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2. JOYSTICK V.F.A. The World Record Award Antenna (7' 6" long).

3. JOYMATCH IIA A.T.U. tunes above frequencies (transmitting amateurs, used with V.F.A. handles 300w. PEP SSB PA input).

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JOYSTICK V.F.A. £13.75 ; JOYMATCH TX/RX A.T.U. IIA (see 3 above) £13.75 ; JOYMATCH LO-Z 500 A.T.U. TX/RX 500w. SSB (PA input) with RF meter, £19.91 ; Communications Headphones 8 Ω (suitable TRIO, ECIO, etc.), £3.14 ; OA2 mains stabiliser (plugs into 9R59DS), 74p ; 6 spare 9R59DS valves, £2.35 ; Full set spare 9R59DS valves incl. OA2, £4.29 ; Artificial Earth (as used on Oil Rigs), £5.80 ; Aerial Bandswitch tuned Aerial for domestic receivers, £5.80 ; A.T.U. kit 1.8–30 MHz receive and transmit (300w. PEP SSB PA input), £5.80 (assembled, £7.01).

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NO V.A.T. on Overseas Orders (deduct 1/11 from prices quoted) but EXTRA Carriage and insurance necessary.

BOX 5

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Full range including the new FT101B

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SENTINEL DUAL GATE MOSFET 2 METRE OR 4 METRE CONVERTERS

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Now with much improved metalwork. 2 metre IF’s available from stock : 2-4 MHz, 4-6 MHz, 9-11 MHz, 14-16 MHz, 18-20 MHz, 24-26 MHz, 28-30 MHz.
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2-4 MHz and 4-6 MHz use double conversion technique with two mixers and no crystal oscillator multiplication.
28-30 MHz IF’s use 116 MHz crystals with no crystal multiplication.
Noise figure 2 dB. Gain 20 dB.
MOSFETS protected against gate failure.
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This one uses an I.F. output of 144-146 MHz. This has enabled us to produce a very high performance converter with a noise figure of 3·5 dB for only £16.90.

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* Low price : £78.99 complete. £44.35 less valves—valves required are 2 off QV03/10, 1 off QV03/40A. Additional 12·6v.
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MONO-BANDERS

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COMPREHENSIVE RANGE OF DENCO, PCB with Instrs. for G3XGP 2M Con-

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2m. SSB/FM/CW TRANSCEIVER

2m. SSB/FM and CW Synthesised 200 Ch. AC/DC. 10w o/p. (S.A.E. for details please)

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Communication

Many years ago, it was said in this space that radio amateurs were privileged still to use the simplest, most elegant, accurate, reliable and unambiguous method of radio communication yet devised. They still are—and we refer, of course, to the art and practice of CW telegraphy.

It has often been said since (though never by us) that “CW has had it,” or “Why do we need to know Morse, anyway?” or “Most amateurs never touch the key again after passing the Morse Test.”

Well, the answers are that a large proportion of AT-station operators, all over the world, still do use CW as a regular thing—because they find it an interesting and entirely satisfactory method of communication. As to why the Morse Test is a necessary qualification for a radio amateur licence (for the HF bands) in every country of the world, there are several answers: The most cogent are, first, that by international agreement Amateur Radio is defined as a self-training service, and to justify this concept then radio amateur operators ought to be able to communicate by telegraphy. Secondly, the requirement to learn Morse, and pass a test, effectively separates those who take Amateur Radio seriously from those who would just like a licence “to talk to their friends over the air.” (Of course, there are infinite shades and variations of this proposition, but it is a fair generalisation.) Thirdly, while it is probably true that many amateurs never do use the key after passing the Test, this does not justify its abolition. Learning Morse is like learning to swim—once you know how, the ability is never lost, even if the execution is indifferent due to lack of practice. Fourthly, to take and pass the Morse Test is in itself a satisfying achievement.

What it comes to is that since the objective of the great majority of radio amateurs is to communicate, and CW is one method of communication it is just as important in the amateur context as telephony—and a great deal cheaper and more efficient!
COMMUNICATION and DX NEWS

H. P. Essery, G3KFE

HOW quickly time flies! It seems only a day or so ago that your old scribe was complaining about winter conditions, and here we are again complaining about summer conditions. However, it's all part of the roundabout of Amateur Radio, and if conditions were always the same, even if good, we'd soon get bored with it.

There have been flashes of life here and there on Ten, even, and as this piece comes to be written the summer static is beginning to show on Top Band; the bands in the middle of these two are all, to a greater or lesser extent, doing their proper thing, which is to provide us with someone to communicate with, preferably at DX.

Ten Metres

9M2DQ (Penang) writes with various items of news, not least of which is that they have completely lost two metres, taken by the Government for other purposes. As for Ten, it has shown a surprising amount of activity in those parts, even at 1730z which is 0100 their time. On April 1, at 1400z, Cyprus and Spain were raised; the 5th, F's, I's, IT, YU, EA, 4X4 and at midnight local 8R1G; April 6 saw contacts with VQ9, 5X5's, HC2, 9G1, and on the 9th A51PN. On April 11 5U7BB, 5U7AZ and HC2JN were worked, and on the 18th there VK/ZL contacts for the asking. All this on ten metres—though in Malaya.

Not an actual contact, but an observation, by G2BJY (Walsall) who took a listen round at 0730 GMT on April 10 and found the DL01G1 beacon romping in at S9, indicating the possibility of an opening later that day; sure enough, on return from a shopping expedition the band was open to Europe with S9 signals both on CW and SSB, the band was open to Europe with return from a shopping expedition opening later that day; sure enough, indicating MAGI beacon romping in at S9, GMT on April 10 and found the who took a listen round at 0730 observation, by G2BJY (Walsall) though in Malaya.

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E. P. Essery, G3KFE

morning openings, and he himself found, around 1000z, signs of life from 4X4, ZC4 and the USSR, followed, in the early afternoons by openings to Southern Africa, CR6, CR7, ZE, ZS and 70, but not much from South America. SSB contacts were made with CR6QU, TR8WR, ZC4HC, ZS1EZ, ZS1PF and ZS6EL.

Fifteen

G4AFJ (Nottingham) makes his re-appearance, primarily to pass on the word about VP8NO, of which more anon. For himself, Geoff has an FT-101B and a TA33 fixed on a southerly heading. On 21 MHz, he worked 5Z4OW, ZD7FT, JY5UM, PY1BDU, EA8CO, VP8KF, MP4BBF, VP8NO, PY7AZQ and KCAAAC.

One feels sympathy with G2HLU (Reading) who took the trouble to have a go in BERU, and found when the time came that he could only raise one station on Fifteen, in the shape of 9J2BO. It is certainly frustrating when conditions turn sour like that.

9M2DQ makes no mention of DX worked on Fifteen, save to say that around 1000z he usually works G5FA on 21355 kHz, although the third member of the group, G6RC, is temporarily out of it while moving to the USSR, and on looking through one of the holes that let the hot air out, flashes were also noted although it could not be established for certain just what was flashing over to what. On taking it all down, it transpired that one of the big bottles had gone intermitent between grid and cathode, and in its path away had gone the bias adjustment to that valve. But it took an awful long time to appreciate that the flashes had been inside the valve and reflected off the glass of the other bottles, before we gave up looking for burn-marks.

G2BJY took a look at the CW end of Twenty, and raised FC2CC, OH2BM / OH0, OX3HY, UD6DFK, UJ8BO, UJ8BX, U18IK, U18IR, UJ8JBR, UL7GAX, UK0BBA, UK0WAA, VS6EY and XW8BP.

G4AFJ got RS57 from VK6WC on the long-wire, while VP8NO, PY7BNY, HC1XG, VK2XG, ZL4BX, VP8NS and PY7ZAV were all raised by means of the TA33.

9M2DQ mentions working ZL4NJ out of Campbell Island, who can usually be found in the Pacific DX Net, 14265 kHz although at 0630z it is a job to raise him from Malaysia.
R. Baton, B.Sc., GM3SZP, 61 Waterside Road, Kirkintilloch, Glasgow was licensed as G3SZP in March '64 but has been a GM for the last two years. He runs an FT-200 transceiver and a Europa transverter for two metres, and also has an HE-80 for general coverage, with a small AM Tx for 80/160m, working. He has an interest in RTTY, using a Creed 7B. Aerials are a multi-band dipole and a 5-ele Yagi for two metres, with rotator.

due to the QRM from Europeans coming in by long path. Another net to watch for is the Royal Signals Club net, 14275 kHz on Wednesday afternoon between 1400 and 1600z or even later.

Another net to watch for is the Royal Signals Club net, 14275 kHz on Wednesday afternoon between 1400 and 1600z or even later.

Twenty in BERU was pretty useless, avers G2HLU, who could not even raise VK during the contest on this band. However, Harold had some consolation in receiving his 30 w.p.m. sticker to his "G3BZU" QRQ Certificate. It took him two years to get from the 25's rate up to thirty, nearly there severaltimes but one word wrong, and now he reckons it will be impossible for him to write fast enough to go higher even though he may be able to read the actual Morse. So... take heed you faint-hearts, and get stuck in to Morse practice for a Class-A licence!

G2HKU (Sheppey) succumbed to the lure of QRP from a lantern battery as power—after starting his amateur career on DC mains, he should have learnt all about it!—and so did not spend a lot of time with the big rig; however, he rang the bell with MID, KH6CA and VK3HE on SSB, plus UAOACJ on the key.

G3YJS (Maidstone) is in an area where five amateurs live within a hundred yards—which must raise the problem of who to blame when anyone gets TVI! However, he himself has a clean bill of health. He reckons that with his Viceroy, KW-600 linear, and KW-77 receiver, to work DX on SSB is a greater achievement than when using CW; he has YA, VQ9, CR6, VK, CE, FC, YS, FY, 9G, KG6, ZS, XV and much else booked in but is in difficulties with the return QSLs, even though when sending IRC's he sends ample. His difficulty in getting into the Pacific and the Far East, he modestly puts down to lack of operating know-how, but maybe operating times are more the problem, particularly as he has a garden 160 feet by thirty to keep up.

Points from the Post

G2BJY holds the view that any amateur worth his salt should brew his own gear—all of it—and his belief that the difficulty of obtaining components is a large factor in forcing people to go commercial. While, as Geoff argues, it is no harder to build SSB gear than to put together a superhet receiver, one suspects that for many amateurs, an SSB rig is a "black box" that they are a bit afraid of. G2BJY set himself the task of getting on ten-metre Sideband with CR3WB, FP8CT, HZ1AB, JA8BKM, VE8CD, VK2TG, VK3ANO, VK3ATI, VK3CE, VK3XI, VK6AB, ZK1DX, ZL4KF, ZS1WX, ZS6AOM, 4S7PB, 5W1AU, 5Z4GK and 5Z4JE.

As for the components shortage, one wishes it were as simple as Geoff reckons; your scribe in his daily routine is being asked several times each day to suggest alternatives for all sorts of components which are...
Reporting the HF Bands

**Forty**

GM3JDR (Wick) first: Don, having recently got his aerials up, has rejoined the fray. His SSB tally includes JY3ZH, VO9M, 5B4BZ, U99ACN, U99BE, TR5DG, and VK7GK, with CW giving him contacts with FG7AO, VO9M, UA9FAY, UL7MG and UD6DFY, to prove the old touch has not deserted him after his lay-off.

At G4CXM, Ray stuck to CW on Forty, and made his number with VP9BK, VE2JL, FG7TD, PY7CER, UM8MBA, PY2RG, K4YKZ, W8CQN, UD6DHC and a 5T5JG who “went” when QTR was sent and who in any case was not at an appropriate time, so would appear to be another Fred Phoney.

As for G2FLU, he found Forty was a better proposition than Twenty for much of the time, and worked VK and ZL, which he could not achieve on the latter band.

9M2DQ is finding DX operating on Forty SSB to be an increasingly difficult proposition, partly because of QRM from a USSR commercial on 7075 kHz beamed on China, and possibly more so because the remainder of the band is occupied by serried ranks of JA’s all talking to one another; however, he did manage to raise XV5AC, 4S7PB, 9M8SDA and some HS’s.

GW4BLE still has his 18AVT/WB on the go, and with it has managed to connect on Sideband with HK3PH, VK2AVA, SM4CGA / YV5, XE1CCK, XFIJ, YS1FMS, T12AJF, PY2ELV, PY4BTK, PY4PA, PY5AFE, PY9QY, VP9AC, ZL3RB, ZL2BB, ZL2AUJ and VK2CW. In between times GW4BLE was out portable on two-metre SSB—deserter!

While his SSB made it over to YV6MQ, CW was more profitable to G2HKU, contacts being registered with K1S9IN, W1BDG, K1RQE, WA2DIG, W3UV, K4II and W4ZSH.

**Eighty**

A voice out of his distant past looms up for your old conductor with the next letter, which comes from G3NAP (Gњventry), who was a schoolboy neighbour, along with G3NBQ, of the writer’s about twenty years ago. Now G3NBQ is DX himself, old ‘KFE sits in the CDXN desk, and Barry discourses on the ins-and-outs of Eighty as...
he finds it after recently deciding to have a go at DX on that band. So far he is not getting out too well, owing to aerial problems, but much listening has been done. As Johnny Morris would put it, the band is "Bung-full o' gubbins"—but how much of that gubbins is legal, wonders G3NAP. There is, as ever, a great deal of downright considerate operating, calling CQ on top of a QSO and so on, all over the band, but, by contrast there is some good stuff about both as to operating and to DX quality, much of it at the CW end of the band.

G2NJ (Peterborough) sends comments on the QRP front. Although the noise level has been rather high around noon, several QRP stations were raised, the lowest-powered one of all being G4AZO, running 500 milliwatts to put a 569 signal into Peterborough; G3PHV in Chesterfield, with his 200 feet of aerial, was 579, and G8PG was copied at 569 despite the fact that conditions were all against QRP on that occasion—both the last two stations were at the two-watt level. Up to S-point at RST 589 was G4AL, using three watts to a transceiver near Derby, and G6ZS was about the same strength from Bolton with four watts. As G2NJ might put it, anything much above four watts doesn't really rate as QRP! Another QRP station comes up for mention in Nick's second letter in the shape of G2CAS, up in Harrogate, who was running six hundred milliwatts. This all goes to show how little power is necessary even on such a bedlam of a band as Eighty, if the chap behind it knows what he is about.

Another sad note in the letter from 9M2DQ, to add to the loss of two metres out there. Jimmy believes that, probably in July, all the range 3.5 to 3.8 MHz will be opened to the JA's, in addition to the very restricted portion they already have around 3550 kHz. 9M2DQ rather dreads this opening-up of the band for the Japs, but consoles himself with the thought that in Malaysia they are permitted to work up to 3-9 MHz, which will give a little area of escape, by working split-frequency downwards; he already finds West Coast W's coming in well to him around 1430z on 3806 kHz.

G4AFJ, writing on behalf of VP8NO, says Mike plans an 80-metre dipole and has already heard such as 4X4NJ, PY2BW, I6FLD and OK1KPU on the band, although not many actual QSO's had transpired at the time of writing; in addition VP8NO believes he has a phoney alter ego trading on the band, so when you hear a VP8NO, make sure it's the right one!

G2HKU has been running between one and two watts to a Ten-Tec PM2B transceiver on Eighty and getting a lot of fun out of it. To make it more interesting he made his contacts during the evenings, through all the normal QRM at that sort of time. DJ5LU, GM3HGA, GW5TW, G3KHZ, G4CWN and one contact lasting 75 minutes solid with G3ZNF were the results of his efforts. Ted now reckons to transfer his peanut whistle to Forty and Twenty, still using the "G5RV" aerial which has served him for years—he reckons it responds well to the little tickle of RF from the QRP rig.

Top Band

Just one mention this time, but that one is of considerable importance. The June Top Band Activity Period covers the whole of June, and on into July, conditions permitting. The objective is to work North-South QSO’s to DX. In general, the frequencies in use will be the DX-window in which the Europeans transmit, and the area 1800-1808

John Bundock, G4CJQ, 28 Retingham Way, Chingford, London, E.4, was licensed in August '73. In spite of a manual disability he passed his Morse Test by learning to use the "side-swiper" type of key. Starting on Top Band with a home-built Tx, his present interest is 20m. CW, for which he has a good aerial on the roof of a block of flats. The station itself is in a cupboard.
kHz where the Transatlantic stations will be. Others will use one area or the other depending on who they are after, save that the ZS stations will be on 1930-1925 kHz transmit, listening at the 1806 or 1825 kHz areas as the case may require. The times for all concerned is 0001 to 0030 GMT, extending later if conditions are specially ripe. Generally, says PY1RO, who is spark-plugging the effort with EI9J, although the static level is higher than winter, signals on the good openings peak to much higher levels to more than restore the balance. PY1RO will be out of it during June, to more than winter, signals on the good conditions times for all concerned is 0001 to 24-25, 1000-1600z.

That W1GEY operation from China, about which we expressed doubts last time, did in the event fail to get off the ground.

It is understood that shortly AC4 will join the sad list of "deleted" countries from the DXCC list.

That new A9 prefix covers the old MP4B—one, Bahrain, the calls issued so far all apparently being in the A9K—block.

The convalescence of LU5HFI in the Canal Zone after the shooting in Cordoba continues to be satisfactory, and Fred has written to West Coast DX Bulletin thanking the kind people who sent him so many messages, cards and flowers from all over the world.

The prospect of any operation from Clipperton, FO8C, seem to be somewhat faint in the cold light of day, in view of the fact that the general reaction of the authorities concerned is along the lines of "get lost!" even if couched in more official words.

Another one which is persistently rumoured, and with some good reason, but which to date has not shown up, is the Mount Athos effort—but it is still possible that it will have appeared by the time this reaches print.

G3YJS is perhaps lucky in having his son, G4CJH, in the MPT set-up, and between them they have spent much time over the related questions of aerials, earths and TVI. One thing he has done is to put in a nine-foot stake to provide the DC earthing to the base of the 12-AVQ and its radials. This earth is taken by means of heavy-duty coaxial cable, inner and outer strapped at the earth stake, and the outer floating at the aerial end where the inner of the earth cable is connected to the radiator. This means that effectively the earth cable connection for the aerial is itself screened, and it is also arranged to be a non-resonant length. In addition, the shack earthing is to a bus-bar which in turn is strapped to four nine-foot earth stakes all bonded together so that there is no connection whatever with the mains earth in the shack; this must help both in minimising noise pick-up and also with the propagation of interference of local TV's. At the rig, two low-pass filters are used in the aerial feeders, plus a Z-Match, mains filtering, numerous ferrite beads, screened cable wherever it can be applied and make to be of non-resonant length, even down to the mike lead; an old 405-line TV is five feet away from the rig, and is operated from a set-top aerial hung in the garage, to make sure the TV starts with a poor signal from the TV station. On the K.W. Viceroy, the meter has been boxed-in and filtered as that was where most of the RF leakage occurred, and a stub has been fitted in the PA compartment. In addition there is a Harmoniker filter for Twenty available but not in use and not needed. So, gentlemen, that's how to deal with TV from an operator who has the courage to operate, knowing he has taken all precautions and is in the clear.

And, one may remark, all very fine, but why this perpetual harping on the subject of TVI and its beating? Because, in a nutshell, we British amateurs are the weakest in the world when it comes to TVI, and for people like W's, JA's and the Iron Curtain countries, G's are rare DX, at least on the HF bands, during TV hours; in many cases although the operators would love to work DX, they have accepted the wide-spread notion, which seems to be self-perpetuating, that TVI is incurable. Any keen operator can cure himself of TVI, if only he will bestir himself in the first place, and in the second will combine forces with another chap locally to deal with both their problems—it is far easier and quicker if you work in pairs.

Conclusion

That's it for another time; sincere thanks to all those who send in their news and views not forgetting of course Geoff Watts DX-Newsheet, and the West Coast DX Bulletin. For next time, the deadline will be June 7, first post, addressed to CDXX, SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ.
**THE MOBILE SCENE**

REPORTS AND PICTURES

With the Mobile Rally season now well under way—and more events notified—it seems that, as in previous years, these Sunday occasions for radio amateur gatherings are as popular and as well supported as ever.

Our latest notice from the Home Office Press & Information Unit (see Editorial comment, May) shows that there are now some 4,400 /M licences in issue, of which about 27% are Class-B (VHF). With nearly 20,000 U.K. amateurs licensed, in both categories, the mobiles form a goodly percentage of this total.

Up at Drayton Manor Park on April 21 they had a crowd estimated at 3,000 for this annual North Midlands event. Drayton is, of course, a well-known show place, regularly open to the public, with good catering and car parking facilities, also a number of outdoor attractions. The trade stands reported lively business and our information is that all concerned felt the whole event had been another resounding success.

Much the same comment applies for the Spalding & District Amateur Radio Society “Tulip Time” Rally on May 5. Despite dull and cold weather, attendance was in the region of 1,000 people. They had eight trade stands and various other attractions were laid on for the young and their mothers. On the /M side, some 30 mobiles were worked on two metres but only a handful on Top Band, though there were four times as many cars on site fitted for 160m./M than in previous years. Here again the organisers feel that their event was a success, in spite of the Wx.

We have also to report the cancellation of the Wessex rally, previously notified for July 21, for reasons, we are told, “outside the organisers’ control.”

**THE RALLY CALENDAR**

June 2: Most unfortunately, notice was received too late for our last issue, though this may be seen soon enough for some people in GI to get to Castlewellan Forest Park, Co. Down, for the Bangor & District Amateur Radio Society second annual rally, at a very fine locale for an event of this kind. We can only hope that the Bangor boys do have a good attendance.—J. McCormack, GI4CSO, 17 Victoria Avenue, Newtownards, Co. Down, Northern Ireland.

June 9: Located near Derby, the fifth Elvaston Castle Rally, at this 200-acre country park, with weekend caravan and camping facilities. Approach by the B.5010, just off the A.6 Derby-Loughborough, with easy access to Junc. 24 on the M.1. There will be talk-in by G3EEO and G3ZBI (bands/frequencies not stated), a good range of trade stands, bring-and-buy stall, and Army demonstration teams.—K. W. Clamp, Nunsfield House, Amateur Radio Group, 11 Cavendish Court, Shardlow, Derbyshire, DE7 2HJ. (Tel.: Derby 792374).

June 16: East Kent Radio Society event at Westgate Hall, Canterbury, opening at 12 noon, with trade stands (“junk” and “shiny box” varieties) and talk-in on 1980 kHz AM and 145 MHz FM (station callsigns not stated). Canterbury is about 1½ hours from London down the M.1 and is in a holiday resort area.—P. S. Nicholson, G3VJF, QTHR.

June 30: Upton Mobile Rally, at Hill Secondary School, Tunnel Hill, Upton-on-Severn, Worcs., one mile west of the Severn, on the A.4104. Talk-in will be given by G8JC (3750 kHz SSB) and G3GJL (SSB 144-20, AM 145-00 and FM 145-50 MHz). Sports,
fancy dress for children up to 14, refreshments, model railway and aircraft displays, trade stands, and bring-and-buy stall.—B. A. Jones, G8ASO, QTHR. (Tel.: Worcester 29208.)

July 7: West of England Mobile Rally at Longleat, Wils., as in previous years. Details: Brian Croker, G3ULJ, QTHR.

July 14: Anglian Mobile Rally at Colchester, organised by the local Club. (No further information available).—E. T. Jacobs, 26 Pondfield Avenue, Colchester, Essex.

July 21: Cornish Club Rally (no further information available).—M. C. Locke, G3NKE, QTHR.

August 11: Derby Radio Rally, Rykneld School, Bedford Street, just off Derby outer ring road. Opening at 11.0 a.m., with free admission and parking, and ample covered accommodation. Draw prizes and the famous monster junk sale, also numerous trade stands. Talk-in on 160m. (G3ERD), 4m. (G2DJ) and 2m. (G8DBY).—T. Darn, G3FGY, 1 Sandham Lane, Ripley, Derbyshire.

August 11: Torbay Amateur Radio Society annual Mobile Rally at Newton Abbot Rugby Club ground, as last year.—L. H. Webber, G3GDW, QTHR.

August 18: Bromsgrove Mobile Picnic, Avoncroft Museum, Bromsgrove.—J. Dufrane, 44 Hazelton Road, Bromsgrove, Worcs.

September 15: Peterborough Mobile Rally, as last year. Details later.

Organisers are invited to let us have a report on their event as soon as possible after it, so that it can be covered in this feature. Good photographs are also always wanted for general illustration. Address to: “The Mobile Scene,” SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ.
MODIFYING THE FR-50

SOME PRACTICAL NOTES

This piece is based on notes by VK3OM in a recent issue of the Australian "Amateur Radio."—Editor.

THE FR50 is a double conversion receiver with a 5172 kHz first IF to a 455 kHz second IF with ceramic filters to give a three kHz band pass that was reasonable for both AM and SSB. The selectivity was fixed with no provision for change.

The front end was of the tunable type as distinct from the larger FR100 receiver which is crystal locked. Although the oscillator was transistorised, its stability was not one of the goods points of the receiver.

The valve line-up was straightforward with a 6BZ6 RF, 12AT7 first mixer, 6CB6 second mixer with a crystal locked transistor oscillator, two 6BA6's as the 455 kHz IF, 6BE6 product detector, 6BA6 BFO, and a 6AW8 for the audio.

In its original form the FR50 is of course an amateur-band-only receiver, covering from 80 to 10 metres, with a special position for WWV on 10 MHz. The dial was the same type as used on all the Yaesu gear of that time and featured one kHz calibration, although the accuracy of this was not comparable with the larger receivers and transceivers. Overall performance was quite fair with the exception of the tunable oscillator stability, and a rather high front end noise level.

The modifications to enable the receiver to cover the 160-metre band were worked out by VK3BOB. The band switch position labeled JJY (the Japanese WWV) is used for 160.

When the receiver is set up for 10 MHz the oscillator for this band is tuned to 15,172 kHz. In order to cover 160 metres it is necessary to drop this to 6,972 kHz. All that is needed is a single 330 µF silver mica condenser across the JJY oscillator coil in parallel with the existing fixed padder.

The antenna and RF coils are re-tuned in rather a different manner. Here, of course, it is rather a long way to pad the 10 MHz coils down to 160, but not so far for the 80-metre front end coils and this is just what we do. First, on top of the chassis you will see the trimmers for the antenna and RF coils. Yaesu have put in a few spares, three in fact. Wire these in parallel and add a 220 µF ceramic condenser also in parallel. Then wire the next section in the same way, disconnect the JJY antenna and RF coils and tape up the connections for future use.

Now wire the paralleled trimmers to the JJY position on the band switch and at the same time arrange the 80-metre coils to connect also to the JJY position.

To align the set for 160, set the tuning dial to “0” and adjust the oscillator trimmer to bring in 1800 kHz. Now 1860 will appear at 450 on the dial. To complete alignment, peak the antenna and RF coils with the three parallel trimmers.

As the dial now covers only 60 kHz it will be necessary to make up a graph of the new calibration against the old—or perhaps exact frequency is not so important on this band.

MICROPHONE PRE-AMPLIFIER

VALUES FOR 12 dB GAIN

G. R. THOMAS (G4AWJ)

ACQUIRING a dynamic microphone of unknown origin led to the construction of the pre-amplifier discussed here.

Plugging the microphone into the FR-200 showed the output to be greatly lacking as opposed to the normal station microphone, Measurement on a 'scope indicated an output of just over 200 mV from the station microphone whilst the unknown specimen gave only 100 mV which is quite a considerable drop—it required the FT-200 gain to be virtually wound full up.

The transistors chosen for the amplifiers are OC71 which have at low collector current adequate beta gain. Any germanium general purpose transistor should work in the circuit, as the transistors are zero biased, giving a lot of leeway in transistor choice.

Grounded-emitter stages are chosen because of their medium input and output impedances. The decoupling capacitor across the emitter resistor of the first stage circuits the emitter to positive supply as far as AC is concerned.

The second stage emitter resistor was left un-bypassed as it was felt that a reduction of gain could be tolerated with the resultant negative feedback and thus some increase in stability.

Both stages give a phase shift of 180° which is of no consequence; AC current gain is high as is also the AC voltage gain; the first stage has fixed gain whilst the second stage is a gain-controlled transistor.

The unit was constructed on the usual small piece of Veroboard and powered by a PP3 9v. battery.

Measurements on a 'scope showed a nice clean

\[\text{Circuit of the pre-amplifier. Values can be: } C_1, 0.22 \mu F; C_2, C_4, 0.1 \mu F; C_3, 100 \mu F, 6v.; R_1, 18k; R_2, 2.7k; R_3, R_4, 3.3k; R_5, 1k; R_6, 100k; R_7, 36k; R_8, 4.7k—all rated 1W. VR_1, 10k miniature linear; Tr_1, Tr_2, OC71. Gain about 12 dB.\]
output and for a 100 mV input an output of 400 mV. This can be shown to be a gain of 12 dB. Tests on the air revealed the FT-200 gain had to be set lower than normal due to this 12 dB, which puts in some extra 200 mV as opposed to the station microphone. Reports indicate speech quality to be slightly toppy, against normal reports using the station mike.

By using the pre-amplifier with the normal station microphone it may be held a little further away from the mouth for the same gain, which allows a little more freedom about shack.

## THIRD-METHOD SSB EXCITER

### USING LOGIC CIRCUITS

G. C. CLEMERSON, B.Sc. (G4CLT)

There are three possible ways of generating an SSB signal. These are the phasing, filter, and third methods, and are shown in block diagram form in Fig. 1. The phasing methods, once quite popular, has largely been superseded by the filter system, which is easier to set up, and can be used for transmission and reception—an obvious advantage in transceiver design. The "third method," which is sometimes described as a combination of the other two, has never attracted much interest among amateurs.

In the third method, two oscillators are used. One operates a radio frequency $f_c$. The other is an AF oscillator with a frequency $f_p$, which is at the centre of the audio passband. Each oscillator feeds a pair of balanced modulators via a 90° phase shift network. The two pairs of balanced modulators are connected together by two identical low-pass filters, which have a cut-off just below $f_p$. Because this is a low audio frequency, very high performance filters can be easily constructed using simple LC circuits.

In essence, two single sideband signals are produced. One is a lower sideband with a nominal carrier at $f_c + f_p$, and the other an upper sideband with a nominal carrier at $f_c - f_p$. Both sidebands are produced in each "arm" of the circuit, but with opposite phases. When it is correctly adjusted, either the lower or upper sidebands cancel in the output tank circuit, depending on the relative connection of the two 90° phase shift networks.

A simple way to produce the required AF and RF phase shifts is to use digital integrated circuits. Fig. 2(a) shows one suggested method. The main disadvantage of this circuit is that very high speed devices are needed to give an output above one or two megahertz. By using "double ended" drive to the clock inputs, the frequency division can be reduced to two, and higher frequency output obtained with cheaper circuits.

The generator described in this article uses two dual type-D flip flops, SN7474, and is capable of producing SSB output at above 6 MHz. The connection of the integrated circuits is shown in Fig. 2(b). To change from upper to lower sideband, it is only necessary to reverse the phase of one balanced modulator. This is most conveniently done by reversing the connections to the Q and Q outputs of one flip flop, preferably the one operating at audio frequency.

### Construction

The unit is constructed on two 6½in. x 4½in. printed circuit boards. All the active components are mounted on one board, and the other one contains the two LC filter networks. The two boards are mounted one above the other in a small aluminium box. Power supplies are...
not included, and a stable source of 5v. at about 70 mA is required.

The selection of components for use in the prototype was made partly on the basis of what was readily available. Other constructors might wish to make substitutions, particularly for the transformers and filter inductors. Close-tolerance units are only required in the pilot tone oscillator and the filters, and a method of selecting suitable values for the latter is given below.

Circuit Description

The system will function as either a generator or detector of SSB signals. For simplicity, only the generator action will be described. When used for reception, the input and output are reversed, as is the signal path, but otherwise the circuit action is similar. The preset balancing controls are adjusted for best SSB output, and should not need resetting for use as a detector.

Fig. 4 is the circuit diagram of the main unit. Audio input reaches both "arms" of the circuit via RV1, the Audio Balance control. In the upper "arm" it is taken via T1 to the double balanced mixer D1-D6. Because both the audio input and the audio carrier (i.e., pilot tone) are in the same frequency band as the DSB output, a single balanced mixer is not possible here. Diodes D1-D4 provide balanced switching, and diodes D5 and D6 act as clamps, eliminating the need for balancing presets. The arrangement gives a higher output than a ring mixer, and needs no adjustment.

The reference level for both the double balanced mixers is set by the emitter follower Tr1. If a higher degree of pilot carrier suppression is required, the potential divider R5, R6 can be replaced by a small preset potentiometer.

The audio pilot tone is generated by the multivibrator Tr2 and Tr3, which operates at 3.3 kHz. Since the accuracy of the audio phase shifting depends on the mark-to-space ratio of this waveform, close tolerance components are used for R8, R9, C2, and C3. Outputs are taken from both collectors to IC1, which produces quadrature outputs at 1650 Hz to feed both balanced modulators.

The output from the centre tap of T1 consists of audio frequencies from zero to 3.3 kHz. These are normal and inverted double sidebands of the pilot tone at 1650 Hz. It is taken through one of the low-pass filters, which removes the upper sidebands and any residual carrier, and reappears on the main board at C4. Similarly, the output from T2 passes through the other low-pass filter, and is applied to C5.

The audio signals at C4 and C5 are taken to the modified ring mixer, D13-D16, via T3 and T4. This circuit is identical to the type used in many phasing exciters. Quadrature RF drive is obtained from IC2, via T3 and T4, at 6 MHz. RV2 and RV3 provide RF Balance controls for both arms of the circuit. SSB output is taken from the common tank circuit via a link winding.

Tr4 operates as a xtal oscillator at 12 MHz, and drives Tr5 and Tr6 via the centre tapped transformer T5. It would be possible to provide fine adjustment to the RF phasing at this point, but if the centre tap of T5 is not decoupled to RF, it is not necessary. The transistors Tr5 and Tr6 act as switches, and provide suitable outputs to drive IC2.

Filter Details

The circuit of the filter board is shown in Fig. 5. It was designed to have a cut off at 1350 Hz, which gives an audio response from 300 to 3000 Hz. The actual response is not as critical as the matching of the two filters. Any imbalance here will cause different audio phase shifts, and spoil the unwanted sideband suppression.

For the prototype, all the inductors were wound on ferrite pot cores, and final adjustments made with a commercial inductance bridge. An alternative method, which gives equally satisfactory results, is to connect a 1 μF capacitor across the inductor, and then measure the resonant frequency with an AF signal generator and an AC voltmeter. (Smaller values of shunt capacitance may cause errors, because of the self-inductance of the windings).

A similar method can be used for the capacitors. Each capacitor is connected across a known inductance, and the resonant frequency checked. Matched values of capacitance should then be used in the corresponding locations in each filter.

Testing and Setting-Up

An oscilloscope with a bandwidth of at least 6 MHz is needed to set up the balance controls. The SSB output will contain harmonics of the 6 MHz carrier, and the
TABLE OF COIL DATA

**T1, T2** = Any two identical small centre-tapped AF transformers, such as Radiospares TT7.

**T3, T4** = Primary 30 turns, secondary 20 turns, spaced quarter-inch from primary.

**T5** = Primary 10 turns, secondary 5 turns centre-tapped, spaced half-inch from primary.

**T7** = Primary 16t. centre-tapped, secondary 3t. p.v.c. wire over middle of primary.

**RFC** = 5 mH RF choke of usual pattern.

Except for T1, T2 and RFC, all coils close-wound using 28g. enamelled on 0.3-in. formers with screening cans.

In this circuit, there is no 'T6' nor value for it.
Constructional form for the circuit Fig. 3, opposite

oscilloscope should be connected to the unit by a small RF transformer tuned to 6 MHz. The controls are then adjusted to display the envelope of the RF output.

Initial adjustments are made without any audio input. Oscillator transformer T5 should be adjusted until output is obtained at 6 MHz, and then both T3 and T4 can be peaked for maximum output. The RF balanced modulators are now set by adjusting RV2 and RV3.

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Table of Values

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1, C4, C6, C8, C11, C14, C16, C18</td>
<td>100.0 μF</td>
<td>1%</td>
</tr>
<tr>
<td>C2, C3, C5, C7, C9, C12, C13, C15, C17, C19</td>
<td>0.25 μF</td>
<td>5%</td>
</tr>
<tr>
<td>C10, C17, C19</td>
<td>0.047 μF</td>
<td>5%</td>
</tr>
<tr>
<td>R1, R2, R4, R6, R8, R10, R12, R14, R16, R18</td>
<td>270 ohms</td>
<td></td>
</tr>
<tr>
<td>R3, R5, R7, R9, R11, R13, R15, R17, R19, R21, R23</td>
<td>2,300 ohms</td>
<td></td>
</tr>
<tr>
<td>L1</td>
<td>1.8 mH</td>
<td></td>
</tr>
<tr>
<td>L2, L4</td>
<td>1.55 mH</td>
<td></td>
</tr>
<tr>
<td>L3</td>
<td>1.0 mH</td>
<td></td>
</tr>
<tr>
<td>L5</td>
<td>1.15 mH</td>
<td></td>
</tr>
</tbody>
</table>

Note: All resistors and capacitors have a ±20% tolerance unless otherwise marked. Where marked ***, see test for method of selecting these components. C1 can be built up by connecting 6 units in parallel.

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Fig. 4. CIRCUIT OF FILTER BOARD
for minimum output. The two controls will interact somewhat, and several successive adjustments will be needed.

When the RF circuits have been set up, apply about 5 volts of audio at around 1000 Hz to the input, and carefully adjust RV1 for minimum ripple on the RF envelope. It should be possible to obtain less than 5% ripple with careful adjustment. If this is not achieved, try slight adjustments to the cores of T3 and T4. As a last resort, the coupling between the primaries and secondaries of T3 and T4 can be altered, but this should not prove necessary if the transformers have been wound carefully.

Performance

A poor Third-Method Exciter does not produce any output in adjacent channels, or at the carrier frequency. Imperfections show up as a steady output at the centre of the passband, and as inverted sideband in the same channel as the wanted sideband. The prototype had a residual output at some 45 dB down, and some inverted sideband at about 26 dB below the wanted sideband.

Any comparison with filter-type exciters is difficult, because the unwanted sideband does not have the same significance. In practice, it is almost completely swamped by the wanted sideband, and the only effect is to give the signal a characteristic sound which several operators have commented on.

When used for reception, the unit produces some output at the pilot frequency. This can be easily eliminated by the use of a simple band-stop filter in the audio amplifier. There will be a small “hole” in the AF passband, but this is not noticeable and is in fact already present due to the AC coupling between the low-pass filters and the RF circuits.

Further Development

One of the most interesting applications of the third Method is in direct-conversion transceivers. The prototype was not suitable for this purpose because of the xtal oscillator, and the number of tuned circuits. Another version is currently under development which, it is hoped, will overcome these difficulties. A simplified block diagram is shown in Fig. 5.

The use of integrated circuit (IC) mixers eliminates some of the preset controls and reduces the size of the unit, but it does introduce some extra complexity in “transmit” to “receive” switching. DC coupling to the RF mixers removes the phasing errors which are caused by differences in the tuned transformers of the prototype. The system is ideally suited to use with a mixer VFO, since the SSB output has twice the stability of the tunable oscillator, and does not contain any unwanted products of the mixing process.

"... You sound pretty weak to me..."
PARABOLOID FOR TWENTY-THREE

DESIGN AND CONSTRUCTION FOR A PRACTICAL DISH

K. H. PARKES (G3EHM)

ALTHOUGH there is a fair amount of design detail for 23 cm. dishes, details of their actual construction are remarkably scanty. The following method and sequence of construction, it is hoped, will encourage amateurs interested in this band to go ahead and make one.

Choose first, the diameter of the dish you wish to construct. In the example given, a diameter of 48 inches was chosen, with a depth of 10 ins. giving a focal length of 14.4 inches.

\[
Y^2 = \frac{4f}{y}
\]

Where \( y \) is dia. of dish

\[x = \frac{4f}{y}\]

where \( x \) is depth of dish

\[f = \text{focal length}\]

work out values of \( x \) for \( y \) equals 3 in. and multiples of 3 in. up to 24 in. Table I gives the calculated values for the example being described.

Get a large sheet of paper (wall lining paper) and draw a base line of 48 inches. Draw in the verticals and carefully sketch in the complete paraboloid. Pin or paste this to a sheet of 12 x 48 in. blockboard and saw out the templet. This will be used in the construction of the dish.

The following materials are required:

- 15 yards of galvanised iron fencing wire \( \frac{1}{4} \) in. diameter.
- 4 yards by 1 yard of galvanised or tin dipped \( \frac{1}{2} \) in. wire netting.
- 2 feet of \( \frac{1}{4} \) in. diameter copper tube (small bore central heating variety).
- 1 foot of galvanised iron conduit to slide over copper tube (threaded for 2 or 3 in. at one end).
- Locknuts, sundry copper wire and \( \frac{1}{4} \) in. brass brazing rod, and one galvanised iron disc, 16g. 9 in. diameter.

The construction of the dipole can now be undertaken, but with some important additions. First, the 44 in. copper reflector (double-sided copper laminate board can be used), situated in front of the dipole 16 \( \frac{1}{4} \) in. holes equally spaced, drilled around its periphery about \( \frac{1}{4} \) in. in from the outer edge.

Second: The inner conductor made of \( \frac{1}{4} \) in. brass rod has a 1/16 in. hole half-inch deep, drilled in the end remote from the reflector. This enables the coaxial cable to be passed up the copper tube and secured by soldering the inner conductor to its central wire.

Fig. I gives the dimensions of the dipole. The holes for which are drilled first. The upper one is enlarged to provide a sliding fit, the lower one for a wedge fit. The copper tube is slit with a backsaw to the requisite depth, the surplus being broken off and the slot cleaned up. The inner conductor is temporarily wedged into position. The upper half of the dipole is trapped gently through the hole to meet it. The lower half is wedged in its hole. After careful alignment, apply "easy-flow Flux" as a watery paste. Get up to a red heat with a blow-lamp and apply silver solder. The small reflector can then be drilled \( \frac{1}{4} \) in. in the centre, fitted over the protruding inner conductor and together with the copper sleeve, soldered with soft solder. This sleeve can be made from a piece of the copper tubing, split and expanded.

One end of the coaxial cable can be got ready. It should be prepared as per Fig. 2. Although final connection is deferred until the dish is constructed, it will be seen that the inner conductor will fit into the drilled hole provided. The two copper braids can be passed through the slots, bent back, wrapped with copper wire and secured with soft solder.

A blow-lamp gently applied to the inner brass rod will permit solder to flow into the hole provided. When
Fig. 1. Dimensions and mechanical details for the 23-centimetre dipole and reflector assembly.

Complete, clean up and liberally flood with polystyrene cement to prevent ingress of water.

Although there may be some doubts about having the cable permanently attached, the positive connection thus made is much superior to coaxial fittings in a weather location.

**Construction of Dish**

Use the garage floor as a base. Drill into it to a depth of about half-inch, a hole with a small masonry drill. Make up a rudimentary compass and mark with chalk a 48in. diameter circle. Lay on this chalk line the fencing wire, using a copious supply of weights to secure in position. Overlap by 6 inches or so, bind with copper wire and flood with solder. The wooden template previously made should fit neatly between the wire circle.

The galvanised iron disc should have a central hole which just clears the conduit tubing. If necessary this disc can be made slightly concave by repeated hammering around the centre.

The necessity of weights on the circle will now become apparent; flux and flood with solder the end joints. Since the parabolic curves would cockle up in the centre if this was repeated, the wire at the centre must be soldered to the galvanised iron disc for 2in. from the edge and then sawn off. This is repeated until 8 ribs are soldered on. An alternative method is to drill eight $\frac{3}{8}$ in. holes at 45° intervals about one inch in from the

**TABLE I**

<table>
<thead>
<tr>
<th>Y</th>
<th>3&quot;</th>
<th>6&quot;</th>
<th>9&quot;</th>
<th>12&quot;</th>
<th>15&quot;</th>
<th>18&quot;</th>
<th>21&quot;</th>
<th>24&quot;</th>
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</thead>
<tbody>
<tr>
<td>X</td>
<td>0.1563&quot;</td>
<td>0.625&quot;</td>
<td>1.406&quot;</td>
<td>2.5&quot;</td>
<td>3.906&quot;</td>
<td>5.624&quot;</td>
<td>7.656&quot;</td>
<td>10&quot;</td>
</tr>
</tbody>
</table>

Values used to construct the template


circle and see text. Positive, well protected connections are needed at this point.

Showing the copper aerial tube, the conduit and the galvanised iron disc. See text and compare with drawings.
Fig. 3. The wooden template showing the galvanised disc and the wire ribs—and compare photograph. This needs doing carefully to get a good shape and a rigid dish.

edge of the iron disc, bend the ribs sharply at right angles 3½in. from the end, fit into hole and bend over and secure as before at the circumference.

A wire circle of two feet diameter is prepared and placed concentric with the outer rim. It is advisable to make up a substantial quantity of 4in. lengths of tinner copper wire to bind the various intersections. These are soldered.

The framework is now up-ended for the wire netting to be fixed. The netting is cut in half, since it is impossible to mould it to the contour in one piece.

Lay one section on one half with an overlap of about 3 inches. Work from the outer edge inwards, cutting an occasional slit from the centre to make it fit. Secure at the intersections. Bend over the surplus at the periphery and trim off. Drill and tap the conduit tube 4BA and insert one or more 4BA grub screws to secure the sliding aerial tube at any point. Fit the coaxial cable as described.

To enable the rim of the dish to be concentric with the dipole, a series of nylon cords are attached to the holes in the copper disc. These are adjusted and fastened to the outer rim. This tends to correct any warping made in securing the netting and in addition, makes the whole structure rigid. It obviates sag when mounted vertically. Details of construction can be seen in the photographs.

A dish made as above has been in operation for over twelve months in a most exposed position at 850ft. a.s.l. and is giving good results on the 23 cm. band.

GB3TMY, June 1-30: Sustained operation on 10-160m. and two metres. Colour QSL's for all contacts, including SWL reports, via bureaux or direct on receipt of stamps.—R. Bellerby, G3ZYE, Physics Laboratories, Kelly College, Tavistock, Devon, PL19 0HZ.

GB3SOL, June 8: For the Solihull Carnival, Tudor Grange Park, the local Club will be working 20-160m. and two metres.—L. G. Boswell, G4AEJ, QTHR.

GB2FES, June 8: For the Leyland (Lancs.) Festival, operation to be AM on 2m. and 160m., other bands CW/SSB, with a special card to confirm QSO's and reports.—R. Banister, G4BEE, QTHR.

G3SAD, June 8-9: Operated by Stevenage & District Amateur Radio Society to mark the grant of local borough status, exhibition station on the HE bands, also running VHF and RTTY.—C. Barber, G4BGP, QTHR.

GB3KCIW, June 10-13: For the Kibbirnia (Ayrshire) Civic Week, 1800-2100 BST, with SSB on all bands 15-80m. QSL's via R. J. English, GM3YKE, QTHR.

GB2NTF, June 13-16: For the Trades Fair at Newton Abbot, on the 15-80m. bands.—L. H. Webber, G1GDW, QTHR.

GB3NS, June 15: For the Nottingham Scout Event, operating all bands 160m. to two metres, from Wollaton Park.—P. Carey, G3UXH, 1 Coach Drive, Eastwood, Notts.

GB3BA, June 15: At the Broughton Astley Gala, Blaby, Leics., on all bands 2-160m. All SWL reports (with s.a.e.) will be acknowledged.—J. E. Hall, G3FZQ, QTHR.

G4ACQ/A, June 29: Kent Coast Radio Club station, on all bands 80m. to 2m.—L. Randall, G4ACQ, 5 Linden Road, Westgate-on-Sea, Kent.

To keep in touch with the world of Amateur Radio, read "Short Wave Magazine" regularly – Independent, Unsubsidised and now in its 32nd volume.
for Children Fete.—L. H. Webber, G3GDW, QTHR.

GB3SFG, July 11-13: Operated by the Southgate Radio Club for the Finchley Carnival at Victoria Park, N.3, running 2m./4m./160m. and 10-80m.—A. E. Edwards, G3MBL, QTHR.

We would be glad to have short reports on these events, with photographs where possible—these should be about post-card size, bright prints, with details on a separate sheet. Address to: "Specially on The Air," SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ.

**LINEAR RF AMPLIFIER SWITCHING**

Following this article, by GW4BCD, in our January 1974 issue (pp. 660-669) queries have arisen as to the method of switching used by the author. It is shown below.

The third c/o contact on the internal relay could be used for switching the Exciter but this would put the input-output of the RF amplifier too close together and could lead to instability. The AC side could be supplied by the switch controlling the EHT supply, thereby to make the application of screen voltage without HT on the plate impossible—this being the important point (the screen must never receive HT unless there is voltage on the anode). In this circuit, RLA1 is single pole change-over, RLB should be a heavy-duty 3-pole c/o, and SI is for on-off.

[Diagram showing the linear amplifier and switch configuration]

**NOTE ABOUT DX-PEDITIONS**

We are frequently asked by eager-beavers—intending to set out for the wilds of mid-Wales, northern Scotland, the less-populated Channel Islands and even Andorra, Monaco or Luxembourg—to give them publicity for activity on this-or-that band, "skeds to be fixed with whoever-it-is, special QSL cards to be minted for the occasion," and so forth.

In too many instances, nothing in fact ever happens on the air. The "expedition," if you can call it that, never gets off the ground, either because the transport fails, or essential items of gear are not available, or the Wx is too bad, or the key man falls ill, or the hoped-for commercial backing is not forthcoming, or the participants have a row amongst themselves and decide to call the whole thing off. In the meantime, they have had their advance publicity, in immortal print, and the keen chaps have been on the qui vive for a callsign that never comes out. We can count on the fingers of both hands the number of times this sort of thing has happened in the last few years.

In future, we will not publicise DX-peditions—to anywhere on any band—more than one month in advance, e.g., in July issue for a August, and the notice must be supported by the name/callsign/QTH of the individual responsible for the organisation, the correspondence arising and the QSL arrangement. On the other hand, we are well aware that there are properly-organised DX-peditions that do not fall within these strictures, and to them we would always give publicity support.

New coaxial switch offered by Heathkit, the HD-1234, is designed to switch one RF source either to aerial or dummy load. It has four positions, is rated 1 kW, and can be used against four load points. Price about £7.
Contests

Conditions during the 70 MHz Open contest of April 21 could not be described as particularly good, although there was some nice DX around if one dug for it. A cause of satisfaction for many was the fine signal from GI3FFF/P in Larne operated by G3VPK and G18AYZ. GW4BUC/P and GW4ABR/P in Gwynedd and Powys respectively seemed to be the only Welsh portables making any significant headway. GD2HDZ was on and made it into Dorset and Gloucester but had to finish early due to TVI. G3ONX (Gloucester) worked into Cumberland with just one watt. G3RWM (Coleshill) had 26 SSB QSO’s, which shows which way the wind is blowing on this band. G3EKF (Blackburn) worked eleven G1 and one EI out of a total of 22 contacts and G3OHH (Mow Cop) had two good DX contacts with G1 (GI3FFF/P and GI4DBB/P in Dungivan).

It is too early to give a synoptic of the 144 MHz Open contest of May 4/5 as few reports are yet to hand but the following represents the rather parochial view of the event as seen from G3DAH. Well to the fore at the start on Saturday afternoon were the GW portables and by the end of the first hour several were passing scores in the thirties which is pretty good going. GM8DMZ/P also made a welcome appearance at this time. Some EU activity was observed during the course of the evening and into the early hours, mainly F, ON and PA, although DJ came through briefly just after midnight and again around lunch time on Sunday. It was remarkable that the AM/FM operators taking part in the event were so few compared with similar occasions last year, and remarkable also was the small amount of CW, since conditions were only a bit above average and this mode should have paid off. Several checks around 145-41 MHz seemed to point to most SSB operators having migrated to the low end of the band and indeed the QRM there gave the impression that this was another 2m. sideband contest. Operating techniques were slick in most cases and only a couple of really poor quality signals were noted. There was a tendency to congregate unnecessarily on the SSB calling channel, with consequent QRM, while there were plenty of clear frequencies between 144.25 MHz and 144.30 MHz, which is close enough to the centre of activity to attract attention and yet be clear of interference. Many operators, particularly the portables, did not announce their locations when calling CQ and remembering the emphasis which was given to “putting oneself in the mind of the chap at the other end” by G3LTF during his address at the Twickenham Convention, failure to use this procedure may well have cost points. Scores over 200 were made by several G stations but, as usual, the Continentals were piling up points well above this figure. (DC9DZ/A passed 338 at 1400z). All in all, an event which called for little criticism and much satisfaction.

Forthcoming Events: The 70 MHz portable contest has been moved from June 9 to June 2 to avoid a possible clash in the demand for CW operators for this event and NFD. Microwave Field Day is June 15/16 and the Region 1 (RSGB) VHF Contest takes place on June 23.

The WAB VHF Phone contest is slated for June 30 between 0900z and 2100z. Full details from R. L. Senter, G4BFY, 10 Toll Bar Avenue, Bottesford, Notts., NG13 OBB.

DX-Pedition and Portable Operations

Dates for the G8AGU/GM3JFG trip to GM have now been changed to May 27—June 7. Other details as given last month.

Peter Lennard, G3VPS, is off on another foray, this time to Northern G and Eastern GM. July 6/7, Cumberland with Northumberland as alternative; July 10/11, Angus; July 13/14, Kincardine; July 16/17, Aberdeen. Operating times 1830z onwards each evening except for July 6/7, the Jubilee UHF/VHF Contest weekend, when he will be on for Saturday evening and all day Sunday. QRG, 70-33 MHz with 70-16 MHz as alternative, CW/Phone. Skeds to G3VPS, QTHR with s.a.e.

The Oxford University Radio Club are planning an expedition to Kirkcudbright / Dumfries / Selkirk during the week July 6-13. They will have AM/CW/SSB VFO controlled and FM xtal controlled on both metres. Callsign (presumably) GM3OUR, and skeds can be arranged via G4BIX, QTHR.

G3YJ will be operating on 2m. from Guernsey during July 6-18 with FT-101 and Europa transverter. Flintshire will be activated by GW8COP on 2m. SSB and GW81MB on 70 cm. AM every Wednesday evening, 2000-2400 clock during the period July 3-September 25; 23 cm may also be available. Skeds by s.a.e. to GW8COP, QTHR. G8HQA is also planning a trip to GW; he will have 2m. SSB at Llanberis in Caernarvonshire, May 26—June 1 and July 21—August 3. He will be up at 1,500ft. so there should be a reasonable chance of working him. G8BPJ will operate portable from Merioneth on June 9. He will have A3, and possibly A3j on two metres and A3 on 70 cm. Skeds, QTHR.

GM8APX et al will be testing a site at Lude, near Blair Atholl on A9 on June 16. The object is to determine the sort of coverage which may be given by the proposed BBC repeater there. They will have 2m and possibly 70 cm. also. Skeds via GM8APX, QTHR. G8AWK will be operating portable in Invernesshire between June 22 and 29th and would welcome skeds. QTHR.

VHFCC Awards

Peter Roberts, G8GJB, is normally resident in Herne Bay, Kent but while studying for his electronics qualification he lives in Hampton.
Hill, Middlesex and it is from that QTH that he has made, and got confirmation of, the necessary contacts for his 2m. Award No. 217. He was first licensed in August, 1972 and started on the band with an HW-17A running 10 watts to an indoor 4-ele. beam located on the top of the wardrobe! He got an 8-ele. up outside at 20ft. in March, 1973 and in the October fired up a Murphy base station, modified to give FM and AM with 35 watts input to a QQQV03-20A. He uses a mosfet converter tuning 4-6 MHz into a Lafayette HA-600. He is now QRV on 70 cm.

From Thame in Oxfordshire, Ray Cox, G8FMK gains Award No. 218 for his efforts on two metres. He was first licensed in October, 1971 and all his equipment is home-built. The converter has a BFY90 front end and AF139 mixer. In the early days, the Tx ran 40 mW from a transistor rig, but a choke modulated EF183 was added subsequently and this is now followed by a QQQV03-10 at 18 watts input. The 8-ele. Yagi is at 30ft. Ray has 70 cm. gear and, as can be seen from the Tables, is now QRV on 23 cm.

Bradford, Yorks., is the QRA of Geoff Oughtibridge, G8GYK, and it is from there that he gains Award No. 219 for 2m. operation since August, 1972. The Tx winds up with a QQQV03-10 in the final with 10 watts DC input, and this is modulated by a single EL84. The Sentinel converter precedes a Trio JR-500S and the skybook is a 5-ele. at 37ft. a.g.l. and 575ft. a.s.l.

The Scots Scene

We have been taken to task by Jock Inglis, an ardent 2m. SWL, for putting GM8IEN in the Kingdom of Fife in the April "VHF Bands." Apologies, it should be in Ailsa, Clackmannanshire, and hopefully this will suffice to keep your claymore back on the wall, Jock!

Our best wishes for a speedy recovery from a damaged knee and shoulder caused by a fall to GM6XJ. If you wonder why you haven't heard him on the air recently, here is the explanation, but he should be fit enough to operate on 2m. from Kintyre during the first two weeks of July.

The George Watson's College Radio Club have three new licencees among their members: GM8IOG, GM8IQR and GM8IRZ—and it is understood that six more members were preparing to sit the recent R.A.E. GM3ILV now operates a Pye base station at the home QTH and a "Cambridge" in the car, and is enjoying considerable success with both. GM8HXM, who suffered so much from a defective TV amplifier in his vicinity, has now moved QTH and is in the clear again. It is not reported whether the move was because of the TVI.

Congratulations go to the S.E. Scotland three-centimetre group, on their recent success in establishing a new inter-GM record for the band—150 km. GM3FYB, GM3DXJ, GM3BKE and GM3HEY set up shop on Cairn o' Mount and worked GM3XUX and GM4BWT on Cheviot Hill with Q5 signals both ways.

Stop Press: In conjunction with the Barry Radio Club, GW4BRS, GM3OXX and GM3DXJ set up a new British record for a 3 cm. contact of 243 km. between Cairnsmore of Carsfain in Kirkcudbrightshire (2,600ft. a.s.l.) and Snowdon (3,560ft. a.s.l.). Equipment at both ends was a 10 mW Gunn diode Tx with a 30-inch dish. Signals were 10 dB over noise at the GW end and 2/3 dB over noise in Scotland. The Barry Club team consisted of GW4AMV, GW3PPF, GW3THK, GW8FGD, GW3WBU, GW8GJW and GW3ZIY. Wx at the time was reported as intermittent rain at both ends and the GW lads were 800ft. into the cloud. May 11, 1974 is a date that none of them is likely to forget! Congratulations to all concerned.

Great credit is due to them for their enthusiasm in activating a band which is not all that popular in Scotland, and for the design and engineering skill which made such achievements possible. But for the shortage of reasonably priced Gunn diodes (Birkett is out of them) one might expect even more activity. These really are dandy little devices—they will produce 20 mW at 10 GHz with a supply of 7v., and this with a 40 cm. diameter dish, should produce a perfectly readable signal over 30 miles or so. GM3XUX is off to the Isle of Man shortly and is looking for 3 cm. skeds.

An extensive conversion programme to make the Pye Vanguard receiver fully tunable is under way in the Edinburgh area. In this connection, GM3XJ draws attention to the article by GW3VPL in SHORT WAVE MAGAZINE of June, 1973 which has been very helpful in this respect. For those contemplating a
similar conversion for the Cambridge, plus NBFM facilities on both "transmit" and "receive," the Bury & Rosendale Radio Society have produced a publication called Feedback which gives some excellent advice and which may be obtained for 50p from G8GTP, QTHR.

GM8GEC has built a 40w. solid state linear for his mobile installation which is producing excellent results. SSB activity in GM is now nearly all at the low end of Two although getting the appropriate xtal is still a snag.

The recent openings on 2m. were used to good effect in Fife and North Berwick. GM3OLK and GM3YOR in particular were having a ball and GM81AP in Cellardyke was pleased to work 17 PA0's during his first experience of extended tropo conditions. GM3BOA has been heard complaining that he only worked about 40 Continentals! The chaps who might have cause to complain are surely the Edinburgh operators who were not hearing, let alone working, a thing. Still, they have got Princes Street, the Castle and the Festival!

GM3ZBE, Inverurie, was pleased to find that the opening on April 9 extended up to the 70 cm. band. He worked six countries including PA0, DL, ON, G (G4BYV and G3DAH), GM, and F5VA who was only running one watt p.e.p. out! Alex himself now has some 200 watts of SSB available. His new QTH is running one watt p.e.p. out! Alex himself now has some 200 watts of SSB available. His new QTH is working out well, and for those who would like a sked on 70 cm., the address is: A. M. K. Allan, Tulloch Ard., Westhill of Crimond, Keith, Banff on the Saturday of the contest and in Moray on Sunday. They promise more operation from these rare counties during the summer.

The "Liner 2"
The modification scheme operated by Bill Lowe to convert this gear for operation at the low end of the band is going ahead like a bomb. They report that they are up to their eyes in this work, but will still come to the aid of callers who can wait, since the time involved in the actual modification and realignment is not

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<th>Station</th>
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Notes:
1. Claims should be on the basis of the old county boundaries until January 1, 1975.
2. The Table shows claims to date from January 1, 1974 and will close on December 31, 1974. Claims should be sent to: "VHF Bands," Short Wave Magazine, Buckingham, MK18 1RQ at monthly intervals.
very great.

Talking of "Liner 2" operation at 144-2 MHz, several instances have been reported of spuri on 145-4 MHz. A possible cause of this is the second harmonic from the 38-553 MHz oscillator beating with the 28-6 MHz SSB signal to give 48-466 MHz, the third harmonic of which is 145-4 MHz. Lacking access to a spectrum analyser, it has been found that finding the spurious signal on a Rx and adjusting the 116 MHz tuning for minimum output on 145-4 MHz without significantly reducing the RF output can effect a cure. A word of warning though—this is a tricky piece of apparatus to play around with unless you have appropriate test equipment and know just what you are doing since the final result may be to clear one channel only to introduce spuri on others, both in and out of band.

Twenty-Three Centimetres

G5DF (Reading) has now gone over to a Microwave Modules varactor tripler for this band which he finds a substantial improvement on the 2C93A. He plans to add a pair of 2C93A amplifiers. He has skeds with G4ALN (Romford) at 9 p.m. on Tuesdays and Thursdays and he and G8FEV (Abingdon) both call G4BEL (Ely) after the latter's test with G3JVL (Hayling Island) around 9 p.m. on Mondays. G3JVL has regular skeds with G4BEL, G6XM (Wilts.) and G3OBD (Dorset).

In Thame, G8FKM now runs a varactor tripler using 1N4148 diodes to give 400 mW of AM. This is fed to a 9-6e. Yagi at 31ft. The converter uses a BFY90 RF Amplifier and AF239 mixer. He has had several contacts with G8FEV over a distance of 27 km.

G8CBU reports that the Dunstable Downs Club beacon should be operative within the next few weeks. The antenna is already up. QRG will be 1296-05 MHz and power is 15-20 watts output.

Four Metres

Conditions have been pretty quiet on Four recently although there have been several lifts. Peter, GD3YPS/P during May 13-16 was a fair signal in the Southeast (peaking 549 in Herne Bay) but QSB was troublesome and unless one knew exactly where to look, and when, the contacts could have been missed quite easily.

Sunday-morning SSB activity continues to increase although it is noticed that some operators are working "transceive" and presumably using prime movers with narrow filters and no AM/FM demodulators, since several instances have been noted where they have failed to respond to AM/FM calls a bit off frequency. There is a long time to go before SSB becomes the primary mode on Four and a separate receiver is a most desirable asset until the situation changes.

G3NHE (Sheffield) should have SSB shortly, but is usually on the band on Sunday mornings with AM/CW.

It is regretted that an error crept into the Tables of Values for the 4m. transverter PSU on page 79 of the April, 1974 issue of the Magazine. R6 and R7 should be 20 ohms and not 20 kilohms as shown.

Two Metres

Activity fairly low in most parts for the past few weeks, with the exception of the contest and the "No Callsign" brigade still taking up the SSB calling channel for long periods. G1WUIELF in Anglesey had it good though, with 200+ mile contacts most evenings. G1, GM, GD and GC all copied at fair strength. He has his 4CX250B linear completed and is ready to go as soon as the PSU is finished. G8GPR in Camberley also has a 4CX250B amplifier on the stocks. G3XDY (Grimsby) found the opening on April 8/9 brought in EU's right up to the DM border. He notes that 144-35 MHz-144-40 MHz is good for many German stations, and that those who continue to operate around 144-2 MHz are experiencing QRN from repeaters which have not yet moved to their new frequencies. He was called by an LX at this time, but lost him in the noise before he could get the full callsign. Going back in time a bit, G3TBG was on mobile with eight watts of AM in Shropshire during the January opening and was pleased to get an SWL report of 5 & 5 from the face of Big Ben (with a telescope!). He would like to arrange skeds with a GW. The QTH is: Moretons, Harrow-on-the-Hill, Mdx. G8GPR is now G4CZP and G8FUR has become G4DCV.

G8BBP (Worcester) reports having worked six GD stations recently (GD8EXI, GD8DMA, GD3TNS, GD3YDB, GD3FLH and a visitor there, GD8FFX/P) and these, together with the other regulars GD2HDZ and GDFOC, mean that I.O.M. activity is still on the up and up.

A comment from G8GXE (Stoke Poges) raises an interesting point. During the open 2m. contest he found that just over one third of his contacts were with SSB operators although he was on AM. Perhaps the new band plan, which puts DX operations at the low end of the band, is encouraging cross-mode contacts, particularly now that one doesn't have to tune far from 144-20 MHz to find an AM/FM station. He puts in a plea for DX-expeditions to ensure that they have with them a Rx capable of resolving AM/FM so that everyone gets a fair crack of the whip. G3OHH (Mow Cop) reports hearing no SSB on 145-41 MHz during this contest. Someone is getting xtals from somewhere! Repeater: According to the U.K. FM Group (Southern and London) Newsletters, repeater activity in this country proceeds apace. The Bristol Channel job, GB3BC, should be in operation very shortly. It is located at Mynydd Machen, five miles N.W. of Newport, Mon., at 1,600ft. a.s.l. Input and output frequencies are the same as those of GB3PI, i.e. in on 145-15 MHz and out on 145-75 MHz, but tone access is 1750 Hz, 50 Hz higher than for GB3PI.

G8GKN is now G4CPO and operates from Harrow-on-the-Hill with 10 watts of 2m. signal and an 8-ele. beam on the 500ft. a.s.l. site whence he can read the time on the face of Big Ben (with a telescope!). He would like to arrange skeds with a GW. The QTH is: Moretons, Harrow-on-the-Hill, Mdx. G8GPR is now G4CZP and G8FUR has become G4DCV.

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Development of the gear for the Southern repeater, GB3SN, is proceeding—also the hardware for GB3LN, the Crystal Palace device, the licensing proposal for which is still with the Post Office, is virtually complete. The requirement for the Clyde/Forth repeater has been formulated but there is little progress to report on the construction of the equipment. The U.K. FM Group (Northern) have a proposal under consideration at the present time.

A convincing case can be made out for repeaters on 70 cm, and indeed on 23 cm, also, and one looks forward to the time when some enterprising group of enthusiasts will get cracking with some concrete proposals.

Seventy Centimetres

A brief reference was made last month to the possibility of auroral contacts on 70 cm. It can now be confirmed that G8AGU in Devon had such a contact with G8EPG in Sheffield on March 16 and that SM3AKW (QRA IW30e) worked UR2EQ (QRA NT61c) by the same medium. That should give the propagation experts something to think about!

G3NHE (Sheffield) now has 15 watts of SSB/CW from a QQV03-20A but was delighted to work G, GW, PA, ON, DC and OZ recently while still running one watt out! The band can't be quite as dead as may be thought since he adds that he had 66 QSO's with 36 different stations on 19 evenings in a month when there was no contest activity.

Another low power operator is G3XDY (Grimsby). During the good conditions over April 8/9 he made it with GM3UAG, DC6LN, ON5BD, several PA and G, and all this with one watt out!

G4ALN (Romford) is putting the final touches to his new PA and has established, successfully, skeds with ON5FF in Ghent on Tuesday, Thursday and Sunday evenings at 2000z on 423-20 MHz. They never seem to miss. G4BEL (Ely) has a sked each Tuesday evening at 2000 clock with PAOVV on 432-2 MHz SSB which you are welcome to join.

General Information

Maps showing the new counties which have come into existence since April this year are now becoming available. Three appear to be suitable for our purposes. The Geographia shows both the new and the old boundaries, while the Geographers gives only the new boundaries, but has a good marginal gazetteer locating most of the well-known places. Both are reasonably priced at 40p. Standard's General Map of Great Britain is a good buy at 35p but shows the new boundaries only, although these are distinguished by really clear colouring. Available at, or through, your local newsagent if he stocks maps.

Just a reminder that for the purpose of the Annual VHF Tables we are working on the old county boundaries and names until the end of this year.

G8BBP got in touch with MinPosTel with a query about operating hand-held equipment, and received a reply of which this is an extract: "The method of authorising this particular use of your amateur station has now been decided. The mobile use of amateur equipment by a pedestrian by the Amateur (Sound) Licence. However, since you hold the Sound Licence, please accept this letter as the necessary authority to operate your Amateur station as a pedestrian. The callsign G8BPP/M should be used, and this letter should be attached to your Amateur (Sound) Licence and carried with you at all times when this mode of operation is employed."

So now you know!

A copy of the Medway Amateur Receiving and Transmitting Society (MARTS—G2FJA) Newsletter has just been received from which it is learned that the Society has been in existence since 1922. It was then known as "The Wireless League" and meetings were held in the house of the current president—G6NU. In 1928, the name was changed to MATS and shortly after to MARTS at the request of receiving members. There cannot be many Clubs dating so far back, though we do know of several such.

Deadline

Deadline for the next issue is June 7, provided that there are no more industrial troubles. Please send your news, views, comments and claims to: "VHF Bands," SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ. Cheers for now and 73 de G3DAH

Some of us fish for VHF/DX, others for cod. These two magnificent specimens were caught by G3BHW (Margate), who is also pretty successful with the DX, when out in their boat with G3DAH, who on this occasion caught nothing—oh, well you can't succeed all the time!
THE MONTH WITH THE CLUBS

by "Club Secretary"

(Deadline for July issue: June 6)

Address all reports for this feature to "Club Secretary", Short Wave Magazine, Buckingham, MK18 1RQ

SOMEONE once asked just what qualifications justify your old conductor natter on about Clubs and Club life, so for the record it would be as well to state it. He is a licensed amateur, and a consistent Club member, this year enjoying his first year out of office since the local group was formed; and he is by way of being a "country member" of other radio groups, attending their meetings whenever time and domestic chores permit. His membership of one radio group or another has continued for more than twenty years unbroken—and as he writes this piece each month he sees reflected in the mail all the mistakes he has seen his own clubs make, being made all over again somewhere else. They say there's nothing new under the sun!

Our reports this time are taken regionally, taking first the extra-territorial group.

Sad news for WAMRAC members; G3AGX writes to advise of the sudden death of G3NGF, Rev. A. Shepherd, the founder-secretary of WAMRAC, and a hard and sincere worker for the cause, not only his beliefs but also Amateur Radio. Under the circumstances, we are sure G3AGX will forgive us if we quote him as the contact for any Methodist amateur wishing to join, at least for the time being until more permanent arrangements can be made.

Royal Signals write this time to advise of a DX-pedition by two of their members to English Cay off the coast of British Honduras, over June 14-17, and this has rather taken notice away from their Club activities. Suffice it to say that any serving or retired Royal Signals type ought to be a member—details from G3DPS, at the address in the Panel.

Changes in the R.A.I.B.C. management are announced, with Frances, G3LWY, and husband Joe, G3ESR, retiring from their respective offices after twelve long years of devoted service, having done far more than their titles of secretary and treasurer respectively ever implied. They are being succeeded by G3HXN and his XYL, to whom all future correspondence should go, address as Panel, p. 211.

The programme published in their Newsletter by the Echelford crowd does not go as far on as June probably because they have just had an AGM. Anyhow, no problem as we are told they get together on the second Monday and the last Thursday of every month at St. Martins Court, Kingston Crescent, Ashford, Middx.

While some groups seem quite unable to plan a programme, others of similar size or location can get themselves set up with a year's programme ahead; one such is Dartford Heath D/F. In June we see they have a Club night on June 7 at the Scout Hut, Broomhill Road, Dartford; on the 16th they are off to the qualifying D/F event at Slade; on the 23rd they are running their own D/F Hunt; on the 30th there is the qualifying event at Derby, and as if this lot were not enough, a footnote says there will be evening and Sunday D/F events laid on at short notice and "advertised" to the members by a mention on the Sunday-morning nets at 1100, around

nationality of naturalisation who are for any reason domiciled abroad. They have a World-Wide Net on Sundays at 1900z, 14347 kHz Phone, or Saturdays on 14065 kHz at 1900z for CW, plus a Pacific and an Australian net; U.K. stations are invited to chip into any of these.

A.R.M.S. looks after the interests of the lovers of the /M facet of our hobby, as it has done for some 15 years now.

Southern

As usual, this is the fattest wad, and the top one is from Southgate where we note the date and the day quoted are different; however we believe it to be June 13, at the Scout place in Wilson Street, although at the time of writing there are no details available as to what goes on.

Verulam have Charlie Newton, G2FKZ, asking himself publicly "What is Magnetism?" for their entertainment on June 19, at the Market Hall, St. Albans. The June informal meeting is at Salisbury Hall, as in previous years, with a station on the air, and a short talk. The date for this visit to London Colney is June 5.

On to Reigate where on June 4 the lads foregather at the "Marquis of Granby," Hooley Lane, Redhill, to make their final dispositions for NFD. Then on June 18, there is the formal session when G8AAI will be talking about Repeaters and FM.

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1930 kHz.

Away to the East, to Colchester who have now found a place at Stanway Comprehensive School, Winstree Road, Stanway, which, incidentally, is also to be the venue for the Anglian Rally on July 14. For more details, dates, times, and so on, of the meetings we have to refer you to the Secretary—see Panel, p.211.

It seems to be the first Thursday in the month for Cray Valley, the venue being the usual one at Eltham United Reformed Church Hall, 1 Court Road, for the formal session, and a fortnight later at the same place for the ragchew evening. Start at 7.30 for 8.0 p.m.

At Milton Keynes they have a place at Wolverton Youth Club, where they can be found on the second Monday of the month, June 10, for a talk on Slow Scan TV Techniques. Incidentally their DX-pedition event this year will be to Northumberland, from July 20-27.

The weekly sessions of the Worthing Club are held at the Rose Wilmot Centre, Littlehampton Road, as follows: On June 4, NFD preparations, and on the 11th a report on the same event. June 18 is called “Talk In,” and on June 25 there is the Summer Sale.

Tuesday, June 18 is a red-letter day for the Sutton and Cheam lads—they can change round their junk-boxes at the Surplus Sale! There will also be a report on the NFD activity, and on June 5 we note they have a demonstration station going at Sutton Fayre. The Hq. is at the Library, Cheam.

G3CCD is the speaker for Acton, Brentford and Chiswick, and his topic will be Stage 2 of his two-metre SSB transceiver construction project. This one will be, as usual, at Chiswick Trades and Social Club, 66 High Road, the date to reserve being June 18.

We have often commented in these pages that most successful groups have a member who is always doing something for the Club while others sit back and listen. The “someone” for Silverthorn is G2HR, who has popped up in a new task of Newsletter compiler. The front page tells us that the venue is Friday Hill House, Simmons Lane, Chingford, and we know they get together there on a weekly basis, we believe on Fridays. However, to make sure, get in touch with G4AJA, as Panel.

Quite the most professional-looking Newsletter cover-page we have ever seen adorns the Farnborough effort; and it is also a lot more comprehensive inside than the average—we only hope they can keep up the pace! As for the group meetings, they are at the 8th Farnborough Air Scouts Hut, Rectory Road, on the second and fourth Wednesdays in each month.

For the Crystal Palace fellows, the date to book is June 15, when the speaker is to be Bob Burns, G300U, his subject being “SSB.” As ever, the place to head for is Emmanuel Church Hall, Barry Road, London, S.E.22.

Stevenage have two events booked for June: On the 6th, the talk will be on Transistorised Receivers, and the 20th is a Beginners’ Evening. Meeting place is Hawker-
Siddeley Dynamics, Ltd., Gunnels Wood Road.

Down in the West

Plymouth is our first port of call, to the Club Hq., Virginia House Settlement (located at rear of the Breton Arms, Buckwell Street) on the first and third Tuesdays of each month. On June 4, G3RMZ will talk to the members about SSB reception, and June 18 is down for an Open Evening.

On Saturday, June 29, the Torbay group will have an NFD retrospective (meaning inquest or post mortem) and a Film Show, the Hq., being at Bath Lane, 94 Belgrave Road. In addition, there are regular meetings during the week, and on June 13-16 a special-activity station signing GB2NTF will be in operation at Newton Abbot Trades Fair. More details from G3UIQ, as Panel, opposite.

The club room of the Cricketers Arms, Windham Road, Bournemouth, is Hq., for the Wessex Amateur Radio Group, on the first Friday of every month and the Monday seventeen days later—that is, for June, the 7th and 24th, the latter date being for G3NIL to talk about Phase Lock VFO's.

Cornish are as strong as ever, and now have 163 members, which is pretty good going. They get together at the SWEB Clubroom, Pool, Camborne, on June 6 for a Film Show, followed by Questions and Answers.

In a letter primarily intended for CDXN, GW4BLE mentions the Blackwood group, and the fact that they are holding a convention at Oakdale, Gwent, as far ahead as September 22. For details of current Club goings-on, we suggest you contact him at the address shown in the Panel.

A good idea is put forward by the Axe Vale hon. secretary. It seems that on May 4, they organised an exhibition of Amateur Radio, with a brace of operational stations, displays of old and modern equipment, DX QSL cards, and so on, plus stands by local trader Reg. Ward and the nearby Racal Instruments establishment. As there was no charge for admittance, they no doubt got quite a few people in to have a look, and, we hope, the membership received a boost in consequence.

For details of the normal meetings at St. Clare's Education Centre, Seaton, we have to tell you to get in touch with the Secretary.

Midlands

This covers a sizeable chunk of territory, and for our first report we head for its northern limit, to South Manchester, where, as usual, the lads will congregate at Hq. on Fridays—Sale Moor Community Centre, Norris Road, Sale. In addition there are weekly VHF group meetings on Mondays at the club shack, Greeba, Shady Lane, Manchester 23. On the Fridays there is an activity each time—for instance, on June 7 a discussion on Aerials; the 14th sees G3UYG talking about Amateur Television; on the 21st a mini-D/F contest and a discussion about the Region 1 VHF contest; and on the 28th G8EUX will discuss Modern Circuit Design. Quite a range of interesting activity.

A special-event station is being set up on June 8 to support Solihull Carnival, in Tudor Grange Park, by the local Szlihull group. In addition, there is the normal Club meeting on June 18, at the Manor House, High Street.

At Worcester they are “playing away” on June 3, by visiting a computer installation, but they will be home again in time for Saturday 15th, at the Old Pheasant Inn, New Street, when the use and abuse of Test Equipment will be demonstrated.

The Hereford Hq. is at the County Control, Gaol Street, on Friday evenings. However, we notice from the Newsletter that they resume their policy of having quite a few outdoor events during the summer so we feel you should get in contact with G4CNY for final details, QTH as Panel, opposite.

Never any doubt about the Coventry programme or venue—the secretary “lays it all on the line” each month. For June they have Nights on the Air on June 7 and 21st, a Tape Lecture on Integrated Circuits on the 14th, and an Open Night on the 28th: they foregather at Baden-Powell House, St. Nicholas Street, Radford Road, on these dates (Friday evenings).

Although we know the Wolverhampton chaps get together weekly, the only date for which we have any information at the time of writing is June 3, when the subject will be the conversion of surplus R/T sets for operation on the VHF bands—always a topic of interest. The venue is at Neachells Cottage, Stockwell End.

Up North

Up as far as Scotland; to be more precise, to Glenrothes, where they assemble on Wednesdays at the Clubroom, The Library Building, Douglas Road, Leslie, Fife. Perhaps the main thing in June is the NFD Preparation session on June 2.

Also on Wednesday evenings is Lincoln, at the Astronomical Society, Westcliffe Street, off Burton Road, Lincoln. June 5 is a two-metre Project Night, and Films are down for the 12th; a Treasure Hunt occupies the 19th, and for the 26th there is an Open Forum.

Another place where Wednesdays each week is favoured is Derby, at 119 Green Lane. For the 5th there is a Junk Sale, and on the 12th a Treasure Hunt. A D/F event starting at 7.30 outside the clubroom occupies June 19, and on the 26th there is a Film Show. Add to this a station in NFD, and the Derby D/F qualifying event on the 30th, and you realise someone must do a lot of work for this Club.

York have their being in the British Legion Club, 61 Micklegate, York, where they get together every Thursday evening. During the near future we understand they have several visits lined up, so for the latest details contact G3WVO, who will give you the gen.

Every Wednesday it is for Star, at their Hq. in the New Inn Hotel, Bramley Town Street, Leeds 13. For the last week in August and the first week in September they are running a DX-pedition to North Wales on 14 and 144 MHz—anyone wanting skeds with them, contact G32WA, QTHR.

Since his last letter, the scribe at Nottingham attended the AGM and found himself propelled into the “hot seat.” However, whatever his office this year, he will still write to tell us that the meetings occur every Thursday evening at Sherwood Community Association, Woodthorpe House, Mansfield Road; the details of the programme will no doubt have been settled by the time June, 1974
and so it remains for us to ask you to send in your Hull of late, but this time they have re-surfaced to tell than has been noted for several years, says the Newsletter. involved in a higher level of enthusiasm and activity some months to come.

Shear Bank Road, Blackburn.

Metres, Equipment and Such" on June 6, at the YMCA, G3YGL to confirm—see Panel, above.

At East Lancs. G8EJB will be talking about "Two and August 8. BCNU. Likewise, forward dates are July 4

Bury and Rossendale members are finding themselves involved in a higher level of enthusiasm and activity than has been noted for several years, says the Newsletter. To find out about this enthusiasm, why not pay a visit? For the first time, a higher level of enthusiasm and activity than has been noted for several years.
NEW QTH's

EI0CP, S. Taaffe, 4 Ardee Terrace, Dundalk, Co. Louth, Eire.
G4BOC, H. Hodgson, 1 Harris Street, Askam-in-Furness, Lancs., LA16 7BY.
G4CIY, J. A. Cass, 5 Lark Drive, Welligore, Lines.
G4CUU, J. M. Brown, Darley House, Darley, Harrogate, Yorkshire.
G4CVD, P. M. Petty, 130 Whitstable Road, Canterbury, Kent, CT2 8EG.
GW4CWQ, D. R. J., 9HX. (Tel. Haverhill 2852.) Close, Terrace, Port Seton, East Lothian. (Tel. 0482 75972.)
G4CXM, R. James, 21 Blackbrook Avenue, Broadsands Park, Paignton, Devon.
G4CQ, D. L. Dyer, Damir, 10 East Park, Mont Ambrose, Redruth, Cornwall. (Tel. Redruth 4886.)
G4CYF, C. S. Tully, Falstone, 23 The Drive, Dovercourt, Harwich, Essex, CO12 3SU.
G4CZA, K. J. M. Newman (ex-G8ICX), 2 Sky's Wood Road, St. Albans, Herts., AL4 9NZ.
G4CZL, A. J. Rogers, 39 Wicks Crescent, Formby, Liverpool, L37 1PD.
G4CZP, R. M. Crossley (ex-G8GPR), 29 Westover Road, Warton, Carnforth, Lancs., LA5 9QT.
G4CZS, S. C. Kershaw, 11 Langdale Close, Gatley, Cheadle, Cheshire, SK8 4QW.
G4CZV, A. R. Wilson, 24 Anson Road, Hull, Yorkshire, HU9 4SN. (Tel. 0482 57972.)
GM8ILV, J. McLeod, 17 Johnston Terrace, Port Seton, East Lothian.
G8ILI, C. J. Kitchener, 19 Chestnut Close, Haverhill, Suffolk, CB9 9HX. (Tel. Haverhill 2852.)
G8IML, C. C. Keys, 9 Tomlins Court, 65 South Norwood Hill, London, SE25 6BZ. (Tel. 771 0240.)
G8IPK, C. J. Knight, 10 Brocklebank Lane, Allerton, Liverpool, L19 4TA. (Tel. 427 4493.)
G8IPT, P. R. Hughes, 48 Hall Green Avenue, Stretton, Burton-on-Trent, Staffs., DE13 0HG.
G8IQT, T. C. Spicer, 101 Ancaster Avenue, Grimsby, Lincs., DN33 3LP. (Tel. Grimsby 70011.)
G8IQZ, C. R. Harris, 74 Charnwood Road, Barwell, Leics., LE9 8FL.
G8IRU, L. G. Ouseley, 23 Cromer Close, Little Gaddesden, Berkhamsted, Herts.

CHANGE OF ADDRESS
EI2CI, J. M. Purfield, 12 Wolsey Street, South Circular Road, Dublin 8.
GW3CBA, J. Kellaway, 50 Winston Road, Barry, Glam. (Tel. Barry 77792.)
G3GNR, R. E. Short, North Trew Farm, Highampton, Beaworthy, Devon.
GD3JJU, M. R. Thompson, 12 Brierfield Avenue, Birch Hill, Onchan.
G3JQC, G. W. Hawksworth, Kenton, 16 Birkhead Street, Heckmondwike, Yorkshire. (Tel. Heckmondwike 402707.)
G3MAX, F. Nicholls, Sunnybank, Racecourse Lane, Cotebrook, Tarporley, Cheshire.

G3MCY, G. C. Moore, Highfield Farm, Glentham, Lincoln.
GM3MGJT, A. W. Hope (ex-G3MGJ), 11 Craigs Road, Edinburgh, EH12 8EH.
GM3MHJ, J. Enderby, 95 North Drive, Troon, Ayrshire.
G3PKS, J. H. Stock, Sunset, 29 Priory Road, Wells, Somerset, BA5 1SU. (Tel. Wells 73015.)
G3VNJ, C. H. Fowler, 8 Shardlow Road, Hornesea, E. Yorkshire, HU18 1EY.
G3VXG, B. J. Fielding (CT1EJQ), Casa Ancora, Areia's de S. Joao, Albufeira, Algarve, Portugal.
GM3WOJ, C. W. Tran, Cairnel, Sandhead, Stranraer, Wigtownshire.
G3WYJ, J. R. Smith, Oak House, Croston, Preston, Lancs., PR5 7TB. (Tel. Croston 233.)
G3XMI, M. J. Prior, 8 Market Place, Coleford, Glos. (Tel. Coleford 2717.)
G3XOY, L. J. P. Wood, 9 Grassmere Close, Highwoods Estate, Mexborough, Yorkshire.
G3YRU, P. R. Wilby, B.Sc., 42-C Woodville Gardens, Ealing, London, W5. (Tel. 01-997 6566.)
G3ZOJ, D. J. Deane, 99-A Bedford Street, North Donside Road, Balgownie, Aberdeen, AB2 8PA.
G4ALC, J. B. Balls, Quorn Cottage, Cromer, Norfolk. (Tel. West Runton 357.)
G4GWA, R. T. Payne, c/o 26 North Donside Road, Balgownie, Aberdeen, AB2 8PA.
G8ATV, I. A. R. Dredge (ex-V56GA), New Cottage, Iddow, Dauntsey, Chippenham, Wilts.
G8DIN, D. S. Cooke, 11 The Avenue, Nunthorpe, Middlesbrough, Teesside, TS7 0AA.

For this month's Reader Small Advertisements, see pp. 216-221
SOME TITLES DESCRIBED

ABC's of ANTENNAS
The introductory chapters cover the fundamentals of radio-wave propagation and basic antenna characteristics. The remainder of the book is devoted to a discussion of the various types of antennas and their uses. Antennas for radio, television and two-way communications are included. Business radio, amateur, both mobile and fixed-station operating, etc. The final chapter should be particularly appealing to those interested in microwave uses and radio-navigational systems. A perusal of this book will provide any student with an excellent foundation for more advanced study in antenna design.

BEAM ANTENNA HANDBOOK
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This completely revised 3rd edition of Bill Orr's popular book covers beam antenna theory, design, construction, installation, and adjustment. Includes ionosphere theory; transmission lines; matching devices; new inducto-match system; parasitic beams; beam design; charts and SWR curves for beams—six to forty metres; how to evaluate your beam; test instruments and how to use them. A must for the serious operator whether he buys or builds his beam.

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For many years "Beginner's Guide to Radio" has been extremely popular training in electronic fundamentals. A book whose many advances made in recent times have rendered a new edition desirable.

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AMATEUR RADIO SSB GUIDE
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The author's many years of experience as an experimentalist and radio-amateur are well known to all who have used his earlier editions of "Beginner's Guide to Radio," and his descriptions of the various forms of equipment and circuits are lucidly and clearly written.

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Circuits of Pye Cambridge AM101D, showing TX, RX, Inverter, etc., 65p, post paid.

TRANSISTORS (NEW)

2N3190, 25p ; AF191, 50p ; AF163, 50p ; OC200, 20p ; BD126, 50p ; AC121, 6p ; NKT002, 25p.

MINIATURE SLIDER SWITCHES, two pole, 2 way, 3 for 50p.
Xtal Places, containing 2 HC6U sockets and one 1-10pf trimmer coil each, 3 for 50p.
Min. 4 core Screened Cable, 10m. for 50p.
Radio equipment, new, 2½" centres, 2 pairs for 50p.
Values, min. CV types, 20 for 50p.
Bandpass Filters, 25-32-5 MHz RT type, 50p.
Pots, 10 different values, 50p.
Self adhesive foam pads, 30mm. x 20mm. x 3mm. thick, large roll, 50p.

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