2·5 to 1. A loop correctly resonated and properly fed has a small power gain over a dipole (1 to 2 dB), but because the top and bottom sections operate in-phase, the actual communication gain is somewhat higher. The radiation resistance at resonance averages around 100 to 110 ohms, although in some cases this can be as high as 150 ohms. The exact feed resistance at a current-loop depends on the height above ground and the configuration used. The horizontal pattern is bi-directional at right-angles to the plane of the loop with maximum radiation concentrated at low vertical angles. The loop can be fed at the alternative points on the circumference where the current is maximum, and this permits the loop to be horizontally or vertically polarised as required.

Configurations

As used in the Cubical-Quad beam, the loop is normally mounted in the shape of a square with the top and bottom sides parallel to the ground. As shown in Fig. 1A, the square is horizontally polarised, but if the feed point is transferred to the side of the loop (Fig. 1B), the polarisation is then vertical. Some designs of Cubical-Quad have the square turned through 45°, and this shape is usually referred to as a diamond (Fig. 1C). The latest shape to be used is the *delta*, or upside-down triangle (Fig. 1E), and there are a number of variations on this configuration that will be described later. On the LF bands, where height is obviously a problem, the oblong (Fig. 1D), is capable of good results. One shape that is rarely, if ever, used on the HF bands is the circle, due to the mechanical difficulties of making up and rigging such a structure.

Square Loops

The writer first used the square-loop some years ago when he was keeping schedules on 7 MHz with a station in Australia. As a dipole did not have the performance required, a "W8JK beam" had been erected and this worked well—until a short, sharp gale broke one of the 16ft. bamboo spreaders and deposited the bits through the roof of a neighbour's greenhouse. Not having any more long bamboos, a local amateur came to the rescue and loaned the driven element of a 7 MHz Cubical-Quad which had also suffered damage in the same gale. The square, complete with spider and spreaders, was suspended from the top corners, but because of the weight, the bottom was quite close to the ground. In spite of this, the aerial worked every bit as well as the previous "W8JK" and enabled the schedules to continue without a break. At an early opportunity, a replacement, lighter loop was constructed without the use of spreaders. The aerial was fed in the centre of the bottom side (the same method was used on the Quad) (as Fig. 1A), with 70-ohm balanced twinlead and although there was some mismatch, this did not cause any difficulties. The original heavy square had a side length of 33ft. 6in., but as resonance was found to be well above the 7005 kHz schedule frequency, the replacement loop was cut to the formula length of 35ft. 9in. In practice this change of length did not seem to make any difference to the performance, although the SWR was slightly better on the longer loop.

The excellent results obtained on 7 MHz, and later on 14 and 21 MHz with similar square-loops, prompted consideration as to how such a loop would work on 80 metres. This was quite a problem as a loop cut for 3·5 MHz is a Big Thing with sides of around 70ft. As the maximum height of the G6LX masts was only 50ft., some means had to be found of shortening the vertical sides to 40ft. or less (about 0·6 of the full-size). Some time previously the writer had tried a half-sized Cubical-Quad beam which had loading coils in the sides to make up the required electrical length for resonance. This arrangement had been very inefficient and it was felt that it would be a waste of time to try a similar arrangement with a single-element version. During a discussion with G3FPQ, he suggested that the square could be stretched so that the horizontal sides were made longer

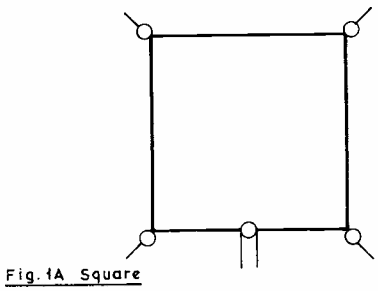


Fig. 1A Square

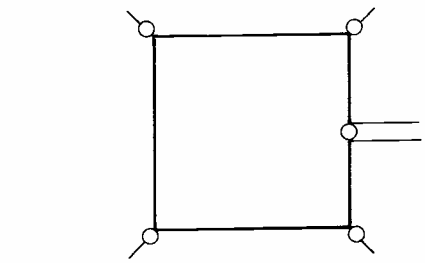


Fig. 1B Square

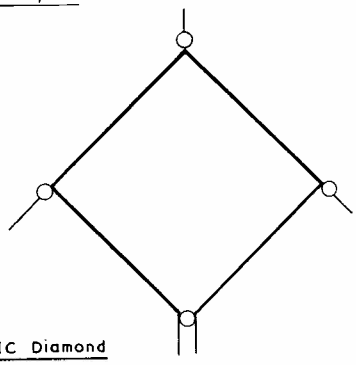


Fig. 1C Diamond

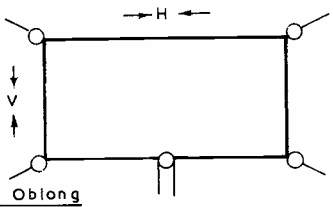


Fig. 1D Oblong

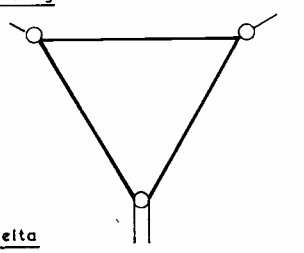


Fig. 1E Delta

A 512

than the vertical sides. He had not tried such a loop, but he could see no reason why it would not work provided that the elongation was not too great. It was this suggestion that eventually solved the 80-metre problem and triggered off a test programme on other shapes of loops.

The Oblong

As this was new ground, a 10-metre square was constructed and erected as a "standard" aerial. A second loop of exactly the same length was formed into an oblong having a vertical-to-horizontal side ratio equivalent to that required for 80 metres. In order to simulate the 10ft. loop-to-ground spacing both loops were suspended so that their bottom sides were only 18in. off the ground. The loops were fed with identical lengths of 70-ohm balanced twinlead connected in the centres of the bottom sides. A General Radio RF bridge, generator and null detector were available, and (having learned how to drive this gear) it proved to be a great time-saver, making it possible to obtain accurate measurements, which had not been so on the earlier loops.

Unfortunately, it would happen that 28 MHz propagation conditions were rather poor during the test period and although no contacts could be made with the States, about 30 checks were made with stations in Europe, Asia and South America. Direct comparisons between the square and the oblong showed that there was little difference between the two loops on contacts with stations located up to 5,000 miles from London. On the longer paths, the square was marginally better, with reports one or two S-points up on contacts with 9M2, 9V1 and VP8.

Bridge measurements showed that the square was resonant at 28550 kHz and the oblong at 28660 kHz. As both loops were the same length, this showed that a slight adjustment would be needed for the oblong as compared with that given by the formula. The feed impedance at resonance for the square was 95 ohms, and 110 ohms for the oblong. The bandwidth of the two loops was very similar and the loops could be used over a range of at least 500 kHz before the SWR became unreasonable.

Having proved that the oblong would work, the next step was to build a full-sized 80-metre version. Using side dimensions of 40ft. (V) × 96ft. (H), the bottom of the oblong was the desired 10ft. above the ground. The resonant frequency was found to be 3670 kHz, which was not too far off the design figure. The bandwidth was checked and was found to be around ± 150 kHz from the resonant frequency before the SWR had risen to 1·5 : 1. As this bandwidth was measured with the bridge set at 115 ohms (the null point at resonance) a quarter-wave open wire stub was fitted at the feed-point and the 70-ohm feeder connected to the stub at the position that gave minimum SWR at 3670 kHz. The aerial was used with this stub-matched feed arrangement for a while and gave very good results for both medium and long-distance working. As the bottom of the loop was so near the ground, the 66ft. stub had to run away from the loop at right-angles and fixed parallel to the ground at the 10ft. level. This was very unsightly and after receiving the expected ultimatum from the XYL, the feed-point

was transferred to one of the vertical sides. Not only did this switch the polarisation from horizontal to vertical, but it also produced a better match to the 70-ohm line, so eliminating the use of the stub altogether. Although it was not possible to make any direct comparisons between the two polarisation modes, the change to vertical appeared to make the loop less responsive to short-skip European signals, without having any adverse effect on DX performance. Another advantage which resulted was an increase in the bandwidth of the loop, allowing full coverage of both the CW and SSB band-edges with SWR's of 1·6 : 1 or less.

The vertically polarised oblong was used very successfully during two winter seasons of 80-metre operation, and enabled G6LX to book in well over 100 countries on CW and SSB. It would still be in use today if space remained available—but an extension to the house effectively reduced the length of the aerial run and necessitated a change to vertical aerials for 80-metre operation.

There are two postscripts to these notes on oblong loops: First, a number of Scandinavian stations used these aerials during the winter season of 1970/71 with quite remarkable results. As has been reported in the DX columns, these stations made very many long-path *daylight* contacts on 80 metres with W6, W7, VE7, KH6, KL7, VS6, VU and other Asiatic and Pacific areas. In many cases it was found that the loops were more effective than verticals over these very long distances.

The second postscript also comes from Scandinavia. Several of the stations participating in the afternoon DX sessions experimented to see just how much elongation was permissible. From the information that they obtained, it would appear that the vertical-to-horizontal ratio used in the G6LX oblong (40ft. × 96ft.), was very near the maximum that can be used. Further stretching appears to modify the loop performance so that it ceases to operate as a low-angle radiator, and works more as a folded dipole—as one would expect.

As mentioned earlier, the diamond is sometimes used as an alternative to the square in Quad-beams. At first sight this "shape" looked interesting as the loop could be suspended at the apex and orientated in any desired direction. As only one pole is needed, the ability to be able to change the line-of-shoot is most useful, particularly when the fixed aerial run is in an unfavourable direction. Unfortunately the diamond—or at least the ones tried at G6LX—did *not* work as expected.

As for the tests on the 10-metre oblong, a series of comparisons and measurements were made using the set-up described earlier. These showed that the diamond does not have the same low-angled main-lobes that are a characteristic of all the other loops that were tested. The feed resistance is much higher than the square (about 150 ohms) and it was necessary to fit a linear transformer to match the 70-ohm feedline to the loop. A large number of contacts were made on both the standard square and the diamond. On distances of up to a few thousand miles, there was little to choose between the two systems but beyond this the square showed a marked advantage, with differences as great as 4 or 5 S-points on contacts with VK.

Because of these unexpected results it was thought

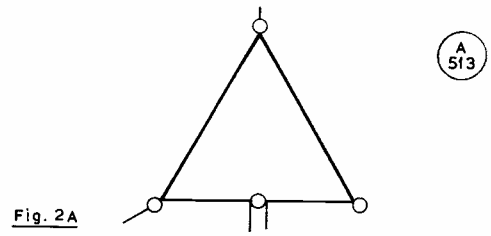


Fig. 2A

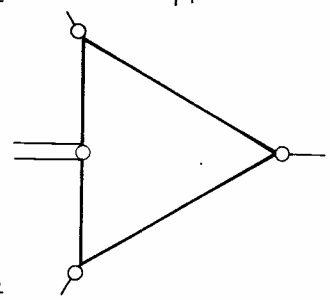


Fig. 2B

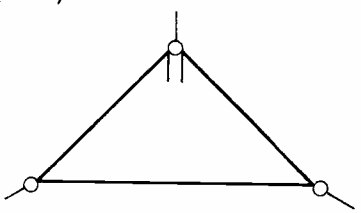


Fig. 2C

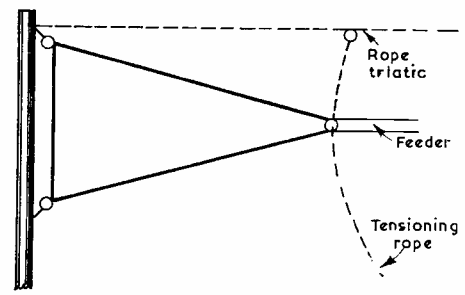


Fig. 2D

at first that there must be something wrong with the diamond test-loop. After measuring the length of the loop, checking the insulators and the feedline, the aerial was tried at widely differing heights above ground. The results still showed that the performance was well below that of the square, and it became clear that the shortcomings must be due either to the configuration or the position of the feed-point on the loop. As will be seen by reference to Figs. 1A and 1C, the square is normally fed in the centre of a side, while the diamond, as used in the Quad-beam, is fed at the lower corner. To see if a change in the feed position would improve the performance, the feedline was transferred to the centre of one of the lower sides of the diamond. While this lowered the resistance at the feed-point to near 100 ohms, it did not seem to make much difference to the performance which was still poor on comparisons with the square over

the longer distances.

It is not known why the diamond differs so much from the square. Other users of loops have also reported finding similar difficulties and W6SAI, writing in his *Quad Handbook*, says that the diamond has no measured gain, and performs exactly as it it were a folded dipole.

Triangle Loops

The use of the triangular shaped full-wave element as an alternative to the square was first suggested by W6DL in a note to *QST* published in 1967. Since that time a number of practical designs for "Delta-Loop" beam aerials have been suggested. These have all been of the configuration shown in Fig. 1E—that is, with the horizontal section at the top with equal lengthed sides, and with the feed-point at the bottom corner. Following the appearance of the first article, tests were made to see how the triangle would perform in relation to other shapes of loop. This work has shown that the triangle is a most useful and efficient aerial. It can be used "delta-fashion," turned rightway-up (Fig. 2A), used end-on (Fig. 2B), or stretched (Figs. 2C, 2D). In any of these configurations the triangle performed as well, if not better, than any other loop that had been tried.

The rightway-up triangle can be supported from a single pole in the same way as the diamond. The stretched rightway-up version is useful when the pole height is limited, and the sideways-on types enable the triangle to be mounted on one side of a pole. The loops can be fed at any current-point and can be used with horizontal or vertical polarisation as required. In operation the triangle has similar characteristics to that of the square. The circumference of the loop can be calculated from the formula and the radiation resistance at resonance is between 90 to 110 ohms depending on the height above ground and the amount of stretching used. The bandwidth for aerials resonated in the centre of the 7, 14 and 21 MHz bands is sufficient for full coverage. On 28 MHz the triangle will operate over a 800 kHz sector before the SWR becomes difficult. The horizontal bi-directional lobes appear to be about the same width at the half-power points, and are radiated at the same low vertical angles as the square.

In common with the oblong, the amount of stretching that can be used with the triangle is limited. Whilst no precise tests have been made to determine these limits, there is a deterioration in performance once the ratio of horizontal to other side lengths exceeds 1·3 : 1. To make this point a little clearer: If a 7 MHz loop has a circumference of 143ft., giving an equal side length of 47ft. 8in., the maximum stretching that is possible is 1·3 times the side length (47ft. 8in. × 1·3 = 62ft. 8in.). As the loop should have a total circumference of 143ft. the remaining 80ft. 4in. is used to make up the two shorter sides. It must be stressed that the 1·3 factor may not be the limit of the stretching that is possible, but aerials with these dimensions have been tried and appear to perform as well as their full-sized equivalents.

Practical use was made of both the stretched rightway-up and the sideways-on triangles during the winter of 1969/70. Two 7 MHz loops were set up to give 360° coverage and were mounted on separate supports at a height of about 50ft. The sideways-on loop was cut to formula and mounted along the line of the aerial run to give East-West coverage. As the point of the triangle had to be supported, a triatic was fixed between the two masts and a rope between the triatic and ground was used to tension the loop, as in Fig. 2D. This loop was used full-size and was vertically polarised taking the feed-point to the centre of the vertical side. The second triangle was supported at the apex from the other pole and orientated at right-angles to the aerial run. The dimensions used were those given earlier (62ft. 8in. for the horizontal side and 40ft. 2in. for the other sides). Although the loop could have been used full-size with a support height of 50ft., it had to be kept clear of fruit trees that were directly in the way. By shortening the vertical aspect, it was possible to tension the triangle above the trees and in the clear. The loop was fed in the centre of the bottom section and used with horizontal polarisation.

Both loops were fed with 70-ohm balanced twinlead *via* a changeover switch and balun installed in the shack. The SWR's were roughly similar for both aerials and no adjustments to the transmitter controls were found necessary on changing from one to the other. Although it was not possible to compare the performance of the two loops and the different polarisation because of their opposite directivity patterns, they both worked extremely well, particularly over the longer propagation paths. In parallel with the results obtained by the Scandinavian stations with their 80-metre loops, it was found possible to hear and work on 40m. many long-path West Coast U.S. stations during the early afternoons.

Other Points

Although obviously the full-wave loop must be a single-band aerial, it will operate satisfactorily on its third-harmonic, thus allowing a 7 MHz loop to be used on 21 MHz. As is common practice with Quad-beams, it is also possible to mount several loops inside each other in a concentric arrangement. If this is done it is essential to feed each loop separately, otherwise there will be interaction which results in detuning and poor performance.

The length of wire required for a 3·5 or 7 MHz system can be quite heavy if copper wire is used. This can put a severe strain on the supports and tensioning ropes, so to avoid this problem, the loops described were constructed from 14g. *aluminium* wire. Not only is this much cheaper than copper, but the weight is very much less. (4 lbs of 14g. aluminium is equal to about 600ft.). This material can usually be obtained from any of the larger non-ferrous metal stockholders.

If required a loop can be grid-dipped to check its resonant frequency. To do this a two-turn coil is connected in place of the feed-line to provide a means of coupling the loop to the grid-dip meter. But the usual precaution must be taken—cross-checking on a calibrated receiver to check for frequency pull.

In conclusion, the writer would like to thank the many amateurs world-wide who co-operated in the tests. In particular, G3FPQ who suggested the oblong loop; GW3AX who provided a standard of comparison night after night during the tests on the 80-metre oblong; W7KSA who suggested the sideways-on triangle; and the members of the Croydon group who helped with masts and in so many other ways.

HIGH-PASS FILTER FOR UHF/TV

SIMPLE AND EFFECTIVE UNIT FOR THE TV Rx END

I. JACKSON (G3OHX)

IT is regrettable—indeed deplorable—that most TV set manufacturers are still taking no effective precautions to keep unwanted amateur signals out of TV sets. Such is the progress in the last 25 TVI-ridden years! We still have ludicrous cases of 160m. TVI on BBC II.

The circuit of Fig. 1 is typical of that found behind the TV set coax socket. The capacitors couple both the inner and outer of the feeder to the set, while affording isolation in case the chassis is live. The 1 megohm resistors bridging the capacitors provide a leakage path for static which might build up on the TV aerial and feeder. Unfortunately, the capacitors can be as high as ·001 μF in some sets, and ·001 is only 76 ohms at 2 MHz. This is not exactly conducive to stopping braiding currents from flowing straight through the set to earth, and in the case where the TV feeder is a quarter-wave long—say, on 40m.—it is likely that amps could flow. The result is almost money-back guaranteed TVI!

A great improvement is often obtained by increasing the impedance of the capacitors, *i.e.* lowering their values, but to prevent attenuation of the TV signal they must be built into the form of a high-pass filter. This is conveniently a balanced *pi*-section, as in Fig. 2. The result is that the feeder is effectively connected to the TV set at frequencies above 470 MHz (Channel 21), and relatively disconnected below this frequency.

Suitable construction is shown in Fig. 3, using two of the plastic type coax sockets with the mounting flange at the rear. Unfortunately these seem to be out of fashion at the moment, and supplies are difficult to obtain, but with a certain amount of ingenuity, other plastic types can be used when suitably "fiddled with a hacksaw and hot iron". All component leads must be kept to virtually zero, and the filter connected to the TV with a short length of coax jumper lead—if too long you may pick up RF again and be back where you started.

The filter loss is quite negligible on Channels 21 to 68. At 144 MHz the loss is 25 dB and at 70 MHz 40 dB. Below 30 MHz—well, you name it!

The filter has proved 100% effective in several cases of TVI to UHF TV, including one where 10 watts on 80 metres was causing wipe-out. In this instance the set was reproducing G3OHX when the coax plug outer was touched on the socket outer! So far one case has proved invincible, that of slight TVI on 15m. and wipeout on 10m. This is probably due to direct pick-up in a "modern type barn-door design" IF! It may be worth while earthing the TV feeder where it enters the house if the cure is incomplete.

In conclusion, the filter described here is cheap but very effective. All that is needed is the consent of the TV/Rx owner for it to be fitted at his input terminal—as it has virtually negligible insertion loss (which can be demonstrated), there should be no difficulty about that. Indeed, it is hard to understand why all TV receivers are not provided with an input circuit as Fig. 2. Nobody could claim that it would cost more and it would prevent much of the TVI allegedly "produced" by a clean transmitter, leading to all the ill-feeling there can be between a local amateur who knows his Tx is blameless and neighbours who nevertheless do suffer interference.

Editorial Note: This article is based on material by G3OHX in the Greenford Amateur Radio Society *Newsletter* for April.

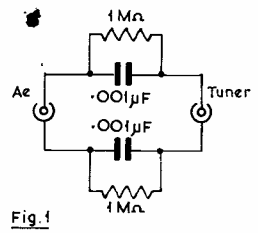


Fig. 1

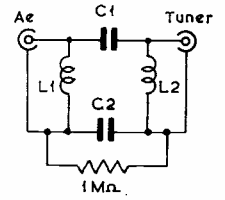


Fig. 2

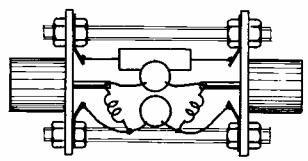


Fig. 3

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Fig. 1. Usual TV/Rx input circuit, for protection only. Fig. 2. Circuit evolved by G3OHX, as discussed in the text; values are, for C1, C2, 5.6 pF disc ceramic, and L1, L2, each four turns 24g. enamelled close wound to one-eighth inch inside diameter. Fig. 3. Form of construction adopted by G3OHX—see text.

"CHEAP GENERAL-COVERAGE RECEIVER"

Some Further Notes

ATTENTION of readers is drawn to remarks in Part I on p.95 of the April, 1971, SHORT WAVE MAGAZINE (right-hand column) which relate to the stripping of components and the use of a circuit diagram. This is the detailed description referred to under "Preliminary Work" (first paragraph) and it should, of course, be carried out before the metalwork also mentioned on p.95.

The following corrections all relate to Part I:

(*a*) In Fig. 3 (page 98) the switch pole connected to pin 2 of V2 should be labelled YR6.

(*b*) In Fig. 4 (page 98) IFT1 and IFT2 have been transposed.

(*c*) In Fig. 3 (page 99) the output of V3 should be labelled IFT2. The function of the Q-multiplier switch is, of course, "on-off".

(*d*) In the Table of Values on page 99: R7 should be 5,600 ohms, 1w.; and R32 1,000 ohms, 8w.

VHF BANDS

A. H. DORMER, G3DAH

THE warmer weather has brought with it a spell of fair conditions on both Two and 70 cm. which have not been matched by much of an increase in activity. For example, on no fewer than nine occasions between April 11 and May 11 the Angus beacon on Two has been perfectly readable in Herne Bay without any apparently significant rise in the number of stations heard or worked to the North. In fact, the best DX axis has been North/South for quite some time, with the Cornish and French beacons just riding up and down on the noise when the Durham beacon was at S5.

April 15 showed a good opening to PAØ and DL, particularly on SSB, but it was interesting to note how many Continental stations are now running NBFM. April, as predicted, was a good month for Auroral activity, with the splendid opening of April 14/15, reported on p.173 last month and several minor occurrences terminating with that on May 6. That reliable prophet G3COJ drew your scribe's attention to several of these, but we both seem to have found them unsatisfactory in that they were short-lived and far from widespread. The high point of the whole series was of course the welcome appearance of the two UR2's and SP2RO.

Perhaps rather surprisingly, propagation on 70 cm. has been far better than on Two for quite long periods, particularly just after the May 144 MHz contest and again around May 11/12, when the Sutton Coldfield beacon was well up. Four has remained quiet and it will propably be another month or so before we see any good *Es* on that band.

DX-Peditions

An expedition to Andorra is being planned by members of the Imperial College Radio Society (G5YC). Once there, they will be operating all the HF bands and will have two metre SSB mobile through France. The plan is to repeat the attempt made last year by the G8CKT expedition and hoist a two-metre station to the top of Mount Casablanca. The estimated power is 500 e.r.p. with a strong possibility that this may be increased to 3 kW e.r.p. Operating frequency will be 145·41 MHz, and they will tune ± 20 kHz of this channel. To clear possible Continental QRM, they ask that they be called 10 kHz HF of their channel. Times will be 1700z—1800z, and at such other times as propagation conditions warrant it, and local circumstances allow. They plan to leave England on June 26 and return on July 11, and expect to be QRV in C31 from June 29, and especially during the July contest. The callsign has not yet been allocated, but they should have it in time for the July issue o SHORT WAVE MAGAZINE. In any case, a C31 call on SSB between the dates indicated is likely to be them!

Many operators will have had their first contact with some of the less populated (from a VHF point of view) Welsh counties through the medium of the DX expedition mounted by G8CXI, G8CXJ and G3TYB. Setting off on Good Friday, they started in the South and worked their way up through Brecknock, Radnorshire and Montgomeryshire, both the Wx and the propagation conditions on Two improving as they went. By April 13, they had reached Anglesey and found an excellent site there some 535ft. a.s.l. which had a good take-off in all directions and from which they contacted over 100 different stations during two days, with the best DX PAØDMT and F9NJ. In all, 45 counties and 7 countries were worked, and over 230 contacts were made. The gear consisted of a QQV03-20A running at 35 watts, a converter and a Sommerkamp FR-DX500 receiver with a six-ele. beam. Power was supplied from a Honda E300E generator. The same team are planning an expedition to the Isle of Man in August this year, and apart from improvements in the two-metre gear, will also have 70 cm.

Finally, G8ALM, G8BPH and G8BXC will be making a trip to Les Cluds (QRA Locator DGO3c) on the Swiss border during the July contest. The site is 4700ft. a.s.l. with a clear take-off in the direction of the United Kingdom. The Tx equipment on two metres will consist of a QQV06-40A running 100 watts DC input to as many elements on Two as the mast will carry—up to 40, they say! The Rx side is a dual-gate Mosfet converter into an Inoue IC700R with a second Mosfet converter and an Eddystone EC-10 as standby. They will be going and returning mobile, so look for them on July 1/2 as FØUV/M—on July 3/4 as HB9XKG/P—and on July 5/6 with the French callsign again. QSL cards should go to G8BXC, *QTHR*. On 70 cm. they will be running 30 watts to an 8/8, so this looks like one to note for future reference!

Events Calendar

Just a reminder that the Midlands VHF Assembly and Dinner will take place at the Albright and Wilson Oldbury Recreation Club on Saturday, June 19. Unfortunately, Geoff Barnes, G3AOS, has had to forgo the invitation to chair the event, as he will be in America on that date. The afternoon lecture will be given by Geoff Stone, G3FZL, and will be entitled "VHF in the Seventies". A new departure will be the "Queries Desks" which will be manned by G3BA, G3NNG, G2HIF, G8ACB and G8ARV, who will be prepared to answer VHF problems. Trade shows and a bring-and-buy sale have also been arranged. Talk-in stations: G3TGL/A on 70·26 MHz and G3OXD/A on 144·3 MHz. Tickets may still be obtained from Graham Badger, G3OHC, 50 Essex Road, Four Oaks, Sutton Coldfield, Warwickshire.

The Scottish VHF Convention will

be held at the Carlton Hotel, Edinburgh, on Sunday, October 3. It will include technical sessions with ample opportunity for discussions, and the principal speaker will be Tom Douglas, G3BA. The informal dinner in the evening will be followed by a raffle and the presentation of the Jock Kyle Award. Tickets will be available in September, and further details will be published then. In the meantime, if you have any urgent enquiries, they may be addressed to Vic Stewart, GM3OWU, *QTHR*.

The next meeting of the South East UHF/VHF Group is scheduled for June 18 in the Electronics Building of the University of Kent, Canterbury. The speaker on this occasion will be Eric Hancock, G3BHW. Details of this and other Group meetings may be obtained from the hon. secretary, G3DAH, *QTHR*.

Owing to unforeseen circumstances, it is with great regret that we have to announce the cancellation of the VHF "get-together" arranged for June 4 at the Copdock House Hotel, Ipswich. To those who have given their support, our thanks and the promise that another such occasion will be organised.

VHF Awards

VHFCC Award No. 93 for two metres goes to SP9AXY in Bielsko-Biata near Katovice in Poland, and this is the first time that we have had an application from Eastern Europe. Unfortunately, he did not include any details of his station with his application, but he has been asked to do so, and it is hoped to publish them in due course.

Application to add to his wall of QSL cards and certificates comes from G8BRT, Sheffield, to whom we are happy to send Certificate No. 94, again for two-metre operation. Most of his contacts were made with a 5 watt Tx, but this has now been replaced with a QQV06-40A job at 30 watts input to a 5-ele. beam, shortly to be substituted by a 6/6 at 34ft. A dual-gate Mosfet converter into an EC-10 completes the Rx side. Bob does quite a bit of portable work, and for this he has a tweaked-up HW-30 running 4-5 watts.

Certificate No. 95 goes to George Ellis, G8CKX, for two-metre operation from Ripley, Derbyshire. He operates from his parents' home as this lies at 525ft. a.s.l. with a good take-off all round, and says that an understanding XYL makes this possible. The QQV03-20A runs 30 watts, modulated by a pair of 6V6's with a transistorised pre-amp. The solid-state converter is home-built and consists of AFZ12 RF and mixer stages, with an oscillator chain of OC171's, the pre-amp being an AF 279. The 30-year old BC-348 still does yeoman service as the IF strip! The 8-ele. Yagi is at 32ft. with the 70 cm. beam above that. The QSL's he submitted with his claim seem to be a very fair cross section of activity in the British Isles, and for those who do have trouble getting their cards in George says ". . . *nil desperandum*". He had two QSL's from the Bureau the other morning from PAØ and DL which had taken over a year to arrive! One might add as a footnote to this that in the last batch of cards G3DAH received, there were four dated 1967 ! !

Enquiries are still being received anent the procedure for obtaining the VHFCC Award, and therefore membership of the VHF Century Club. For the benefit of those who have not seen the original announcement or the repeats, details are as follows: Having obtained 100 QSL cards confirming contacts with 100 different stations on either Four, Two or 70 cm., a list of these QSO's, with callsigns and dates worked, should be sent to G3DAH, "VHF Bands," SHORT WAVE MAGAZINE, BUCKINGHAM. Six cards chosen at random will then be called for and these contacts verified. If all is in order, the cards will be returned with the Award. Contacts with portable and mobile stations may be included in the total, but all transmissions must have been made from one site. By implication, therefore, you may gain the Award for operation from the home QTH or from the *same* /P or /A site. You may also claim more than one Award by fulfilling these conditions on any of the bands quoted—in fact, this has already been done by several operators.

SSB Operation

Isn't it about time that the current procedures for SSB operation on two metres were revised? Here we are with some 300 U.K. stations transmitting SSB and still using the area around 145·41 MHz for their contacts. Apart from the fact that the rapidly increasing number of operators on SSB has meant that the spread around what started as the "International calling channel" now takes an unjustifiable chunk out of the Zone C frequency allocation, the QRM is building up, and as the old prejudice about AM/SSB working has virtually disappeared, it would seem both logical and desirable that SSB calling should now take place on the appropriate Zone frequency when there is much activity on the band. When the band appears dead, a call on 145·41 MHz would be in order, followed by a QSY to the Zone frequency for inter-G working. There may still by some justification for using the international calling frequency for its original purpose. Contacts with both British and Continental stations on SSB have shown that the great majority of operators are using the transceive mode and/or are equipped with stable VFO's, so in-Zone working should not present a tiresome chore nor a costly technical problem.

VFO Operation

GD2HDZ (Laxey, IOM) takes us to task for advocating VFO operation on VHF. He says ". . . after some hours listening to the chaos on two metres during the portable contest at the weekend, I am more than ever convinced that you are rendering the greatest possible disservice to two metres by constantly advocating the use of VFO's. It is all very well to say it is permissible to work a station out of Zone and then return. Mostly they don't return, even if they started in the right Zone, which is not often the case." Well now, it must be true that the *misuse* of the VFO causes chaos, but surely that is not a good reason for scrapping it. It frequently happens during the heat of a contest, that an operator having moved out of his Zone to catch a particular signal is called again on channel, and that several QSO's may then take place on an out-of-Zone frequency; this is unavoidable in such circumstances, but deliberately to set oneself up at, say, 144·160

MHz, well out of Zone, is anti-social whether the oscillator be VFO *or* xtal, and is to be condemned on any count. Co-channel working during a contest must reduce QRM, and this in itself is a very desirable characteristic of VFO working. Even outside a contest, the ability to shift frequency slightly to clear QRM, and the facility with which two or more stations can join a net and so use a single channel, are advantages not lightly to be discarded. It really all comes down to the *correct use* of the VFO, not the apparatus itself.

Contests

The two-metre portable contest over the weekend of May 1/2 saw a goodly turnout of /P stations, and some F, PAØ and DL activity, with what appeared to be an unusually high number of Welsh portables. Your scribe worked just the dozen of them from Herne Bay. Most of them had some pretty good scores, too—GW3NUE/P from near Brecon was offering 306 near the end, and GW3UCB/P, GW3NWR/P and GW3GBU/P were all over the 200 mark, with, one would imagine, some good DX ranges. G3ZXR/P, from Ventnor, I.o.W., was one of the few portables located in England who was heard at the 250 mark. Conditions were certainly up on the level we have been experiencing recently, without being outstanding, and activity was high. Propagation did not appear to be quite as good on the Sunday, but the deterioration on two metres was paralleled by a spell of fine conditions on 70 cm., with PAØ at 5 & 9+ in the South—but activity was low due, one supposes, to most VHF operators being on Two.

Aspects particularly noted were the small amount of CW to be heard, and one must comment here on the outstanding quality of the Morse from G3ZNW/P; the persistent out-of-Zone operation, particularly at the low end; the failure of many operators to state their tuning intentions; and the continued, although false, impression that the faster that one can make a CQ call without using phonetics, the more can contacts be crammed into a given space of time. Quite erroneous! A shorter call, *clearly enunciated*, would have done the job very much better in view of the hundreds of operators tuning over the band.

Returning to the question of out-of-zone operation, this is encouraged by the number of operators who announce either that they are tuning from the low or the high end, or tuning both ends in. Why does one hear so rarely "tuning from 145 out, or up, or down?" Apart from the portables themselves, the bulk of fixed station activity in this country lies between 144·5 and 145·5 MHz, and having once cleared the workable DX from GM and the Northern counties, and the South-West of the country, one would have thought that there would be some advantage in concentrating on the high-density areas. Altogether, this event was well supported, the WX was kind and a good time seems to have been had by everyone.

The Ainsdale Radio Club is organising the Region 1 VHF contest again this year. The date is Sunday, June 27, 1900z to 1800z. Operating bands are Four, Two and 70 cm., and copies of the rules may be obtained from G2AMV or G2CUZ, *QTHR*. An attractive feature of this event is that one does not have to live in Region 1 to participate. An award is made to the station *outside* the Region giving the greatest number of points to stations *within* the Region.

Future events include the 70 MHz Portable on June 27, and the Microwave contest on the 20th of that month. The 144 MHz Open is over July 3/4 and the 432 MHz Open, on the 18th.

North of the Border

GM3EOJ, Aberdeen, who is in a favourable position to observe and take advantage of an aurora, was disappointed with the results he obtained during the *Ar* openings of April 4 and 9th, although the tropo. opening of April 11 brought some good DX to his south at the 100-150 mile range. He really came into his own with

THREE BAND ANNUAL VHF TABLE
January to December, 1971

Station	FOUR METRES Counties	FOUR METRES Countries	TWO METRES Counties	TWO METRES Countries	70 CENTIMETRES Counties	70 CENTIMETRES Countries	TOTAL pts.
G3COJ	31	3	51	13	24	6	128
G3DAH	18	2	46	8	18	1	93
G3OHH	38	5	30	3	13	2	91
G2AXI	24	3	39	4	8	2	80
GD2HDZ	18	3	38	5	10	2	76
G8BCA	—	—	37	3	19	3	62
G3IAR	31	3	21	4	—	—	59
EI6AS	15	5	30	6	1	1	58
G8BKR	—	—	30	4	4	1	39
G3FIJ	—	—	32	5	1	1	39
G3EKP	18	5	11	4	—	—	38
G8CVD	—	—	32	5	—	—	37
GM3EOJ	—	—	18	10	3	1	32
G8AUN	—	—	26	2	1	1	30
G2JF	—	—	26	4	—	—	30
G8BWW	—	—	19	4	4	3	30
G8APZ	—	—	—	—	16	2	18
G8CYN	—	—	13	2	—	—	15

Just a reminder that the Tables go through to December 31st, 1971. The Three Band Annual Tables show claims to date for the year commencing January 1, 1971. Claims should be sent to SHORT WAVE MAGAZINE, BUCKINGHAM.

the aurora of April 14, which, although not visible there, was producing some astonishing signal strengths. Both DLØPR and SK4MPI beacons were overloading the Rx, and GB3VHF was S8/9. Charlie worked G3LTF, G3USB, G2UN, G8GP, G3VSA, UR2CQ, G3DAH, OZ6OL, G3AAV, SM5DWF, DK1KO, SK6AB, SM5BUZ and SP2RO. Not a bad haul. Only gotaways were GW2HIY and G3COJ. Apparently the UR2 was not all that difficult, but it took about two hours to notch up the SP for what looks like a GM/SP "First," as a subsequent check showed that GM2DRD did not make it with him after all. The GM/UR must also be a "first," so nice going, Charlie. GM3EOJ is also on 70 cm. now, with about 10 watts out from a BAY96 varactor. The antenna is an 18-ele. *Parabeam* and the Mosfet converter works into an EC-10 tuning 18-20 MHz, xtal frequencies are 433·350 and 433·404 MHz and plans are being formulated for increasing power and for going FM and SSB to supplement the AM and CW presently available.

Still north of the Border, GM8BRM now operates from Keig School House, Keig, Alford, Aberdeenshire. The site is surrounded by hills, but Iain is still pressing on with his portable expeditions and seems to be as successful as ever. From Cairn 'o Mount he worked 41 stations, most of them G, on April 11. The following day he was 600ft. up on a hill at Cairnorrie, from whence he had 24 contacts, again mainly GM's. Although he could hear the Continentals during the April 14 aurora, he was unable to work them as he has neither CW, obviously, nor SSB. However, there was some good tropo. about on the 15th, and he got 5 7/8 reports both ways with PAØDMT and PAØPVW. Gear is still the Pye Tx with an EC-10 and a TW or DL6SW converter, and the beam is an 8-ele. array 10ft. above ground. He will be operating /P or /M nearly every weekend during the summer.

West of the Border

Activity from Cardiganshire is always welcome to the VHF/DX man, and it is encouraging to know from John Armstrong, GW3EJR, that he, GW8BBR and GW3ITD may all be heard from there on two metres. Inevitably, the terrain is a bit difficult (with all those mountains within a mile or so of Cardigan) but plans are afoot to go /P during the summer months from both the home county, and from Pembrokeshire and Carmarthenshire, where sites in excess of 1000ft. a.s.l. are within easy range. GW8BBR also has gear from 70 cm., and GW3ITD is planning to come up on SSB using his K.W. "Viceroy" as prime mover. John himself runs a much modified TR.2002 and a 4-ele. beam at 40ft., the latter to be replaced before long with a 6/6 slot, and will shortly be pressing the Sommerkamp FR-250 into service with a transverter to give him SSB on Two. It should be rewarding to head the beam in that GW direction when a tropo. opening is evident.

G8BRT, *QTHR*, will again be operational from Ireland this year. Look for him during the last week of June and the first week of July on two metres as EI2VBD/P. Although he will only be running two watts of RF, he had a good contact with G2JF last year when running the same power, so if conditions are right it will be worth looking for him in the evenings.

EI6AS reports *Ar* contacts from his Dublin QTH on four occasions during the first four months of this year, but on only one of them was Continental activity to be heard, and this was on February 26. This ties in with observations in the South of England, excluding the April 14/15 opening, of course. In Dublin, the appearances were short lived in all cases, two hours being the maximum. Albert is now on Four with SSB obtained from a mix of the two-metre output with 74 MHz, a method which is achieving increasing popularity. He has 100 watts p.e.p. to a 6-ele. Yagi on 70·208 MHz, and is out portable from a high spot in the Dublin area on Wednesday evenings whenever conditions look right.

Reports have been received that there is now regular two-metre activity from Limerick.

South of the Border

Just to show how fortunate it is for the VHF/DX man to operate from near the equator, G3VPS records some of the success which 9H1BL in Malta has been having with long-distance TV reception. He has been copying consistently the pictures from Salisbury, Rhodesia, and at times has intercepted French, or at least French-speaking, TV. Al hopes that this augurs well for another good DX season with sporadic-E openings to the U.K. on four metres, on which band he will be keeping regular watch for CW or Phone from the U.K.

Stations active in the evenings on SSB and/or CW from the Paris area are: F1CF, F1ATH, F1AMS, F3FR, F1AWT and F6BEG. All run medium power and will be beaming towards England.

East of the Border

G3TMQ writing from Holland as PAØLY (he also operates as FØAP) puts in a plea for the greater use of VFO's on two metres and says that this helps under weak signal conditions as one then knows where to look, *i.e.* on channel. He would also like to see more CW on the VHF bands. And who wouldn't!

News Items

G3ZYC (Shottle, Derby) perhaps better known on 70 cm. as G8AUE, is now on two metre SSB and four metre AM. G3LQR of Woodbridge, Suffolk, and G3LTF near Chelmsford have now had contacts on 23 cm. on SSB. G6CW of Nottingham is actively engaged in preparing gear for 1296 MHz and for *three* centimetres. He is able to receive at present and hopes to be fully operational later this year.

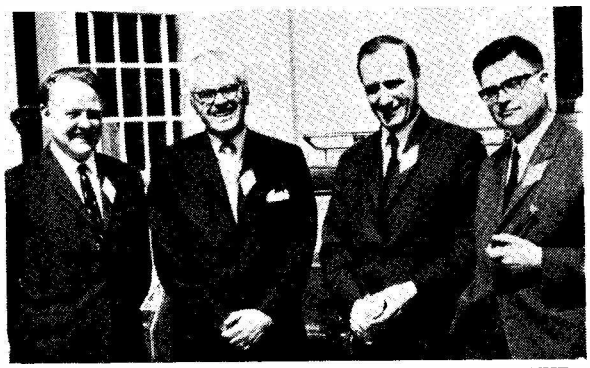
New activity from Leeds, this time on 70 cm. Trevor Brown, G8CJS, *QTHR*, is on and appears to be the only station operating regularly in his locality on that band. He runs a QQV06-40A in the final to two stacked MBM46 antennae and has two trough-line pre-amps (AF139's) into a home-built converter. He would like to hear from anyone else in the area who has an interest in 70 cm.

G8CVD raises a point which has been noted before but apparently requires re-emphasis. Over one weekend, he worked 57 G8/3 stations and is now getting cards in directly to the home QTH at the rate of some three per day, the

majority requesting a QSL card but without an enclosed s.a.e. Postal rates being what they are, there is every justification for sending a reply-QSL through the Bureau in such cases, and this is fine so long as the delay is not important. But if the contact is considered of sufficient importance to warrant sending a card *direct*, then surely it is of equal importance to provide the other operator with the means to reply without expense to himself. So how about that? Incidentally, Clive now radiates a potent signal from the new two-metre rig with a QQV06-40A in the final.

G2JF has now gone over completely to NBFM for Two and Seventy—so does anyone want a pair of 200-watt modulators? G3OIZ, Bill Ingle, has moved from Littlestone-on-Sea to 30 Head Street, Goldhanger, near Maldon, Essex, to be near his flying job at Southend Airport, and will be QRV on Two shortly from there. G2DCG (Margate, Kent) has recently returned from a three-month holiday in VK and is to be heard once more on Two. He was able to get around and have a good look at matters HF and VHF while he was out there, and is greatly impressed by the ranges achieved both with and without the NBFM repeater chains which have been established. Reception of two metre beacon stations at S9 at 1000 miles is not out of the ordinary! Asked to give a talk to one of the local Radio Clubs on VHF in Europe, he says that he was delighted to find on a station bookstall a copy of SHORT WAVE MAGAZINE which gave him some new ideas about which to speak.

G3BA and G3BHT of Sutton Coldfield are now both on Four with SSB. Both use a QQV06-40A in the final, both mix 144 MHz with 74 MHz to give the required output, and both use 4-ele. beams.



Among those down from the Midlands for the London VHF Convention at Twickenham on April 17 were, left to right: G3HBE, G3BA, G3URV and G3BHT. The G3BA/G3BHT team plan to be in LX for the September VHF Contest.

G3COJ (High Wycombe, Bucks.) found the April 13/14 aurora a rather frustrating business as, apart from a couple of SM's right at the beginning, he heard no Continentals at all for the two hours of maximum effect between 2300z and 0100z, only the GM's and GW2HIY. At 0100z the GM's faded and SM5DWF and SK6AB appeared, followed by SP2RO. Nothing was heard of UR2CQ or OZ6OL. Brian confirms your scribe's opinion of propagation conditions so far this year when he says that although things have been fair several times since the start of the year, there has been no really first-class opening. He has yet to have a really solid QSO with DL, and notes that on several occasions, the last during and just after the two-metre contest at the beginning of May, propagation on 432 MHz was superior to that on Two, with PAØ's at good strength many times and ON4HN receivable without difficulty. He monitors Meldrum on 58·215 MHz regularly, as he finds that this gives a reliable indication of an *Ar* opening and so supplements the WWV magnetic storm warnings, although what cannot be predicted from these observations is the magnitude and duration of the disturbance as it may affect VHF. For example, although the Meldrum signal was auroral at 1525z on April 9, it was back to normal again by 1550z reverting to *Ar* once more between 1652z and 1822z, during which period Brian worked GM3EOJ, EI5BH and EI6AS. GW3NDB of Barry, Glamorgan, was also heard, apparently on SSB. No *Ar* signals were heard on Four at this time.

Deadline

Deadline for the next issue is **June 5** and the address for news, views, claims and comments is: "VHF Bands", SHORT WAVE MAGAZINE, BUCKINGHAM. Cheers for now and *73 de G3DAH.*

SPECIALLY ON THE AIR

Further to the notice on p.166, May, here are the latest notifications:

GB3SKY, June 19-22: *See* p.145 and p.170, May issue, for details of this expedition to the Isle of Skye. Contact man: J. P. Moore, G3IKR, 16 Silverbirch Road, Solihull, Warwickshire.

GB2RNS, June 29-July 1: Arranged by Norfolk Amateur Radio Club for the Royal Norfolk Show, Norwich, to be on the air 24 hours a day. Visitors will be very welcome at Stand 414.—J. L. Lockwood, G3XLL, 29 Coppice Avenue, Hellsesdon, Norwich, NOR.49M.

G3EKW/A, July 10-25: Arrangements in hand by the local Nottingham Amateur Radio Club for the Nottingham Festival '71, Wollaton Park, as last year.

GB2SS, July 24-25: Station to be established by Southdown Amateur Radio Society for the Polegate, Sussex, Steam Engine Rally, working all bands 2m. to 160m., with talk-in to the ground on 1975 kHz, 70·26 MHz and 145·00 MHz. Admittance charge will go to local charities. Special QSL cards for stations worked and SWL reports received.—P. Hayes, G3POQ, 78 Hawthylands Road, Hailsham (*3876*), Sussex.

TELEPHONING "RADIO SHACK"

Reference the advertisement for Radio Shack, Ltd. on p.140 of our May issue, their phone number should have been given as **01-624 7174**—on this number, you will be assured of immediate service and attention.

THE MOBILE SCENE

Rally Notes and News

THIS year, June 27 is the busy day for Mobile Rallies. Inevitably, there is bound to be some clash between the rival attractions of Hanworth, near London—the Anglian at Ipswich—and Longleat in Wiltshire—all within motoring distance of anyone setting out from the Midlands or the southern part of England.

Normally, Longleat attracts mobileers from the South-West and South Wales, so it is a reasonable probability that once again there will be a large crowd there. The remainder of those who feel like taking in a Rally on Sunday, June 27 (and may it be a warm and sunny day for them all) will be thinking about either Hanworth or Ipswich.

* * *

Though there two important Rallies scheduled for July 4, these are so far apart geographically—Cornwall and Co. Durham—as in no way to clash. In previous years, both have drawn good attendances, the one from the North of England and the other from holiday visitors to Cornwall, additionally to the considerable local interest.

* * *

Nowadays, all Rally organisers appreciate the importance of making their events generally attractive for the whole family—for it has to be remembered that if the XYL/children are being motored out on a Sunday afternoon, everybody in the car expects to be heading for something interesting. As we all know, for the /M operator himself it is enough to be able to raise the talk-in station and get there to find a lot of chaps to whom he can talk mobile and Amateur Radio for the rest of the afternoon—but the distaff side and the young can show signs of boredom in ten minutes if there is nothing much for *them* to do!

Anyway, in the hope that all going to any of the Rallies we list will be suitably entertained, here is the programme for the next couple of months or so.

RALLY CALENDAR

May 30: Spring Bank Holiday weekend Rally, at the Y-Sports Centre, Maidstone, with talk-in stations signing GB3YSC on 2-4-80-160m., opening at 9.0 a.m. There will be trade stands, also a bring-and-buy stall and events for the children and the XYL interest. Overnight caravan stay can be arranged and how-to-get-there maps obtained on application to: A. S. Walter, G3WXL, 31 Lansdowne Avenue, Maidstone, Kent.

June 13: Annual Mobile Party organised by the Pembroke & District Amateur Radio Club, at the Regency Hall, Saundersfoot, Pembs., with talk-in on 1875 kHz and 144·35 MHz. So that catering arrangements can be kept under control, please notify intention to be present to: J. Hogg, GW8DMD, 2 Pembroke Road, Pembroke Dock, Pembs., West Wales.

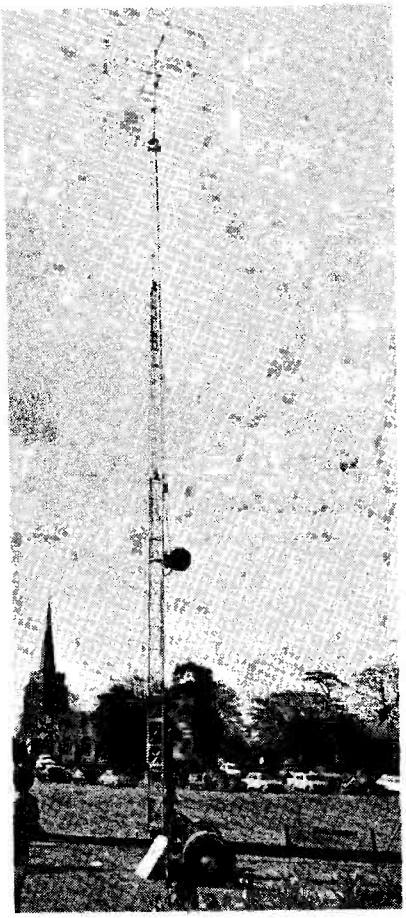
June 13: The second Elvaston Castle Mobile Rally, organised by the Nunsfield House Community Association Amateur Radio Group, Derby. Enquiries to: P. Neal, G3WFU, *QTHR*.

June 27: Echelford Amateur Radio Society Mobile Rally at Hanworth Air Park, about three miles south-east of Heathrow (London A/P), between Sunbury and Richmond. Talk-in will be given on 2-80-160m., signing GB3HCW. As the occasion is a large local carnival, there will be many attractions of family interest, with refreshments and a licensed bar available on site. Further details from: A. G. Wheeler, G3RHF, 32 Feltham Hill Road, Ashford (*55265*), Middlesex.

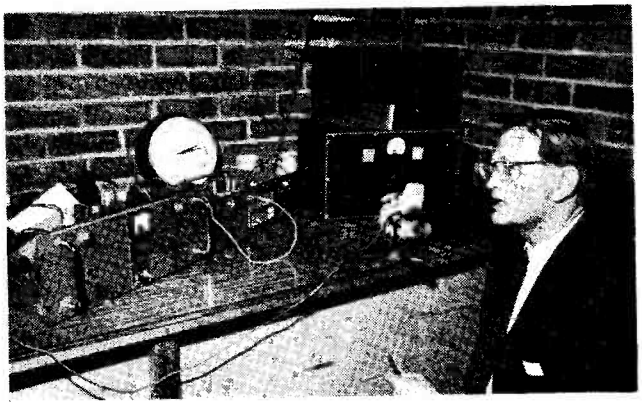
June 27: Anglian Mobile Rally, at the Suffolk Show Ground, Ipswich, organised by the Colchester and Ipswich Radio Clubs, working together. This has become a very popular Rally event. Applications for trade space are invited; overnight caravan parking will be available; and there will be all the usual Rally attractions, with refreshments obtainable on site. Trade enquiries to G3SJO, *QTHR*, and for other Rally details and information apply: D. W. A. Thomas, G3ZLN, 9 Burlington Road, Ipswich (*55200*), Suffolk. [*cont'd. p.240.*

Can you see yourself anywhere here? The crowd at the prize-draw for the Midlands Mobile Rally at Drayton Park on April 18. In the foreground are G3RTK, G5PP (who for years has been one of our outstanding mobile operators, working not only /M but also DX/P on Top Band round the GM counties) and G8DEM, writing it all up on the board.

For the Spalding "Tulip Time" Rally on May 2, held in glorious weather, the two-metre talk-in station signed G3XBS/P. In this picture, it was being operated by G3MNS (left), G3THX on the microphone, with old-timer G5IC (from Shrewsbury) looking on.



At the Spalding Amateur Radio Society's "Tulip Time" Rally on May 2, they had a 60ft. "Versa-tower", loaned by the firm, to work the distant stuff on VHF—and very well it did, too.



For the Midlands Mobile Rally at Drayton Park on April 18, the four-metre talk-in station signed G3UDA/A and the operator was G3DML when this picture was taken.

For the Midlands Mobile Rally, the two-metre talk-in station signed G3MAR/A. When we took this shot, it was being operated by G8ACR, Bob Yates, chairman of the Midland Amateur Radio Society.

Personalities at the Drayton Park occasion on April 18 last—left to right, Tom Douglas, G3BA, one of the best-known amateurs on the air; old-timer G6LD, from Huddersfield; and, on the right, G2CVV of Derby, with his wife.

G3MMJ of Garex Electronics was at the Drayton Park (Midlands) Mobile Rally on April 18, showing at left a mobile transceiver for Top Band and a two-metre Rx designed for AM/FM/SSB/reception. We have no details as to the worth or price of these items.

June 27: Annual Mobile Rally at Longleat House, near Warminster, Wilts.—always a very well-attended event in particularly attractive surroundings, with the great house, the home of the Marquis of Bath, fronted by a lake and standing in a magnificent park. And of course, there are the Lions! There will be trade stands, a bring-and-buy stall and a raffle. This year there will also be facilities for over-night camping, and a caravan park. Talk-in stations, opening at 10.0 a.m., are to be G6YB/P, 1924 kHz; G3JMY/P, 70·425 MHz; and G3TAD/P, 144·350 MHz. Further details and information from: B. Croker, G3ULJ, 36 Portland Street, Staple Hill, Fishponds, Bristol BS16-4PT.

July 4: Annual South Shields Mobile Rally at Redwell County Secondary School, Prince Edward Road, South Shields, Co. Durham—a half-mile inland from Marsden on the B.1300, and about that distance from the beach. There will be talk-in stations on 2m. and 160m., also trade stands, raffles and competitions, all as in previous years, with ample free parking space. Information from: F. Harrison, 42 Woodlands Road, Cleadon, Sunderland, Co. Durham.

July 4: Cornish Amateur Radio Club Mobile Rally, at Truro Rugby Club ground, with talk-in stations offering contacts on 2-4-160m., on the air from 10.0 a.m. Refreshments and bar available on site. Full details and a local sketch map from: J. Farrar, G3UCQ, Elm Cottage, Ventonleague, Hayle, Cornwall.

July 11: The Worcester & District Amateur Radio Club Rally, this year at Hill County Secondary School, Upton-on-Severn, Worcs., out near the beautiful Malvern Hills, opening at 11.0 a.m., with talk-in to be given on 2-4-160m. Free entry, light refreshments at reasonable prices, with trade stands, a crystal exchange and frequency measuring service and other interesting attractions. Further details from: G. Spink, G3WUI, 1 Belvoir Bank, Malvern (*3088*), Worcs., WR14-4LY.

July 18: Scarborough Amateur Radio Society Mobile Rally, at Burniston Barracks, Scarboro', on the A.165, with talk-in by G4BP/A on 1980 kHz and G3NRS on 145·8 MHz. Ample space and indoor accomodation, with trade stands, a bring-and-buy stall and a raffle. The beach, Zoo and Scarborough's "Marineland" are adjacent, in themselves considerable family attractions. Details from: A. C. Dunn, G2ACD, *QTHR*.

July 25: White Rose Mobile Rally, at Alderton Girls High School, Leeds 17—an all-indoor event, with plenty of parking space, talk-in on 2m. and Top Band, trade stands and refreshments obtainable on site. Enquiries to: K. Wells, G3WIX, *QTHR*, or R. Short, G3YEE, *QTHR*. (*Tel. Bradford 664220*).

August 15: Torbay annual Mobile Rally, Newton Abbot Rugby Club ground—*details later*.

August 15: The 14th Derby Mobile Rally, at Rykneld Schools, as in previous years—*details later*.

Rally organisers are reminded that we would like to have reports, with photographs, as soon as possible after the event, for coverage in the next available issue of SHORT WAVE MAGAZINE—details as p.162, May.

OLD TIMERS' ASSOCIATION MEETING

On May 7 last, the annual meeting of RAOTA (the Radio Amateur Old Timers' Association) was held in London, some 65 members being present. In the unavoidable and much-regretted absence of Kenneth Alford, G2DX, this year's president, the chair was taken by "Rusty" Russell, G5WP, the vice-president. He disclosed a very satisfactory financial position, with money invested to provide funds for the assistance of OT's who might be in need—for the RAOTA is essentially a benevolent association.

The RAOTA as it now functions is based upon the concept of the British Old Timers' Club, initiated by the Editor of SHORT WAVE MAGAZINE as long ago as 1948. The first BOTC dinner—at which 78 members answered the roll—was held in London on May 20, 1949, with the late Gerry Marcuse, G2NM, in the chair, supported by Jack Clarricoats, G6CL (no longer with us) and by Austin Forsyth, G6FO.

Several of those at that first Dinner 22 years ago were present on this latest occasion. Nobody seemed to look much older, and the talk was all about Amateur Radio. The hon. treasurer of RAOTA is Ernie Dedman, G2NH, and the hon. secretary Miss May Gadsden (79 New River Crescent, London, N13-5RQ) who has performed this essential function for the Association for many years.

For the future, membership of RAOTA is to be open to those who have held a current licence for not less than 25 years—under the old ruling, proposed for the BOTC, the qualification was "20 years since December 1928". This, in effect, made the Association self-liquidating!

A.J.F.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for July issue: June 4)

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

ONE feels that the approach of the North Devon group is one that all Clubs could benefit from. Your conductor visited them at very short notice, at their Hq. on the outskirts of Barnstaple. Not only was he made welcome, but he was provided with a route-map to make sure he arrived with the least amount of head-scratching. Once there, he was introduced individually to every member as they came in. That evening passed in a moment. No wonder they have members prepared to travel sixteen miles and more.

Wales and the West

Still with the **North Devon** crowd, they meet on alternate Wednesdays, at Crinnis, High Wall, Sticklepath, Barnstaple, the next dates being June 9, for a talk, and June 23, when there will be a general ragchew.

Additionally, the North Devon secretary, G4CG, tells us that there have been some enquiries as to the existence of clubs in the **Bude,** and **Minehead** areas. If anyone in these parts of the West Country are interested, a line to G4CG will be passed on to the right quarter, in the hopes that something may be set up. G4CG's address appears under the North Devon heading in our address Panel, p.243.

Having just re-elected their officers for another year in bondage, **Torbay** write to mention that their June affair will be an inquest on NFD plus a lecture, at Hq., Bath Lane (rear of 94 Belgrave Road), Torquay, on June 27. Further ahead, we note the Torbay Mobile Rally, planned for August 15, on the Newton Abbot Rugby Football Club Ground.

From **Yeovil** we learn that the club get together on every Thursday at the Youth Centre, 31 The Park, at 7.30 clock. June 3 will find them listening to G3DCS talking on tape of his professional topic, when he discusses the "Elements of Radio Valve Theory." On June 24, G3XFW will take the stand to discuss about his receiver.

Now to **Basingstoke,** where the lads foregather at Chineham House, Shakespeare Road, Popley, on the first and third Saturday evenings. June 5 sees them nattering, learning Morse, listening on the air, or constructing—a wide choice indeed! For June 19 it is not so wide, as there will be a lecture and demonstration by Alan Stables on Radar.

June 17 is down for the AGM of the **Conway Valley** crowd, at their Hq. in the Parade Hotel, Llandudno; if the business is cleared quickly this will be followed by an inquest on NFD, the site for which is to be the grounds of the Civic Centre at Colwyn Bay. Visitors are welcome either as members or if just holidaying in the area.

For **Chippenham** the main news is the recent AGM, at which an amendment to the address Panel was generated, as G3UTO stood down. June 26 is an important date for them, when they will be putting on a display at Monkton Park.

As usual, we drop the **Bangor, Co. Down** group into the "Wales and the West" slot, and pray this raises no ire with either side—but it is difficult to know quite what to do with the GI and GM reports as there are so few of them compared with the more populous parts, Amateur Radio-wise. However, we are to say the Bangor lads are still in residence at the Silverstream Hall, Belfast Road.

Activities

Whilst writing this piece each month over the years, your Club Secretary has noticed that many, many clubs have regular sessions on the air, either on Top Band or VHF. It occurs to us that many others, who would otherwise be reduced to just having a natter, would be able to come on and operate as a *Club* once in a way, by courtesy of one or another of the members lending gear and, maybe, a call.

Heaven forbid that we should set these many Clubs into anything resembling a contest, but there would seem to be interesting possibilities in such groups being on the look-out for other Clubs, just to work them as Clubs and generally get together in Club groups over the air.

What is wanted is simply a distinctive call—what about "CQ Clubs" as a nice simple one—and maybe a national calling frequency on which to establish contacts before moving off to clear spots in the band. How about 1835 kHz for CW calls, and the usual one for a dead-band call on Phone, 1910 kHz? The latter is a frequency that may produce an unexpected visitor in the way of a Mobile going through the district.

Nothing like a contest *please*, but if you try the idea and care to report results, we should be very interested to hear how it goes along, and to write it up if sufficient interest is shown—who knows, we may hear of some more Clubs this way!

Scotland and the North

A thin clip, thanks to the shortage of reports from north of the Border; there are known to be quite a few groups up there of whom we have either out-of-date information or nothing at all—and it is most frustrating

to be faced with a letter from a keen lad, asking for details of local Clubs, and to be able to give him no more definite lead than that there is thought to be a Club fifty miles away of whose hon. sec. we are not sure! Often we end up such a letter thinking that here is a promising youngster who will be lost for want of a bit of encouragement. So at least let us have a note of your local Club address, the QTH of the Secretary and the meeting arrangements, for our card-index.

Although the basic set-up is of weekly Wednesday sessions at Billingham Community Centre, the **Billingham** chaps also run the odd "extra" shindig. At Hq., on June 9, they are entertaining a member of the Tees-side Fire Brigade who will be giving them a talk and film show. One of the outside events crops up on June 27, when they are going to Catterick, to the Royal Signals "At Home."

The **West of Scotland** group now have their own premises at 81, Virginia Street, Glasgow, meeting every Friday evening at 7.30 p.m. A callsign for the Club has been applied for and they should soon have their own station on the air. New membership will, of course, be very welcome.

It looks like the second and fourth Thursdays for the **Lothians** crew; the venue is 66 Hanover Street, Edinburgh, 2, and the starting time 7.30.

That is also noted as the starting time for meetings of the **Wakefield** lot, at their Hq. at the Youth Centre, Zetland Street. For June 15 the entertainment is "Operational and Constructional," and on June 29 there is a Quiz, organised by G3WWF. These are but light relief after the June 1 event, which takes the form of the eternally-popular Junk Sale.

Northern Heights next, where we note that the AGM has been passed, and G3MDW again occupies his customary chair as secretary. The attendance at the AGM was a lot better than they expected, a sign that things are looking up. Although at the time of writing we have no details of the June activities, we can suggest that a look into the Peat Pitts Inn, Ogden, on a Wednesday evening and a few discreet enquiries will locate the gang; or, of course, write or phone G3MDW at the address in the Panel opposite.

For **Tyneside,** a change of Secretary is reported since the recent AGM—it seems only a few weeks ago we had the letter saying they were wondering if there would be enough interest to make a start. Start they did, and we understand they are going from strength to strength. The pattern of second and fourth Mondays will probably be changing in June to weekly meetings on the same day; and theory and Morse classes are, if all goes well, to be added to the programme at the same time. For details of the programme, contact the new hon. Sec., address as Panel. Hq. is at the Community Centre, Vine Street, Wallsend. either in the Club rooms for informals or the lounge for lectures.

The usual weekly arrangements hold sway at **Hull**; June 4 is, naturally, devoted to last-minute details of Field Day, which takes place over June 5/6. June 11 sees G3SSA discussing the conversion of a receiver from 405 to 625 lines for DX/TV work, while the 18th, which is the SWL Night, is given over to "Basic Amateur Radio." On to June 25, when G3AGX and G3SSA join forces for an interesting subject, namely Fault-Finding.

Sheffield report they now assemble at the Sheaf House Hotel, Bramall Lane, Sheffield, on the third Monday in the month. June 21 will be devoted to a talk by G3JMV on Mobile Operating.

From **Spen Valley** we hear that things are more or less going to plan, with June 3 given over to Satellite Communications, June 10 to an outdoor event—a demonstration of Marine Models at Batley Park Lake—June 17 an Open Meeting, June 24 a lecture by S. Marsden of West Riding Electronics on "What's New." All this provides a run in to the most important meeting of the year—the AGM on July 1. The "at home" sessions are all held at the Grammar School, Heckmondwike.

The Bradford area formation known as **White Rose** are finding their innovation of a monthly Quiz to be highly successful, and they are looking for new opponents to conquer—volunteers to write to the hon. secretary, G3YEE. Another joint activity being planned is a Treasure Hunt. Coincident with the White Rose Mobile Rally, down for July 25, the lads are going to launch an intensive drive for recruits, who will find the form of things to be weekly meetings, Wednesdays at the White Horse Hotel, Armley Town Street, Leeds 12. In general two of the meetings each month are informals and the other two are for lectures or other organised activities.

Not far away is the **North Leeds** group, who have their meetings every Tuesday evening—their range of interests is wide, taking in amateur TV and RTTY as well as the normal activities. Details from G8CJS, address as Panel.

The monthly get-together of the **Border** crowd for June takes the form of an outing for members and wives-and-families. All will be heading for Routin Lynn, near Fenton, about 11 miles from Berwick, to arrive about 2.30 on June 6.

One gets the impression that **Wirral** are now well and truly booming, with all sorts of interesting things appearing on the scene. For June 2, there is a Sale of Surplus Equipment to extract some hard-won new pence, and on June 19, naturally, the post-NFD inquest. Harding House, the venue, is at the Claughton village end of Park Road West, Birkenhead, the start time being 7.45 p.m.

Midlands Area

There are all sorts of attractions offered to prospective members of the **Bicester** crowd, not least of which is that the mid-meeting cup of tea is "on the house." A Club rig is being organised, Morse classes are being run, several projects are being worked on, and there is a construction competition under way as well. To find the lads, any Wednesday evening, head for 11 Stoneburge Crescent, Bicester.

Wolverhampton have been finding out how hard it can be to trace members from fifty years ago—their enquiries have led to letters being awaited from two correspondents in VK, one in W6 and a couple in Barbados. As to meetings, in general it is a case of Mondays at Neachells Cottage, Stockwell End, Tettenhall each week. For June, the main meeting is on the 7th, but the speaker had not been announced at the time of writing.

It should be pretty easy to find the **Hereford** gang—their Hq. address is Gaol Street, in the County Control

at Civil Defence Hq. June sees them continuing with their revised arrangements of two meetings each month, although at the time of this going down we did not have details—refer to the hon. secretary, as in Panel below.

Now to **Peterborough,** who are in process of sorting themselves out a new Secretary, because G3KPO (who has been their "rock and prime mover" for many years) is moving to the Isle of Wight—no doubt we shall have the new incumbent's "vital statistics" in due course. Meantime, how to contact the Club? One suggestion might be to ask the folk at the Rose and Crown, opposite the City Police station, around the first Friday in the month. Another could be to investigate the Windmill at Alwalton.

Lichfield have also had a change of secretary, but in their case the incoming official, G3ZIF, has himself advised the change, which appears in the Panel. Meetings are on the first Monday and third Tuesday in each month; in addition there is at the moment an increasing bias in their activities towards the organisation of their set-up for the Uttoxeter Carnival on July 3.

After a long absence, the **Oxford** and District crowd report in, with meetings arranged on the second and fourth Wednesday in each month at the Cherwell Hotel, Watereaton Road, Oxford, to which all are welcome. The first R.A.E course will by this writing be coming to an end, so it is hoped removing in the near future the county of Oxford from the category of "rare on Top Band." It is intended to run the R.A.E. course again in the autumn, all being well.

There is always a slight hint of apology about the Newsletter of the **Worcester** Club, but in fact they seem to be doing quite well—not many Clubs can boast of a skittles match on their programme, and even less of a skittles match with the Ladies of RRE Malvern! Next meeting is at the Crown in Broad Street, Worcester, on

Names and Addresses of Club Secretaries reporting in this issue :

A.R.M.S.: N. A. S. Fitch, G3FPK, 40 Eskdale Gardens, Purley, Surrey, CR2-1EZ.
BANGOR: E. R. Sandys, GI2FHN, 25 Moira Park, Bangor, Co. Down.
BASINGSTOKE: P. Sterry, G3CBU, Ashley, Orchard Road, Salisbury Gardens, Basingstoke.
BICESTER: T. H. Shaw, 5 Langford Gardens, Bicester, OX6-8NA.
BILLINGHAM: L. Crooks, 4 Victoria Grove, Fairfield, Stockton-on-Tees, Tees-side.
BORDER: C. H. Crook, G3YOG, 19 Hatters Lane, Berwick-on-Tweed.
BRIGHTON (Technical College): R. J. Henley, G2CMH, 35 Wilmington Way, Brighton, BN1-8TH.
B.A.T.C.: J. Rose, G6STO/T, Pinchbeck Farmhouse, Mill Lane, Sturton-by-Stow, Lincs. (*042-776 356*).
BUDE: *see under* North Devon.
BURNHAM BEECHES: I. MacHardie, G3YMV, 17 Blandford Road South, Langley, Slough, Bucks.
CHIPPENHAM: P. J. Tuck, 186 St. Ediths Marsh, Bromham (*274*), Chippenham, Wilts.
CONWAY VALLEY: E. G. Liebert, GW3ZXT, Five Acres, Baclaw, Conway, North Wales.
CRAWLEY: G. Bowden, G3YVR, 51 Leighlands, Pound Hill (*3253*), Crawley, Sussex.
CRAY VALLEY: P. F. Vella, G3WVP, 78 Hurst Road, Sidcup, Kent.
DERBY (Nunsfield House): P. Neal, G3WFU, 94 Jubilee Road, Shelton Lock, Derby, DE2-9FD (*Chellaston 2265*).
ECHELFORD: R. Hewes, G3TDR, 24 Brightside Avenue, Laleham-on-Thames (*Staines 56513*).
GRAFTON: T. Coleman, G8EEI, 14 Norman Court, London, N4-4QD (*01-340 9542*).
GREENFORD: I. Jackson, G3OHX, 154 Ryefield Avenue, Hillingdon, Middx. (*Uxbridge 33861*).
GUILDFORD: P. J. Hopwood, G8CQM, 27 Woodruff Avenue, Burpham, Guildford, Surrey.
HARROW: R. H. Medcraft, G3JVM, 134 Dulverton Road, Ruislip Manor, Middx., HA4-9AG (*Ruislip 38726*).
HEREFORD: S. Jesson, 181 Kings Acre Road, Hereford (*3237*).
HULL: Mrs. M. E. Longson, 4 Chester Road, Wold Road, Hull, HU5-5QE.
KINGSTON: R. S. Babbs, G3GVU, 28 Grove Lane, Kingston-on-Thames (*2801*).
LICHFIELD: H. Wilson, G3ZIF, 20 Brownfield Road, Lichfield.
LOTHIANS: D. E. Ferguson, GM3YMX, 1 Braidburn Crescent, Edinburgh, EH10-6EL (*031-447 2858*).
LOWESTOFT: G. E. Grimmer, G3KJU, 58 Kirkley Run, Lowestoft.
MAIDENHEAD: E. C. Palmer, G3FVC, 37 Headington Road, Maidenhead (*20107*), Berks., SL6-5LA.
MANSFIELD: F. Beasley, G8HX, 116 Westfield Lane, Mansfield (*25208*), Notts.
MID-HERTS: H. R. Thornton, G3PKV, 43 Fordwich Road. Welwyn Garden City (*23163*), Herts.
MID-SUSSEX: E. J. Letts, G3RXJ, 87 Meadow Lane, Burgess Hill (*3552*), Sussex.
MINEHEAD: *see under* North Devon.
NORTH DEVON: H. G. Hughes, G4CG, Crinnis, High Wall, Sticklepath, Barnstaple, Devon.
NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax.
NORTH LEEDS: T. Brown, G8CJS, 12 Hollin Hill Drive, Leeds, LS8-2PW.
NORTH STAFFS (Polytechnic): D. A. Hancock, G8CCM, c/o Amateur Radio Society, North Staffs Poly., Beaconside, Stafford.
NUNEATON: D. W. Smith, G8ERM, 2 Niton Road, Nuneaton, Warwickshire.
OXFORD: D. R. Ward, 2 Lincoln Road, Oxford (*47771*), OX1-4TB.
PETERBOROUGH: *Hon. Sec. name and address wanted.*
PURLEY: A. Frost, G3FTQ, 62 Gonville Road, Thornton Heath, Surrey, CR4-6DB.
READING: P. J. Bendall, G3NBU, 16 Three Firs Way, Burghfield Common (*2257*), Berks.
REDDITCH: R. J. Mutton, G3EVT, Summerhayes, Mill Lane, Alcester (*2041*), Warks.
SHEFFIELD: C. Kilvington, G8EPH, 658 Stannington Road, Sheffield, S6-6AE.
SHEFFORD: A. Sullivan, G2DGF, 12 Glebe Road, Letchworth.
SOUTH MANCHESTER: D. Holland, G3WFT, 7 Alcester Road, Sale, Cheshire M33-3GW.
SPEN VALLEY: J. Milnes, G8DSB, 19 Cliffe Street, Staincliffe, Batley, Yorks.
STEVENAGE: F. Collett, G3OVT, 8 Silam Road, Stevenage.
STOWMARKET: A. P. Ashton, G3XAP, 30 Ford View Road, Stowmarket IP14-2BL.
THANET: P. Trull, G3RAD, 1 Approach Road, Broadstairs, Kent.
TORBAY: Mrs. G. L. Western, G3BQD, 110 Truro Avenue, Hele, Torquay.
TYNESIDE: G. Lowdon, 21 Winifred Gardens, Wallsend, Northumberland.
VERULAM: H. Young, G3YHY, 93 Leaford Crescent, Watford, Herts., WD2-5JQ.
WAKEFIELD: M. E. Garner, G3XVU, 13 Kingsdale Avenue, Drighlington, Bradford, BD11-1EY.
WAMRAC: Rev. A. W. Shepherd, G3NGF, 178 Manchester New Road, Middleton, Manchester (*061-643 2368*).
WESSEX: G. A. Moore, G8BBN, 15 Stanfield Road, Winton, Bournemouth, BH9-2NL.
WEST SCOTLAND: K. McDermott, GM3SSB, 22 Fettercairn Avenue, Glasgow, W.5.
WHITE ROSE: R. Short, G3YEE, 10 Tyersal Grove, Bradford 4, Yorks. (*664-220*).
WINCHESTER: P. Simpkins, G3MCL, Flowerdown House, Harestock, Winchester.
WIRRAL: A. Fisher, G3WSD, 34 Glenmore Road, Oxton, Birkenhead (*652-5078*).
WOLVERHAMPTON: J. P. H. Burden, G3UBX, 28 Coalway Road, Wolverhampton, WV3-7LX.
WORCESTER: G. Spink, G3WUI, 1 Belvoir Bank, North Malvern (*Malvern 3088*).
YEOVIL: D. L. McLean, G3NOF, 9 Cedar Grove, Yeovil.

the evening of Saturday, June 12.

The **North Staffs Polytechnic** Radio and Electronics Society seem to be well equipped for their function, with the Club station sited in a screened cage in the Electronics Lab, where they have K.W. Vespa, KW-2000 and K.W. Linear, plus an Eddystone 880/2 receiver with 144 MHz converter and a ten-watt two-metre transmitter.

As regards antennae, on the VHF side is a 14-element Parabeam, and for HF a Triband beam, both at heights above 100 feet. Main activity period seems to be Wednesday afternoons, signing G3VZI. Anyone interested in skeds, especially on Two, or anyone wanting more details of the Club, should get in contact with G8CCM, *via* the address in our Panel, p.243.

The new Hq. for the **South Manchester** group is at Sale Moor Community Centre, Norris Road, Sale. Here there is a house-warming Open Night on June 4, followed by a talk on the 11th by the winner of the home-construction contest last April—the hon. sec. himself, no less. The South Manchester D/F Qualifying Event is down for June 13, starting at NGR 808,848 at 1.0 p.m., clock. Back to Hq. on June 18, for a talk on the construction of Crystal Filters for CW and SSB, by G3VIW. Finally, on June 25, comes a talk on "How to pass the R.A.E.," by G3ZBZ. All this in addition to the Monday-evening sessions of the VHF section, which assembles each week at the Club shack, Greeba, Shady Lane, Manchester 23.

At **Redditch,** the lads have a place at the Old People's Centre, Park Road, on the fourth Thursday in each month; the current emphasis is on an all-out effort to get the Club's HW-100 transceiver finished, when it is hoped to be regularly on the air.

There are two groups in the **Derby** district; one is a constituent part of the Nunsfield House Community Association, in whose place they have Room 7, every Friday evening. There is a Night on the Air on June 4; a D/F Practice Run on June 6; preparations for the Elvaston Castle Rally on June 11; and the Rally itself on June 13. This leaves June 18 for a technical film show, and June 25 for a Quiz. Incidentally, Nunsfield House is in Boulton Lane, Alvaston, and visitors are very welcome. Their Rally this year will be this group's big effort.

Mansfield continue to meet at the New Inn, Westgate, on the 1st Friday each month. They have recently acquired, from among members, three new G4/3 calls but as yet they have no G8/3's! They have been able to arrange for Club operation from the pro's workshop at Coxmoor Golf Club, one of the highest points in the County—of course, the pro. happens to be one of their members!

At **Nuneaton,** it has been decided to make the meetings twice monthly—a step in the right direction, if ever there was one! They will henceforth be on the first Friday of the month and the Wednesday a fortnight later. Two regular Club nets are also in operation: From 1100 every Saturday on two metres, and same time Sundays on 1985 kHz, times clock.

Southern and Eastern

Another small town in a previously un-catered for area has formed a club—this time it is at **Stowmarket,** in Suffolk, and the spark-plug is G3XAP, QTH as panel. Meetings are being run on the first Monday in every month, with an informal "ragchew session" on the third Monday, the place being the Works Canteen of Messrs. E. R. Howard, Ltd. Membership seems to have stabilised at around the twenty mark, which looks pretty fair in such an area.

Harrow, of course have been an organised Club for a very long while; their place is at Harrow County School for Boys, Sheepcote Road, and the dates and details are: June 4, a Practical Evening; June 11, a Junk Sale; June 18, another Practical Evening; and June 25, a talk.

If you are going anywhere within striking distance of **Lowestoft,** at any time, you might as well drop the locals a line—*see* Panel—because you will surely be intercepted and entertained at the local club anyway; so you might as well give them a bit of warning! Seriously, the record last season was fourteen interceptions of visiting amateurs, and they aim to raise the figure this season—*see* p.179, May.

Brighton Technical College have June 7, for an Open Evening during which G3TCB will be on the air; June 21 for G3SKI to give an illustrated talk on Integrated Circuits; and June 28 for the final ragchew before the summer recess. These are scheduled for the Richmond Terrace address of the College, but in addition it is intended that as many of the members as may be should attend the Mid-Sussex "Annual Beanfeast and Mobile Rally" on June 24, at the Calyton Windmills site.

Verulam have their main meeting on June 16, when the speaker will be G3BPT, Peter Balestrini, giving his well-known talk on the P.L.A. Telecommunications system. This one is at the Council Chamber, St. Albans Town Hall, but the informal is down for Salisbury Hall, London Colney—a place well-worth a visit for itself, let alone for the Club meeting.

Shefford is a group that keeps on keeping on, no matter what befalls; and now a new hon. sec. writes in —*see* Panel—with the doings for June at the Church Hall in Ampthill Road. June 3 is NFD preparations plus a quiz; June 10, the post-mortem on the same event; June 17 is down for a D/F Hunt, presumably starting from Hq.; and on June 24 comes an intriguing event entitled "Morse Quiz."

Cray Valley seem to have bookings on the first and third Thursdays at the Eltham Congregational Church Hall, 1 Court Road, S.E.9, with the former the lecture occasion while the mid-month date is for a natter evening.

As recently as February 1970 a Club was formed in **Winchester,** and it is understood to have gone from a membership of eight up to as high as 28. As a result, Winchester had an R.A.E. class for the first time, and will have one again this coming autumn, all being well. They have a clubroom with a seprate shack adjoining. Full details, with dates, details and so on, can be obtained from G3MCL, as Panel, as far as the normal meetings are concerned.

A nice front cover adorns the **Echelford** *Newsletter,* and the inside is equally good—despite G5AGX's alleged difficulties in spelling English the English way! However, there was so much news to be passed along in the current issue that there is no detail on the programme for June at all. This can be easily rectified, however, by

getting in touch with G3TDR, as Panel.

Thanet were represented at the Hobbies Exhibition put on recently by Broadstairs Rotary Club with active stations on HF and VHF; G3RAD will be glad to give you all the programme details if you want to look them up.

A brief note from the retiring secretary gives the name and address of the new man for **Guildford**—*see* Panel—who will be only too pleased to make a start on his new duties by giving all the details of the Guildford June programme.

Both the venue and the booking days have changed for **Burnham Beeches** since last they wrote—they now are at the Buffalo Hall, Victoria public-house, Victoria Road, Farnham Common, and the bookings are on the first and third Thursdays in every month. Here they have a "natter nite" on June 3, followed on the 17th by a Junk Sale.

Anyone wanting to get in touch with the **Grafton** crowd during the "close season" could do worse than visit them on their own private field day, June 13, at Tumulus Hill, Hampstead Heath, time between 0900 and 1930 clock. One snag—no cars on the site, so you will have to walk a little way.

Purley have their AGM at the Railwaymen's Hall, 58 Whytecliffe Road, on June 18, but before this there is the meeting on June 4, when they have a natter-session—they must be the only Club in the country not to be sorting out the NFD problems on that night!

Mid-Herts have the Civic Centre at Welwyn booked for June 10, when they are to have a talk and discussion on Direct-Conversion Receivers.

Apart from the mobile evening on June 24, at the Jack and Jill Windmills, Clayton, mentioned elsewhere in this piece, **Mid-Sussex** have their NFD "last-minute flap" session on June 3, then a Junk Sale on June 17—at which, we are assured, there will as usual be plenty of knobs and several hundred jack sockets! Marle Place is in Leylands Road, Burgess Hill.

A demonstration and talk covering the G3LFM transceivers is down for **Reading** on June 8, which will probably add piquancy to the constructional contest at the next meeting on June 22. Hq. is at the "Victory," Meadway Precinct, Tilehurst, Reading.

Alternate Fridays is the form for **Greenford,** this working out as June 11 and 25th, at the Community Centre, Oldfield Lane, Greenford, Middx. The latest issue of their *Newsletter*, the fourth, is one of the best we have seen lately.

Maidenhead are now "returned to the fold" after a period of absence from these pages; in March there was an AGM with new officers, but G3FVC still soldiers on as hon. secretary, having held the job continuously since the formation of the Club. Monday, June 7, is an informal, and June 15—a *Tuesday*—is the formal lecture, when the subject will be Solid-State VHF Transmitters. Both are at Victory Hall, Cox Green, Maidenhead, and there will be "light refreshments" provided.

Our latest information on **Crawley** is only up to the May dates, but no doubt G3YVR will be only too pleased to pass on the information if you contact him, as Panel. We can tell you, though, that the Hq. is at Trinity Church Hall, Ifield, Crawley.

The Penguin Lounge, 37 Brighton Road, Surbiton, is the Hq. of the **Kingston** crowd; here they can be found on the second Wednesday in each month; at the June 9 meeting, they will be entertained by G3OSQ, talking about his modular approach to D/F Receivers.

Once again, after a long gap, we hear from **Stevenage,** and we note with pleasure that G3OVT is back in the "hot seat" as secretary. The lads have the first and third Thursday in each month reserved for them at the Staff Canteen, Hawker Siddeley Dynamics, Gunnels Wood Road—and in case anyone thinks this sounds a bit off-putting as a venue, let your conductor himself say it is one of the nicest clubrooms he has ever been in.

The **Wessex** crowd seem to be happy with their secretary—they re-elected him! He tells us the lads are still getting together at the Cricketers' Arms, Windham Road, Bournemouth, and leaves it to any prospective attender to contact him for the relevant dates—*see* Panel, p.243.

Some Others

This clip takes in the groups and formations which cannot be covered under one of the territorial allocations.

It must have been a happy moment for **WAMRAC** Secretary G3NGF to see his latest Circular Letter go out—after several years of struggling against difficulties, he has now got his arrears of circulars wiped off. **WAMRAC** exists as a group to unite members of the Methodist Churches worldwide, and their supporters, the only qualification being this and interest, as either SWL or licensed amateur, in Amateur Radio.

Mobileers come next, by way of **A.R.M.S.,** and their *Mobile News*. In the April edition, G3FPK did a few sums to point up the futility of the Postal strike, without in fact taking his mathematics to the logical conclusion (apparently to make sure no one could be offended). No such luck, as the following month there appeared a letter from a member who seemed to think that G3FPK's comment was "political." First time we ever knew either that facts as such, or mathematical work based on those facts, could be called "political bias!" We live and learn.

Finally, we have the **B.A.T.C.** journal, *CQ-TV* in front of us; this is a very useful periodical of its kind, and one would think membership of B.A.T.C. is a *must* for anyone with interests in A/TV. Details, of course, from G6STO/T, at the address shown in the Panel on p.243.

In Conclusion

There it is for this time. Reports for next issue, July, should be with us by **Friday, June 4**—giving your programme for July, the hon. secretary's name and QTH and the regular meeting place.

We will do our utmost to cover all Club reports received by the due date—but those that come in late cannot be guaranteed appearance. So that there can be no good reason for scribes being late with their reports, below are the deadlines for the next few months. All these dates are a *Friday*, because the feature has to be prepared for press over the ensuing weekend—so we have no time to juggle with reports that trickle in on the following Monday or Tuesday! For most correspondents, the schedule means posting "first-class" on the Wednesday to be sure of catching the Friday deadlines, which are: **June 4** (for July); **July 9** (August); **August 6** (September); and **September 3** (for October).

NEW QTH's

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

G2CUI, H. C. Bailey, 1 Bircham View, Crownhill, Plymouth, Devon, PL6 5PY (*re-issue*).

G3ZRZ, I. M. Cobbe, 24 Rossendale Avenue North, Thornton-Cleveleys, Blackpool, Lancs., FY5 4NT.

G3ZWK, D. T. Raimbach, 15 Park Avenue, Ruislip, Middlesex.

GW3ZXI, S. J. Brennan, 1 Heol Deg, Tonteg, Pontypridd, Glam.

GW3ZXJ, B. Brennan, 1 Heol Deg, Tonteg, Pontypridd, Glam.

G3ZYE, R. Bellerby, Ashdene, Rossall School, Fleetwood, Lancs. (*Tel. Fleetwood 5468.*)

G3ZYW, C. W. Debney, 111 Penn Lea Road, Bath, Somerset, BA1 3RQ.

G3ZZL, S. J. Keightley, 26 Victoria Grove, Southsea, Hants., PO5 1NE.

G4ABI, D. S. Radley (*9J2GE/ex-G8EBN*), P.O. Box 1586, Lusaka, Zambia.

GM4ABO, A. Stewart, 4 Lang Street, Paisley, Renfrewshire.

G4ABQ, J. Hudson, 54 High Street, Odell, Beds.

GM4ACM, A. C. Miller, 19 Craighill Drive, Clarkston, Renfrewshire.

G4ACP, J. Scherrer, 5 Claymore Drive, Ickleford, Hitchin, Herts.

G4ACW, N. D. Roe, 82 Fletchers Estate, Sidlesham, Chichester, Sussex. (*Tel. Sidlesham 376.*)

G4ACY, R. B. Ratcliffe, A.R.I.B.A., 4 Hart Close, Rugby, Warks. (*Tel. Rugby 75096.*)

G4ADD, W. A. Ricalton, 4 South Road, Longhorsley, Morpeth, Northumberland.

G4ADE, M. Woollin, 276 Oxford Road, Gomersal, Cleckheaton, Yorkshire, BD19 4PY. (*Tel. Cleckheaton 5016.*)

G4ADF, P. D. Harrison, The White Cottage, Codmore Hill, Pulborough, Sussex.

G4ADP, P. McCurrie, 38 Rydal Avenue, Freckleton, Preston, Lancs., PR4 1DJ.

G4AED, B. Cator, 72 Vicarage Walk, Watton, Thetford, Norfolk.

G4AEF, M. Fatherley, 34 Chatsworth Avenue, Winnersh, Wokingham, Berks., RG11 5EU. (*Tel. West Forest 4954.*)

G8ECU, D. C. Reekie, 10 Aintree Avenue, East Ham, London, E6 1NX.

G8EDZ, B. Godfrey, 15 Rossdale Drive, Kingsbury, London, NW9 8NP. (*Tel. 01-205 6692.*)

G8EHW, H. Hodgson, 1 Harris Street, Askam-in-Furness, Lancs.

G8EKQ, K. R. D. Turner, 10 Howard Road, Morpeth, Northumberland. (*Tel. Morpeth 55264.*)

G8EPS, G. T. Phelan, 34 Birmingham Road, Kidderminster, Worcs.

G8EQC, D. T. Cliffe, The Willows, Kings Bromley, Burton-on-Trent, Staffs.

GW8EQH, D. E. Evans, Glendale, Mount Pleasant, Buckley, Flintshire.

GW8EQJ, T. W. Jones, 14 Park Side, Park Road, Buckley, Flintshire, CH7 2HB.

GM8ERB, H. T. Stears, 13 Silverknowes Green, Edinburgh, EH4 5PJ. (*Tel. 031-336 4267.*)

G8ERJ, P. Dudgeon, 180 Crow Lane East, Newton-le-Willows, Lancs. (*Tel. Newton-le-Willows 6895.*)

G8ERQ, G. Hardwick, 13 Wharfedale Place, Harlow Hill, Harrogate, Yorkshire, HG2 0AY. (*Tel. Harrogate 69801.*)

G8ERW, C. J. Baker, 12 Westland Drive, Brookmans Park, Hatfield, Herts.

GW8ERZ, J. R. D. Morgan, 1 Myrtle Grove, Sketty, Swansea.

G8ESK, B. M. Kermode, 56 Brantwood Road, Bradford, Yorkshire, BD9 6QA. (*Tel. Bradford 45611.*)

G8ESQ, J. R. Morris, 15 Princess Way, Euxton, Chorley, Lancs.

G8ETN, S. R. Last, 65 Marlow Road, Ipswich, Suffolk, IP1 5JL.

G8EUB, C. J. Deacon, 23 Waterloo Road, East Ham, London, E6 1AP.

G8EUN, P. S. Smith, 49 Hucknall Avenue, Ashgate, Chesterfield, Derbyshire.

CHANGE OF ADDRESS

G3AQQ, J. Kelsall, M.B.E., 9 Treelands Drive, Leckhampton, Cheltenham, Glos.

G3GYZ, W. G. Wooller, 19 Beaumont Road, Petts Wood, Kent, BR5 1JL (*Tel. 66-25987.*)

G3HPJ, T. Shepherd, 59 Pantain Road, Loughborough, Leics., LE11 3LZ.

G3KDP, A. G. Bounds, 19 Quicksand Lane, Aldridge, Walsall, Staffs.

G3NMH, H. E. Perkins, Spinney, Hilltop, Beaulieu, Hants., SO4 7YQ.

G3NOB, Mrs. Rita Shepherd, 59 Pantain Road, Loughborough, Leics., LE11 3LZ.

GW3OKM, J. Mitchell, 20 Camden Crescent, Brecon, Breconshire.

G3PKR, K. E. Parker, 21 Lundy Drive, Hayes, Middlesex.

G3RBF, A. C. West, 27 Ashby Road, Welton, Daventry, Northants.

G3TZI, A. Senior, 36 Squires Lane, London, N3 2AT. (*Tel. 01-349 1438.*)

G3WGE, E. K. Law, 28 Fosseway, Lichfield, Staffs. (*Tel. Lichfield 3084.*)

G3WNI, W. A. Lindsay-Smith, 12 Curtis Road, Ashdell Park, Alton, Hants.

G3XEP, White Rose Radio Society, White Horse Hotel, Armley Town Street, Armley, Leeds, 12.

G3YAC, P. A. Howarth, Higher Hawks Stones Farm, Kebcote, Todmorden, Lancs. (*Tel. Todmorden 3525.*)

G3YTO, T. M. Roberts, Willow Cottage, Lebberston, Scarborough, Yorkshire.

GM3YVE, W. Skilling, 25 Cawdor Crescent, Bishopton, Renfrewshire.

G3YZF, W. A. Harrison, 34 Churchfield Way, Welling, Kent.

GW8BPG, B. E. Viney, 10 Heol Merion, Barmouth, Merioneth.

G8DDT, I. B. Bullock, 38 George Road, Fleet, Hants. (*Tel. Fleet 21218.*)

SMALL ADVERTISEMENTS

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TRADE

TRIO JR.500 with Top Band and Calibrator Unit, new, £65·00. Slightly marked, £55·00. Twelve months guarantee. Send s.a.e. for copy "Short Wave Magazine" review.—HOLDINGS Photo-Audio Centre, 39-41 Mincing Lane, Blackburn, BB2-2AF. (Closed on Thursdays). Tel: Blackburn 59595/6.

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SEE The Trio TS-510 and other Amateur Equipment at the **York Photo-Audio Centre, Fossgate, York.** Tel: 56176, or evenings 25798. **Cameras and Equipment in Part Exchange.** H.P. terms available. Also **Wanted:** Good commercial equipment for cash or in part exchange for Cameras and Projectors.

JULY Issue: Appears June 25. Single-copy orders 25p, post free, to reach us by Wednesday, June 23, for posting on June 24.—Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

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SLOW-SCAN TV: Just arrived from California the fabulous Robot SS/TV equipment—Camera, £225; Monitor TV Receiver, £225; available separately. All an SWL requires is the Monitor TV Rx, into his communications receiver, for world-wide SS/TV reception. Send s.a.e. for descriptive brochure.—Saltash Radio, Ltd., 84 Fore Street, Saltash, Cornwall—or ring Harold Jones, G5ZT, Plymouth 76552.

STAY AT The Cornwall Ham-Radio Holiday Centre. Self-catering furnished accommodation. Six-element beam; 65ft. tower; 90 awards.—Full details from Bernard Broughton, G3XBR, St. Tudy, Bodmin, Cornwall.

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READERS

WANTED: AR88 cabinet. Selling Standard-8 Film Editor, £3·00.—Bowen, G3GCO, 31 The Crescent, Donnington, Telford, Shropshire.

FOR SALE: Forty-foot fold-over Versatower, galvanised, complete with cables, winches and socket, price £95. — Franklin, G3XVH, QTHR, or ring 01-222 7939.

WANTED: Signal Generator—Advance, Avo or similar—with calibrated attenuator. Must be in good order and reasonably priced. (North Lincs.)—Box No. 5010, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Trio 9R-59DE, with matching speaker SP-5D and headset HS-4, also one Eddystone doublet Type 731/1, all purchased new Jan. '70. All in perfect condition, with original packing and hardly used. Offers invited.—Ring Mathews, 01-876 7868 (London, S.W.14).

SELLING: KW-2000, including AC/PSU, in immaculate condition, just serviced by K.W. Electronics, price £130. Tilt-over Tower, similar to "Versatower", including rotator and indicator, £60. Tri-band Cubical Quad, including feeder lines, £15.—Jones, G3RCU, Japonica, Abbey Road, Sandbach, Cheshire.

OFFERING: Pye AM-27F and transistor Ranger. Both on two metres.—Ring South, Medway (0634) 75018.

REQUIRED: Manual for ex-Army Mk.10 UHF receiver.—Pearce, 11 Pipers End, Wolvey, near Hinckley, Leics., LE10-3LQ.

FOR SALE: R.C.A. AR88LF receiver, complete with matching speaker and Hosiden stereo headphones, price £35.—Ring Bourne, Treffgarne 660 (Pembrokeshire).

SALE: Must Clear The Shack! Receivers—SB-301E, with all filters, £130; Eddystone EA-12, £100; Hallicrafters S.76, coverage 0·6 to 32 MHz with amateur bands spread, £30. HW-17A, £50. HWA-17/2 NBFM adaptor, £5. Garrex Twomobile Tx, £20. 'Scopes: CD.568, £20; CD.514, £25. Transistor Ranger, high band, £5. Heath RF-1U signal generator, £10. Jap valve-type GDO, £10. Also valve and transistor two-metre converters, PSU's, transformers, ex-Govt. VHF and microwave gear, including units with 4CX250B bases, etc., etc. Visitors by appointment only please.—Baker, G8DLP, Eastfield House, Kings Bromley, Staffs., or ring Yoxall 315 evenings (021-556 0781 office hours).

SELLING: Hartley Type 13A double-beam 'scope, 2 Hz to 5·5 MHz, complete with probe and manual, £19. AM Tx for 10 to 80m., 60-watt input, 5B/254M PA, pi-output, with FB transistor modulator, £14; separate PSU, £5; both fully metered; details s.a.e.—Orchard, G3TTC, Devonshire House, Gold Street, Stalbridge, Sturminster Newton, Dorset.

DISPOSING: Several "Teletype 19 Tape Sets" comprising Teletype 15 page printer with EOL, 45 to 50 baud, 5-level tape punch, standard keyboard and silence cover; some covers need paintwork retouching and new tear-off strip. All in good mechanical and electrical condition, complete with transmitter distributor Type 14 and mains supply for motors and local loop. Price £12·50.—Sanders, G3CRH, QTHR, or ring Burntwood 6364 (Staffs.).

SALE: SB-101, with some -102 mods., complete with PSU, £140. Also SB-200 linear, checked by Heath, £80.—Abbott, 2 Broomfield Avenue, Telscombe Cliffs, Sussex.

SELLING: KW-2000A with AC/DC PSU's; has made DXCC both static and mobile. Will be checked by K.W. Electronics before delivery. Best offer over £160—Jacobs, G3AAQ, QTHR, or ring 078885 (Swinford) 444.

FOR SALE: Lafayette communication receiver covering 550 kHz to 31 MHz in four bands, with band-spread, S-meter, ANL, internal speaker, etc., in good condition, price £22, carriage free.—Williams, 6 Heol Llwynon, Caewern, Neath, Glam., South Wales.

WANTED: World War II parachute transmitter/receiver Type BP.5 in good condition, with mains PSU. Please give details and price, with photograph if possible.—Box No. 5011, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Squeeze Keyer, Quali-Fi Type MSK-4, self-completing with memory, monitor tone and speaker, all-IC circuitry, clock-pulse silicon drive, mains or 6v. AC/DC powered, brand new and surplus to requirements, price £26·50 post paid.—Cook, G5XB, QTHR, or ring 073-525 2195 (Reading).

WANTED: By Wrekin Radio Society, small communications receiver, RA-1 or similar; about £20-£25 in kitty.—Birch, G8DMS, 15 Oak Crescent, Wellington (55846), Shropshire.

SELLING: Home-built amateur-band receiver, Electroniques front end, Eddystone 898 dial, in aluminium case, some alignment required, £20. Also, at £1 each, three QQV03-20A, two 4CX250B, two 4X150, Woden UM1 and UM3 mod. transformers, PSU 250v. at 80 mA. Two-metre Tx, '3-10 output stage, choke-control modulated, with Ae. c/o relay and xtal, £7·00. Four-element 4m. J-Beam, £3. Londex 24v. Ae. c/o relay, £1·75. Hansen transistor checker, £3·50. Proprietary ATU, with aerial change-over relay and output meter, £5. Inductance Bridge Type TF-301B, 1000 kHz, £5.—Rawlinson, G8BJR, QTHR, or ring Charing (Kent) 2395.

WANTED: Faulty or partly-built "G2DAF-type" transmitter (preferably with commercial parts). Price and details, please.—Henry, GM3WCH, Anderlea, Gulberwick, Lerwick, Shetland.

WANTED: Urgently, Codar A.T.5 Tx, T.28 Rx, mobile PSU 12 M/s, and R/S control unit.—Shaw, G3XFJ, QTHR, or ring 0904-78857 (York).

OFFERING: Command 40-metre Tx and PSU, requires some attention, nearest offer to £10 secures.—Hunter, Dalesview, Gebdykes, Masham, Ripon, Yorkshire.

WANTED: R.216 VHF receiver, with PSU and manual, must be in perfect condition.—Ring Ewert, 01-467 2156 (Kent).

MANUALS Available: SP-600JX, Collins J4, £2. At 62½p each, 62A, 62B, 888A, 840A. Postage extra. About 130 others available.—Brooks, 5 Farrant House, Winstanley Road, London, 2EJ.

WANTED: VHF Rx tuning up to 160 MHz, AM/FM. SALE: Eddystone 888A Rx, £60. Lafayette HA-600 receiver, £30. DX-100U transmitter, 150 watts CW/AM, £50.—Bushell, GW3OSV, Park East, Clarbeston Road, Pembrokeshire.

FOR SALE: BC-221 frequency meter, in mint condition, with built-in stabilised PSU, £25 or near offer. Aerial tuning unit, twin variable inductors, switched capacitors, c/o relay, and metered, £5. QQV06-40A, £1. Wayne-Kerr RF Bridge, 50 to 250 MHz, 10 microvolt sensitivity, £10. Tx covering 2·0 to 18 MHz, 2/4X150 with blower and circuit, some attention required, £3·75. PSU, 350v. DC 150 mA, metered, paper condensers, 300v. xformer approx 150 mA plus LT windings, £1·25. All plus postage. —Rawlinson, G8BJR, QTHR, or ring Charing (Kent) 2158.

SALE: Nombrex signal generator Type 27, as new, £6. Class-D wavemeter, with mains xformer and manual, £3. K.W. low-pass filter, range 52/4, £2. Avo AC/DC Multiminor, in leather case, £4. G3BDQ-type amateur band receiver (as "Short Wave Magazine," 1962) in Philpotts cabinet, with Eddystone dial, built by the late G3LNO, working but needs re-alignment, bargain at £15. Joystick aerial and two tuner units, £3. All carriage extra, but receiver "test and collect" only.—Dumbleton, G3HCM, 11 Woodburn Close, Allesley Park, Coventry, Warwickshire.

WANTED: VFO covering 80m. band, also low-impedance headphones suitable for B2; price and details, pse.—Box No. 5014, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Mosley vertical RV4 aerial, self supporting, suitable 10 to 40m., rated 2 kW p.e.p., £10. Roof mounting kit RV4RK, complete with radials for RV4, £5. Dow-Key (valve type) T/R switch, for BK operation, with spare valve, PSU and double-male connector, £5. New absorption wavemeter, coverage 3·0 to 35 MHz, metered, £2·50. New Hamgear PM-11 preselector, £5. Hansen SWR bridge, £2·50. Pair field telephones Type F (as offered surplus at £6·50), £2·50. New 4-amp. battery charger, 6v. or 12v., metered, £1·25. Labgear LG.300 transmitter, with three spare 813's, circuitry and notes, £15; the matching Mod/PSU for LG.300, with circuit notes, £10. American Johnson Viking screen modulator, ideal for the CW man's local phone contacts, complete with handbook and microphone, £2·50. Moving-coil 0-3500v. voltmeter, large scale, £2·50. All collect, or carriage at cost; send s.a.e. with enquiries.—Stone, 39 Purret Road, Plumstead, London, S.E.18. (Tel: 01-854 6646.)

RACAL Enthusiasts! Single Sideband Transceiver, coverage 3·0 to 12 MHz, complete with PSU, in handsome "base station" type cabinet, a bargain for someone at £25, plus carriage, but prefer pick-up deal; send s.a.e. for details. (Midlands.)—Box No. 5012, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Hy-Gain TH 3-element beam for 10-15-20m., senior model rated 2 kW, in excellent condition, £22 plus carriage.—Cartwright, G3UCV, 5 Manston Gardens, Leeds (643788), Yorkshire, LS15-8EY.

WANTED: K.W. Vespa Mk. II with AC/PSU, in good condition.—Bedford, G4AEE, Stoneycroft, Stoney Lane, East Ardsley, Wakefield, Yorkshire. (Tel: Lofthouse Gate 3214.)

FOR SALE: R.C.A. AR88LF receiver, with manual, £25. National HRO Rx, rack mounting, with AC/PSU, speaker and six coil packs, £20. Buyers inspect and collect.—Ring Frost, Brewood 313, NSAR Stafford and Wolverhampton.

SELLING: Collins TCS receiver, covering 1·5 to 12 MHz, in almost mint condition but less PSU, £10. Avo signal generator, 50 kHz to 80 MHz, with manual, £10. Lafayette mechanical filter Type MF-455 10AZ27, with instruction sheet, £4. American ultrasonic relay, complete with transducers, mains operated, with manual, would make super burglar alarm (!), price £7. WANTED: Transmitting or transceiver converter, for two metres to 20m.—Box No. 5013, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

OFFERING: **Circuit Diagram** and notes for R.1475, 75p (15s) and large s.a.e.—Cresswell, G3ZZY, 61 West Street, Tavistock, Devon.

JULY Issue SHORT WAVE MAGAZINE will appear on Friday, June 25. Single copies at 25p post free can be supplied to orders reaching us by Wednesday 23rd, for despatch on Thursday 24th, the day before publication. Orders with remittance to: Circulation Dept., Short Wave Magazine Ltd., 55 Victoria Street, London, S.W.1.

WANTED: T.W. Communicator Two, for 144-146 MHz, in good condition. Price and details.—Youens, G2HAR, QTHR, or ring Hemel Hempstead 2817.

WANTED: Eddystone EB-35 receiver, price and details.—Hodges, French Mill, Claphill Lane, Rushwick, Worcester.

WANTED: Pre-War Hallicrafters Sky Buddy, Sky Chief or similar receiver.—Litherland, G8CFB, 11 Birch Grove, Chippenham, Wilts.

SELLING: General-purpose communications receiver Type C-864, double-conversion, 4ft. illuminated film scale, coverage 15 kHz to 30 MHz in seven ranges, incremental tuning to 1 kHz read-out, with crystal calibrator, S-meter, upper/lower Sideband selection, also CW/MCW, absolutely as new, with comprehensive handbook by Racal. This receiver can make a serious claim for CW/SSB professionalism, £70 or near offer.—Ring Shams, 01-278 5839 (London).

SALE: Hallicrafters S.38E, covering 550 kHz to 32 MHz, with bandspread, BFO, 120/240v. step-down transformer, good appearance, £12. Pye table-model receiver Type 1101A, AC/DC, for long, medium and short-wave reception in 7 bands, not a communications Rx, £12. Codar PR-30X preselector, £6·50. Two V.L.S. 631 thermal-delay switches, B7G base, offers? Four used 7C5, 50p. Carriage extra. Send s.a.e. for details.—Latham, 64 Gorsey Lane, Liverpool 21. (Tel: 051-928 5847.)

WANTED: To buy or borrow, circuit diagram of the Mullard MAS-407 receiver.—Holway, 31 South Street, Taunton, Somerset.

SELLING: Anglican 1000-L linear amplifier, with two spare 4CX250B's. Also a KW-2000B, works fitted 6146B's, mint, £250. — Price, 13 Fox Close, Wigginton, Nr. Tring, Herts.

FOR SALE: KW-2000 complete with AC/DC PSUs, with Shure microphone and vehicle mountings, price £140. Will deliver to 100 miles, otherwise carriage extra.—Brett, G3HBE, QTHR, or ring 021-373 3026 (Birmingham).

SALE: TCS-12 Tx, Rx, PSU and ATU, £25. Two-metre mobile Tx/Rx, with halo aerial, £10. Four metre Tx/Rx, £7. Gibson "Explorer" amplifier, 15-watt, with two microphones, 12in. speaker and tremolo, £20. Can deliver in London area.—Bean, G3TJQ, 51 Heathfield Square, London, SW18-3HZ. (Tel: 01-874 1227.)

OFFERING: KW-2000A, with mains PSU and microphone.—North G8IO, Grafton Manor, Bromsgrove (72151), Worcs.

SALE: Hallicrafters S.108 receiver, AM/CW/SSB, bandspread on amateur bands, with built-in speaker and instruction book, in mint condition.—Ring Lance 021-706 0557 (Birmingham).

SELLING: R.C.A. AR88LF receiver, in very good condition, £35. Hamgear PM-2 preselector, hardly used, £5. Could deliver to reasonable distance. — Rickerd, 6 Penfold Drive, Great Billing, Northants.

FOR SALE: Collins 75S-3B, mint condition, £240. Drake TR-4, AC-4 and RV-4, little used, £350.—Barry, 15 Fairlawn Court, London, W4-5EE. (Tel: 01-994 6931.)

SELL: National HRO Rx, with nine GC coil packs, speaker, PSU, manual, and Codar PR30-X preselector, £20. Also 23-centimetre corner reflector. £1.—Arnold. 24 Albert Road, Stechford, Birmingham, B33-9BD.

WANTED: 6AW8A valves for Mosley CM-1 Rx; also converter for Top Band.—Pigott, 52 Rowan Road, Bexleyhearth, Kent.

SELLING: National HRO Receiver in excellent order, with eight coil packs, mains PSU and Hamgear preselector, £26 or near offer. Callers evenings.—Page, 20 Allen Street, Maidstone, Kent.

WANTED: SSB Tx for 160 metres, "Cannonball" or similar.—Cox, G4AEL, Windyridge, Catbrain Lane, Bristol, BS10-7TQ.

SALE: R.C.A. AR88D receiver, in excellent condition with spare set valves, price £35.—Hannah. 11 Lancaster Avenue, Skegness, Lincs.

FOR SALE: Hammarlund HQ-120 Rx, £80 or near offer, excellent condition and performance. Minimitter transmitter with aerial relay, £17.—Angell, G3ZTX, 46 Upton Park, Slough (21086), Bucks., SL1-2DE.

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