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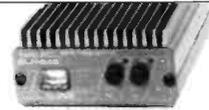
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SHORT WAVE MAGAZINE

(GB3SWM)

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Editor: **PAUL ESSERY, G3KFE/G3SWM**

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VHF BANDS

NORMAN FITCH, G3FPK

THE *Sporadic E* season started quite early this year on 2m. on May 16, bringing a welcome relief from the generally mediocre tropo. conditions of recent months. On 6m. there have been contacts with EA, CT and ZB2 stations *via Es*, and the FY7THF beacon on 50.038 MHz has been heard on several occasions. Satellite *Oscar-10* suffered a "spacecraft emergency" on May 10 which could be rather serious.

Awards News

Congratulations to another overseas reader Georg Grahle, DL4OL, from Holle (FM61f) in West Germany who is member number 65 of the 144 MHz QTH Squares Century Club. His certificate was issued on May 13 with stickers for 125 and 150 squares confirmed, his actual total being 154. One contact was on FM, all the rest on SSB. Modes were 130 on tropo., 14 *via Es* and 10 *via Ar*. DL4OL is the D.A.R.C.'s manager for the UKW-Europa-Diplom which was mentioned on page 149 last month.

Mike Stevens, G1IQJ, from Epsom in Surrey, is member no. 383 of the 144 MHz VHF Century Club. His station comprises a Yaesu FT-726R and 10 dB amplifier, the antenna being a 12-ele. Yagi at 30ft. *a.g.l.* His QTH is 108ft. *a.s.l.* Mike is a keen participant in the Worked All Britain activity and he hopes to work a lot more people on 70cm. He says he get full pleasure from this fantastic hobby and is studying for his Morse test.

The Wythall Radio Club, in conjunction with Eddystone Radio Ltd., are offering a Worked All Midlands Clubs Award which starts on July 1. The award is to promote the existence of AR clubs and societies and is open to radio amateurs and listeners, "...operating on the 6m., 4m., 2m. and 70cm. bands and in any simplex mode." The four awards are bronze, silver, gold and platinum and require the accumulation of points. For full details, send a large *s.a.e.* to the Wythall Radio Club, c/o Mick Pugh, G4VPD, 37 Forest Way, Hollywood, Birmingham, B47 5JS. The club's own call is G4WAC and the certificate is very attractive.

Bob Nash, G4GEE, is the Honorary Treasurer of the Worked All Britain Awards and has supplied a list of "Notable

WAB Firsts on VHF." The first recipient of the new WAB Islands Award was Jack Charnock, G4WXX, for working ten British off-shore islands since Jan. 1 1986. The first ever WAB Sapphire Award, for working 1,350 WAB areas, went to Laurie Segal, G6XLL. Life membership of WAB costs £5 and record books and all information can be obtained from Brian Morris, G4KSQ, 22 Burdell Avenue, Sandhills Estate, Headington, Oxford, OX3 8ED.

The Satellites

The main news this month is about *O-10* which suffered a "spacecraft emergency" at 0320 UTC on May 18. A fault developed in the Integrated Housekeeping Unit — IHU — resulting in the systems becoming uncommandable. At *perigee* passage on May 17, defective PSK telemetry was noticed. The result of the malfunction was that the spacecraft was in Mode B all the time with the real danger of ruining the batteries. *AMSAT-UK* contacted members altering them not to use the transponder and other *AMSAT* groups did the same.

Ian Ashley, ZL1AOX, is the control station and between 1938 and 2037 on May 19, he reloaded *O-10*'s computer with software, after which some meaningful telemetry blocks were received. One suggestion is that the IHU fault was induced by a high energy particle impacting the computer or its memory. "Soft" errors can be dealt with and the design of *O-10*'s system makes it largely immune to soft errors. However a "hard" error would cause permanent damage to memory cells, so spacecraft software would have to run, bypassing the affected byte(s). This has already happened last year.

A program of software diagnostics was initiated to find out exactly what has happened and it could be several weeks before the transponders are back in action again. The good news is that the batteries are being kept well charged and the satellite is in no immediate danger. It has to be appreciated that the memory chips in the IHU will suffer degradation due to the long term effects of cosmic radiation. The initial failure to place *O-10* into the planned orbit resulted in the spacecraft spending more time per orbit in the *Van Allen* belts.

It is quite likely that, once the faulty memory addresses have been identified, a new operating system will be devised to restore the satellite to a more or less normal state. However, it is inevitable that this type of fault will occur more frequently from now on. Users should listen to the *AMSAT-UK* net on 3,780 kHz for the latest news direct from G3AAJ.

The *Phase 3C AMSAT* spacecraft has been finally completed and was due to undergo thermal vacuum tests on May 27. Thereafter it was to be shipped back to

Marburg in West Germany in mid-June. Failure of the last *ARIANE* launch has resulted in slippage of the 3C launch date, now guessed as January or February next year, realistically.

The launch of the Japanese satellite *JAS-1* should be on July 31, if all goes to plan. The estimated parameters are:— altitude 1,500 kms; period 120 mins; inclination 50°; window 20 mins. *per pass*. There are two, separate Mode J transponders. The first is a linear one, Mode JA, with uplink 145.90 – 146.00 MHz and inverted downlink 435.90 – 435.80 MHz. The output power is one watt *p.e.p.* and there is a 100 mw CW beacon on 435.795 MHz. Ground stations will need 100w *e.i.r.p.* output power, *e.g.* 10w to a 10 dB gain antenna.

The second transponder is a digital one, Mode JD, with four input channels using Manchester coded FM for the uplink, on 145.85, 145.87, 145.89 and 145.91 MHz, the downlink being on 435.91 MHz for all four. Again 100w *e.i.r.p.* is suggested for ground stations. Protocol is AX-25 Level 2, Version 2 with 1,200 bps data transfer rate for both up- and downlink. Mode JD is not a "digipeater" but a storage and forward system since digipeating in real time is not satisfactory for a low orbiting satellite with a relatively small "footprint."

"VHF Bands" deadlines for the next three months;—

August issue — July 2nd
September issue — August 6th
October issue — September 3rd

Please be sure to note these dates.

An English translation of the *JAS-1 Handbook* is now available. For details, send a self-addressed envelope, with IRC, to Project OSCAR, c/o Ross Forbes (WB6GFJ), P.O. Box 1, Los Altos, CA 94023, U.S.A. Your scribe plans to publish the usual article for this new satellite as soon as it has been put into orbit and known to be working successfully.

Beacon Notes

The 4m. ZB2VHF beacon on 70.12 MHz is back on the air from XW64g. On June 9, the 6m. beacon in Gibraltar carried the message, "ZB2VHF Info 4m. beacon now operational." During the *Es* opening on May 16, John Palfrey, G4XEN, (NHM) heard a CW signal on 144.310 MHz at about S7, repeating the callsign, UO5OID. He assumes it was a beacon and if so, wonders if anyone has details. It faded quickly. Between 144.136 and 144.371 MHz, 16 Soviet beacons are listed

but all are lowish power, as far as is known. Nothing is listed for 144.310, nor anything in UO5. *GB2RS* mentioned that *GB3CTC* on 70cm. "... will be off the air until further notice."

Contest News

The results of this year's 4m. *Cumulative* Contest were broadcast over *GB2RS* on May 25. The winners were the *Wirral and District ARS*, *G4MGR*, with 687 points from 95 contacts. The *Sheppey Outcasts*, *G4BVY/P*, were second with 529/113 and there were 22 entries.

The weekend of July 5/6 is VHF NFD which commences at 1400 for 24 hours. This year, 2.3 GHz will be included, the scores to be added to the 1.3 GHz figures and the same callsign must be used for both bands. On 4m. the period 1400-2200 on the 5th is for 'phone only, with closedown thereafter until 0600 on the 6th, when the last eight hours will be CW only. On 4m. only, the QTH must be sent, given in a different form in each section. Serial numbers start at 001 in each section and the final total is the radial ring sum of points added together. The full rules were published in the April issue of *RadCom*, page 283.

During NFD weekend, the *British Amateur Television Club* is running its Summer Fun event and for details, contact *G6IQM* who is *QTHR*. On July 26, there is the 144 MHz Low Power and SWL Contest, with the 432 MHz version on the next day. The respective times are 1500-2300 and 0900-1500. There are three sections; Fixed, All other and SWL. The usual radial ring scoring system will be used for each QSO, the total points then being multiplied by the sum total of different counties and countries worked. Up to three different stations in the Scottish regions may be counted for multiplier points. The county names or code letters must be exchanged and recorded in the entries. The 2m. entries go to *G4FRE*, the 70cm. ones to *G3FZL* who are both *QTHR*.

The fourth legs of the 10 GHz and Microwave *Cumulatives* are on July 13 from 0900 to 2000 and the microwave band will be 5.7 GHz. John Acton, *G1DOX* (CBA) asks if the *Short Wave Magazine* has considered sponsoring a contest as some other magazines do. Erik Gedvilas, *G8XVJ*, (CHS) was more specific and suggested some kind of 70cm. *Cumulative* event in August, perhaps a few two or three hour sessions on a Sunday morning. It would be too late to organise anything for this August as it would need to be well publicised in advance. If any readers have constructive ideas please write in. Alternatively, some may think there are enough contests already: whatever you think, please comment in your next letter.

Packet Radio

Last month's plea for news of what readers are doing with packet radio has brought a couple of replies. Bob Geddes, *G8GGI*, (LDN) says that PR is now taking off in the U.K. He bought an AX-25 TNC kit at the 1984 *BARTG* rally then did not work a single station that year. 1985 was better and this year has seen a considerable increase in activity. Over the weekend May 31/June 1, Bob copied 19 stations on 144.675 MHz, all on F2D mode. Most QSOs seem to be the traditional RTTY kind of conversations and the way the mode is being used does not offer any benefits over AMTOR. But he feels that there is much potential for development if digi-repeaters and mailboxes are established.

A problem is that the frequency is shared with *BBC*-type PR and ASCII, creating Bedlam at times. *G8GGI* has been experimenting with AX-25 PR through *O-10* and has worked himself. He was all set up to try again on May 18 when the aforementioned IHU problem occurred. Bob notes the following as QRV on AX-25 PR:— *G0AMP*, *G0AMX*, *G0/K8KA*, *G1JOV*, *G3s CWB*, *OLM*, *ONR*, *VMR* and *WGV*, *G4s BBR*, *NWP*, *PHZ* and *TRS*, *G6s DLJ*, *HUH* and *RBP*, *G8LWY* and *G8VLY*, and last, but not least, John Danks, *G5DS*, (LDN), whose report comes next.

G5DS has been active on 144.675 MHz since January, 1985 using AX-25 with 1,200/2,200 Hz tones and 1,200 bps. He also mentions the non-compatible *BBC* system at 300 bps, but the real problem is the ASCII operation which, because it is a continuous carrier system, inhibits the operation of the AX-25 TNCs. John has made contact with 59 stations on 2m. and is aware of 72 British AX-25 operators, although some are on HF only. *G5DS* uses 1,600/1,800 Hz tones at 300 bps on the HF bands on which he has contacted 67 stations.

Neither *G8GGI* nor *G5DS* commented on the *RSGB* VHF Committee proposal for digipeaters on 144.650 and 145.275 MHz, but it does seem that AX-25 and *BBC* PR, plus ASCII data should not all use the same frequency. *G5DS* mentioned some deliberate interference from stations who put carriers on and off when they hear PR tones on 144.675 MHz. Of course this poltroonery has been evident on the more notorious repeaters for years, and one wonders about the warped mentality of those few whose only "hobby" appears to be annoy others.

Six Metres

The beacon *FY7THF* in French Guiana on 50.038 MHz has been received in the British Isles. In a long letter to *G5KW*, Ted Collins, *G4UPS*, (SOM) reports copying it at 1910 on May 30 and again at 1635 and 1800-1808 on June 4. Norman Hyde, *G2AIH*, (SRY) copied it on June 4 at 1923

for 40 mins. up to S4, while *G5KW* (KNT) heard it on June 6, 2000 to 2040 and again on the 7th, 2010-2130 at less than S1. The Gibraltar beacon, *ZB2VHF*, on 50.035 MHz, has been received quite frequently and was good copy on June 9 at *G3FPK* using a crossed dipole antenna for 10m. in the loft.

There is illegal activity by a few Spanish stations. It seems they applied for permission to operate on the band but were refused. Nevertheless, it seems their attitude is that, if they do not cause any TVI, they just use the band anyway. Jerry Russell, *G4SEU*, (WKS) worked *EA2JG* (IN83MC) on May 30, the EA being S9 plus 30 dB. Crossband QSOs with 10m. stations were *OH1ZAA* on May 15; *EA4CGN* on the 30th and *LA2AB* on June 1.

G4UPS first heard the Cyprus beacon, *5B4CY*, (QU14g) on 50.50 MHz on May 15 at 1425, and again on May 20, 21 and 22. Ian Parker, *G4YUZ*, (HFD) has regular MS skeds every Tuesday with *GM3WCS* and out of 12 up to May 23, only one had failed. During May, he made a few crossband contacts to 10m. stations *via Es*; on the 16th, *YO2IS* (KF), *OZ1DOQ* (GP), *SM6PU*, *LA1K* (FX) and *OH5IY* (NU). On the 17th, Ian worked *OH1ZAA* (KV).

Ken Ellis, *G5KW*, had a crossband QSO on May 16 with *YO2IS* at 0630 and with *EA3ADW* on the 22nd at 1910. He also worked *EA2JG* direct on 6m. on May 30 at 1920. The *ZB2VHF* beacon was copied on June 1 from 1845 to 2010 up to over S9; on the 2nd from 0630, then all day "in and out," peaking S9 plus 20 dB at 1650, and also on the 3rd from 0630.

Mike Johnson, *G6AJE*, (LEC) found the band very lively *via Es* on May 26. At 1520 on 50.25 MHz he heard a pop music programme, with adverts, in Italian, but he thinks these might have been images as other, similar, signals were copied in other parts of the band. From 1750 to 1800, Mike copied *5B4CY* which he reckons has the worst FSK ever. Dave Lewis, *GW4HBK*, (GWT) heard *ZB2VHF* on May 31 and June 1. He worked CT and EA direct and had many crossband contacts with D, EA, F, LA, OH, OZ and SM. HB, I, OE and YO stations were also working U.K. stations, crossband.

Four Metres

The east European broadcasting stations have been regularly on the band. On June 3, for example, Terry Hackwill, *G4MUT*, (BRK) heard them from 0900-1000. Tony Collett, *G4NBS*, (CBE) replaced his 6m. beam with a 4m. one in time for the April contest in which he made 44 QSOs for Annual Table points. *G4SEU* worked *G4WND/P* (NLD) on May 25 for an all-time new county, also *EI2CA* the same day. *EI9Q* was on, but not heard in Nuneaton. Jerry has bought a dual 6m/4m. beam from

Sandpiper Aerials in South Wales which sports five elements on 6m. and six elements on 4m.

G4YUZ now has 54 counties worked and confirmed and Ian is looking for any GMs who would like to try some MS skeds. He hopes to work 60 counties by the time he retires, 44 years hence. He is *QTHR* and the 'phone no. is 0992 463478. He worked SM6PU crossband to 10m. on May 16, but failed with DK1PZ. He hopes to try with the latter on MS later. GW4HBK reports good activity with Europeans looking for crossband QSOs. On May 6, the only *Auroral* signal Dave heard was GB3CTC, but his most pleasing contacts were with EI9Q worked twice on May 25. He mentions the extreme selectiveness of *Es* signals on 4m., too; a difference of only a mile making all the difference between working and not working a station.

G4SEU reports that David Butler, G4ASR, (HWR) made good use of the GB4MTR call making over 150 QSOs in the first few days. Until July 15, G13ZTL (LDR) will be using the call, then from the 16th through Aug. 12, GM4ZUK (GRN) will be doing the honours. Jerry advises that Roger Banks, G4WND, has now taken over production of the *4m. Newsletter*.

Two Metres

Mike Honeywell, G0ABB, (HPH) added a further 36 stations on CW to top the 1986 2m. ladder, but admits to having been distracted by 10m. CW activity. Colin Morris, G0CUZ, (WMD) missed the *Es* opening on May 16 but has been plugging away at MS, and in the *Eta Aquarids* on May 6, he completed with I0UZF (GD) on random CW after seven, previous uncompleted skeds. The final burst from the 10 was 85 secs. long. Other May success were:— 7th, OK1KT/P (IK); 10th, OE3XUA (HH); 13th, SP9AMH (JK); 17th, EA2LU (ZC); 22nd, IIANP (EE) and 23rd, OK1KTL (HK). Some comments about MS procedure from Colin will be aired later.

Welcome to new contributor Philip Everitt, G1CRH, from St. Ives (CBE) who enters the Annual Table. He doesn't have too much time for the hobby due to the priorities of school work, so most activity is confined to contests. He uses a *Yaesu FT-290R* and 5-ele. *Yagi* in the loft. Best DX to date are G4APA/A (DHM), GW8KQW/P (PWS) and GM4RZW/P (BDS). John Acton, G1DOX, (CBA) added six more counties including G14OWA (LDR), GJ3YHU, EI8EF (Donegal), EI7BJB (Kildare) and G0AEA (IOS).

Bob Nixon, G1KDF, (LNH) caught the brief *Ar* on May 6, 1800-1830, towards GI and GM, otherwise he found conditions very flat. G14KIS has been contacted when portable in numerous locations in ATN, LDR and FMH. G4IWB/P (CNL) was a

ANNUAL VHF/UHF TABLE

January to December 1986

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		23 CENTIMETRES		TOTAL Points
	Counties	Countries	Counties	Countries	Counties	Countries	Counties	Countries	
G1KDF	—	—	91	15	59	8	18	3	194
G4NBS	27	2	63	16	47	7	16	3	162
G1DOX	—	—	72	7	40	4	20	3	146
G4SEU	36	4	40	7	29	3	—	—	119
G6HKM	—	—	65	13	30	8	—	—	116
G0CUZ	—	—	66	22	19	2	—	—	103
G4MUT	24	2	38	10	23	5	10	2	102
G4YCD	—	—	63	10	21	2	—	—	96
G1EHJ	—	—	49	6	36	4	—	—	95
G4WXX	—	—	79	14	—	—	—	—	93
G6AJE	—	—	39	10	35	4	3	1	92
G3FPK	—	—	72	16	—	—	—	—	88
G1SWH	—	—	64	6	—	—	—	—	70
G4VOZ	36	3	—	—	28	2	—	—	69
G6XRR	—	—	58	9	—	—	—	—	67
G1PDW	—	—	52	11	—	—	—	—	63
G8RWG	—	—	45	9	4	1	—	—	59
G4TGK	—	—	50	8	—	—	—	—	58
GW6VZW	—	—	48	9	—	—	—	—	57
G6OKU	—	—	31	5	18	1	—	—	55
G4YIR	—	—	47	8	—	—	—	—	55
G8XTJ	—	—	42	8	—	—	—	—	50
GW4HBK	36	5	—	—	—	—	—	—	41
G4DEZ	—	—	24	8	—	—	4	1	37
G1CRH	—	—	25	5	—	—	—	—	30
G2DHV	4	2	21	2	—	—	—	—	29
G1HGD	—	—	10	2	11	2	—	—	25
G4TIF	10	2	6	3	1	1	—	—	23

Three bands only count for points. Non-scoring figures in italics.

new square, XJ, in the contest on May 18 Bob also got GB8IOS (IOS) but he heard nothing from the GB00S group (SLD) on the Outer Skerries. Ian Rose, G1PDW, (ESX) remarks how the more obscure counties appear during contests. He quotes his best DX for May as GJ6TMM/P, G14VIP/P (DWN) and GM4ZUK/P (GRN) during the May 17/18 contest.

George Haylock, G2DHV, has been operating recently from portable sites through repeaters using an *LS-202E*. He gave the locator as IO79GE and referred to "SW repeaters," which has your scribe utterly baffled. He is getting ready for RTTY operation soon. Pat Billingham, G4AGQ, (SRY) reckons that better, "summer" conditions are starting to occur with the French beacons consistently stronger and HB9F and HB9HB copied some mornings. On May 25, things were lively with HB9COZ/P (JN37RF) RST539 using an *FT-290* and a 5-ele. *Yagi*. Pat had a two hour CW QSO with G0DRQ/M who was on a motorway and it was his first such contact with a moving mobile.

G4MUT's "Contact of the month" was SP4DGN in the rare LN square, whom Terry worked *via Es* at 1146 on May 16. He was audible for about 20 mins. and no other DX was heard. He notices that there can be strong *Es* propagation on 70 MHz, with east European BC stations very loud, yet both 28 and 50 MHz seem dead. G4NBS's only 2m. activity was in the May 17/18 contest when he used 180w *p.e.p.* to an antenna at 40ft. No TVI complaints, Tony says. He made 360 contacts in 60 counties, 11 countries and 31 squares. Only Cleveland county was not worked in

England, but activity in northern G and southern GW was very low. Most of the 51 continentals were worked between 1100 and 1230.

Graham Jarrett, G4PPV, (KNT) added another 23 stations to his CW ladder total but says he has not heard much DX this year, yet. In the May 17/18 contest, G4SEU used his 6m. beam and managed QSOs with stations in F, GD, GJ and GI. On June 1, Jerry worked GB4XN on Anglesey. Now he has the dualband 6/4m. beam, he has space to re-erect a proper 2m. antenna. June Charles, G4YIR, (ESX) concentrates mostly on CW and is now up to 155 different stations this year. May proved a better month, starting on the contest on the 3rd/4th when seven new ones were worked on the key. In the 17/18th event she worked G14VIP/P whom she relies upon each year for GI. G4APA/A was an all-time new county on CW. On SSB, new 1986 counties were CHS, MSY, GDD and GNM.

John Palfrey, G4XEN, (NHM) heard his first signals *via* the Moon on April 19/20; these were W5UN and WA1JXN/7. On May 6, he discovered the *Ar* at 1945 and heard G14OMK very weakly. On MS mode, he completed on CW on Apr. 4 with EA2LU (IN92) and on the 21st with HG8VF (JN96) receiving a 40s. burst. On May 5, John completed with EA5EMM (IM99) at the third attempt and Julio is often on the 20m. VHF net for those needing ZZ squares. On May 12, the fourth attempt with I0UZF on CW was successful and on the 16th, an early morning sked with LA8KV was completed with short reflexions. Later on,

during the *Es* opening to the east. John worked SP4DGN on SSB at 1125 and on CW at 1134. SP2LU (JO93) was worked on CW at 1141, thus adding two more squares.

On Apr. 25, G4YUZ worked SM2CEW (LZ) for his best DX so far. A sked on May 22 with OE61WG (HH) took 1½ hours, due to poor reflexions, starting at 0300. Ian was on holiday in Scandinavia from May 1 so called in to see SM2CEW and collect his QSL. Peter put Ian and his friend up for the night on May 6, which was kind of him. Ian then met LA6QBA on the 9th and collected his QSL for their 6m. QSO on Apr. 26. Back home, G4YUZ heard SP4DGN on the 16th, but could not crack the pile-up.

G6AJE came home from work at 1230 for lunch on May 16 to hear the GWs excitedly calling "CQ" Band 2 was yielding stuff from the east so Mike aimed in that direction and was rewarded with SP4DGN at RS59 each way. On May 18, in the contest, he lists his best DX as GW4CZZ/P (CWD), GM4RZW/P, G4APA/A, GW3OXD/P (PWS), GD4IOM, G3AHD/P (MSY), GJ6TMM/P, G4IWB/P, (CNL) and XJ square, no. 87, G0CRW/P (SXE) and G4CAN/A (DOR). Keith Killigrew, G6DZH, (HWR) thinks the *Es* season got off to a very slow start but missed the May 16 opening due to being at work. Like many others, he has acquired a Band 1 TV Rx and has been watching pictures from all over Europe.

Ela Martyr, G6HKM, (ESX) thoroughly enjoyed the May 17/18 contest making 333 contacts as a Single-op. entrant. Her best DX was GM4ZUK/P at 602 kms. and she worked 53 counties and 11 countries with 22 D QSOs. On May 22, at 2012, she worked DF1CF (FH23j) for a new square and three 25th out portable in EI square. On the 25th, HB9AEN/P (JN36GU) and F3FJ/P (JN36GB) were worked. Neil Montanana, G8RWG, (SRY) received the FX4VHF beacon (AF69c) very strongly on May 24 so worked FC1GTU (AF64a) at 2215 and at 2300, FD1FHI (ZH63a). Although the Normandy beacon FX3THF (YI13d) was incredibly loud later, no French or Spanish stations were to be heard.

Erik Gedvilas, G8XVJ, (CHS) caught and eight minutes *Es* opening on June 7, his "CQ" call being answered by LZ1ZB (LC), followed by LZ2AR (LD) for a couple of new squares. Others worked were YU1EV, and YU2SB and YU3AL in JF. On the 8th, he completed an MS sked from 0500 in 45 mins. with OK1KT. Prior to that, at 0430, Erik heard YU1GCK on 144.300 MHz calling "CQ" for 15 secs.

Congratulations to John Eden, ex-GM6LXN (HLD) who passed his Morse test at Wick Radio on March 3 and who is now GM0EXN. Between 1120 and 1140 on May 16, beaming 130° had 18 *Es* QSOs as follows:- OK3WCM, OK3CVM,

QTH LOCATOR SQUARES TABLE

Station	23cm.	70cm.	2m.	Total
G8TF1	79	141	126	346
G8GXP	9	133	290	432
G4FRE	56	124	78	258
G3XDY	70	123	176	369
G3JXN	77	119	172	368
GJ4ICD	59	117	239	415
G3IMV	—	108	383	491
G3UVR	61	106	213	380
G3PBV	41	106	200	347
G4MAW	45	106	52	203
G4TIF	—	104	173	277
G4NQC	63	99	234	396
G8KBQ	34	99	214	347
G3COJ	43	99	174	316
GW4LXO	45	98	235	378
G8HHI	23	96	135	254
G6DER	53	95	164	312
G8PNN	53	91	126	270
G8ULU	36	91	127	254
G6HKM	—	88	137	225
GW4TTU	37	87	227	351
G4RGK	28	86	204	318
G8XVJ	—	86	213	299
G4MUT	17	86	135	238
G1EZF	32	85	184	301
G4XEN	—	84	207	291
G6MGL	45	83	133	261
G4MCU	25	82	201	308
G6DZH	—	80	130	210
G4DCV	25	71	248	344
G8WPL	16	70	105	191
G4HFO	—	70	120	190
G4BWG	—	68	160	228
G4FRX	—	66	99	165
G4NBS	29	66	65	160
G1KDF	11	65	114	190
G4JZF/P	—	63	—	63
G4TJX	—	60	100	160
G6YLO	20	59	67	146
G6HKS	—	58	180	238
G6Y1N	—	58	87	145
G4ZTR	35	57	82	174
G6CMV	18	53	144	215
G6JNS	5	53	119	177
G4CQM	—	52	87	139
G6XSU	—	52	43	95
GM0BPY	—	50	110	160
GW8VHI	—	48	96	144
G4NRG	5	47	132	184
G4OAE	—	46	195	241
GW3CBY	18	46	107	171
G4VPM	—	46	117	163
G8MKD	—	45	112	157
G8ROU	1	43	88	132
G1INK	—	42	42	84
G8ZDS	—	41	119	160
G6XVV	5	40	172	217
G6CSY	16	39	34	89
G3BW	15	38	269	322
G6AJE	3	37	87	127
G4KUX	—	36	302	338
G6XLL	—	36	109	145
G4RSN	2	34	92	128
GM8BDX	13	31	41	85
GJ6TMM	—	22	125	147
G4MJC	—	18	160	178
G4FERG	—	16	278	294
G1DQX	11	15	33	59
G8RWG	—	13	105	118
G4WHZ	—	8	49	57
G1HGD	—	5	38	43
G2DHW	—	3	24	27
G8JUV	—	2	42	44
G6SIS	—	1	31	32
G3POI	—	—	448	448
G4IJE	—	—	338	338
9H1CG	—	—	276	276
G4DHF	—	—	272	272
GM4IPK	—	—	245	245
G4DEZ	—	—	242	242
G3FPK	—	—	213	213
G4SFY	—	—	203	203
G4MEJ	—	—	198	198
G6ECM	—	—	194	194
G8LFB	—	—	190	190
G4IGO	—	—	186	186
G0CHE	—	—	181	181
G4YUZ	—	—	168	168
G4DOL	—	—	148	148
G4XEK	—	—	143	143
E15FK	—	—	118	118
G0CAS	—	—	115	115
G1EGC	—	—	111	111
G6XRK	—	—	100	100
G8XTJ	—	—	92	92
G4TGK	—	—	90	90
G1IZO	—	—	82	82
GW6OFI	1	—	75	76
G1DWQ	—	—	72	72
G0BPS	—	—	50	50
GW6VZW	—	—	46	46
G1JOU	—	—	44	44
GM4WLL	—	—	39	39
G4WJR	—	—	37	37

Starting date January 1, 1975. No satellite or repeater QSOs. "Band of the Month", 70cm.

OK3YCM, YU7EW, HG7JAK, OK3KCM, HG8VF, OK2WCK, OK3KCM again, HG8CE, OK3RHW, HG5KKN, OK3TTL, OK3TBY, OK2KZR, OK2PEW, OK2TU and OK3LQ, all very good signals each way. Unfortunately the useful squares information was not exchanged. John was using 25w and a 10XY *Yagi* at 25ft. The same day, he reports that GM4LPG/M in the Grantown on Spey area worked to Vienna on simplex FM, and that GM6WQC in Dornoch worked another GM *via* a repeater in Belgrade: doing it the hard way?

Paul Baker, GW6VZW (GWT) took part in the May 3 contest working F6G1F/P (ZJ), FD1JLQ/P (AK), F6KBF/P (AJ), ON4ASL/A (BK), FD1FHI (ZH), PI4VLI (BL) and DJ4UF (DK) a new 1986 country. On the 5th, GJ1/DG4YDT was another new county and country this year. GB4LI on Lundy Is. and G4XBN/P on Rat Is. were unusual QSOs. In the May 17/18 contest, Paul added another seven 1986 counties, G4APA/A (DHM) being an all-time new one, while G4IWB/P in XJ was a new square.

A late letter from Ken Osborne, G4IGO, (SOM) covers the *Es* of May 16. From 1000-1030 he worked RQ2GGS (LQ), UQ2GJN (MQ), SM1HOW (JR), SM7OSW (HQ) and SM7LXV, OZ1DOQ and OZ9FW all in GP. At 1742 on June 6, Ken got I6DRF (GC) and at 1832 IC8CQF (HA) *via Es*. On the 7th, he worked IW4ARD (GE) by MS in an 80s. burst. Later that day, in another brief *Es* opening, he worked YU1AFS (KE) at 1703, YU4WEU (IE) at 1715 and YU8ALN (KC) at 1715. YU2FVW and YU1HFG were heard.

The May 16 *Es* was quite a lengthy affair, it would seem, since GW4CQT began by working SP5AD at 0947. Your scribe was out all morning and came back to find a message from G6TUH about the event. At 1147, UP2BH (MP) was worked on CW at RST449 but in the next few QSOs, he came up to S9. The most consistent DX was SP4DGN who was worked by many up and down the country. There were 13 SPs copied and your scribe heard someone telling a friend he had worked SP4DGN at 1340, whether GMT or BST was not mentioned, though.

Other notes gleaned from monitoring the VHF net, etc., are that SM5MIX contacted seven Fs between 1100 and 1200 on May 16, suggesting the reflecting region of the *E-layer* was over northern Germany. PAs were worked into LZ *via Es* on May 11. On May 22, Paul Pasquet, G4RRA, (SRY) worked OE2CAL (GH) at 1944 in a very selective, duct-type of tropo. event, followed by DF1CF (FH). On May 28 there was a fleeting *Es* opening around 1850 when GD4IOM was heard calling an IW0 and DL7YS said that between 1548 and 1630, there was an opening between

Station	ANNUAL CW LADDER				Points
	4m.	2m.	70cm	μ Wave	
G4AGQ	8	178	5	—	191
G0ABB	—	189	—	—	189
G4YIR	—	155	—	—	155
G4SFY	—	151	—	—	151
G4XUM	—	105	—	—	105
G4ZVS	—	104	—	—	104
G4OUT	—	93	—	—	93
G4PPV	—	86	—	—	86
G4EIB	—	83	—	—	83
G0DJA	—	55	—	—	55
G4TJE	—	42	—	—	42
GW4HBK	31	—	—	—	31
G2DHV	3	17	—	—	20

No. of different stations worked since Jan. 1.

UB5 and 9H/IT9. At 1320 on May 30, IW6MIA was heard on the SSB calling frequency. At 0530 on June 8, during the contest, it seems that an ON station was startled to have his "CQ Field Day" call answered by a YU, according to a QSP from G8MBI. On June 6, between 1750 and 1815, 9H1BT was worked by some and IW9AUH/9 and IT9SBZ, both in HX square were about. G3IMV reckons the beam heading for the latter was 15 to 20° off the great circle QTE and this has been reported on other *Es*-type openings, particularly the May 16 one, when some east Europeans were audible for a long period, but at low strength, suggesting FAI propagation.

Seventy Centimetres

During May, G1DOX added GW4BVY/P (PWS) and EI8EF (Donegal) for a pair of new 1986 counties and the EI in VO was a new square for John. G4NBS found conditions in the May 3/4 contest very poor and Tony only made 10 QSOs in G and GW. He has now completed his *SSB Electronics* transverter and can run 100w, TVI permitting. He is changing his *Trio* TS-130 for a TS-440. On May 29, he worked GB4XN and almost made it with GW3KJW. G4SEU also worked GB4XN on June 1 for a new square.

G4XEN worked his final three letters for the *RSGB's Monday Night Award* and hopes that activity will not wane now that this award has finished. Back on Apr. 4, John worked 29 stations in the contest, best DX being PA3AEF at 375 kms. Strong SW winds forced G6AJE to point his antenna to Wales on May 12 and Mike worked GW1SSQ and GW1MCD, both in Gwent. On May 19, he worked G1EBW (SXE) while on the 29th, he found GB4XN for a new square and 1986 county.

For G6DZH, things were very quiet until June 1 when, in the contest, Keith worked GM6MGS/P (IO86RW) at 1101, a QRB of 520 kms. using just 12w and a single 18-ele. *Parabeam*. On May 25, G6HKM contacted HB9AEN/P (DG) and on the 29th, GB4XN. Ela has added the *ARRL VHF-UHF Century Club (VUCC) Awards* for 70cm. the 432 MHz/60, and also for 2m., the 144MHz/100 to her collection.

The Microwaves

G1DOX has been putting more work into his 13cm. station and John now has the brass PA fired up. With a 2C39BA valve, the power output is now 4.8w and he expects to squeeze another couple of watts out of it. He has contacted G4CBW (SFD) receiving a 57/58 report. G3FNQ in Southport has been worked, John getting 54 from him. Shortly G1DOX will be conducting tests with four Midlands stations; G6FK, G8SWZ, G8UYR and G3KFD. He says that G3BPJ is contemplating 13cm. too. On 23cm. G1DOX added ZM square, G6NBY, on Apr. 20, and on May 11, he mentions GI4KIS/P as a new county but omitted to say which one of the six.

G4NBS worked GW8TFI/P (DFD) and XL square for an all-time new one and it was Tony's 40th county from his "new" QTH in ten months on 23cm. He has been spending a lot of time under his car lately, but emerged to have 11 QSOs on 23cm. in the May 3/4 contest. Another new county was GW4GFX/P (PWS) but no continentals were worked. The only other QSO was on the 29th, GB4XN another new county and square. Tony has put his preamp. on the mast which has improved reception. Beacons GB3CLE and GB3MLE are now fully audible, but with only 5w at the antenna, very few stations are worked outside of contests.

It is proposed to publish the latest listings for the 13cm. All-time Table next month. The present participants are G3JXN, G3XDY, G6DER, G6YLO, G8PNN and G8TFI, but it would be nice to have some more entries. All you need do is state the number of administrative counties worked, the countries and the QTH squares, then add them together for your total points.

DX-Peditions

From the 20m. VHF net, John Hunter, G3IMV, has heard that YU7AJH may operate from LB square in the August *Perseids* meteor shower. Also, SP6GZZ is promising operation at the same time period from IM and JM squares.

The Five Bells Contest Group is running a DX-pedition to ZT square in the Shetland Is. from July 20 for two weeks. They will be QRV on 2m., 70cm., 23cm. and maybe 6m. On 2m. the call for CW MS will be GM4DHF/P on 144.028 MHz using 2½ minute periods and they will always transmit on the second period. They have complete duplicate equipment and propose to run two stations simultaneously, the other being GM4YHF/P on 144.128 MHz. The tropo. QRGs on all bands will be decimal 213. The two other members of the group are G4ODA and G1DXI and this team can always be relied upon to put on a very good performance.

MS Procedures

The following comment from Colin Morris, G0CUZ, has been received;—"Recently, in a sked with a DL station, I tried the 'missing information procedure' when my call sign was still missing but 'Roger' report received. I loaded the memory with 'MMMM. . . .' and the next period this was greeted with 'RRR. . . .' from the DL station. The QSO then failed. This procedure obviously does not work and I shall not use it again.

"The problem is that some stations — and I have done this myself — will gamble towards the end of a sked and send, say, 'R26 R26. . . .' with no call signs at all. This is OK if these have been received earlier in the sked but a number of my skeds have failed because of my missing part, or all, of the call sign still needed, despite 'Roger' report received. I know not of any effective way around this, now having tried the 'missing info' procedure".

Perhaps other MS practitioners would care to comment on this matter.

Six Metres Supplement

From Ken Osborne, G4IGO, (SOM) some more 6m. notes. He writes that the ZB2VHF beacon has been appearing at good strength for long periods. On May 26, 5B4CY was up to S8 between 1805 and 1835. On May 30, FY7THF was up to S4 from at least 1901 to 2018, and on June 4, from about 1936 to 2011 and 2052 to 2107, it was up to S6. On June 8, from about 0706 to 0808, Ken was receiving a TV test card on Ch. E4 with the words ORTAS-DAMAS which he assumes was from Syria. (N.B. There is a 100kw TV Tx at Hassake on E4). G4IGO has worked the following;— May 30, 2000 EA2JG (YD), June 5, 1807 ZB2BL (XW), June 7, 1055 EA1MO (XB), 1758 GM4FDT (XR) and 1807 GM4UPL (XR) all *via Es* EA1MO is said to be running one watt to a 2-ele. beam.

For transatlantic 6m. watchers, there is something magic about June 30/July 1 as GJ3YHU reminded your scribe recently. In 1984, Dennis had 47 North American QSOs in the period 2234 to 0057, it may be recalled. A point worth noting is that 6m. may be open even though 10m. is quite dead, so don't be fooled.

Finale

This last part is being edited on June 10 and there has not been a really good *Es* opening on 2m. in June. But perhaps the "season" will start late this year, following the pattern of the summer? weather. Whatever happens, please write and share your experiences of the VHF/UHF bands. The all-important deadlines are in the box and address your correspondence to; "VHF Bands," SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts., AL6 9EQ. 73 de G3FPK.

Practical, Simple Sideband Part 2

*in this special series, these two
very well-known designers and constructors
get together to unravel its mysteries*

REV. G. C. DOBBS, G3RJV and IAN KEYSER, G3ROO

Continued by G3ROO

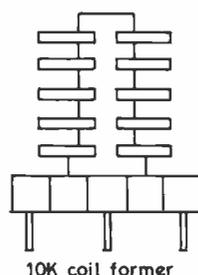
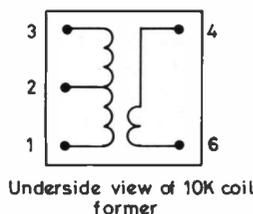
REVERTING to the circuit diagram we have two mixers following the filter, IC4 and IC6. IC4 is not used if the set is to be operated on 80 or 20 metres; if any other band is required dual conversion is used and the frequency of the crystal oscillator is calculated by adding 14.5 MHz to the top end of the required output frequency of the transmitter. This means that the output of the first mixer must be tuned to a frequency 5.5 MHz HF of the top end of the required output frequency. Table 1 lists the required frequencies.

The output from the first mixer is amplified by IC5 prior to passing to the second mixer so making up for loss in the circuit. The output from the PCB is about 0.5 milliwatt at a fairly low impedance. When used to drive the *Cirkit* linear amplifier module a maximum of five watts output can be obtained, a good QRP

level for SSB which will enable the world to be worked under good conditions. The advantage of keeping the output power low in simple SSB transmitters is that we do not have to worry about ALC, automatic linearity control. If the power amplifier is capable of producing 20 watts with reasonable linearity and we can drive it to less than half of its rating we can remain fairly confident that we will radiate a clean signal.

If the PCB is to be used for an all-band version we do not effect the single-conversion onto 20 metres — instead we keep to double-conversion. By doing this we can choose crystals so that sideband selection is automatically LSB on 160, 80, and 40 metres and on all the other bands USB. That means that we only require a single carrier crystal, so saving a few pounds. The two sets of coils have to be mounted on another board, for which *Vero* could be used, and the correct set selected for each band using a multi-pole,

Band	Mix 9MHz LSB with xtal on	To reduce signal on/in L1/L2	Then mix with VFO on	To produce output on/in L3/L4	L1 & L2 36swg enam.			L3 36 swg			L4 36 swg			C 34,35,36.	C 37,38,39.
					1-2	2-3	4-6	1-2	2-3	4-6	1-2	2-3	4-6		
160m	2MHz	7MHz LSB	5.0-5.2	2.0-1.8 LSB	10	10	4	16	16	5	4	28	5	200p	560p
80m	Unbal mixer	9MHz LSB	5.2-5.5	3.8-3.5 LSB	10	10	4	16	16	5	4	28	5	100p	130p
40m	3.5MHz	12.5MHz LSB	5.4-5.5	7.1-7.0 LSB	6	6	3	10	10	4	3	17	4	150p	220p
20m	28.5MHz	19.5MHz USB	5.15-5.5	14.35-14.0 USB	6	6	3	6	6	3	2	10	3	33p	100p
15m	35.5MHz	26.5MHz USB	5.05-5.5	21.45-21.0 USB	4	4	2	6	6	3	2	10	3	33p	33p
10A	42.5MHz	33.5MHz USB	5.0-5.5	28.5-28.0 USB	3	4	2	4	4	2	2	6	2	22p	22p
10B	43.0MHz	34.0MHz USB	5.0-5.5	29.0-28.5 USB											
10C	43.5MHz	34.5MHz USB	5.0-5.5	29.5-29.0 USB											
10D	44.0MHz	35.0MHz USB	5.0-5.5	30.0-29.5 USB											



Last 1/4 in this port and finish on Pin 3 }
 Third 1/4 in this port }
 Second 1/4 in this port }
 Tap as necessary on pin 2 }
 Wind link winding (4-6) in this port. Starting on Pin 1, wind 1/4 main winding on top of link.

TABLE 1: TO CONVERT 9MHz LSB SIGNAL BY DUAL CONVERSION TO AMATEUR BAND OBTAINING CORRECT SIDEBAND

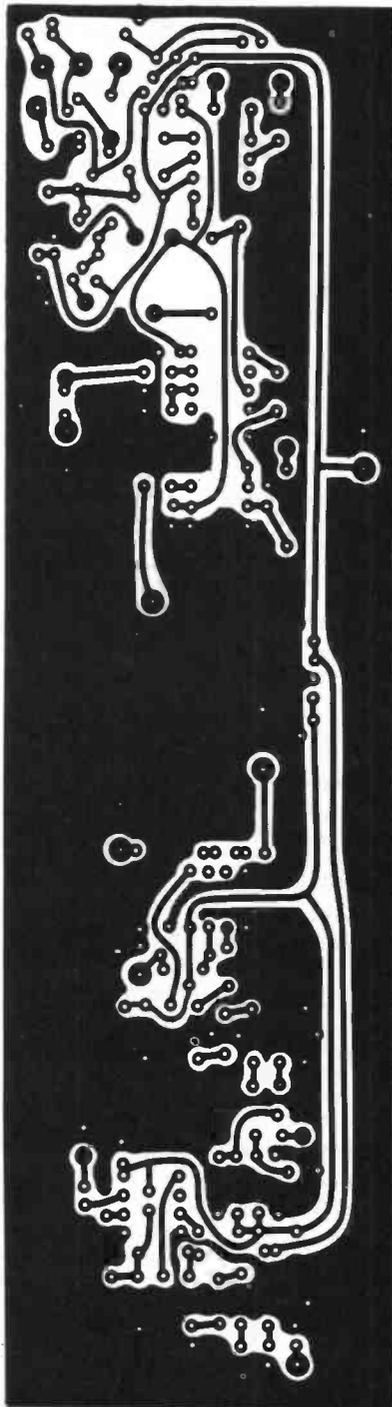


Fig. 14 PCB LAYOUT

Full Size

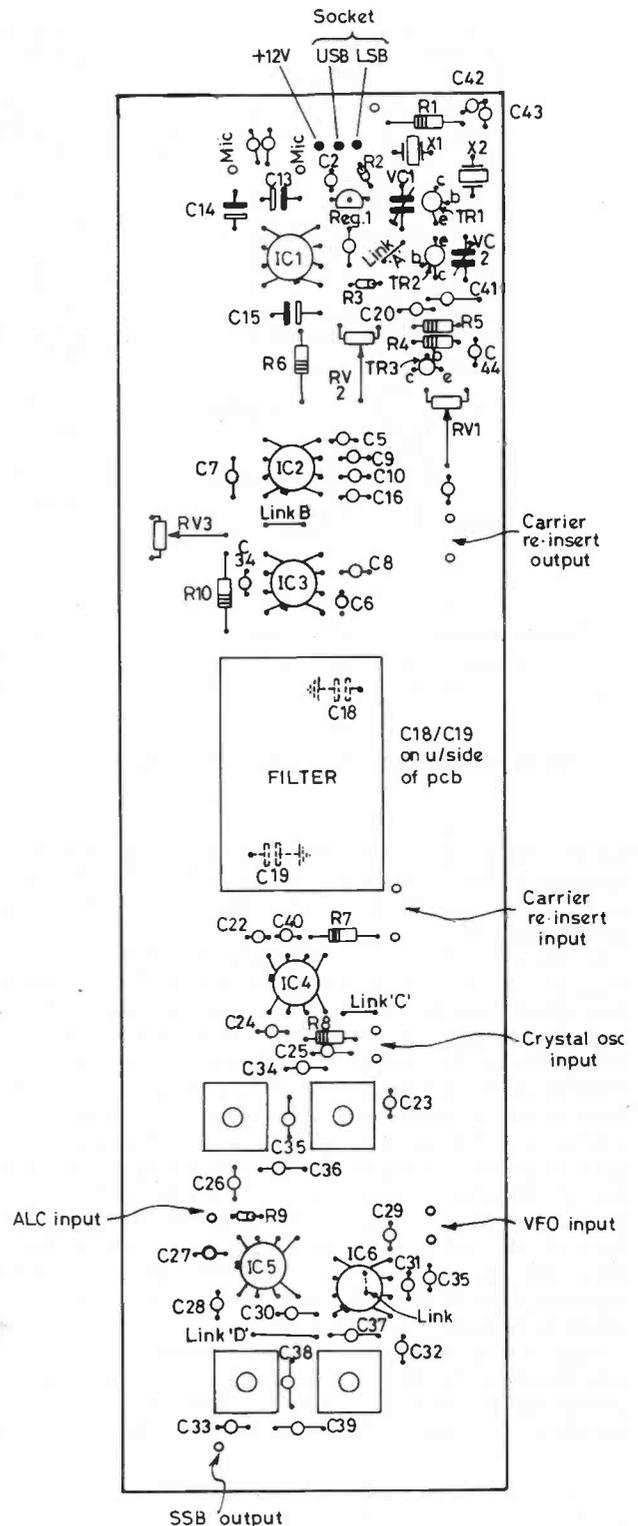


Fig. 15 PCB COMPONENT LOCATION

Full Size



multi-way switch. In the case of 80 metres the first mixer is not required and so is unbalanced by applying a bias to the carrier port and tuning the output to 9 MHz. The SSB signal from the filter will then pass directly to the SL610 amplifier and thence to the second mixer IC6.

Setting-Up

The beauty of the filter method of SSB generation is that setting up is very simple indeed, all that is necessary is a general coverage receiver. First thing to do when applying power is to check for

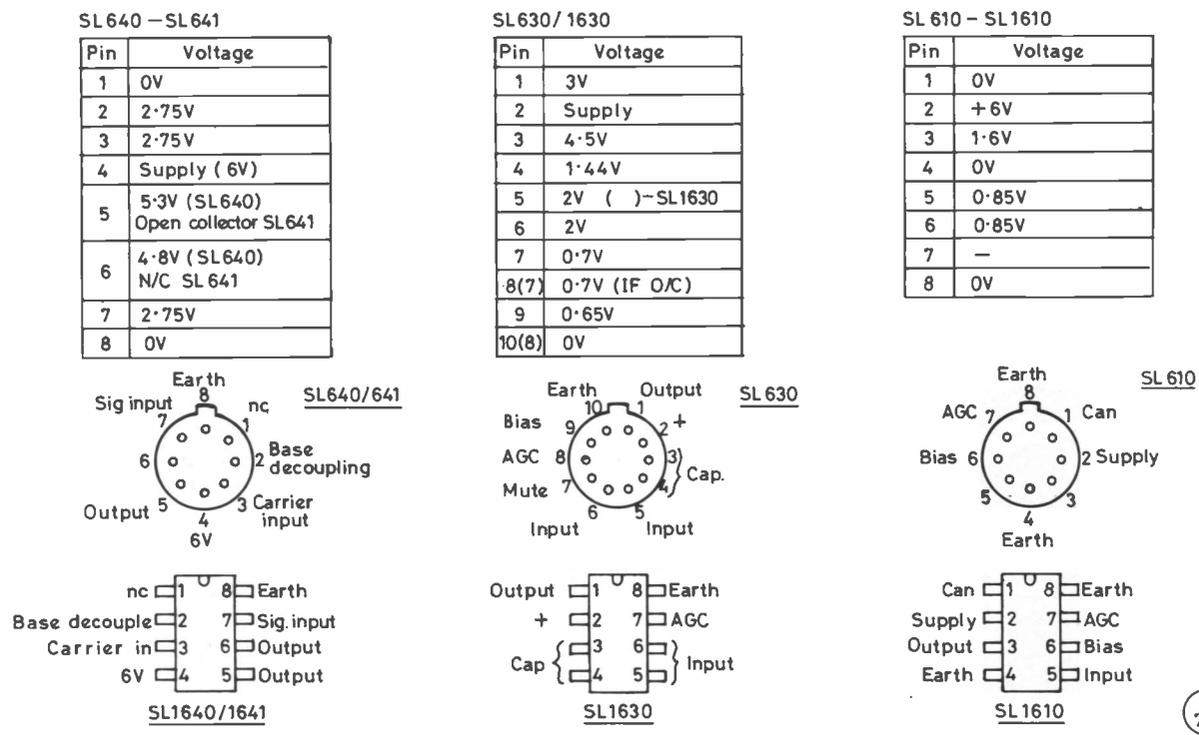


Fig. 16 SL600 SERIES: DATA AND VOLTAGES

smoke! Ideally an ammeter in the positive supply lead is an advantage and can be of considerable assistance in fault finding. I prefer to isolate the supply to each module in any complex unit and check in turn.

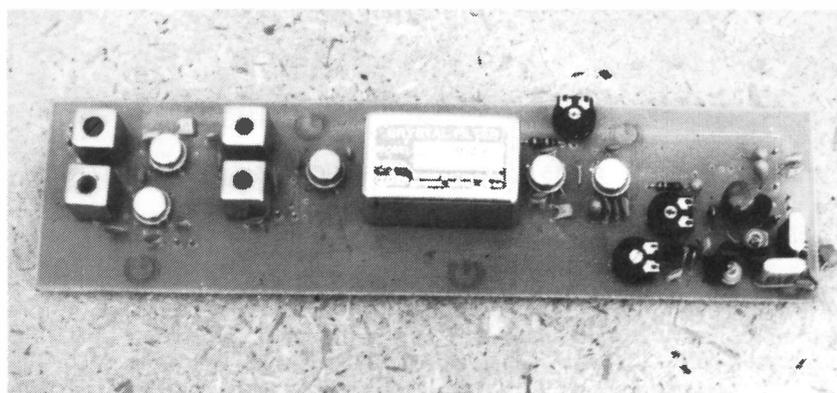
In this case we have four modules, the VFO, the crystal oscillator, the SSB module and the PA module. The PA should have already been checked for correct operation when that was built and set up. Next is the VFO, and the supply should be connected and the module checked that it is generating the required signal using the general coverage receiver with a short length of wire connected to its aerial terminal, this being placed near the output of the oscillator. Now the crystal oscillator unit; again the general coverage receiver is used in the same way as with the VFO. Finally the SSB unit: apply power and set the two presets to half travel. Using the general coverage receiver check that when the + 12 volt supply is connected to each of the carrier oscillator select pins the correct crystal oscillates. The two trimmer capacitors can be checked that they change the frequency of the crystal by a kilohertz or so.

Next connect a microphone to the microphone input pins and talk. The audio should be heard in the receiver strongly when the pickup wire is held near the filter terminals. Now connect the output of the crystal oscillator PCB to the carrier input of the

mixer IC5; couple the receiver aerial loosely to the filter tuned circuits on the output of IC4 and tune to the expected frequency. The audio from the microphone should be immediately evident. Now temporarily disconnect the microphone and it will be possible to hear the carrier frequency which is leaking through the balanced modulator: adjust RV2 to reduce this to its lowest level. Next loosely couple to the output of the PCB and tune to the required output frequency. Connect the VFO to the second mixer, IC6, carrier input and tune the VFO until the SSB signal is heard in the receiver. Peak the cores of L1 and L2 for maximum and then peak L3 and L4 for maximum reducing the coupling to the receiver as you go.

That completes the rough setting-up but it will be necessary to re-trim L3 and L4 when the transmitter is completed so that a fairly flat response is obtained over the band in use.

Final setting up of the carrier crystals must be done with another station by moving the trimmer slightly and getting reports on the audio. Another more reliable method uses an audio signal generator. Feed a 1.5 kHz tone into the microphone input and adjust the level so that 1 watt is being radiated, then maintaining this audio input level reduce the audio frequency to 250 Hz and adjust the trimmer so that the output power is about 200mW. That is just about optimum for most SSB filters.



Completed simple sideband transmitter board.

E 731

Further Uses of the Transmitter PCB

We now look at other ways that we can use the PCB. The output of the board is not sufficient to drive the Cirkit PA module to full output. As explained earlier this is not a bad thing as it does mean that we are less likely to radiate a poor quality signal and *that*, in turn, gives home brew equipment a bad reputation!

The following description is for a transmitter with much greater output than the simple sideband unit and is considerably more complex to construct. The fully tested circuit of the exciter stages is given and over the years this has been built in various disguises. The complete unit is not given as it has not been built as a final unit, but the description given is to show how a full transmitter can be built and got going. Fig. 17 gives the complete block diagram to show the requirements of such a transmitter.

If we are prepared to go to the effort of including ALC circuitry it is possible to utilise the board to accommodate a transistor in place of the final mixer and so increase its output to drive the Cirkit PA module to full output of 20 watts. The new circuit of the mixer section of the PCB is given in Fig. 18 and the component layout in Fig. 19. The second mixer IC6 has been replaced by TR4, this is DC connected to the output of IC5 and the biasing set so the transistor is running in Class-A. The output signal is tuned by L3 and L4 and as the frequencies are the same as the original design we can use the data in Table 1. L1 and L2, however, are now tuned to the output frequency and the transmitter uses single conversion; the data for these coils is the same as for L3.

We now come to the problem of the VFO. If the transmitter was to cover only the four LF bands we could get away with using a VFO and change its frequency to suit the conversion: 160 metres would require a VFO on 7 MHz, 80m. on 5 MHz, 40m. on 2 MHz and 20m. on 5 MHz. These are all practical VFO frequencies and one of my earlier transceivers did just this. If 15m. and 10m. are to be covered the VFOs needed would be on 12 MHz and 19 MHz respectively — far too high to maintain good stability. To overcome this we can use a crystal mixer VFO using the same design as the transmitter mixer circuitry. Fig. 21 shows the overall circuit and notice the similarity: it's almost identical! We feed in our VFO and crystal, tune the output and it's ready to feed into the transmitter strip. Setting up is a little more difficult as the higher frequencies are outside the range of the average general coverage receiver, but there are several ways of overcoming this problem, but we will cover those shortly.

Firstly a word about the output frequencies. In the simple sideband transmitter we chose our first conversion frequency so that the sideband output was automatically selected to be correct for the band in use. This was fine as we were using dual conversion, but if you look closely you will see that there could be problems if only single conversion is used.

For an example look at the frequencies used in the 40-metre band. We used a conversion crystal oscillator on 3.5MHz to convert the 9 MHz signal to 12.5 MHz. The second harmonic of the 3.5 MHz oscillator is on 7.0 MHz and if allowed to get to the signal stages would be radiated as a strong carrier. We are lucky in this design as the signal would be heavily attenuated in the 12.5 MHz bandpass circuit and does not cause any problem, but we must take care that this situation cannot occur on any transmitter we design.

This can easily be avoided by ensuring that the oscillator is HF of the band in use; the harmonics of the signal are then well out of the passband of the transmitter. There can be another problem, that, of two harmonics of oscillators in the set beating together to produce spurious signals, but these are more troublesome in receivers than transmitters and by using the old faithful VFO frequency of 5.0 to 5.5 MHz and the crystal frequencies associated with it we are relatively problem free. (This VFO frequency not was just pulled out of a hat but was worked out by someone as being the best. The first recollection I have of it being used was by the famous constructor Arnold Mynett, G3HBW, who used it in a solid-state transceiver back in the early 1960's. This set, as I remember it, had all the facilities that are in the FT-707 but included 4m. and 2m. as well and in a case only a little larger!)

For setting up any piece of equipment it is advisable to have a few items of test equipment such as diode probe, GDO multi-meter, and a great advantage is a power supply which includes a current meter. As mentioned in the setting up of the simple sideband transmitter the supply current can tell the more experienced constructor a lot about what is happening in the circuit but it can also be of assistance to the non-experienced. Full scale deflection when you're only expecting 100 milliamps points to an obvious fault! A slowly rising current when you're not doing anything to the circuit points to thermal runaway somewhere, so look for something getting hotter and hotter! And no deflection at all . . . well, find the disconnection.

A signal generator, however simple, can be of great assistance as, when used on maximum output, it can temporarily be used in place of an oscillator. The SL640 and SL641 are especially suited to this as the carrier input port only needs 100mV to drive it; all signal generators will be able to supply this on maximum output if working properly. If the transmitter is to be used only on the LF bands the setting up procedure is the same as the simple sideband description. Look for oscillators on the general coverage receiver, start from the exciter end and work towards the output. On HF, where the general receiver cannot be used, firstly tune the signal generator to the required output frequency of the crystal mixer VFO and feed it into the carrier input of IC4. Tune the transmitter stages as described in the simple sideband unit, monitoring the output on the amateur band.

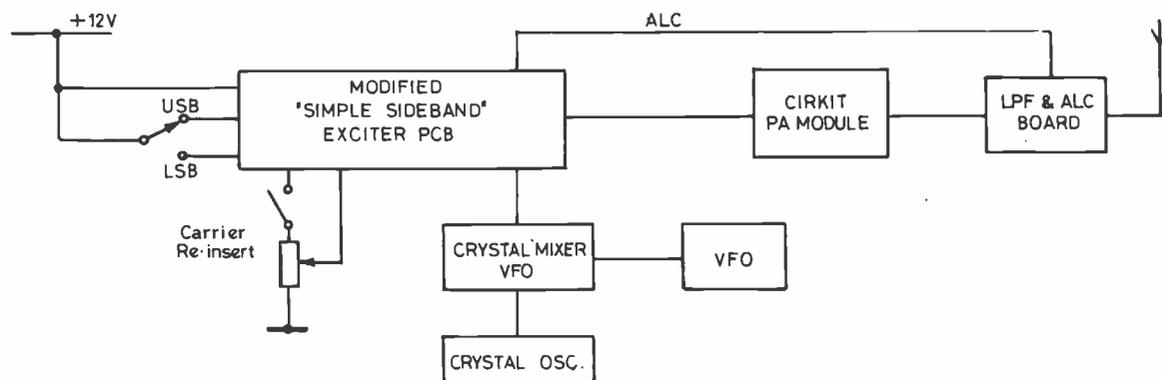


Fig. 17 BLOCK DIAGRAM OF HIGHER POWER "SIMPLE SIDEBAND"

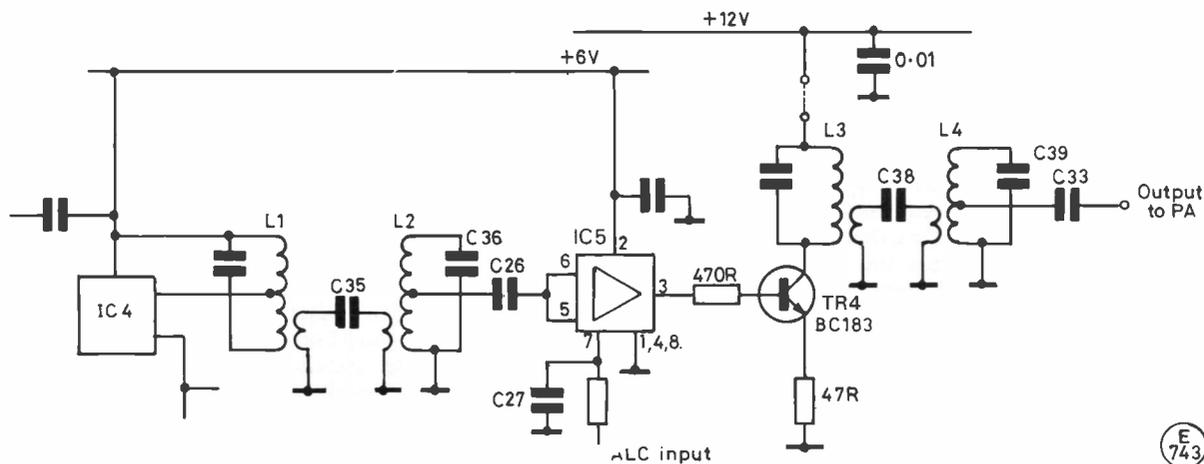


Fig.18 "SIMPLE SIDEBAND" Higher output Mixer diag. (see Fig.11b part 1).

E 743

Having got the exciter going feed in the VFO and peak the crystal mixer VFO tuned circuits for maximum output; the transmitter will then be ready to put on the air after filtering output through suitable low pass filters.

Construction Problems

This is the most difficult part of any design! The RF circuitry is totally predictable on paper but when placed in a box snags can occur if the screening is not good enough. As far as possible construct in boxes, bolt these together in a suitable arrangement and then do the interwiring. Remember when designing layout that you do have to get into it for servicing and tuning-up, so place boxes in such a way that lids can be removed. Also lead all wires off the board in one direction and lace them together, not only does this make it look so much neater but also holds the wires in one place when trying to get the iron in to replace a component.

**Table of Values
Fig. 18**

R1, R2 = 27K, ¼W	C1 to C3, C5 to C11 = 0.01µF ceramic plate
R3 = 470R, ¼W	C12 to C14 = to resonate L1, L2, L3 on
R4 = 47K, ¼W	required output frequency
L1, L2, L3 = inductance required to resonate with C12, C13, C14, respectively on the required output of the xtal mixer VFO, the link winding being 1/10th of the primary winding.	

There is nothing worse that charred wires in completed equipment.

The biggest problem of all in designing the layout of a multiband unit is the positioning of the bandswitch. Remember

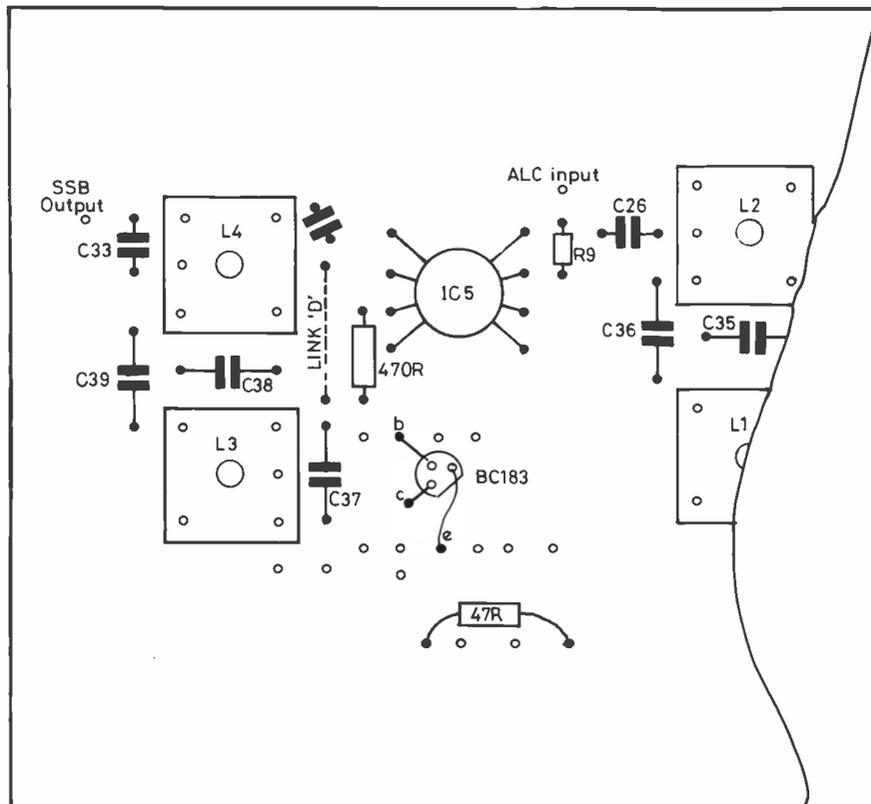


Fig.19 Component layout of PCB output portion (Higher Power version).

E 744

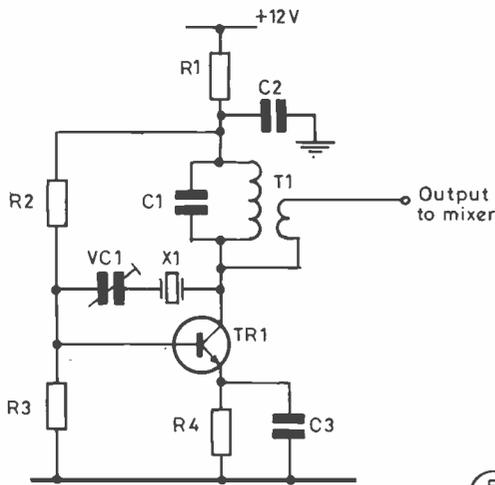


Fig. 20 Typical Crystal Oscillator Circuit



Table of Values
Fig. 20

- R1, R4 = 100R, ¼W
- R2 = 22K, ¼W
- R3 = 4K7
- TR1 = BC183
- C1 = to resonate T1 on output frequency (xtal freq. x 1 or xtal freq. x 3).
- C2, C3 = 0.01µF ceramic plate
- VC1 = 5-50 pF miniature trimmer
- X1 = xtal required for band used
- T1 = Toko 199KCA314N coil with capacitor in base destroyed or removed (Bonex Ltd., 102 Churchfield Rd., Acton, London W3 6DH).

Considerable saving can be made by buying "untested" SL600 devices from *J. Birkett* of Lincoln. I use these devices exclusively and have a drop out of less than 20 per cent. The PCB has been designed to accept the SL1600 range of IC's so the SL600 range has to have its leads bent into a dual-in-line configuration prior to fitting in the board. The pin connection of both styles are given in Fig. 16.

Table 2. Crystal Mixer VFO frequency details

Band (MHz)	Mixer output freq. (MHz)	VFO input freq. (MHz)	Xtal required for mix (MHz)
1.8-2.0	10.8-11.0	5.3-5.5	16.3
3.5-3.8	12.5-12.8	5.2-5.5	18.0
7.0-7.1	16.0-16.1	5.4-5.5	21.5
14.0-14.35	23.0-23.35	5.15-5.5	28.5
21.0-21.45	30.0-30.45	5.05-5.5	35.5
28.0-28.5	37.0-37.5	5.0-5.5	42.5
28.5-29.0	37.5-38.0	5.0-5.5	43.0
29.0-29.5	38.0-38.5	5.0-5.5	43.5
29.5-30.0	38.5-39	5.0-5.5	44.0

that the exciter PCB, the crystal oscillator board, the crystal mixer board, as well as the low pass filter box, are all switched. You could use four switches, one for each unit but that makes the front panel look untidy and unprofessional. All these units must be 'in line' from front to back with the switch running beneath them. The other alternative is diode switching or relay switching. Diode switching is cheap but I am not altogether happy with it especially at high levels in transmitters.

The alternative, and the method I now use almost exclusively is relay switching; this is far from cheap, but far more convenient. I design my boards to accept relays, get the set to work on one band, preferably one of the highest, and then add bands as required. In this way the cost of the unit is spread, only bands that are used are fitted but the facility is always there to fit others at a later date.

With relay or diode switching positioning of the boards is very simple indeed, as it is only necessary to think of the RF path of the design.

Keep the exciter stages as far as possible from the PA and the low pass filter box; the microphone input is very sensitive to RF signals and this is a common cause of audio distortion.

As mentioned earlier this latter design has not been built as described as a transmitter, but all stages have been used in the past at one time or another, and have worked. Anyone new to the art of construction should have little trouble getting the simple sideband exciter going on QRP. Low pass filtering is required on both transmitters and details of suitable filters are given in the Table of Values for Fig. 18; these are connected between the output of the PA unit and the aerial terminal and switched as required.

The beauty of the simple sideband unit is the inability to overdrive the PA stages. Audio distortion may occur in the microphone amplifier if a very high output microphone is used but such units are rare indeed.

Next month George, G3RJV, will be taking over to describe a transceiver based on the "MLX" PCB. This is a complete SSB transceiver on 9 MHz and with his design will enable a single band transceiver to be constructed.

We regret that, due to a production problem, Fig. 21 has had to be held over until Part 3 next month.

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SHORT WAVE LISTENER FEATURE

By Justin Cooper

OUR preamble this time is once again down to *W. J. Prior (Lochcarron)* who wonders why on the one hand he rarely if ever, hears a G station and on the other why his Discone, pressed into service as an HF aerial when the main one blew down, seems to be the best yet!

To take the first part, Bill is around 300 miles north of Scotch Corner, very roughly, and so there is no chance whatever of other than a very rare hearing of a G ground-wave signal; also, being surrounded by mountains anyway, he is well screened before he starts. Thus he will only hear G stations who happen, thanks to a combination of their aerial, his aerial, and short-skip conditions, to propagate their signals just right. Now as to the second question — heaven knows! It seems to be a pretty clear hint that a vertical aerial is worth experimenting with! It is quite frustrating to an SWL when he can only hear one end of the QSO, and the U.K. station is inaudible while the DX is a five-and-nine boomer; but that is part of the game and happens to us all, wherever we may be. In fact it is probably by far the most common cause of a contact being wrecked by someone 'tuning-up' and then CQ-ing on top of one's prize DX. He's probably not heard either end of the contact with a quick listen, and the luck of the draw may make him a big signal to any one of the participants. There is a big gap between the last of the ground-wave and the first return of the sky wave, where the only possibility of hearing is by 'scatter' and this mode is not usually effective in our sort of radio, due to lower power and lower-gain aerials. Someone in this 'null' area may have an aerial that puts out a high angle lobe of radiation which comes down on top of the other chap. Of course if they were all much more careful about listening first, this wouldn't happen — but if *everyone* listened, no-one would transmit and the band would sound to be dead! Finally, Bill must have an old *Call Book* as he questions a G0 station he heard as a pirate: that's the current series of 'A' licences.

The Mail

Firstly a couple of letters from *Mrs. A. Sitton (Stevenage)* who is keen on this amateur radio game, and has already realised that listening on the bands is one of the best ways of preparing to be a good operator when the licence is achieved. Angela details her log-keeping system which is not (yet!) computerised; it not only involves the main log but several other notebooks too, and which must require quite a lot of care to ensure it is all up to scratch — but of course that's half the fun of it. On a different tack Angela has an HR-10B which she says is a 'bit flat' particularly at the lower end of the topmost range. The calibrator is permanently on thanks to a duff switch, and this does interesting things to the receiver — pretty obviously the calibrator signal is affecting the AGC system. The answer is to disable the calibrator, maybe by pulling out the crystal, until such time as the switch can be obtained and repaired.

We were amused when *P. Oliver (Paisley)* blamed us for pushing him into sending off for the WAB Book and getting involved in the award; all we did is to mention it in the column! However, it really doesn't matter a jot what facet of the hobby you get into so long as you get your enjoyment out of it.

Now we come to *L. Marquardt (Hereford)* who has no less than three update letters, since his offering for last time seems to have missed the deadline. Luciano has a goodly spread of activity, from Eighty down to Fifteen, even though at this time in the sunspot cycle there isn't much of real interest going on. One can

hardly blame the DX-peditioners for waiting for the up-turn when large sums of money are involved and there may be no propagation to some parts of the world — this, it has been said, was one of the reasons why the recent Clipperton DX-pedition was a busted flush as far as the Europeans were concerned. However, our ears and their choice of frequencies to listen on tell another story altogether!

Now we come to the letter from *B. F. Hughes (Harvington)* and it is quite interesting to note that most of his new prefixes are 'specials' and the majority of European origin. We wonder how many others could boost their scoring by looking seriously at European signals that previously were deemed not worthy of notice.

Now *R. Williams (Borehamwood)*, who has a Yaesu FRG-7, and Joystick aerial and ATU, which seem to be collecting up the DX in fine fashion.

Clubs & Things

Dave McGlone (Limerick) has been listening for just five weeks when he sent in his first entry. Now he is beginning to feel the need for clubs to join and books to read, as we all seem to do at this stage. Firstly, without a doubt, is to join IRTS, the Irish national society; they are at Box 462, Dublin 9. Secondly, find the Limerick club, and to this end our copy of the "IRTS Yearbook" says that the contact is EI4BK, T. Deegan, 27 Oakland Drive, Greystones, Limerick — although we must say that the next issue is about due out, and so there may be a different contact. However, with 71 amateurs in Limerick, they *should* be findable! As for books, that depends on your individual interests, but we would suggest a good general-coverage text for a start, such as the RSGB "Radio Communication Handbook," or the ARRL "Handbook for the Radio Amateur" — both are obtainable from our Publications Dept. On the subject of Dave's HPX listings, it is quite surprising to notice that he has just one East German on the list. This must be an effect of the skip distance, as they are very common indeed in England.

Awards

J. J. Sales (Lancaster) is into awards, and wants to know, in essence, how to go about it. A Good Question! Ideally, one wants to know what the award is about and what the requirements are before you start. Secondly, you also need to know what is required in the way of QSLs, or a certified log entry, or whatever; and thirdly you have to get the stations into the log and get the QSLs out of them if that is called for. For J. C.'s own money, the only awards worth looking at are WAC, DXCC, WAZ and the similar level ones by the Russians and other countries. The efforts that just require you to hear/work six stations in Bloggsville if you are in the same county, and two if you are elsewhere are good for a chuckle and go to make Bloggsville a little more popular with the DX fraternity, but otherwise don't do much. However anyone who can complete a WAZ — let alone a five-band WAZ — and get the cards in, in order to claim his award, is very definitely a savvy operator, be he a Phone or a CW man and deserves every respect. In some of the big awards the same group run an annual contest, and if you work a country in the contest they will check with the other chap's contest log entry and if you are in there they will accept that in lieu of a QSL. That's only one or two cards, though, and the rest have to be got in. This is the tough bit, insofar

**Norman Henbrey's, BRS28198/
G11195, shack in Northiam,
East Sussex.**



as the use of the Bureau isn't very successful; you have to get your *veris* in by direct mailing and enclosing an s.a.e. and maybe even a couple of dollars — and the s.a.e. needs foreign stamps which have to be obtained from stamp dealers. By the time you've got the cards in for, say 200 countries for DXCC, quite a lot will have come in *via* the Bureau, but the rare ones will have cost you a bomb and done your blood-pressure no good! Incidentally about the Russian awards, for the details you must write to Box 88, Moscow.

Next we must turn to *Mrs R. Smith (Nuneaton)* who seems to be having trouble with aerials that won't stay aerial — the spring winds can be *quite* destructive!

S. Wilson (St. Andrews) has been restricted to the 0100-0400 period for his listening, and split these hours down the middle to give equal time to Eighty and Twenty. Perhaps the most interesting one was P4/P/HB9TL on Aruba which Stuart was a bit doubtful about. P4 is certainly the right prefix and an HB9 on holiday there might will be signing as /P.

Now we come to *M. Ribton (Gillingham)* and his R1155 receiver, which, we gather has 'bitten' him. Now the catch is this: the 1155 receiver design separated HT negative from earth so that, as we recall (it is 40 years ago!), a resistor of suitable value between them would develop a voltage which could be used as grid bias. The earth connection should be on the LT-pin if the PSU/output stage is in a separate chassis. However, Mike's receiver has its PSU and output stage inboard, so it is a reasonable assumption that the PSU on the front panel has long since been removed; that's a pity because the use of an inboard PSU and output stage used to make the thing drift too much. The earth connection must be found, and is probably easiest located by finding the screened lead which goes to the grid of the output stage and follow it to a valve pin and hence to LT-; then earth it to the mains earth. However, before you go through all this, a quick check with the multimeter will show up two things. One, is there any DC connection between the mains winding of the transformer and the secondaries and two, is there a capacitor — about 0.01 μ F — connected between one leg of the mains and LT-. There usually is, because otherwise there is a tendency for mains modulation to occur. This capacitor should in any case be renewed with a modern one of at least 1000VDC working, and it is as well to replace *all* the paper 0.1 and 0.01 μ F capacitors if you want to use the beast in anger. Mostly they show O.K. on the multimeter, but test them on high voltage and the picture changes! Another thing which would be worthwhile would be to get the BFO out to the front panel: the RF stage used a rather noisy valve so if it is all on the top line it is a noisy receiver in terms of 'mush.' If the socket for the PSU still exists, memory (be it stressed!) suggests the

connections were: 1 and 2 are aerial inputs (strap these together and use one aerial), 3 is LT +, 4 is LT - and chassis, 5 is HT +, 6 is Phones output, 7 blank and 8 is HT -. With the correct PSU arrangements and the 0.01 μ F capacitor fitted between mains and LT- there is still the possibility of a 'tingle' unless the chassis is nailed down hard to earth, and that would certainly be the case with only a two-core mains lead. It sounds as though the previous user had his earthing all tied to the aerial system, so as to keep the mains earth and its carried noises-off out of the picture.

Aerials — Confusion!

R. Wooden (Staines) noted our comments on aerials and misconceptions in the May issue, and compares G3XAP's recent *S. W. M.* series and an article in another magazine about the 66-ft. wire — G3XAP recommending it and the other chap saying it was a length to be avoided. All we can say about this is that while G3XAP is an amateur he is also a professional scientist and works with scientific method instinctively. On the other hand there are more pundits on aerials than enough, and very few of them have any *real* knowledge of the subject — indeed most professional engineers shy away from this area and leave it to the specialists, of whom there are precious few. Just as an example, read G6XN's book, "HF Antennas for all Locations", and observe how many Aunt Sallys he first puts up and then knocks down again! It doesn't need a lot of native wit to realise that much of 'standard received knowledge' on aerials is pure hokum — but to get at the real truth is so hard that in many areas it hasn't been done yet. One difficulty is that an aerial which in theory can't work — the end-fed Zepp, for example — is hung up and proceeds to net the countries quite well. The user promptly concludes that the end-fed Zepp does work. What he should be concluding is that while it *can't* work as it was intended to, it most certainly *is* working in some, oddball, mode which is quite inexplicable with the data at hand. Perhaps an hour or two clambering round with a GDO and a measuring tape would reveal *an* answer, or a session with a computer. But note the difference in the answers! Seriously, there is more pure twaddle printed about aerials than almost anything else.

N. Askew (Coventry) breaks his silence to offer a 'Nil' report and to mention the passing of locals G2DRW and G6TD, regulars on the Coventry Old-Timers net. They will be missed by many.

B. Musselwhite (Warminster) has a starter claim, but no covering letter — but both the name and the handwriting seem familiar from the past. Perhaps we will find out next time.

The letter from *H. M. Graham (Chesham)* shows that Maurice didn't find a lot on 80 or 10 metres, so he stuck to 21 MHz and

14 MHz. Propagation seems to have been mainly to the east, with Indonesia in particular well represented.

Our next reporter is *M. Rodgers (Harwood)* who offers just an interesting HPX list to take him up to 1667.

N. Henbrey (Northiam) says he has given up playing cricket in favour of umpiring and his wife is a qualified scorer. However, Norman has been in hospital for a spell — hope he will soon be fit and around again.

The two lists from *E. M. Gauci (Sliema, Malta)* cover his All-Time entry and a running total for 1986. So far 1986 has yielded some 666 prefixes — way above the normal 500 transfer point. However, to keep the two lists must be a mammoth task in itself.

There is a change of touring caravan in prospect for *F. Dunn (Chester)*, and Frank reckons he won't get so much listening time in as a result, as he will be out and about. One would have thought something rather fine in the aerial line could have been organised on the caravan, and some exploration of sites and places would yield interesting data for aerial buffs, but of course there is always the problem of powering the receiver (and family objections to contend with in a confined space!)

Next we have a short note from *J. Routledge (Hartlepool)*; he says that now he has passed the 1000 mark on Phone he is going to concentrate his attention on the RTTY and get his score in that mode up. However, time is limited by decorating chores and similar activities.

P. Lincoln (Aldershot) has just a short note this time, as he has been occupied with the computer and when he has been active conditions haven't been very good — mostly Europeans and U.S.A., with the ZS mailbox station strong at times.

Our next letter is from *N. Jennings (Rye)* who passes on the word that our old friend G. Shipton has been in hospital and we all hope he is soon fully recovered and back on the bowling-green. Norman reckons that the reference to Maidenhead Squares in connection with Mrs. Smith's letter last time round was wrong — so we are now left wondering just what those suffixes meant!

E. W. Robinson (Felixstowe) agrees with us about the OTs having much more rigorous definitions of what they call a 'hearing' of a station before they enter it in the HPX List. E.W.R. reckons that we should call for an entry to show the band, time GMT, the station heard, who he is working, location of the station claimed, and maybe comments too. The argument is that often a station will call another on schedule, and give the called stations call many times but his own very little, which could confuse the newcomer combing the band for new prefixes. And, as he says, it's more interesting when you extract the maximum information from a hearing. We agree, but at the same time it would make the preparation of each HPX listing quite complex. Certainly we want to know if the station is at all odd, or at an odd

HPX LADDER (All Time Post War)

SWL	PREFIXES		
PHONE ONLY			
B. Hughes (Harvington)	3148	R. Wooden (Staines)	814
E. M. Gauci (Sliema, Malta)	2839	J. J. Sales (Lancaster)	805
Mrs. R. Smith (Nuneaton)	2578	A. Vest (Durham)	605
E. W. Robinson (Felixstowe)	2463	N. Fox (Wakefield)	570
H. M. Graham (Chesham)	1861	S. Wilson (St. Andrews)	555
M. Rodgers (Harwood)	1667	J. Singleton (Withernsea)	506
P. Oliver (Paisley)	1585		
S. Baker (Cwmbran)	1527		
CW ONLY			
N. Henbrey (Northiam)	1475	F. Dunn (Chester)	1845
F. Dunn (Chester)	1432	J. Goodrick (I.o.W.)	1763
N. E. Jennings (Rye)	1416	A. Vest (Durham)	858
N. Askew (Coventry)	1367	J. J. Sales (Lancaster)	297
R. Fox (Northampton)	1305		
P. Davies (Market Drayton)	1175		
RTTY ONLY			
M. Ribton (Gillingham)	1129	N. E. Jennings (Rye)	677
G. Shipton (Rye)	1091	P. Lincoln (Aldershot)	530
J. Routledge (Hartlepool)	1011	W. J. Prior (Lochcarron)	378
M. Hudson (Folkestone)	987	J. Routledge (Hartlepool)	354
P. Lincoln (Aldershot)	888	N. Henbrey (Northiam)	321
B. Patchett (Sheffield)	858		

Starting score 500 for Phone, 200 for CW or RTTY. Entries in accordance with HPX Rules — see March issue, p. 29.

time, or is in any way a special, so that we can answer any queries that crop up on it — J. C. doesn't claim to hear them all!

R. Williams (Biggleswade) says he is encouraged by the example of Mr. Sweeney at 70-plus to put in his own spoke as a youngster of 69! Ray started BC listening in 1933 and then turned over exclusively to amateurs from 1935 to the outbreak of W.W.II. After the war, Ray listened regularly from 1946-1950, but then broke off until August last year, save for a short spasm in 1966. Nowadays, Ray has an R-600 receiver, picking up its sigs. from a Datong active aerial. This combination seems to have picked out much of the good stuff; YIIBGD with a YL operator, K70XB in Colorado, VK3MO and others on Twenty, all continents on 21 MHz and lots of Indonesian calls, plus ZS6AR who said he was the southernmost ZS, 5H3VB using a Ten-Tec rig and solar power, 6W1NQ, and 8P9AR. On April 28 Ten opened up and Ray logged ZC4MR, 4X4BS, 4Z4BJ, 5B4DN, and HZ1HZ; the next day the band was open to Europe with PA0BN and EA3FHP, both using low power, being noteworthy.

Finale

Once again we seem to have reached the bottom of the pile. Deadline for your letters for next time is **Thursday, July 17**, addressed as ever to your J.C., "SWL" *Short Wave Magazine*, 34 High Street, Welwyn, Herts. AL6 9EQ. Good Hunting!

ANNUAL HPX LADDER Starting date January 1, 1986

SWL	PREFIXES
R. G. Williams (Borehamwood)	463
L. Marquardt (Hereford)	423
B. Musselwhite (Warminster)	338
S. Field (Barningham)	319
Mrs. A. Sitton (Stevenage)	300
D. McGlone (Limerick)	208

200 Prefixes to have been heard since January 1 1986 for an entry to be made, in accordance with HPX Rules, see p. 29, March issue. At score 500, automatic transfer will be made to the All-Time ladder, but for this year those who so wish may continue in the Annual Table, provided a separate listing is sent in (where applicable) from the All-Time list. Thus the 1986 final listing, to appear in the March 1987 issue will show who has heard the most Prefixes in year 1986.

Directory of SWL Names & Addresses

- H. M. Graham, 20 Little Spring, Chesham, Bucks. HP5 2BZ. (0494 786564).
- N. Henbrey, 1 Perrymans Cottages, Northiam, Rye, East Sussex TN31 6HX. (079 74 2437).
- B. F. Hughes, 4 Harvington Hall Lane, Harvington, Kidderminster, Worcs. DY10 4LS. (0562 83 787).
- N. E. Jennings, 64 Udimore Road, Rye, East Sussex TN31 7DS. (0797 222530).
- P. Lincoln, 105 Newport Road, Aldershot, Hants. GU12 4PW. (0252 317870).
- P. Oliver, 64 Moorhouse Avenue, Paisley, Strathclyde PA29NY.
- W. J. Prior, Tigna Beinne, Croft Road, Lochcarron, Ross-shire IV54 8YA. (Lochcarron 207).

August issue due to appear on Friday, July 25th

Propagation Study on 50 MHz, Part 3

*Transequatorial Propagation (T.E.P.) during
sunspot cycles 18, 19, 20 and 21*

KEN ELLIS, G5KW (ex-SU1KE/HZ1KE/MD5KW, etc.)

AT the end of World War 2 the author, as MD5KW serving with Royal Signals in the Suez Canal Zone of Egypt, was able to do extensive monitoring of the harmonics of All India Radio on 49 MHz, Band I, TV, harmonics of services and commercial stations, and it was established that there was a potential for long distance propagation on the north-south path across the equator on six metres.

To explore this probability I constructed a station for operation on 50 and 58.5 MHz with a power output of 50 watts into a four-element directional array, changing direction alternately north and south at thirty minute intervals by means of a modified prop-pitch motor. I had also obtained from the R.A.F. loan of a cabin and an obsolete 50-foot wooden tower which we installed near my quarters at the officers' mess. The beacon started operating early in 1946, and in addition a continuous listening watch was kept for me for cross-band replies on 28.100 MHz at the remote Signals Receiving Station, a few miles away.

During the remainder of 1946 and early 1947 several reports of reception were received from Europe and South Africa, including reports from German stations DEM6753, DE8923 and DE8291. (I wonder who and where they are now — how I received the German listener reports would make interesting reading!) Regular monitoring was being done by G5BY, G6DH, G6XM, G2AOK, VQ2PL, ZS1P, ZS1T and others, but no contacts were made until autumn of 1947.

From *Short Wave Magazine*, November 1947, "Five Metres" by E. J. Williams, B.Sc., G2XC.

"The First Break: by early October reports were coming in that ZS1P and others in South Africa were receiving the afternoon transmissions from Alexandra Palace with fair regularity. Then on October 4th came a series of exciting contacts, when, from 1405 to 1434 GMT, G5BY and ZS1P worked CW and phone on a cross-band contact, G5BY on 28 MHz and the ZS on 50 MHz. Earlier in the day conditions had not been so good, for both G6DH and G6XM (who had listened earlier) switched off under the impression that nothing would happen that day.

The first Europe-South African two-way on 50 MHz was made a week later by PA0UN and ZS1T at about 1200 GMT. A contact with ZS1P followed.

On October 14th VQ2PL heard MD5KW on 50 MHz and on the 15th VQ2PL and MD5KW had a 28/50 MHz crossband contact. The following day G5BY and ZS1P repeated a crossband QSO, and VQ2PL and ZS1P worked MD5KW two-way on 50 MHz; G6DH heard nothing of MD5KW who was beaming on G most of the morning.^[1] On the 17th PA0UN and ZS1T had their second two-way: ZS1T was S7/9 at G6DH from 1200-1225 GMT. G5BY had crossband QSO's with ZS1AX and ZS1P from 1209 to 1249. VQ2PL and MD5KW made it again at 1530, and MD5KW's signals were still audible at VQ2PL with the former's beam pointing north. MD5KW had a two-way on 50 MHz with

Left to right, Ken Ellis G5KW,
Ray Cracknell G2AHU (ex-
ZE2JV), and Ted Collins
G4UPS (ex-ZD8TC).



Fig. 5. Cycle 21 T.E.P., Isles of Scilly

Date	Time GMT	Call	Bands	His	My	Remarks
1980 Mar. 9	1142	ZS6LN	50/28XB	599	59	solar noise S9 1400
" 10	1112-1210	ZS6PW	"	569	55	fluttery signals
" 10	1210	ZS6LN	"	229	239	fluttery signals
" 12	1225-1232	ZS6LN	"	229	239	fluttery signals
" 14	1310-1340	ZS3E	"	56	59	very clear signals
" 16	1245-1405	ZS3E	"	56	56	very clear signals
" 24	1300	ZS6XJ	"	56	57	
Apr. 1	0945	ZS6XJ	"	569	57	
" 1	1340	ZS3E	"	569	57	
" 3	1050	ZS6XJ	"	56	56	
" 4	1130	ZB2BL	"	59+	59+	several QSOs today
" 12	1515	ZS5TR	"	45	56	
May 10	1050	I5TDJ	"	45	58	
June 11	1640	I5TDJ	"	59+	59	
Nov 5	1420	ZS6PW	"	339	56	
1981 Mar 21	2105	ZD8TC	"	229		flutter, echo
" 29	1530	ZS6LN	"	539	55	
" 29	1536/1600	ZS3E	"	239/57	55	flutter
Sept 28	1730	ZS3E	"	59	56	
Oct 4	1645	ZS6LN	"	52	53	
" 4	1647	ZD8TC	"	59+	59+	
" 5	1605	ZS6LN	"	52	52	
" 5	1612	ZS6LN	"	579	57	
" 7	1630	EL2AV	"	579	57	
" 9	1630	ZS6LN	"	339	53	
" 15	1735-1925	ZS3E	"	57	55	
" 18	2015-2100	ZD8TC	"	33/349	44/58	flutter, echo
" 23	1535	ZS6LN	"	329	53	
" 31	1402	ZD8TC	"	599	57	
1982 Oct 10	1237	ZS6XJ	"	45	52	
" 10	1257	ZS6LN	"	539	57	
" 10	1530	ZS3E	"	529	55	
" 10	1530	ZS6BUF	"	529	57	
" 18	1120	ZS6BT	"	579	56	
" 18	1200-1245	ZS1STB	"	329		Cape Town beacon

ZS6BJ at 1300. Both G6DH and G5BD (Mapelthorpe) heard an American station on 48 MHz.

On Sunday, 19th MD5KW reached G for the first time and was heard by G5BY from 0800 to 0835 and from 0948 to 0952, cross-band contact being made at 0820. G6LK heard MD5KW at intervals from 0945 to 1100, signals peaking to S9. G5BY reported MD5KW at RST 558 peaking 20dB over S9! Later ZB2A got a crossband with ZS1T. This same day J9AAO worked CE1AH on 50 MHz two-way for a new world record of 11,300 miles.

Other distances we make as follows: G5BY/ZS, 5,970 miles; G6DH/ZS, 6,015 miles; PA0UN/ZS, 5,940 miles; MD5KW/ZS, 4,500 miles.

In addition to all this there have been many new paths opened up in the Americas, notably between LU and W5, while XE1KE has had over 50 contacts with LU and OA4, also TG9JW, CE1AH and PY2QK have been worked by the LU's.

In the north-south direction G5BY has also scored. During the course of many 50 MHz tests with MD5KW in the Suez Canal Zone, on a number of occasions G5BY would report MD5KW S9 when the signal was absolutely inaudible at G6DH (even though the MUF in that direction was at least 50 MHz) In these instances it appears that G6DH is too close to MD5KW — distance 2100 miles. PA0UN has also on several occasions not been able to receive MD5KW, who is 1950 miles from him, when G5BY was actually receiving him O.K.

Up to Nov. 9th 1947, MD5KW had been received only twice at G6DH for short periods at fairly weak strength. On Nov. 10th, however (when MD5KW made his first 50 MHz G two-way QSO with G6DH), the signals were S9 plus at G6DH. In this instance it appears that E's assisted and reduced the skip distance."

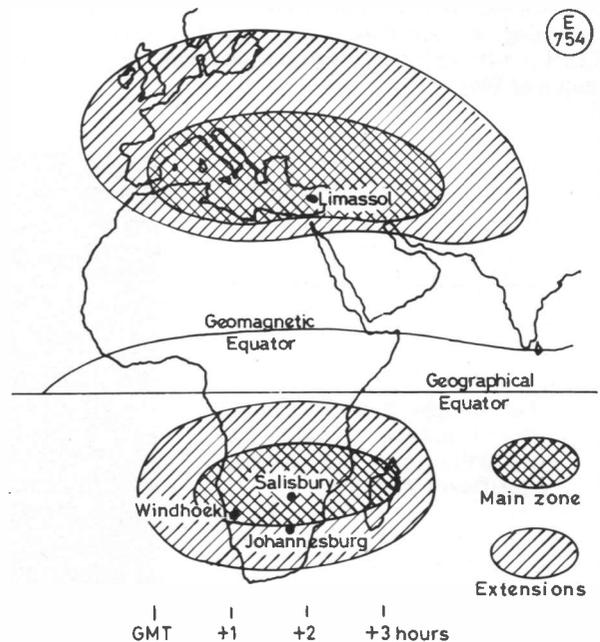


Fig. 6 The TE Zones at 50MHz as seen from Limassol in the north and Salisbury in the south (source: ARRL VHF Manual, 1965). At 144MHz the respective zones fit neatly inside the main zones at 50MHz.

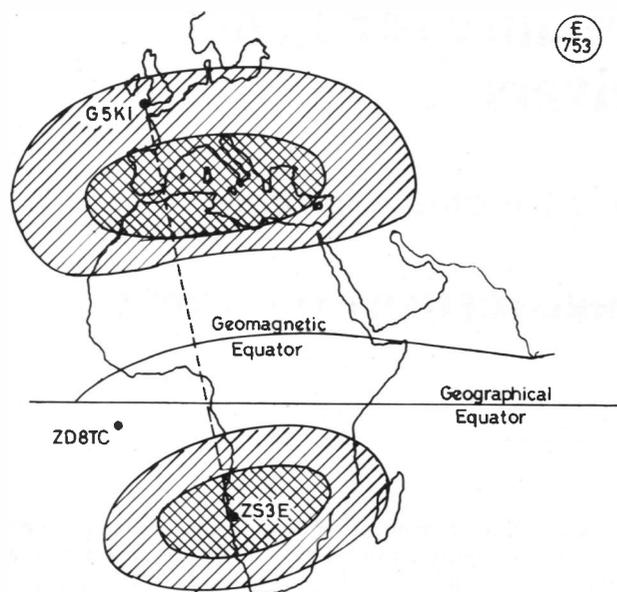


Fig. 7 The TE Zones at 50MHz as seen from Isles of Scilly in the north and ZS3E in the south, approx; based on Fig. 6.

¹¹ *Author's note:* This anomaly was referred to in Part Two (last month) in the paragraph "The effects of latitude" and is confirmed by G6DH in an excellent article in *QST*, January 1948.)

This effect of latitude and distance can be very frustrating and may lead to the impression that one's equipment is at fault, or a location problem! It was most noticeable more recently whilst operating from I.o.S and Penzance.

T.E.P. during Cycles 19 and 20

After the withdrawal of operating permits for 5/6 metres in U.K. due to Band I TV, interest faded in U.K. and the 50 MHz DX was forgotten until a revival of interest during the International Geophysical Year, when a few experimental permits were issued. Gordon Spencer G4LX (Newcastle) reported reception of the ZE2JV tests several times in May 1958. In the autumn he had permission for operation on 52.5 MHz, making tests every evening in September and at noontime on Sundays only. The evening tests were received in Salisbury three evenings out of 29 tried. In September, G4LX, on the other hand, heard ZE2JV 15 evenings out of 29 tried, and heard noontime tests on 2 out of 4 tries. G4LX reported the reception of the South African signals briefly for two evening periods, 1700 to 1715 GMT, usually showing a "clean" signal, and 1900 to 1930, always showing a flutter which is characteristic of TE propagation. The 1700-1715 period was discounted, as F2 propagation may have been responsible, but F2 propagation during the later period appeared unlikely. Tests in the other direction bore this out.

The time factors on the I.o.S-S.African path will of course be later.

T.E.P. During Propagation Studies at Isles of Scilly and Penzance. Sunspot Cycle 21, 1979-1982

Due to family and other commitments, and in view of the expense involved, it was not possible to spend as much time in the extreme south-west as was desirable; therefore only limited observations were possible when T.E.P. was probable to the south — *i.e.* during the spring and autumn equinox periods. However at other times crossband 28/50 contacts were made and these will be referred to.

An extract from the author's log of QSO's over the north-south path, Fig. 5, is included as a guide to possible times and dates of future openings. No attempt has been made to classify the QSO's into the now accepted modes of propagation, but the information is offered for the specialists in propagation studies.

As the geomagnetic equator is more curved at the point of intersection on Fig. 7, *i.e.* concave to the south, and convex to the north, it is assumed that the main zone and extensions will have to be modified. Fig. 7 is therefore being offered by the author as a rough guide; Fig. 7 is based on the original Fig. 6 (source ARRL "VHF Manual", 1965) and reprinted in *Radio Communication*, June/July 1980, in "Twenty-one years of TE".

Ray Cracknell has kindly loaned to me for a limited period copies of most of his excellent detailed and diagram-supported articles. For the benefit of those who may require more detailed information I am prepared, within reason, to assist — on receipt of an s.a.e. My current address is at the end of this article.

Now that we have 24-hour facilities once again, it is desirable that the study started by the pioneers of TEP 40 years ago and unfortunately interrupted be resumed, and all results, however small, be placed on record for inclusion in due course in the U.K. contribution to 50 MHz history. These may be sent to me, or direct to Ray Cracknell. Thanks in advance.

In Dec. 1959 *QST*, R. G. Cracknell, ZE2JV (now G2AHU), wrote a long, interesting and detailed article, "A Study of North-South VHF Propagation", based on the work of F9BG, G4LX, ZC4IP, ZC4WR and ZE2JV. This was followed in 1980 by a series of articles, "Twenty-One Years of TE", in *Radio Communication*, giving an account of observations and experiments in transequatorial propagation between 1957 and 1979.

Evidence was produced to confirm:

- (a) T.E. Propagation takes place *via* the Ionosphere.
- (b) Equinoxial dropout, which effects all signals above 50 MHz.
- (c) Three distinct modes of propagation:-
 1. Normal 'F' layer at irregular periods between 1100 and 2100 hours at very strong signal strengths.
 2. 'F' type TE providing strong signals, often characterised by very deep fading or severe distortion, and occurring mainly between 1830 and 2030hrs.
 3. Pure TE, providing weak signals accompanied by a characteristic flutter fading pattern, the maximum occurring about 2100hrs, but signals may be propagated at noon and throughout the evening until after midnight.

The classification of the three modes was established by time delay tests by oscilloscope photographs of an unmodulated 50 MHz signal received in Limassol from Salisbury by differing modes of propagation. Observations were made of the varying angles of arrival, flutter fading, and frequency spreading of the received signals.

The Future Programme

Now that 24-hour operation on 50 MHz is allowed in U.K. the studies that we can undertake are as follows:-

- (1) A full exploration of the possibilities of longer range TE.
- (2) Confirming or disproving that stations must be equidistant and at right angles to the magnetic equator in order for T.E.P. to work.
- (3) A determination of whether T.E.P. will work at even higher frequencies.
- (4) Transequatorial Propagation during the years of the quiet sun (*see* article "An Amateur IQSY Project", *RSGB Bulletin*, June 1965).

The next article will deal with 50 MHz during the International Geophysical Year, 1957-1958.

Author's address: 29 Stanbrook Road, Northfleet, Kent DA11 0JW.

Improved CW Performance for Ten-Tec Transceivers

better selectivity for the Triton and Argonaut

COLIN TURNER, G3VTT, and CHRISTOPHER PAGE, G4BUE

TEN-TEC Inc. of U.S.A. has marketed a successful range of transceivers in the U.K. for the last ten years or so. Recently KW Electronics has acted as U.K. agents and sold both transceivers and spares. Whilst later designs have a provision for a CW crystal filter as an accessory item, the earlier designs only had provision for an audio CW filter, which does not provide such good selectivity as a narrow crystal filter in the IF strip.

During our trip to the U.S.A. last year we went to the Ten-Tec production plant in Sevierville, Tennessee, as part of our tour of the southern States. CW selectivity was one factor of the early Ten-Tec range that we discussed with Dick Frey, K4XU, who at that time was chief development engineer with the company.

Since our trip Dick has moved to a post with another company, but with the information we learnt and by purchasing two CW filters, we have improved our Argonaut and Triton IV. Do you have an ageing Argo 505, 509 or 515, or maybe a Triton? Do you want to improve the receiver selectivity? If so, read on!

IF Amplifier and Filter

The heart of the improvement in selectivity is the Ten-Tec Model 217 500Hz CW filter, which is obtainable either from Ten-Tec direct or via KW Electronics at Chatham, Kent (their address can be found in any issue of *Short Wave Magazine*). The price quoted to us from Ten-Tec was \$59 plus \$7.50 air mail postage, and the KW price will no doubt reflect the import duty, VAT and airmail costs.

Another filter is available which has a passband of 250Hz, called the Model 219. This can be used to give even more selectivity, but it does have the disadvantage of introducing a 10dB loss to the IF signal. The Model 217 filter has a loss of around 7dB, and this is overcome by using a simple untuned preamplifier before the filter in the IF chain. Switching from CW back to SSB, and so reverting to the normal 2.7kHz bandwidth, is carried out by a change-over relay.

An unmodified Triton or Argonaut will have an SSB filter fitted giving around 2.7kHz passband. The Triton also has an audio filter which enhances reception in the CW mode, whereas on the Argonaut this is an accessory. If either of these transceivers is fitted with both the audio filter (Model 245 for the Triton and Model 208A for the Argonaut) and our extra crystal filter, the result is a very 'hot' transceiver indeed.

The Circuit

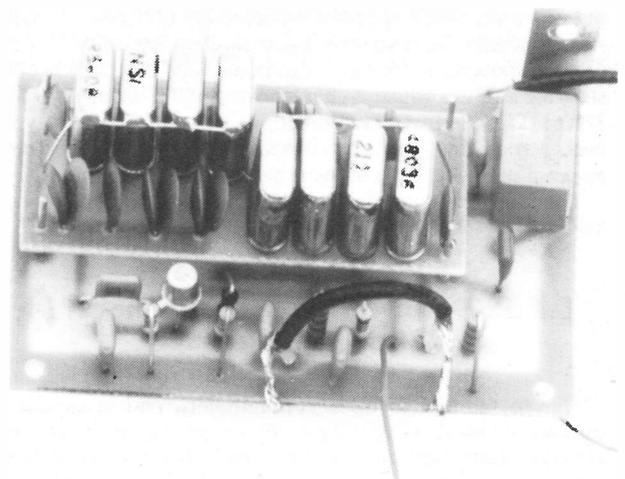
Fig. 1 shows the circuit of the preamplifier, TR1 and the filter with its associated switching relay, RL1. Signals at the IF of 9MHz are taken from the SSB generator board 80282 in the Triton and 80131 in the Argonaut, amplified by TR1 and are then passed via the filter and RL1, to the rest of the receiver IF strip through the IF/AGC board; this board is 80279 in the Triton and 80208 in the Argonaut. This modification affects the receiver path only, and the wire which connects the SSB generator board to the IF/AGC board must be removed before the filter is fitted.

Reference to the manual will show that we need to remove the wire from the pins marked "RX IF" on the SSB generator board, and the other end which is connected to the "IN" pin on the IF/AGC board. On the Triton this wire was coloured brown and on the Argonaut we found it to be blue.

In effect our new filter and amplifier is taking the place of this wire we have just removed. If you are in doubt about which wire to remove, the job has been made easy for you — luckily Ten-Tec transceivers are normally made to be readily serviceable. Merely remove the SSB generator and IF/AGC boards by removing the two screws holding the boards down and gently tug at the boards so lifting them from their sockets. Identify which pin is which by comparing the boards components with the individual circuits in the handbook for your particular transceiver. On the Argonaut the wire to be removed was connected to pin number 6 on both boards. Good old Ten-Tec, they always do a decent job of the handbook and service alignment procedures for their products!

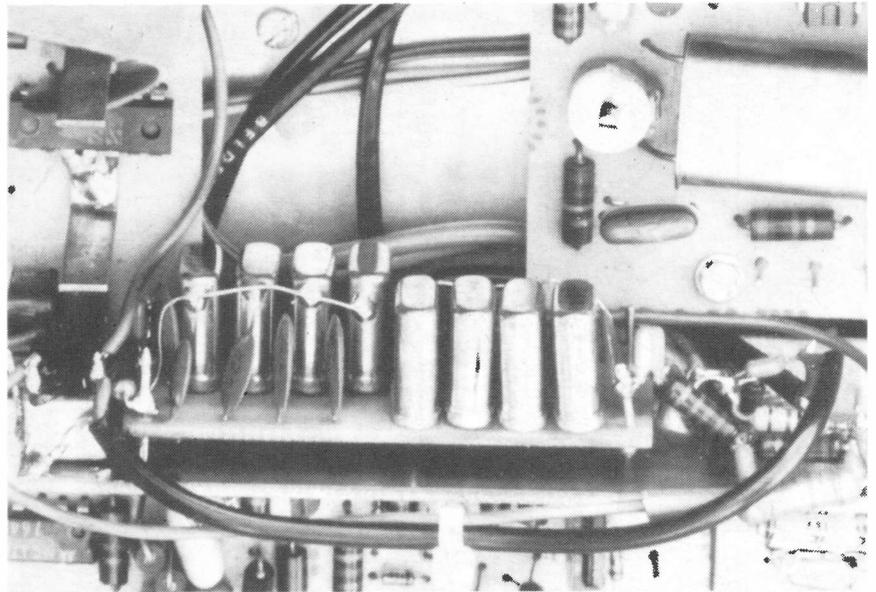
Power for the amplifier can be obtained from any of the points in the transceiver which has 12 volts and is accessible. On the Triton modification there was a bunch of wires delivering power to various circuits at the rear of the crystal calibrator on/off switch, and on the Argonaut we 'stole' it from the dial lamp switch located on the inside of the rear apron.

The changeover relay RL1 is used to switch the filter out of circuit when changing from CW to SSB operation. We arranged that a spare contact on the mode switch which is grounded under



G4BUE's PCB for the filter and associated preamplifier. Note the small 12 volt relay on the upper right.

A close-up of the new filter and amplifier fitted to the Triton IV of G3VTT.



the 'SBN' position, *i.e.* normal SSB, is used to hold the relay in, so connecting the SSB generator board direct to the IF/AGC board and bypassing our filter. When we switch to CW the relay drops out, so inserting the filter in the IF chain.

The relay can be any 12 volt changeover device, the smaller the better. In Colin's Triton we used a 5 volt type with a 560ohm resistor in series, whilst in Chris's Argonaut we used a 12-volt ultra miniature relay supplied by Maplin (part number YX94C, at 98p). Whatever relay is used it must be grounded through its coil from 12 volts *via* the mode switch wafer (S1c on the Triton and S1d on the Argonaut) when switched to 'SB-N'.

On the Argonaut, to enable the filter to be switched out when in the 'SB-R' mode (reverse sideband) as well as the 'SB-N' mode, a connection was also made to the appropriate tag on the switch. The correct tags on the switch can soon be found by using a meter, and if in the same position as Chris's will be at the bottom and rather difficult to get at. We overcame this by taking the side panel off the Argonaut by removing the remaining two screws, and making our connection.

Construction

A piece of PCB is cut just larger in length than the filter, which should also accommodate the changeover relay and the preamp transistor. For the Triton we used 'ugly' construction with the components soldered directly to the earth plane of the board. We etched a board for the Argonaut and used conventional PCB construction techniques. The PCB etching pattern is shown in Fig. 2 and the parts layout in Fig. 3. You can now choose which type of construction you prefer.

Screened leads should be used for all the IF connections, and the negative rail is run to any convenient earth point.

The completed board can be placed in any area near to the IF/AGC board in the underside of the transceiver. It was mounted vertically in the Triton and held in place by a small right-angled bracket soldered to the board and screwed into place under one of the transceiver's own PCB retaining screws. We mounted it horizontally in the Argonaut, parallel to, and immediately above, the IF/AGC board; it is held in place by a small right-angled bracket fixed to an existing screw on the side of the VFO

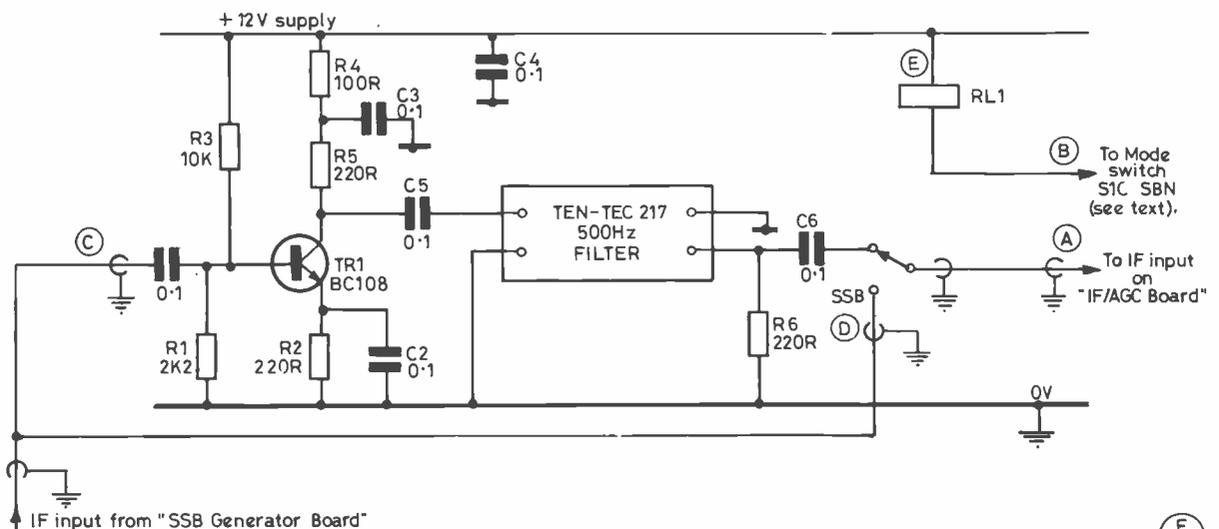
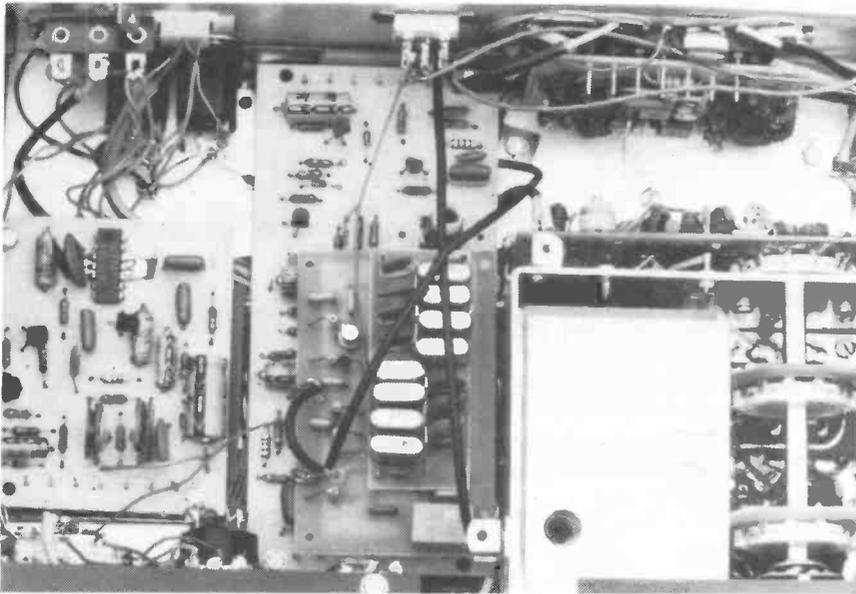


Fig. 1



Inside G4BUE's Argonaut 515, with the new PCB mounted alongside the VFO compartment. A small bracket is used to hold the PCB in position above the IF/AGC board.

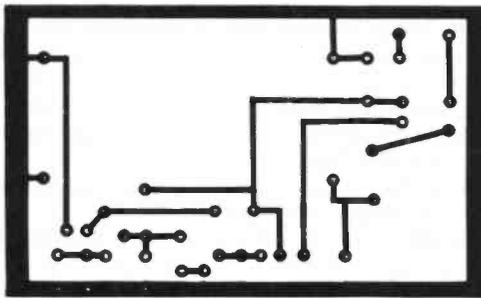
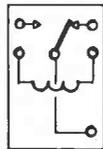
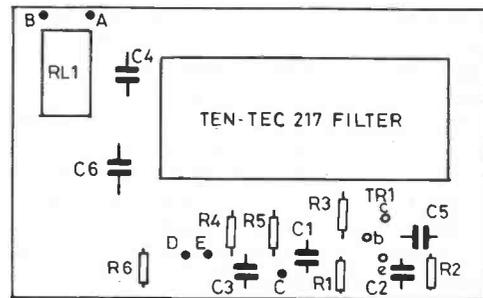


Fig.2 PCB Track side



RL1 underside (see text).

E 751

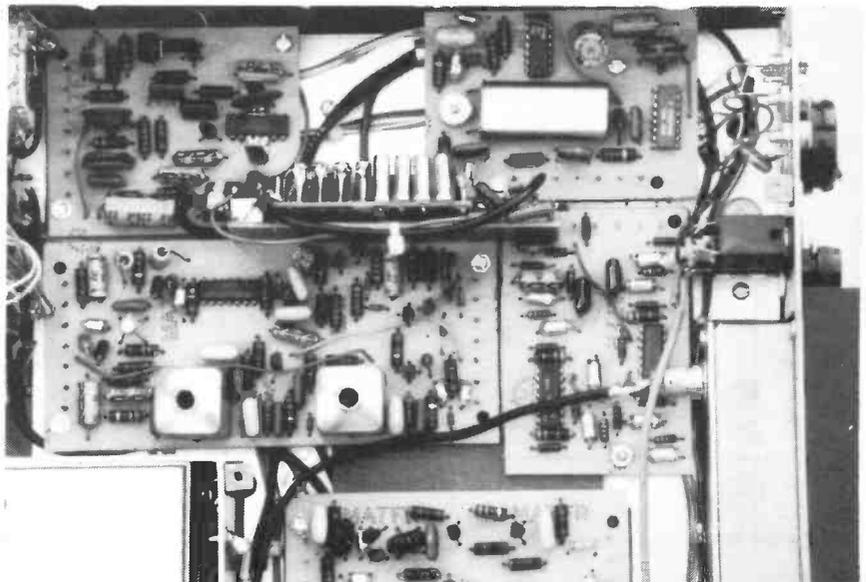


- A = To IF input on IF/AGC board.
- B = To mode switch.
- C = IF input from SSB Generator board.
- D = IF input from SSB Generator board.
- E = +12V input.

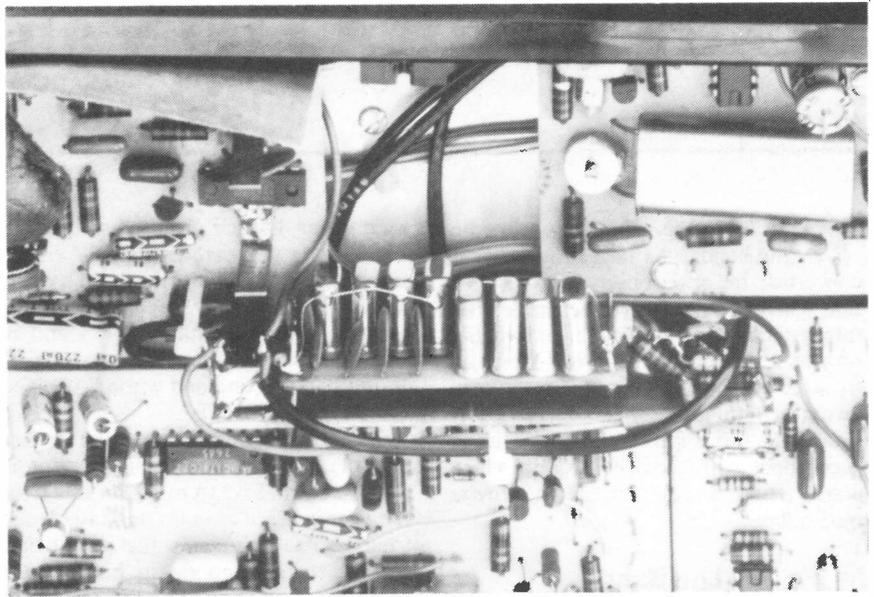
Fig.3 Component layout.

E 752

The position of the new filter module fitted to G3VTT's Triton IV, between the IF/AGC board, calibrator and audio boards.



G3VTT's 'ugly construction' filter module, mounted between crystal calibrator, audio and IF/AGC modules.



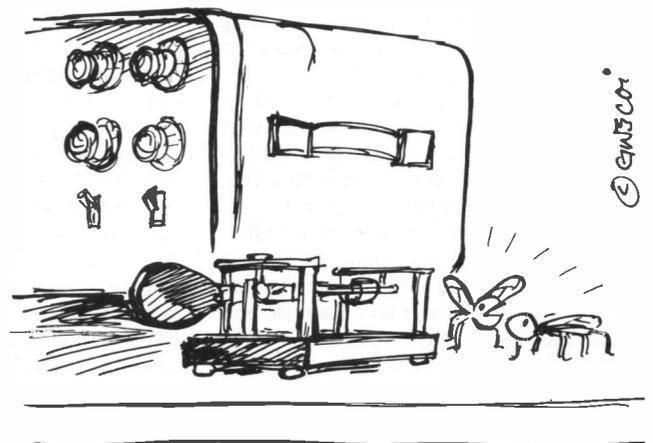
compartment, which in turn holds the bracket which one of the bottom panel retaining screws go into. A piece of insulating card was placed between the filter board and IF/AGC board to prevent shorting out of components should the two boards accidentally touch each other.

Testing and Results

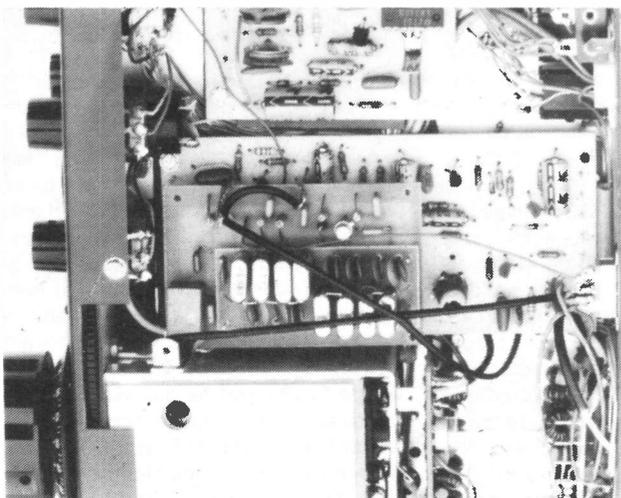
After checking the wiring and switching on, often a nerve-racking business, the selectivity can be compared by switching between 'SB-N' and 'CW', using the normal mode switch on the transceiver front panel.

There should be a great improvement in selectivity between the two positions, in fact on the Triton there are two positions of CW selectivity already fitted with the inbuilt audio filter. The selectivity in 'CW2', i.e. audio filter plus SSB filter plus new CW filter, is enough width for any CW operator on today's crowded bands.

The audio filter (Model 208A) for the Argonaut is combined with a notch filter and is external, being built into a separate case.



"I suppose they are a bit like us . . ."



G4BUE's modified Argonaut 515.

It has three positions of varying bandwidth (CW1, CW2 and CW3) and when used with our new crystal filter turns the Argonaut into a very good receiver, especially for QRP work.

Although we have not tried this modification with real 'live' Argonaut 505 or 509 models, there is no reason why it should not work as they both have identical IF amplifier systems to the later 515 model.

We would recommend that only an approved Ten-Tec filter is used, either Model 217 or 219. This is due to the amplifier design we have suiting only the 220ohm termination impedance seen by the Ten-Tec ladder type filters.

No ringing has been noticed with these filters, the shape factor of either 2:1 or 2.4:1 depending on whether a Model 217 or 219 is used, is enough to ensure that offending QRM can be lost by off-tuning enough to lose it 'over the side'.

So there you have it: with a little careful thought, manipulation of the soldering iron, a relay, the filter, and a handful of components, enhanced selectivity for your Ten-Tec. Go for it!

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

WHAT has this month been like on the bands? As far as the writer is concerned, the prime observation has been that when one returns to the shack after taking the mower for a walk, or switches on after a session of putting slow Morse on to tape, the bands have obviously been giving well but are now equally obviously dropping out. This of course is in accordance with Finagles Axiom, which states that Sodde's Law is *always optimistic!*

The Bands

There has been a little of what does you good to be found on all the bands, provided of course you could be on at the right time, so we may as well cut the cackle, and follow the readers round.

Ten Metres

The improved band conditions during the past month have of course resulted in more contacts and more reports.

G3NOF (Yeovil) noted quite a bit of Sporadic-E, with signals from all over Europe and strong GM signals, the band on occasion being alive from 0700-2300z, while at other times it has opened in the early morning and then died in the middle of the day until around 1600z; there were even a few openings to South America and Africa. Don mentions his contacts on SSB with C53FE, CN2AQ, CU2DG, FY5DG, JR8BUU/5N0, IC8SDL (Capri), PY1ACV, PY2EOQ, PY2EM, T77C and 5N8ZHN.

G4HZU (Knutsford) used CW, SSB and even some FM during the month, and his aerials varied from the two-element Quad, a half-wave vertical or a helically wound vertical used on the car, for one or two FM contacts while mobile. The band opened just about every day; the South American and Caribbean openings were noted but nothing worked due to TVI problems in that direction. However the tally still added up to 5B4RU, CN8AQ, DM, HA, HB9, I, LA, LZ, OH, OK, SM, SP, TK/DL4FF, RA4LD, RQ2GGF, UA6LMB, UA1ZFL (Murmansk) and YU, with gotaways including LU, CE, KP4, and CX. On a slightly different note, Tony recalls the White Rose Club's Activity Day on May 25, and enjoyed the inter-G working it engendered. True enough, and the White Rose Club support of the band and the efforts of David Whitaker are just great.

G2HKU (Sheppey) was entertained mildly by my opening comments last time around — he has been observing the

phenomena himself from close quarters while trying to locate Customs & Excise and local government officials on specific topics. Ted reckons they have training courses in covering their tracks and in laying down smoke-screens! Ted used CW on the band to find and work EA2BUN, EA5ABT, and IK6FBA.

G4ZZG (Warrington) notes the absence of the IY3M thing from his log, but found another one in EA3JA on 28246 kHz from Barcelona, heard at 1445z on May 11; and Charles also comments that, as in last season, there is no tie-up between the presence of amateurs and the presence of beacons. What is required, one supposes, is some sort of reporting network, whereby, for example, if a beacon in country X is audible in country Y, a telephone call goes between them and amateurs are alerted to the presence of an opening, and at least to some idea of the nature and direction thereof. Half of the problem is that while the beacon is giving the distant stations the hint that the band is open, it does nothing to alert the locals. With the present state of technical knowledge, there seems no reason, given only that the beacon band can be split into two, why a beacon cannot both transmit and also *listen* for other beacons; and when it hears one, raise an alarm with the beacon keepers who can then spread the alert through the ranks of the faithful, and get them on the band. On the other hand, to revert to G4ZZG's very interesting and thought-provoking report, how does one account for such as May 12 and 17, when Charles noted lots of amateur activity but *nil* on beacons? Possibly a question of localised paths and no beacon on the route?

Nice to hear again from G4OBK (Chorley) who promises us a photograph of what the wild winds did to his Top Band vertical . . . sounds as though he was getting a hint from nature to try an inverted-L! On Ten, CW accounted for YUs, EAs, Fs, Is, SMs, HB9s, C30BAX (QSL via DL4BBO), SJ9WL (QSL via SM4FTF) and IS00MH. SSB managed to do the trick with CN2AQ and F6FGU, and there were some cross-band contacts to 50 MHz, from 28.885 MHz, which yielded OE1XA, OZ1DOQ and OE3OKS; G4OBK regrets not having time to report to "VHF Bands" too. On a different tack, as we have reported in "Clubs Roundup" this month, there is a new club formed, and G4OBK has been pushed into the chair. He must be O.K. because they've already got thirty members or more signed on! To change tack again, Phil notes that

the CB intruders are still with us, and that it needs more of us to get on and squash the perishers with RF.

G3BDQ (Hastings) has done further work on his aerial as previously forecast, and believes he has in the process improved the signal a bit, too. The 28 MHz openings were not missed and John worked SSB (after he dusted off the microphone!) to work short-skip all over EU, YU, HA, OZ, UK5, DL, and so on, plus 5B4LT, T77C and A71BJ.

G4VFG (Ivybridge) begins by hoping your scribe's aerial is working well, as mentioned last time around . . . chance would be a fine thing, to get it up! Peter noted some of the short-skip and the odd longer haul: IK8EOY, IK8ENH, OK1TW, HG5AAP, HA8XX, EA6NR, YU7QCS, CE3GWO and CE3HYC (both in Santiago), and the EA3JA beacon (on 19th) was followed by a QSO with EA3FGS in — you guessed! — Barcelona. May 20 was the start of the best period, and Peter noted Y32XJ, YU2RVL, DJ2FR, OE3DHS, IK6GTG, HA5WU, I0JX, all on the one day. May 21 saw a selection of beacons logged from Europe and a contact with HB9DAI; on 22nd there were again several beacons heard, and there was just a 4X who failed to come back to the G4VFG call. May 25 showed only one beacon but at 1800 a couple of PYs surfaced on CW, and were snapped up; PY1PL and PY1APS.

"CDXN" deadlines for the next three months:

August issue—July 2nd
September issue—August 6th
October issue—September 3rd

please be sure to note these dates

An interesting and lengthy letter from G2HLU (Earley) who was pleased by my remarks last time about the New Bands. Harold has observed that well-known amateur radio phenomenon, of an upsurge of activity when a new rig or a new aerial is placed in service — and in Harold's case it is the lure of the new Micron rig. In fact, G2HLU has the disease badly, and he has started a new record book for countries, prefixes and so on. So? Well, the old rig was *wartime* vintage so one can imagine the state the poor thing must have been in after over forty years of quite hard usage. On 28

MHz, the QRO CW went to EA7FTN, PY4BH and ZP5XDW, while the QRP box managed I4YCE, IK2GRA, LU7EE, OK3TKM, 4Z4NUT and 9H1EL.

Top Band

Seems to be maintaining a surprising degree of life for the time of year; although the writer will admit that for many years he has believed the summer months offered quite definite and worthwhile DX opportunities.

A new contributor is GM4ZRR (Aberdeen) who for some reason received his April issue *after* the May one — not our fault, your Honour! — and was moved to write by our comments on the Top Band situation. Ian is 16, and has been listening on the band for three years and active on the band since he was first licensed back in 1984, and has such stuff as VK, ZL and 9M2 in his log. Ian says he finds operating standards both on CW and Phone, have steadily deteriorated in the period he has been around. GM4ZRR makes a valid additional point when he remarks that in his belief, many of the Europeans who have been let on the band in the past few years *just don't realise its DX potential*. That is a very important point; twenty-five years or more ago, your scribe could be said to have been one of that fraternity, and the thought of a QSO with GM or GI was wonderful — I just didn't know that the Loran at the lower end of the band emanated from U.S.A. until I had it all explained to me, tried it and found it worked. The need is quite clear, and it seems that the protagonists of single-channel working are probably making a rod for their own backs (and ours) in the long-term. If someone who doesn't understand gets a call from, and makes a QSO with, a DX station he will be all cock-a-hoop and go and try again, using the single-channel approach, and the result in the longer term will be a bedlam in which the best operators will be able to cope and the rest will be nowhere — particularly when the super operators have the know-how to brew up extra-potent signals.

Now W1WY, who sent along a list of some high claimed scores for the 1986 CQ Top Band Contest; we note GW3YDX (misprinted as GW3TDX) and G3SZA in the first five, and a little lower GM3IGW in the CW leg, and GW3YDX again on SSB. Frank also agrees with our views on the DX-Window concept.

Turning to G2HKU (Sheppey), Ted wonders where the blazes all these weird-and-wonderful prefixes come from and what they do for the users — all they do to G2HKU is confuse him! SSB was used for the regular PAOPN QSOs, and CW went to OL6BHV, GM4WAD/A (who was on the Isle of Skye, using an FT-290, kite-supported aerial and a muTek converter).

G4OBK stuck to the key on Top Band, and pulled OL1BKO, UZ6LXL,

UA3ZKZ, and WA3EUL into the log this way.

G3BDQ (Hastings) has been more active than he intended, and among the better stuff John mentions CW with UA9SIF, UA9AJX, UA9FM, UZ9AWP, TK/DL4FF, C30BAX, and LZ2CJ who was worked in broad daylight at 1830z. No late night or early morning sessions — so no Ws!

Eighty

What *does* happen here these days? Without an aerial for the band, your columnist lacks useful knowledge!

G2NJ (Peterborough) keeps his vigil on the lower end of the band during the day. Nick has his HW-8 sitting on the sideboard in the living room, for instant use, and he was interested to receive a recording of his own signal from G3TXK, Chorley, which indicated an excellent signal. Nick mentions that the TOPS CW net had another loss last month, when GW8WJ had to advise net members of the passing of G3HTI, who will indeed be missed. On a different theme, Nick, who is himself a keen straight key operator, said it was a special pleasure to listen to the practitioners at work on the band during the Edgware Straight Key Evening on May 29, and above all to work G2AA, who was a colleague of Nick's during W.W.II.

As far as G3BDQ was concerned there was just one contact to mention, and that was the CW one to C30CEA.

Another one with only a single QSO to report is G4OBK; Phil's pet prize was the QSO with K6ZM/A9.

Eighty for G2HLU was a matter of a string of QSOs on the Straight Key Evening, including one with G3ZPF; these were on the Big Rig, but the Little 'Un acquitted itself well too, with EUs and lots of Gs including one with Ted, G2HKU — the first for several years. One can imagine the ears of any newcomer being laid back a little to hear G2HKU and G2HLU in QSO together, and probably batting along a bit at that!

G3ZPF (Kingswinford) had the unpleasant misfortune to come home in the middle of the day and find his house had been broken into, and that the burglar was still there. In the subsequent fracas David received a face-full of knuckle as the thief forced his way out; shock reactions appeared later — although, thank heaven, David seems to have now fully recovered, and since he disturbed the thief so soon nothing went except some cash. However, David can at least console himself that he has still to look forward to the arrival of the 5BDXCC plaque!

Forty

Gets hardly a mention, save in passing. G2HLU of course had to try out his new Micron on all bands, and it made the grade to reach I, OE, OH and SP.

G4OBK mentions CW contacts with

HC5NA1, JW0A, SM5HV/HK7, OH0BH, VP2VA, OA8AAQ, the latter being a new country on the band.

G3BDQ had a little bit of CW practice on the band, to net YC0CFH and a rapid QSL card, UH8AAW and UM9MHN.

The longest list comes from G2HKU, who found K4YF, 5J1LR (=HK), VK3CWB, KR0Y, PJ2LS, VP2VCW, ZL2AGN, NR8J, VK4XA, XE2AHQ, FM5WO, TV6KAR (=F), YV1AD, ZL2MM and HK3RQ.

Titbits

The problem of the RSGB *Callbook* and the "name and address withheld" splattered all over the place against people who *don't* want their details suppressed is at least partly solved by G4IJF. Nigel found that if the station address and the address for correspondence is different, then the RALU computer software is baffled, so it just spits out a blank. RSGB agreed this was so, and promised to set up a system whereby the afflicted ones could advise RSGB Hq. and they would manually alter their records, and so get the *Callbook* right. Alas, the RSGB system has failed to materialise, at least as far as G4IJF is concerned. Nigel therefore wishes it to be known that the following details should be added to your copy: *G4IJF, Nigel Roberts, PO Box 49, Colchester, Essex CO4 3SF. Station located at Manningtree, Essex.*

Now we must look at *DX News Sheet*. The comments about the Clipperton expedition looking for EU calls on 3803 kHz were somewhat acid, and others have written in the same vein; if that were not bad enough, they were on occasions noted calling Europe and then going back to Ws. A damn bad show all round as far as we are concerned.

There have also been some fireworks over DL7FT and his SV5 activities, and we understand that at least one SV station called the Voicebank to say that his licence had been revoked, although operation continued. Later it appeared that DL7FT's licence had been revoked before he began but someone forgot to tell him; in addition when he was finally located by the Greek authorities he was on Kos, although the licence had been granted for use on Rhodes.

If you came across a call of the form AZ1IARU, don't panic — it appears to have come from Argentina; but watch the QSLs, as we understand AZ1IARU goes to LU4AA, but AZ1IARU/5 to LU6FAZ!

VP8BGO and VP8WTW are reported to be trying to set up a S. Georgia operation, but money is the prime problem; at the time of writing they were awaiting word from some of the major DX Foundations on their representations for help.

Those who hunger for a Spratly contact should note that VQ9ZZ is reported to be

looking at the possibilities of a Spratly activity while he is on a tour of duty in the Phillipines.

New Bands

G2HKU mentions just one QSO on the band, which was a CW one with KV4AM on 10 MHz.

10 MHz CW also served for G4OBK; Phil offers FG5AM, but says he leaves the glory to local G4VDX who does very well on these bands!

G2HLU also offers just one contact; his was with the QRP rig, CW and EA2JJ.

Turning to the letter from G4VDX (Leyland), Joe mentions 10 MHz as having yielded PZ1DV, LX2LH, FG5AM, LU9CV, VE2GXD, 4X4WF, EA8ABR, VK2AMO, C30BBC, CT3DJ, KC3TT, W1HMD, VK4RF, GB4LI (Lundy Is.), W8EGB, 7X2AX, W1KRV, WA1ZQM and 4X4FN/W2 — oh, and WA3FBI at the very start of the month. The band was very active, and Joe heard OEs working JA although the JA wasn't audible in Leyland. G4VDX says he has an activity problem which keeps him on CW — the junior op. insists on trying to 'Eeeee-koooo' at the tender age of two, and so Joe operates Phone when he is asleep and hopes not to waken him! Turning to 18 MHz, G4VDX tripped over Y24DO, DL6NB, DK5HA, and HB9LO, but PY2HT, sadly, escaped his clutches.

G4FLK reports that although he listened he didn't operate; Saturday May 5 found him on 10 MHz from 0600-0900, when SM0EKY, 9H1BB, G4XEV, VK3XB, G5MY, YU1FD, SM4NSS, VK2BQB, G3PJT, I4DHI, DL6ZZ and EA4APT were logged, and of course VK2NN and his cohort were around on upper sideband Phone, along with OE3HTS and EA4BW. On May 4, VK2NN was there again on USB, plus CW signals from EA7ATN, OE5GYL, LA0EH, G2BY, VK3XB, G3PJT, G4UP, DJ2LS, SM1CJ, VK2BKH, G4SEA, G3IGW, G6CJ, G0CZO, G3JJG, I5QNJ, all between 0600-0730. On both days, after the 10 MHz stint, G4FLK turned to 18 and 24 MHz, but conditions were very poor with even the commercials very weak, and a lot of 'mush' on the bands.

Fifteen

Let's look at G3NOF's report from Yeovil first; Don notes that there was some Sporadic-E about but not as much as was noted on Ten, and by and large the band didn't do very well for him. Africans were noted around 1700, some South Americans in the evenings, and just a few weak East Coast Americans around 2300z. Don made sideband contacts with CE6DFY, FY5BV, GBOOS (Housay Is), TI2TEB, VP9JY, YB6ZAI, YC6XE and ZF8DX.

The CW from G3BDQ went out to 4X6IF, 5B4FN, ZV2KT, ZY4OD (both PYs!), C30CSA, HK1HHK, FM5CT and,

after a thirty-minute chase, 3G3C in Santiago, Chile — one of the biggest pile-ups John recalls.

G4VDX was quite pleased to work LU9CV on CW, and also GB4LI on Lundy Island.

Back to G3BDQ, who for once had a basinful of SSB, and worked 5Z4ET, 4X4JU, OD5RH, ZB2IH, VU2ZAP, CX7ABT, FY5BV, J28EL, and a couple of islands in IY7WYF on Pedagne and IK2ANI/IM0 on Magdalena.

G2HLU's QRP rig had to be tried on this band of course, and it netted contacts with HA, LZ, OE, OK, TK, UB, UP, and YU.

Twenty

With the long evenings, one has been able to go into the shack most evenings and find something of interest to work. The writer has even been able to use it to make a recording of slow-Morse-with-some-QRM for training purposes when there was nothing to rave about!

G3NOF has a long analysis of the month on this band; there was some Sporadic-E and some good DX conditions. The VK/ZL path in the mornings hasn't been much good, although the short path to the Pacific has been open between around 0700z and 0900z. Otherwise rather to pattern, save for the odd opening to VE7 and VK around 2300. Don made SSB QSOs with AP2MQ, BY4AA, AZ1IARU, DL7FT/SV5, EO4AHK, EO5BIM, ER3A, EU0G, EV9AW, FF6KTT/P (Levins Is.), FG5BM, FO8FO, GBOOS (Housay Is.), HB0/DA1WA, HH7PV, HK4CZE, HL4CCM, HL9YG, J73JM/KP2, JW1LK, JW5E, JW8FG (Bear Is.), JY8NT, JA2FUQ, JA5EXW, JA8ALC, JE1JUN, JF2EZA, JH7QXK, JH8JWF, K0DU (Colorado), K0VVV (Colorado), KF6OG, KH6IJ, KH6SB, KH6UF, KL7C, KL7HFQ, KL7LF, KL7NT, KL7TC, N7FSW/KL7, RD9DM, RM8MA, RZ1OWB (Novaya Zemlya), S79CA, TA1B, TI2ANL, TI2CLR, TI2OZ, UA0FO (Zone 19), UJ8JB/U8K, UJ8JMM, UZ9WXO, UZ0QWT (Zone 19), UZ0QXH (again Zone 19), V851R, VE2PAB/4U/YK, VE3MSH/M, VK5AQL at 1652z, VP2MU, VQ9GB, VU2DK, WO6T, ZC4AP, ZC4MR, ZF8DX, ZL3AFT, ZS6CW, 4N0IARU, 4S7VK, 5H3BH, 5N8BAV, 5Z4EV, 7SOTM, 8J9ITU (Tokyo), and 9M2DF.

The G3BDQ report includes just the interesting ones: RH8AN, EK1P (Franz Josef Land), VU2RMM, TA3B, PZ1AV, CR7DKG (only a CT!), WC4E/KP4, WA2OMN/TF, a string of Cyprus stations, HS1ALK/5B9, SM6JZ/5B4, 5B4/YU1RL, ZC4JA, 5N4JCN (who is G3IAD) and 4N0IARU.

For G2HLU it was QRP all the way, and the little Micron did its CW thing with EA9SM, HA, I, JA2KYA, JF2EZA, JH1DYT, LA, LZ, SM (including

7S0FRO who nearly had Harold foxed for a tick), SP, UA, UB, UL, UP, UQ, UR, W1, W2 and Y — all of which just goes to show what can be done with a maestro trying a little!

G4OBK tried SSB, and netted V44KAR (QSL via WB2LCH), OE5JTL/YK (QSL via OE5BA), and then turned to CW for W6WO, JW0A, 6F2AQ, HK1BDO, 4U0ITU, DK6AS/SV5, GD0/N4ZC, C30LDN, KH6AI, ZL2AKT, 7S0FRO, I2DMK/IP1 and LG5LG.

A longer list than usual comes from G2HKU, who keyed with K8HVT/KP2, K5AQ, CP6IB for a new one, WC4E/KP4; 4A1HC (=XE), ZV2KT (=PY), N6AR, XL7CC (=VE), KR0Y, NL7G, 8P9AR, CR7DKG (=CT), 5J1LR (=HK), SV5OX (Rhodes), 5H3ZO, TK/DL4FF, KH6IJ, JF6JYS, CE0ZIG (believed to have been on Easter Is.), VE7FNP, UL7NR, VP2MU, and HK5BEG. The CP6 pleased Ted no end in that he has never made it to that country alone of the South Americas, and also because the chap was in La Paz, but he told Ted that the capital is in fact not La Paz but a place called Sucre. We live and learn.

Finished

That's it for another time; the deadlines for the next few months are in the box, and are of course for arrival of your letters, addressed as ever to "CDXN", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. *Cheerio!*

G3ERN a Silent Key

We are saddened to learn of the death on May 10th of G. E. Read, G3ERN, at the age of 81, known to countless friends as 'Ernie'. He was first licenced shortly after World War 2, and quickly became well known, mainly on Top Band, for an outstanding signal from Harlow, Essex, and for the fact that the Harlow club then gathered at his shack. When the G3ERN land was taken up as part of the redevelopment of Harlow, Ernie moved to Hallingbury, from where he continued to radiate a good Top Band signal, even though it had lost a little of the edge due to the different ground structure at his new home. This provoked G3ERN to turn to 144 MHz and he continued to keep in touch with friends regularly, despite failing health in later years.

Among the highlights of G3ERN's earlier career was making the first transatlantic Top Band contact using transistors, with an output power of around three watts. He was for a time president of Harlow club, and later was granted an Honorary Life Membership of the Bishop's Stortford ARC which signified the local appreciation of G3ERN's efforts and his encouragement of aspiring novices.

PRODUCT REVIEW

The MET Six-Metre 2-Element and 3-Element Yagis

IAN KEYSER, G3ROO

HAVING decided that I wanted to be active on the first day that 50 MHz was open to Class A licence holders, considerable work was done to get a station ready. As usual the rig was the priority, and two of these were made ready in case of sudden failure at the last minute! Then came the problem of the aerial.

The first attempt was with a dipole slung from the tower but as more thought was put to the problem I decided that as my interest in 2 metres was so low the good location that that aerial occupied on top of the tower was wasted. Calculation showed that even with a small beam I would be approaching the maximum wind

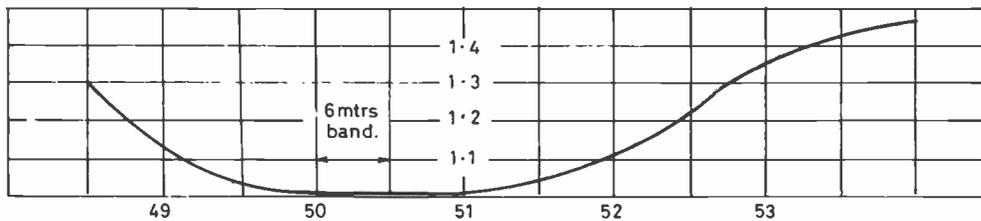


Fig.1 MET 2 ELEMENT YAGI. SWR adjusted to unity at 50.2 MHz

E 738

loading for the tower, and the smallest beam on the market was a three-element. On further investigation the one that seemed to have the least wind loading was a MET antenna, made by Metalfayre.

On a visit to them in St. Margaret-at-Cliffe the problem was discussed but I left without purchasing anything. During a later chat with Metalfayre I was asked if I could test a proposed 2-element beam that they had decided to produce but did not have the time to develop, and the following is a report on the conclusions of the next few days work.

The MET 2-ele Yagi

The aerial itself came in a strong polythene tube and consisted of four element rods, one gamma assembly, one boom, two jointing studs, four locking nuts, fully adjustable clamp, waterproofing boot, a sachet of silicon grease and instructions.

Constructing the beam presented no problem and was on top of the tower, instead of the 2m. aerial, in no time at all. Due to plug incompatibility on the 100 feet of UR67 coax we could not do SWR adjustments at the beam itself but had to use the reflectometer in the shack and use a 2-metre talkback.

Setting up did not take too long as we inserted the gamma capacity rod by two thirds of its length and then adjusted the strap for minimum SWR; the capacity was altered slightly and the strap re-adjusted for best SWR and improvement noted. Playing with the two adjustments soon gave a perfect SWR. The tower was

lifted a few feet and it was noted that the SWR changed considerably! We then realised that we had adjusted the SWR with the beam firing into the ground only four feet away! The beam was then turned by 90 degrees so that it was firing parallel to the ground and the SWR re-adjusted. This time the best SWR shifted 200 kHz HF but remained perfect. The tower was again lowered and the SWR re-adjusted at low level on 50.0 MHz and when lifted this rose to 50.2 MHz. The positioning of the gamma clamp on final setting up was found to be almost at the extremity of the gamma rod for best matching; a second aerial was tried and the optimum setting found to be in exactly the same position.

As can be seen from Fig. 1 the SWR curve is very flat indeed with the SWR below 1.1 to 1 between 49 and 52 MHz. With the tower lifted to the vertical the beacon GB3NHQ became clearly audible and as the beam was rotated it faded into the noise. The beam was then turned onto the power line which runs a few hundred yards away and the noise from that also peaked.

The polar diagram is shown in Fig. 2. This was measured using a stepped attenuator in the aerial line and using a signal from Stuart, G0AXD, with the beams firing at each other. The attenuator was adjusted for an S-meter reading of 2. The beam was then turned by 10 degree steps and the attenuator re-adjusted so that the meter again read S2. Fig. 2 shows that the side nulls are in excess of 24dB and the back-to-front ratio in excess of 10dB — a very reasonable figure for a two-element Yagi. The squint due to the gamma matching rods was a little more than expected and this may have been influenced by the location of the house which is off the side of the beam when firing at G0AXD. This could also explain the amplitude difference of the two lobes.

In use the aerial has proved itself with all stations heard having been worked with five watts.

G3ROO: 50ft A.G.L. 12ft above 3 element full size 20m Yagi. Beacon: G0AXD at 4 miles. 2watts 50-225MHz into 2 ele. MET

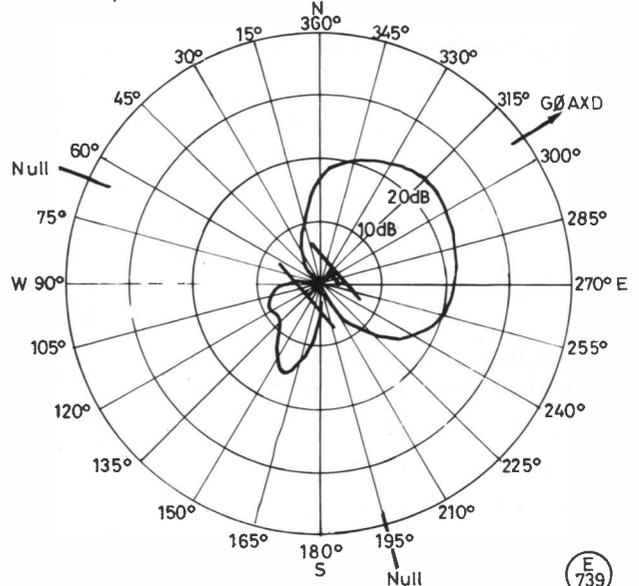
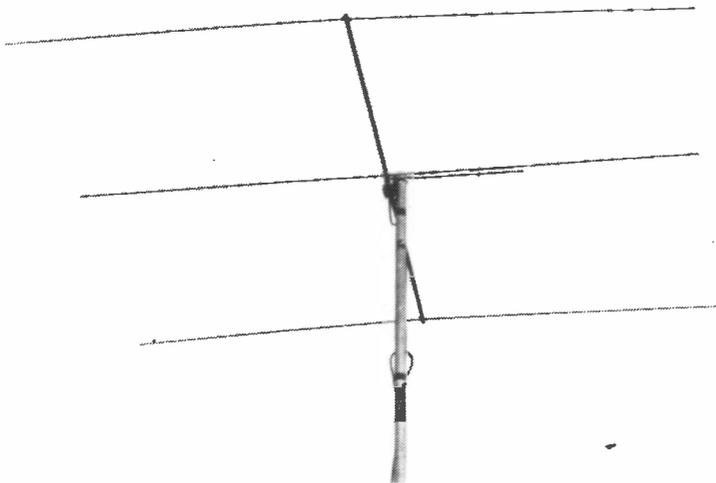


Fig.2 6m. 2ele. Yagi practical horizontal polar plot.

E 739



The MET 3-ele. six-metre Yagi.

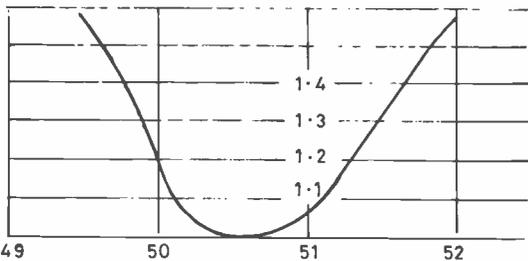


Fig.3 MET 3 ELEMENT YAGI. SWR unity at 50.4MHz

E 740

Conversion to a 3-ele Yagi

When constructing the two-element Yagi it will be noticed that the boom is slightly longer than it needs to be and that there are two plastic plugs in this 'tail'. There is a very good reason for these holes as they can be used to convert the two-element beam into a three-element beam. Having ordered and received the conversion kit, these two plugs and the end plastic stopper were removed and the construction and addition of the third element carried out in accordance with the three-element beam instructions supplied.

It is then necessary to re-match the beam as the addition of the third element will of course make considerable difference to the positioning of the gamma rod and capacitor.

G3ROO: 50ft A.G.L. 12ft above 3 element full size Yagi.
Beacon: GOAXD at 4 miles. 2 watts 50.203MHz into 2 ele. MET

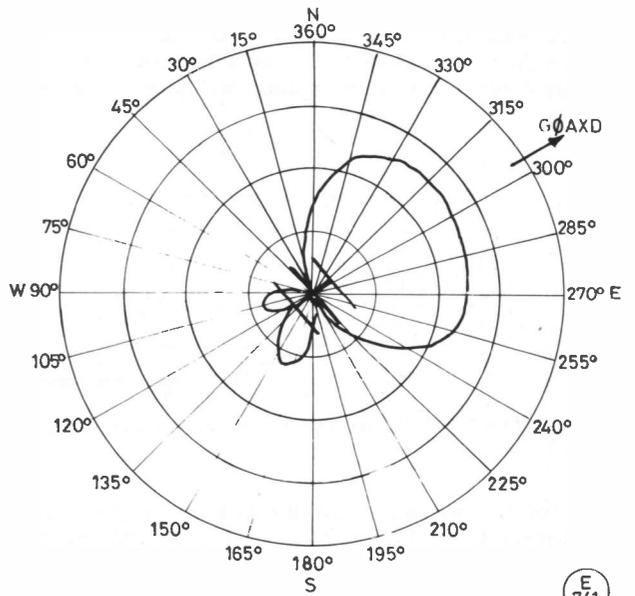
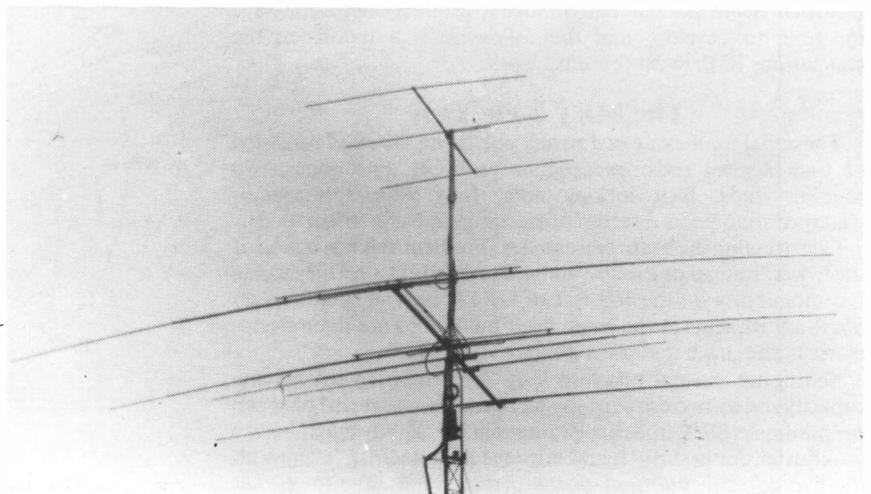


Fig.4 6m. 3ele. Yagi practical horizontal polar plot

E 741

The MET 3-ele. Yagi for 6m.
mounted above the HF beam.



The same tests were carried out as with the two-element beam and the results given in Fig. 3 and Fig. 4. It will be noticed that the bandwidth of the array is less but still the SWR is very acceptable over the whole of the six metre band, not going above 1.2 at the band edges!

The beamwidth of the array is about the same with the 3dB points at plus 40 degrees and minus 45 degrees, the slight squint being caused by the gamma match assembly. In use the extra gain of the third element was immediately noticeable when the beam was pointed at the local power lines and the signal from GB3NHQ was also noticeably stronger; however it is difficult with the equipment available to exactly quantify the gain over the two-element Yagi.

Conclusion

The two-element beam is an ideal unit for those worried about wind loading or those in sensitive areas as far as aerials are

concerned. No-one can complain about it as only 10 years ago the majority of the dwellings in the U.K. were fitted with a very similar aerial for TV reception. Stuart, G0AXD, has mounted his 2-element at 90 degrees to his 2-metre, 7-element beam and only two feet below it. The interaction between the two aerials mounted like this is minimal — and the system looks reasonably neat, too.

The price of the two-element MET beam is £32.00 inc. VAT, plus £3.50 postage and packing. The conversion kit is priced at £11.50 inc. VAT plus £1.75 post and packing. This compares favourably with the price of the three-element beam at £39.95. To complete the range of aerials, MET do a five-element unit which retails at £59.95 inc.; but with all the other pieces of metal hanging on my poor tower I did not dare try this monster out!

Metalfayre's address is Kingsdown Road, St. Margarets-at-Cliffe, Dover, Kent CT15 6AZ. (0304-853021).

• • • “Practically Yours” • • •

with GLEN ROSS, G8MWR

A PROBLEM that the ‘old-timers’ had to contend with has still not gone away despite all the advances in technology that have taken place over the years. Voltage stability caused drifting carriers and other problems in the 1920s and can still cause havoc today. Oscillators can now be built which have greatly improved characteristics compared with pre-war designs but the ultimate test is still the short-term instability caused by slight changes of the operating voltages. There are also many other circumstances in which a well stabilised supply is essential, ranging from the need for a voltage reference to the requirement for an ultra smooth DC line with the minimum amount of ripple superimposed upon it, perhaps for use with a very high gain audio pre-amplifier or the input stage of a piece of test gear.

Stability

The obvious way to make a good start is to ensure that the main DC supply is well regulated and adequately smoothed for the purpose intended, but this is not always enough and it is frequently found that one has to resort to local or ‘on board’ regulation. This is usually required due to voltage swings on the supply lead to that subsection due to varying current demands of the circuitry involved.

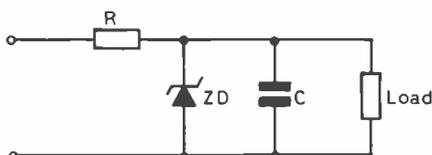


Fig. 1

E 746

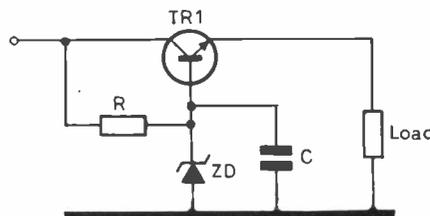


Fig. 2

E 747

Zener Diodes

Possibly the simplest method of stabilising is to use a Zener diode of the appropriate rating across the supply (Fig. 1). These are frequently thrown into the circuit by inexperienced constructors with little thought of the operating parameters of the device and perhaps even less for the limitations of the circuit. The basic idea behind this circuit is that as the load takes less current the voltage across the diode will rise so that more current will flow through the Zener diode, and also the series resistor, thus restoring the voltage to the original level.

Considerations

Firstly it must be obvious that you need a higher supply voltage than the regulated line that you wish to end up with because there has to be a drop across the resistor. There must also be an allowance for the standing current through the Zener diode which for the smaller wattage units should be around 10 to 15 milliamps. Let us look at an example: assume you have a 12 volt line and you wish to stabilise it at 5.6 volts and that the circuit or load draws 20 milliamps. The first thing is to calculate the value of the resistor using Ohms Law. The combined load and Zener current is, say, 33

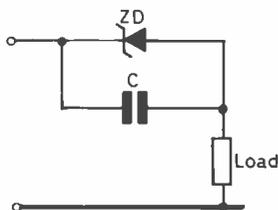


Fig. 3

E 748

milliamps and the required voltage drop is $12 - 5.6 = 6.4$ volts. The nearest standard value resistor which will drop in here is 220 ohms and the wattage rating would be $(V \cdot I)$ approximately 0.22. In practice it would be safer to fit a half-watt component.

Diode Rating

The diode has to be rated on the basis of the load taking no current at all (accidental open circuit) and again allowing a little leeway we would opt for a 500 milliwatt device. One point that is frequently overlooked is that a Zener diode is a great generator of RF hash and noise over a very wide frequency range and because of this it is essential to fit the capacitor shown in the diagram, using a value appropriate to the frequency range of interest. This would normally be about $0.01 \mu\text{F}$ for HF operation and a $0.001 \mu\text{F}$ disc ceramic for suppression in the VHF bands.

Uprating

The basic circuit shown can be used with a wide range of current requirements and there are some really massive diodes seen around the rallies and junk sales. The main disadvantage to this approach is the wattage rating of the resistor and getting rid of the heat that is produced. If the current requirements are not too extreme, say up to a couple of amps, then the circuit shown on Fig. 2 may be used. This is simply a series pass transistor capable of passing the required current with the Zener diode controlling the base voltage. Depending on the type of transistor used the output voltage is typically 600 millivolts less than the Zener voltage. The series resistor is now calculated on the basis of the standing current through the Zener only, the small base to emitter current of the series pass transistor can be safely ignored. Due to the fact that the load is no longer connected directly to the Zener the regulation of this circuit is not quite as good as the basic system and it must also be kept in mind that a short circuit on the load side could blow the transistor — but this does at least protect the supply from damage.

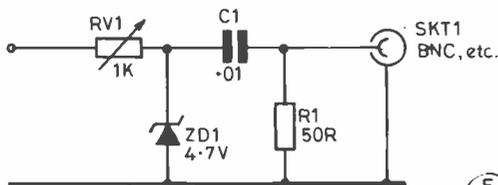


Fig. 4

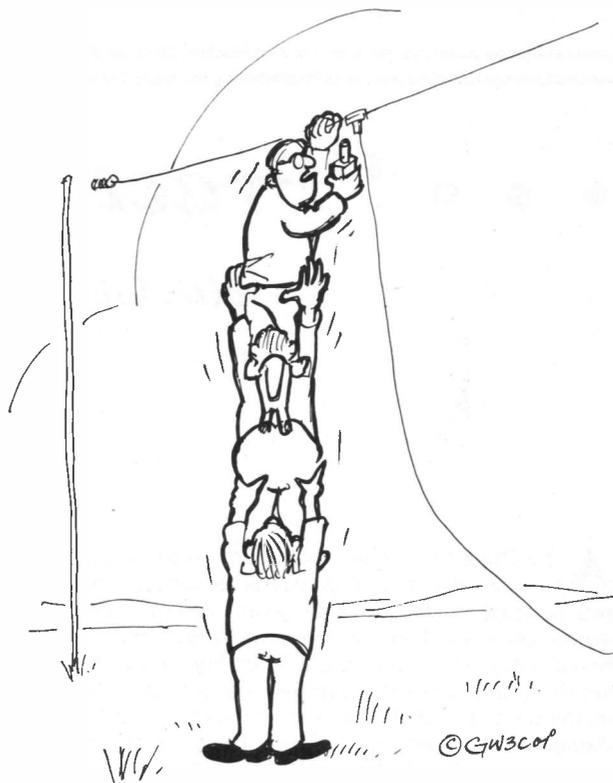
E 749

Zener Dropper

An excellent use for the previous circuit is as a pre-stabiliser in a bench power supply. These are usually built to supply anything from around two to thirty volts at up to two or three amps. One of the problems encountered is that when such a supply is giving around five volts at only a few milliamps the primary part of the supply shows a large voltage rise due to the low current being drawn by the load. The simple regulator will restrict this to a safe level. Another way of getting rid of extra volts is to use a Zener diode as a series dropper, the amount lost being equal to the voltage rating of the diode, see Fig. 3. The only thing to remember here is that you must provide an adequate heat sink for the diode.

Generator

We have already found that the Zener diode is a prolific noise generator, so why not put this to good use? The circuit in Fig. 4 shows the very simple circuit of a noise generator which if compactly built and all leads are kept to the minimum length will operate well up to at least several hundred megahertz. Probably the best way to build it is in a small diecast box with all the components except the variable resistor mounted directly on the back of the BNC or other RF connector. This is not intended as a precision generator but is very useful for routine checks and setting up equipment, it can also make a very good driver for a noise bridge of the type used for setting up aerials.



"... as I thought, 2 kHz high..."

"S.W.M." Cover Price

With effect from the next issue, cover price of *Short Wave Magazine* will be £1.45, and the annual subscription will be £17.40 post free. Current subscribers will not, of course, pay the new rate until their subscriptions fall due for renewal.

This modest rise is due to increased production costs during the twelve months since the last price change.

CLUBS ROUNDUP

By "Club Secretary"

LOTS of reports and not a lot of time to write them up, about sums the situation this month; so straight into the pile, alphabetically as always.

The Mail

July 15 sees the **Abergavenny & Nevill Hall** crowd holding a jumble sale at the Corn Exchange in Abergavenny, 9–12 noon. Normal meetings are at the room over Male Ward 2 at Pen-y-Fal Hospital, Abergavenny, every Thursday. There is a Morse class session at each meeting and we are told that "Bert needs YOU to teach"!

The **Acton, Brentford & Chiswick** monthly meeting at Chiswick Town Hall, High Road, Chiswick, is also on July 15; they will have a discussion on home brewed equipment starting at 7.30 p.m.

Now to **Basingstoke**, where they have G4NNS on July 7 to talk about packet radio, at Forest Ring Community Centre, Sycamore Way, Winklebury, Basingstoke, at 7.30 p.m. We should add that the club also has various other activities, usually set up at short notice — talks to "the WIZ" at the address in the Secretaries Panel for the latest.

July 15 for **Biggin Hill** is a computer night, the venue being at Downe Village Hall, next to the "George and Dragon", 24 High Street, Downe, Kent.

On the Isle of Wight we have **Binstead**, whose Hq. is at the Scout Hq., Drill Hall Lane, Binstead; meetings every Wednesday.

The **Bishops Stortford** crowd has its dates on the third Monday of each month at the British Legion in Windhill, but we understand they are also to be found on Thursday evenings informally in the saloon bar of the "Nags Head" pub on the Dunmow Road, close by the hospital and the golf club.

Borders Hon. Sec. notes that they are in session on the first and third Friday of the month at Tweed View Hotel, Berwick-on-Tweed.

The **Bredhurst** members are booked in on July 10 and 24 at Parkwood Community Centre, Parkwood Green, Rainham, Kent; the first date is down for a talk and demonstration of some of their gear, and on 24th there will be a talk, details of which were "in the pipeline" at the time of writing this piece.

Now we head for **Brighton**; these days the club lives at Seven Furlong Bar on Brighton Racecourse, where they gather on the first and third Wednesday of each month; and there is also a Morse class on Mondays. More details from the Hon. Sec. — see Panel.

Aston Fields Working Men's Club is the scene for the **Bromsgrove** society meetings, which are on first and third Tuesdays at 8 p.m. There is usually something of interest booked in, but we don't have the current details for which we must refer you to the Hon. Sec. — see Panel.

Every Tuesday evening the **Bury** group meets at Mosses Community Centre, Cecil Street, Bury, and the 'main' meeting, with talk or whatever, is the second one in each month.

Next we have **Central Lancashire** which meets at the Priory Club, Broadfield Drive, Leyland, on the first and third Monday each month. On July 7 they entertain G8GG, who will be talking about "Aerials for Confined Spaces". This is a new club, and is looking for support from the locals, so why not go along and join?

Turning to **Chelmsford** we find they have their place at Marconi College in Arbour Lane at 7.30 p.m. and we understand they have something set up in the way of a talk or whatever every month; July 1 is a talk on electricity generation and distribution, and on 12th they have GB4NSC operational at North Springfield.

At **Cheltenham** the base is at Stanton Room, Charlton Kings Library, Cheltenham; On July 18 they have a six-metre evening to which you are invited to bring your gear.

The **Cheshunt** club meets every Wednesday evening at Church Room, Church Lane, Wormley, near Cheshunt; but we note that for some years they have gone to Baas Hill Common for a /P session at least once each month when the long evenings are with us; so we suggest you check with the Hon. Sec. for the correct dates.

Over to **Chester** where on July 1 they have a committee meeting and on 8th G4UXD on the FT-726R plus a video; July 15 is a treasure hunt, starting at 7 p.m. and on 22nd they have a visit to BAe at Broughton; leaving July 29 for a talk on GM3TZO/MM around the Western Isles. All are at Chester RUFC, Hare Lane, Vicars Cross.

Turning to the **Chichester** crowd we find them at North Lodge Bar, County Hall, Chichester, on first and third Tuesdays. On July 1st they have the Annual Summer Social Evening, at Goodwood in the car park opposite the main grandstand; July 12-19 features GB2CHI at the Chichester 911 festivities at Guildhall, Priory Park, and of course the Sussex Mobile Rally is at Brighton on 13th; and the club meeting is on 15th.

For details on the **Colchester** doings at the Colchester Institute in Sheepen Road, we must refer you to the Hon. Sec. — see Panel for his new telephone number.

The **Cornish** club Hq. is at the Church Hall, Treleigh, on the old Redruth by-pass, on the first Thursday of each month; and of course in July they have the Cornish Rally, at Camborne Comprehensive School, on 20th. If you are within striking distance this is one not to miss.

Deadlines for "Clubs" for the next three months—

August issue — June 26th

September issue — July 24th

October issue — August 28th

November issue — September 25th

Please be sure to note these dates!

Back to the Midlands now and **Coventry** and here the Hq. is at Baden Powell House, 121 St. Nicholas Street, Radford, Coventry, where the gang is to be found every Friday evening. However, be aware that on July 4 they are making preparations for VHF NFD at Burton Dasset.

Looking at the **Crawley** newsletter we find they are now based at the Leisure Centre, Crawley, on July 23 for a members' evening. There is an informal too, but for the details on this we refer you to the Hon. Sec. — see Panel.

The **Crystal Palace** club has its base at the All Saints Parish Rooms, at the junction of Beulah Hill and Church Road, Upper Norwood, opposite the IBA mast, on the third Saturday in each month, starting at 8 p.m. July 19 is an informal, with G3VCP on the air.

Further north now to **Denby Dale** and of course the famous Pie Hall; but the newsletter gives no detail of any meetings, so we must refer you to the Hon. Sec. — see Panel for his details.

At **Derby** the locals are to be found on Wednesday evenings at 119 Green Lane, Derby. July 9 sees them going "Back to Basics", and on 16th they have GB3ERD on the air from Hq. July 23 is down for a talk on enamelling by Bob Neill, and on 30th they will be visiting Watnall Weather Centre.

The 'other' club at **Derby** is based on Nunsfield House Community Association, Boulton Lane, Alvaston. On July 4 they prepare for VHF NFD, and on 11th they have Sean Dodds talking about holiday photography. July 18 is the rally barbecue, and on 25th they have a surplus sale.

It is a little difficult to read the **Dorking** club programme sheet,

Names and Addresses of Club Secretaries reporting in this issue:

- ABERGAVERNENY: J. B. Davies, GW4XQH, 109 Croesonen Parc, Abergavenny, Gwent NP7 6PF. (0873 4655)
- ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London W3 8LB. (01-992 3778)
- BASINGSTOKE: D. A. Birleigh, G4WIZ, 14 Winchfield Gardens, Tadley, Basingstoke RG26 6TX
- BIGGIN HILL: R. Senft, G0AMP, Mill Hay, Standard Road, Downe, Kent BR6 7HL. (0689 57848)
- BINSTEAD: D. F. Barnes, G4VJF, 2 Sherbourne Avenue, Binstead, Ryde, Isle of Wight. (Ryde 66298)
- BISHOPS STORTFORD: S. Mammatt, G6HKK, 11 Twyford Gardens, Bishops Stortford, Herts. CM23 3EH. (0279 52297)
- BORDERS: Mrs. M. Bottomley, GM1IRN, 4 Home Farm Cottages, Ladykirk, Nr. Berwick-on-Tweed, Northumberland.
- BREDHURST: K. Fay, G0AMZ, 37 Sandringham Road, Rainham, Gillingham, Kent ME8 8RP. (Medway 0634) 376991)
- BRIGHTON: P. Turner, G4IIL, Flat 6, 132 Marine Parade, Brighton, Sussex BN2 1DE. Brighton 607737)
- BROMSGROVE (ARS): A. Kelly, G4LVK, 8 Greenslade Crescent, Bromsgrove, Worcs. (021-445 2088)
- BURY: M. Sivieri, G4ZTB, 47 Ramsay, Bacup, Lancs.
- CENTRAL LANCS: D. W. Fowler, G4YWG, 22 Larchwood Crescent, Leyland, PR5 1RJ.
- CHELMSFORD: A. C. Mead, G4KQE, 9 Abraham Drive, Silver End, Witham, Braintree, Essex CM8 3SP.
- CHELTHENHAM: T. Kirby, G4VXE, 29 Tivoli Road, Cheltenham, Glos. GL50 2TD. (0242 36723)
- CHESHUNT: J. & T. A. Watkins, G4VMR/G4VSL, 'One Ash,' Frogs Hall Lane, Haultwick, Herts. SG11 1JH. (Dane End 250)
- CHESTER: A. Warne, G4EZ0, 113 Queens Road, Vicars Cross, Chester. (Chester 40055)
- CHICHESTER: C. Bryan, G4EHG, "Marmanet", Salthill Road, Fishbourne, Chichester, Sussex PO19 3PZ. (Chichester 789587)
- COLCHESTER: F. R. Howe, G3FIJ, 29 Kingswood Road, Colchester. (0206 851189)
- CORNISH: N. Pascoe, G4USB, Bosuathick Farm, Constantine, Falmouth, Cornwall. (Falmouth 40367)
- COVENTRY: R. Tew, G4JDO, 4 Chetwode Close, Coventry CV5 9NA. (Coventry 0203) 73999)
- CRAWLEY: D. L. Hill, G4IQM, 14 The Garrones, Worth, Crawley, W. Sussex RH10 4YT. (Crawley 882641)
- CRYSTAL PALACE: G. M. C. Stone, G3FZL, 11 Liphook Crescent, London SE23 3BN. (01-699 6940)
- DENBY DALE: G. Edinburgh, G3SDY, 37 Westerly Lane, Shelley, Huddersfield HD8 8HP. (0484 602905)
- DERBY: J. Anthony, G3KQF, 77 Brayfield Road, Littleover, Derby DE3 6GT. (0332 772361)
- DERBY (Nunsfield House C.A.): J. Robson, G4PZY, 31 Melton Avenue, Littleover, Derby DE3 7FY. (0332 767994)
- DORKING: J. Greenwell, G3AEZ, Eastfield, Henfold Hill, Beave Green, Dorking Surrey. (Newdigate 030677) 236).
- DOUGLAS VALLEY: D. Snape, G4GWG, 30 Culcross Avenue, Highfield, Wigan, Lancs. WN3 6AA.
- DOVER (S.E. Kent YMCA): A. Moore, G3VSU, 42 Nursery Lane, Whitfield, Dover, Kent CT16 3HG.
- DROITWICH: E. G. Tayloe, G4HFP, 6 Marlborough Drive, Stourport-on-Severn DY13 0JH. (0299 33818)
- DUNFERMLINE: D. Ingram, GM1OIN, 6 Greyfriars Walk, Inverkeithing, Fife KY11 1DE. (0383 414283)
- EAST LANCS: S. Westell, G6LXU, 19 Sussex Road, Rishton, Blackburn, Lancs. BB1 4BJ. (Gr. Harwood 887385)
- EDGWARE: J. Cobby, G4RMD, 4 Briars Close, Hatfield, Herts. (Hatfield 64342)
- FELIXSTOWE: P. J. Whiting, G4YQC. (0473 642595, day).
- FYLDE: H. Fenton, G8GG, 5 Cromer Road, St. Annes, Lytham St. Annes, Lancs. FY8 3HD. (Lytham St. Annes 725717)
- GLOSSOP: E. Calvert, 6 Barber Street, Padfield, Hadfield, via Hyde, Cheshire DK14 7EQ.
- GRAFTON: J. Kaine, G4RPK, 74 Camden Mews, London NW1 9BX. (01-267 1000)
- GREATER PETERBOROUGH: F. Brisley, G4NRJ, 27 Lady Lodge Drive, Orton Longueville, Peterborough. (0733 231848)
- HARPENDEN: E. P. Simons, G1BJC, Batford Farm, Common Lane, Harpenden, Herts. AL5 5DN.
- HASTINGS: D. Shirley, G4NVQ, 93 Alfred Road, Hastings, Sussex. (Hastings 420608)
- HAVERING: D. St. J. Gray, GIHTQ, 6 Devonshire Road, Hornchurch, Essex RM12 4LQ.
- HEREFORD: F. E. G. Cox, G3WRQ, 35 Thompson Place, Hereford. (54064)
- I.R.T.S.: G. Gervin, EI8CC, 185 Elton Court, Leixlip, Co. Kildare, Eire.
- ISLE OF MAN: Mrs. A. Mathewman, GD4GWQ, 20 Terence Avenue, Douglas, I.O.M. (0624 22295)
- KIDDERMINSTER: A. F. Hartland, G8WOX, 22 Granville Crescent, Offmore Farm, Kidderminster. (Kidderminster 61584)
- LERWICK: C. Roberts, GM0AVR, 4 Ladieside, Brae, Shetland Isles. (080622 406)
- LOUGHTON: D. Thorpe, G4FKI, 44 Townfield Road, Flitwick, Beds. MK45 1JF.
- MALTBY: I. Abel, G3ZHI, 52 Hollytree Avenue, Maltby, Rotherham, Yorks. (Rotherham 814911)
- MAXWELLTOWN: C. D. S. Rogers, GM4NNC, 5 Elder Avenue, Lincluden, Dumfries DG2 0NL.
- MEDWAY: D. Axford, G4LHU, 141 Nelson Road, Gillingham ME7 4LT.
- MIDLAND: N. Gutteridge, G8BHE, 68 Max Road, Quinton, Birmingham B32 1LB. (021-422 9787)
- NENE VALLEY: M. R. Byles, G6UWS, 108 Kingsway, Wellingborough, Northants. (Wellingborough 71189)
- NEWBURY: M. Fereday, G3VOW, Spindlewood, Stoney Lane, Newbury, Berks. RG16 9HQ.
- NORTH WAKEFIELD: S. Thompson, G4RCH, 2 Alden Close, Morley, Leeds LS27 0SG. (Leeds 536633)
- NOTTINGHAM: I. Miller G4JAE, 93 Boxley Drive, West Bridgford, Nottingham NG2 7GN. (0602 232604)
- ORMSKIRK: R. Nixon, G1KDF, 4 Weldon Drive, Ormskirk, Lancs. L39 4RA. (0695 74868)
- PEMBROKESHIRE: P. O'Neill, GW4UZL, Panteg, Ambleston, Haverfordwest, Pembrokeshire SA62 5QZ.
- PLYMOUTH: A. Veale, G4SCA, Valley View, 26 Manor Park Drive, Plympton, Plymouth, Devon PL7 3HT.
- PLYMOUTH POLY: D. Salter, G1ERM, Room 105, Maritime Hall of Residence, Plymouth Polytechnic.
- POOLE: P. Dykes, G4XYX, 68 Egmont Road, Poole.
- PONTEFRACT: C. Mills, G0AAO, 27 Pendennis Avenue, South Elmsall, Nr. Pontefract, W. Yorks.
- POWYS: M. Smith, GW4DWX, Tonn Marr, Welshpool, Powys. (Welshpool 2068)
- R.A.I.B.C.: Mrs. C. Clark, G1GQJ, 9 Conigre, Chinnor, Oxford OX9 4JY.
- R.A.O.T.A.: G. R. Jessop, G6JJP, 32 North View, Eastcote, Pinner, Middx. HA5 1PE.
- SHEFFIELD: P. A. Cardwell, 223 Chesterfield Road, Meersbrook, Sheffield S8 0PR.
- SOUTH BRISTOL: L. Baker, G4RZY, 62 Court Farm Road, Whitchurch, Bristol, Avon BS14 0EG.
- SOUTH CHESHIRE: C. Wiseman, G1PUV, 14 Whiteridge Road, Whitehill, Kidsgrove, Stoke-on-Trent ST7 4TH. (Kidsgrove 73185)
- SOUTHDOWN: T. Rawlance, G4MVN, 18 Royal Sussex Crescent, Eastbourne.
- SOUTHGATE: D. Elson, G4YLL, 200 Churchgate Road, Cheshunt, Herts. EN8 9EL.
- SOUTH MANCHESTER: D. Holland, G3WFT, 32 Woodville Road, Sale, Greater Manchester. (061 973 1837)
- STOCKPORT: G. R. Phillips, G3FYE, 6 Ross Avenue, Davenport, Stockport. (061-456 7239)
- STOURBRIDGE: C. S. Williamson, G1IEB, 7 Hanbury Hill, Stourbridge DY8 1BE.
- STROUD: P. R. Gainey, G0DZM, Prencott, Harley Wood, Nailsworth, Stroud, Glos. GL6 0LD. (045383 2773)
- SURREY: J. Simkins, G8IYS, 18 Riding Hill, Sanderstead, Croydon CR2 9LN. (01-657 0454)
- SUTTON & CHEAM: A. Keech, G4BOX, 26 St. Albans Road, Cheam, Surrey.
- TELFORD: T. Crosbie, G6PZZ, 41 Culmington, Stirchley, Telford TF3 1UN.
- THAMES VALLEY: J. Pegler, G3ENI, Brook House, Forest Close, East Horsley, Leatherhead KT24 5BU.
- TORBAY: B. Wall, G1EUA, 48 Pennyacre Road, Teignmouth TQ14 8LB. (Teignmouth 78554)
- TRAFFORD: P. Greenhalgh, G3XGE, 238 Derbyshire Lane, West, Stretford, Manchester M32 9LP.
- VERULAM: G. Wimpenny, G4OBH, 30 Faircross Way, St. Albans, Herts. (St. Albans 52003)
- WACRAL: L. Colley, G3AGX, "Micasa", 13 Ferry Road, Wawne, Nr. Hull, Yorks. HU7 5XU.
- WARRINGTON: P. Forster, G0CBN, 6 Birchdale Road, Paddington, Warrington, Cheshire WA1 3ER. (0925 814005)
- WELWYN-HATFIELD: D. Fairbank, G0AII, 2 Sandpit Road, Welwyn Garden City, Herts. AL7 3TN. (W.G.C. 326138)
- WIMBLEDON: G. E. Cripps, G3DWW, 115 Bushey Road, Raynes Park, London SW20 0JN. (01-540 2180)
- WIRRAL: R. Bridson, G3VEB, 14 Zigzag Road, Wallasey, Wirral.
- WOLVERHAMPTON: K. Jenkinson, G1OIA, 10 Avondale Road, Wolverhampton WV6 0AL. (0902 24870)
- WORTHING: R. Jones, G4SWH, PO Box 599, Worthing, W. Sussex BN14 7TT. (Worthing 208752)
- YEovil: E. H. Godfrey, G3GC, Dorset Reach, 60 Chilton Grove, Yeovil, Somerset BA21 4AW. (0935 75533)
- YORK: K. R. Cass, G3WVO, 4 Heworth Village, York.

but we reckon they will be at the "Star and Garter" on July, and heading off for Ranmore Common if weather permits. On July 22

they are at "The Plough", Coldharbour. In both cases latecomers can look out on S20 or S22 for talk-in.

New Home

This is the position for **Douglas Valley** where the club is now meeting on the first and third Thursday of each month at Standish Conservative Club, School Lane, Standish, near Wigan. For more details on how to get there contact the Hon. Sec. — see Panel.

S.E. Kent YMCA is in effect the **Dover** club; and is at the YMCA, Godwynehurst, Leyburne Road, Dover. July 2 is a natter session and on July 9 they have a treasure hunt for members; July 16 is also a natter evening, but we note that at these sessions members are available to help with problems on equipment, both theoretical and practical.

Now we come to **Droitwich**; here the venue is at 17 Ombersley Street West, on the second Monday of each month; nothing particular is mentioned for July, although something is down for September.

Many of the activities at **Dunfermline** are set up at short notice, but they do manage an interesting programme. Find them at Outh Wireless Station on any Thursday; and as that isn't easy, contact the Hon. Sec. for help with transport from Dunfermline to the club Hq.

East Lancs members are to be found at the Conservative Club, Cliff Street, Rishton, on the first Tuesday in each month for the lecture session; the informal natter is on the *last* Tuesday of each month.

Edgware has its place at Watling Community Centre, 145 Orange Hill Road, Burnt Oak, Edgware, on second and fourth Thursdays. July 10 is a talk on microwaves by G6ODA, and on 20th they take in the Low Power Field Day at Cophall Stadium; the month is rounded off by the meeting on July 24 which is informal and practical.

Our next stop is at **Farnborough**, which implies the Railway Enthusiasts Club, Access Road, off Hawley Lane, near the M3 bridge. The dates are July 9 and 23.

Over now to **Felixstowe** where they have a social evening on July 14, and on 28th a talk on hospital radio by Pam and Bryan Hoyer of Ipswich Hospital Radio. Both are to take place in the back room at "The Feathers" pub in Walton High Street, Felixstowe.

Fylde make their sub. a combined one, to the radio club and their hosts the Kite Club at Blackpool Airport, so you can go watch the aeroplanes if you like too! On July 15 they have the informal and Morse class, but the first of July sees their informal with a talk on propagation, (part 2) by G3KEN.

There are no meetings in July for **Glossop** due to the Wakes Weeks and holidays, but they are together again on August 28 at the "Nags Head" for Norman Kendrick's talk on Japanese Morse.

The **Grafton** club has now got a fine Hq. at the Signals Room in *TS Wizard* in White Hart Lane, opposite Haringey Football ground. They are there on second and fourth Fridays and are looking for new members!

July 17 is junk sale night for **Greater Peterborough** at their Hq. in Southfields Junior School, Stanground.

Another New Club

This one is at **Harpenden** where meetings are held at the "Silver Cup" pub, St. Albans Road, Harpenden; July 8 is down for the aftermath of Field Day, and on 22nd they have the natter session. Start at 8 p.m. in the club room, but some members arrive at 1930 for a quick one in the bar!

The latest issue of the **Hastings** magazine has a first text page which very clearly tells one everything one could wish to know about the club; The main meeting is on the third Wednesday of the month at West Hill Community Centre, Croft Road, and the informals are every Friday evening at Ashdown Farm Community Centre, Downey Close.

HaVERING has a busy July. On 2nd there is the quarterly business meeting; 5/6th are down for NFD, and 9th is an informal. On March 16 they have a D/F hunt if weather permits, and on 23rd there is another informal; finally, in July 30 they have a *topic* —

details to be announced. Hq. is at Fairkytes Arts Centre, Billet Lane, Hornchurch.

At **Hereford** the locals foregather in the County Control, Civil Defence Hq., Gaol Street, Hereford. On July 4 they visit the Pathology and Nuclear Medicine Department at the local hospital, and on July 18 they have the informal.

Now we head for Eire, and **I.R.T.S.**; this is the national society for EI-land, and in addition functions to some degree as a local club — and of course it is the place to aim any inquiries about amateur radio in Eire.

Nice to hear again from the **Isle of Man**; they seem to have moved Hq., and are now to be found on Monday evenings at the Howstrake Hotel, Harbour Road, Onchan; in addition there are local meetings at the British Legion Douglas Street, Peel, on Thursdays, and at Perwick Bay Hotel, Port St. Mary, on Fridays. A pity we didn't get to know earlier about their GD4IOM station from St. Patrick's Isle, Peel Castle, but they had problems with the permissions which didn't get sorted until too late. Get all the details on the club from the Hon. Sec. at the address in the Panel.

The meetings for the **Kidderminster** crowd at Harriers Vice-Presidents Club, Hoo Road, Kidderminster, are on July 8 for a session with *Low Electronics*, and on July 22 they have G4LVK plus an on-the-air session.

Up in Shetland there is the **Lerwick** club, GM3ZET, and for all the current details we must refer you to the Hon. Sec. — see Panel.

At **Loughton** in Essex the locals meet at Loughton Hall; July 4 is down for the "Story of Laser 558", and over the weekend 19/20 they will put on GB2LRS and G4ONF to celebrate 25 years of Loughton Hall. More details on this and the club from G4FKI — see Panel. Incidentally we note that the G4ONP signal at this event will be on six metres, and that they are seeking contacts especially on this band.

July 4 at **Maltby** is an activity night when the gang are operational on HF; July 11 is a junk sale. Meetings are every Friday at Hellafield Community Hall, Clifford Road, Hellaby, close to the M18 junction 1.

Although there are twice-monthly meetings of the **Maxwell town** group at the Tam o' Shanter Inn, Dumfries, the dates seem to be a little fluid so check with the Hon. Sec. first — see Panel.

Every Friday evening the **Medway** club meets at St. Luke's Church Hall, Gillingham. Details of what goes on from the Hon. Sec. — see Panel.

Nice of the **Midland** crowd to send your scribe a membership card . . . I might turn up one evening yet! The club's base is at Unit 3, Henstead House, Henstead Street, Birmingham 5. On July 15 they have G4PZA on the Radio Regulatory Dept., but of course you can go along there on just about any week-day evening and find something on the go.

The **Nene Valley** crew has its base at the "Prince of Wales" pub, Well Street, Finedon, on Wednesday evenings; the July and August dates are all to be informals.

On July 8 the **Newbury** chaps will have a talk on satellite operation by one of the AMSAT crowd, at Newbury College.

The **North Wakefield** Hon. Sec. passes on first details of their North Wakefield Rally, at Outwood Grange School, Potovens Lane, Wakefield — dealer and general enquiries to the Hon. Sec., who will also doubtless pass on details of the club meetings too — see Panel.

The **Nottingham** Hq. is at Sherwood Community Association, Woodthorpe House, Mansfield Road. July 3 is an activity night, and on 10th they have a VHF foxhunt. July 17 is down for a talk on packet radio, while on 24th they have a treasure hunt. July 31 is down for a talk on First Aid, given by G8SSL.

Ormskirk lives in Ormskirk Community Centre, on the first Thursday of each month, and the new Hon. Sec. says they are setting up a good programme for the autumn — but he also notes they will have no meeting in August.

Pembroke pass on the word about their expedition to Ramsey Island, over the period July 10-13. They will be using GW0EJE/P on all HF bands and VHF. Details on this and the club itself, from GW4UZL — see Panel for the needful.

Plymouth Albion Rugby club is host to **Plymouth**; the Hq. is in Beacon Park Road, Peverell, Plymouth with meetings at 7.30 p.m. on first and third Mondays.

A note from the Hon. Sec. of **Plymouth Polytechnic** gives details of his new address for the Panel — he can give you all the details of the club, of course.

Now to **Poole** where the club will soon be celebrating ten years of life. Find them at Commanders House, Constitution Hill Road, on July 25 when they will be hearing all about the history and details of GB3SC, the local repeater.

Every Thursday the **Pontefract** crowd foregathers at Carleton Community Centre where they have the top floor.

Wales now, and **Powys**, which gets together every Thursday evening at the Cricket Pavilion, Lymore Park, Montgomery; get details on how to find the place from the Hon. Sec. — see Panel.

RAIBC exists for the invalid or blind radio amateur or SWL. Details from the Hon. Sec. — see Panel.

And of course, **RAOTA** is equally well known as the old-timers club; to get in you must show 25 years of activity in amateur radio. Details from the Hon. Sec. — see Panel.

Sheffield is based at the Firth Park Pavilion, where they foregather on the first and second Monday and the last two Wednesdays of each month. July 7 is the junk sale, and on 14th they have a D/F hunt and pub meet. July 23 is RAE and Raynet, and on 30th they have a committee meeting.

The **South Bristol** venue is at Whitchurch Folk House, East Dundry Road, Whitchurch, every Wednesday evening. On July 2 they prepare for NFD, and on the same evening they have a lecture/demo on cellular radio. July 5/6 is NFD, and on 9th they have a debriefing. July 16 they are out/P with ATV, and on 23rd there is an HF activity evening; July 30 is down for a talk on cables and connectors.

The **Southdown** gang gets together at the Chaseley Home for Disabled Ex-Servicemen, Southcliff, Eastbourne, on the first Monday of each month; also they have weekly gatherings at the Clubrooms, Wealdon District Council Offices, on Tuesdays and Fridays.

Over to **South Cheshire**, where we must refer you for the latest details to the Hon. Sec. — see Panel.

July 10 at **Southgate** is for a talk by G3DKZ on the home-brewing game — not radio but liquid! Find them at Holy Trinity Church, Green Lanes, Winchmore Hill, London.

The weekly meetings of the **South Manchester** crowd are at Sale Moor Community Centre, Norris Road, Sale, every Friday evening. Details from the Hon. Sec. — see Panel.

Stockport is next on the pile, and they are to be found on the second and fourth Wednesday of each month at the "Magnet Inn", Wellington Road North; and there is an informal meeting on the third Wednesday too. Get all the gen on this club from the Hon. Sec. — see Panel.

Our next stop is at **Stourbridge** where the venue is the Robin Woods Centre, School Street, on first and third Mondays. July 7 is informal and on 21st they have a treasure hunt.

July 9 and 23 are the dates for **Stroud** at Nelson School, Stratford Road, Stroud, where the routine is alternate Wednesdays.

The first Monday is the formal session for **Surrey** at *TS Terra Nova*, 34 The Waldrons, South Croydon. The 'B' meetings on the third Mondays are informal, for a natter and operation of G3SRC.

For the **Sutton & Cheam** people, the venue is Downs Lawn Tennis Club, Holland Avenue, Cheam; On July 7 they have a natter in the Downs Bar, and on 18th there is a programme of films and video by G6MKC.

Now on to **Telford** where the locals are having an open day on June 29 at Dawley Bank Community Centre, Bank Road, Dawley; this is the club Hq. They are meeting on July 2 to prepare for NFD, which they are doing at the top of The Wrekin. July 9 is a committee meeting and 16th a debriefing — i.e. what went wrong at NFD?

The first Tuesday in the month is the one for **Thames Valley**

members, when they head for the Library, Watts Road, Thames Ditton — July will be a technical forum.

The **Torbay** letters this time are about the Rally on August 24 at the STC Social Club, Brixham Road, Paignton. Hence for the meeting details we have to refer you to the Hon. Sec. — see Panel.

Now **Trafford** where the locals meet on Thursdays, at the Sea Cadet Hq., Bradshaw Lane, Stretford, Manchester.

The R.A.F. Association is home to the **Verulam** club, and on July 5 they have a joint talk by G3RFS and G4OBH on the "Running Hot and Cold DX-pedition."

WACRAL is one of the special-interest groups in the hobby, and is for committed Christians of any denomination, worldwide. Details from the Hon. Sec. — see Panel.

The **Warrington** club meets at Grappenhall Community Centre, Bellhouse Lane, Grappenhall; on July 1 they have an open forum, and on July 8 they have a visit by *Microwave Modules*. July 15 is down for D/F and a talk by two of the Wirral members, G8TRY and G6SNO. July 22 sees them put it into practice with a treasure hunt, and on July 29 they have an RSGB film show.

The **Welwyn-Hatfield** club notes that they recently had a talk by G3LXP on "Aerials for Small Spaces". They meet on July 7 for an NFD analysis, and have a fox hunt on 21st, both being at Knightsfield Scout Hq, Welwyn Garden City.

Off we go now to **Wimbledon**, which means the St. John Ambulance Hq, 124 Kingston Road, on second and last Fridays. July 11 is a talk on the Great Western Railway, by David Kinsella, and on 25th there is an activity evening.

The older of the two **Wirral** groups is to be found at their clubhouse at Ivy Farm, Arrowe Park on first and third Wednesdays.

Looking at **Wolverhampton** we see they have a junk sale on July 1, and a 144 MHz D/F hunt on 6th. July 8 is a discussion on aerial rotators, and on 15th they visit BBC Droitwich; July 22 is committee night and on 29th they have a night on the air.

Every Wednesday evening the **Worthing** group heads for Lancing Parish Hall, South Street, Lancing; they have a junk sale on July 16.

Now **Yeovil**, and they are to be found at the Recreation Centre, Chilton Grove, Yeovil, every Thursday evening; usually they have one informal and three talks, mainly by G3GC and G3MYM.

At **York** the home base is at the United Services Club in Micklegate, where the locals go every Friday at 7.30 p.m. The main interest seems to be outdoor events in the summer but they do seem a very nice friendly lot from their letters.

Finale

That's it for another month; your letters and data, newsletters and chat, should be arranged to arrive by the dates shown in the box, addressed as ever to your Club Secretary, SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. Be seen' ya!

July Rallies

July 20, Cornish Rally, Camborne School, Camborne, 10 a.m. to 5 p.m. Details from G4MSV, 0736-763549. **July 20, McMichael Mobile Rally**, Haymill Centre, Burnham, Slough, Berks., doors open 11 a.m., full range of trade stands, fleamarket, special radio and family attractions. More information from G0BTY, 0494-29868.

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see information panel on p. 203

Wanted: Eddystone EC-10 Mk. II receiver in reasonably good physical condition, electronics less important. Will collect Somerset/Dorset/Hants. area. Details and price please. — Baldwin, 179 Preston Grove, Yeovil, Somerset BA20 2DB.

For Sale: FT-102, AM/FM board fitted, hardly used, £500. KDK FM-2016 2m. synthesised, £95. Prefer buyers to collect, or carriage extra. — Tibbert, 32 Prescot Close, Mickleover, Derby. (Tel: Derby 515212).

For Sale: Vibroplex Original Delux, £40; Vibroplex brass Racer Iambic, £29. Eddystone EC-10 mains/battery Rx with manual, £65. Microwave Modules 144/28 MHz transverter, £50. Marconi 'Q' meter with matching oscillator, £45. Pioneer SG-540 graphic equaliser, £50. — Ring Nottingham 582358.

Wanted: PCR Rx, LW/MW/SW, with AC/PSU. Also Heathkit RA-1 Rx's. Details and price please. — Marris, 35 Kingswood House, Farnham Road, Slough, Berks. SL2 1DA.

Selling: Yaesu 600 Hz CW filter, suit FT-101Z, FT-707, FT-901, etc., £10. Dust cover for Ten-Tec Argonaut, purpose made, £2. Noise blanker for Ten-Tec Triton, £10. All include post and packing. — Ring Turner, 0622-39936.

Wanted: Ten-Tec Model 242 remote VFO for Triton transceiver. Also Model 244 digital readout. Good price paid. — Ring Turner, 0622-39936.

Sale: Realistic DX-302 communications receiver, £130. Heathkit SW-717 receiver, slight volume fault, £40. Yaesu FRG-7700 without memory unit, with FRA-7700 active antenna, £300. Awia 158 portable 6-band receiver, £5. — Ring Wood, Clochan 378.

Wanted: Sony CRF-320 receiver, moderately priced, and international amateur *Callbook*. Private buyer. — Ring 06174 - 31570 after 9 p.m.

Wanted: Variometer, ex-19 Set type, good price paid. Also require BFO components from British 19 Set. W-H-Y? — Heslop, 75 Alder Park, Brandon, Durham DH7 8TJ.

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Wanted: Trio/Kenwood SWT-1 (2m.) and SWT-2 (70cm.) ATU's. — G1SBS, QTHR.

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Wanted: For the Wireless Museum, lists of pre-war radio amateurs (W.W.I not W.W.II!), old radio books, magazines, QSL cards, callbooks, service sheets, gear, valves, valve tester, keys, knobs. Details please to curator, Douglas Byrne, G3KPO, QTHR. (Tel: 0983-67665).

For Sale: Ten-Tec Argosy 1, little used, £300. Daiwa auto antenna tuner, £120. Realistic 50-450 MHz 20-channel programmable scanner, £80. — Ring Southampton (0703) 335794.

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