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- 2 metres in, 6 metres out
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SHORT WAVE MAGAZINE

ADVERTISERS' INDEX

| | Page |
|--|--------------------|
| Amateur Electronics Ltd. | 143, 146 |
| A.R.E. Communications Ltd. <i>inside front cover</i> 176, 177, 178, 180, 181, 182, 183, 184 | |
| Aspen Electronics Ltd. | 179 |
| J. Birkett. | 178 |
| Black Star Ltd. | 180 |
| Bredhurst Electronics Ltd. | 144 |
| British National Radio and Electronics School | 180 |
| Colomor Electronics Ltd. | 183 |
| Datong Electronics Ltd. | 143 |
| Dewsbury Electronics | 146 |
| E.M.A. | 178 |
| G2DYM Aerials | 182 |
| G4TNY Amateur Radio. | 182 |
| Hately Antenna Technology | 178 |
| D. P. Hobbs Ltd. | 181 |
| KW Ten-Tec Ltd. | 179 |
| MuTek Ltd. | 178 |
| P.M. Electronic Services | 179 |
| Quartslab Marketing Ltd. | 180 |
| Radio Shack Ltd. | 145 |
| R.M.B. Electronics | 183 |
| F. G. Rylands | 182 |
| S.E.M. | 144 |
| Setronix | 182 |
| Small Advertisements | 181, 182, 183, 184 |
| South Midlands Communications Ltd. | 145 |
| Stephen-James Ltd. | 142 |
| S.W.M. Publications | 181, 182, 183, 184 |
| <i>inside back cover</i> | |
| Uppington Tele/Radio (Bristol) Ltd. | 181 |
| Reg. Ward & Co., Ltd. | 180 |
| Geoff Watts | 178 |
| Wood & Douglas | <i>back cover</i> |
| WPO Communications | 179 |

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No. 500

CONTENTS

| | Page |
|--|------|
| Editorial — Maritime Mobile. | 147 |
| Communication and DX News, by E. P. Essery, G3KFE. | 148 |
| HF Antennas for Restricted Sites, Part 1, <i>by A. P. Ashton, G3XAP.</i> | 152 |
| 'McEnroe' Microphones for the Yaesu FT-707 and FT-290, <i>by Ian Keyser, G3ROO.</i> | 156 |
| Oblast Corner, by Nigel Cawthorne, G3TXF. | 158 |
| "Kitchen Table Technology", No. 9: The J.L.D. Transceiver (Part 2), <i>by Rev. G. C. Dobbs, G3RJV.</i> | 160 |
| B-Morse, and Cyrus, Dominate Club Night, <i>by Jack Hum, G5UM.</i> | 164 |
| VHF Bands, by N. A. S. Fitch, G3FPK. | 166 |
| Contemporary Briefs | 171 |
| "Practically Yours", with Glen Ross, G8MWR. | 172 |
| Clubs Roundup, by "Club Secretary". | 173 |

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Articles submitted for Editorial consideration must be typed double-spaced with wide margins on one side only of A4 sheets. Photographs should be lightly identified in pencil on the back with details on a separate sheet. All drawings and diagrams should also be shown separately, and tables of values prepared in accordance with our normal setting convention — see any issue. Payment is made at a competitive rate for all material used, and it is a condition of acceptance that full copyright passes to the Short Wave Magazine, Ltd., on publication.

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| YAESU | |
|---------------------------|---------|
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| FRG880 Gen. Cov. Receiver | £550.00 |

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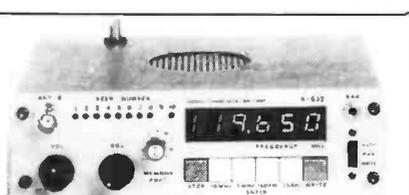
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| Q6 2m 6 Element 2m Quad | £41.40 |
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Frequency range: 110 to 136MHz, i.e. all NAV/COM channels.
Number of channels: 1040 (25KHz steps).
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AE

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FM wide, FM narrow and AM wide and narrow, SSB (single sideband) reception up to 460MHz, and the new ACSB mode. Seven tuning/scanning rates between 100Hz and 100kHz assure fast and efficient scanning while still permitting easy tuning or narrowband signals.

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Sensitivity (S+N/N 10 dB)
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 1µV 0.5µV
 Reduced sensitivity 10-1,600 kHz
Selectivity:
 12 kHz (-6 dB), 24 kHz (-50 dB)
 6 kHz 6 kHz (-6 dB), 12 kHz (-50 dB)
 2.7 kHz 2.7 kHz (6 dB), 4.5 kHz (-50 dB)
Frequency Stability:
 Less than 100 Hz per hour after ½ hour warm up
Image Rejection:
 70 dB or more
IF Rejection:
 70 dB or more
Antenna Impedance:
 50 ohm unbalanced and high impedance
AF Output:
 1.5 W (8 ohm, 10% distortion)
Phone Jack Output: 100 mV
Tape Output:
 300 mV
Power Requirements:
 12 Vdc or 120/240 Vac 50/60 Hz (external transformer), 10 W
Dimensions:
 364mm W x 127 mm H x 253mm D 14 ¼" W x 5" H x 9 ¾" D
Weight:
 Approx. 17 lbs.
Accessories:
 Telescoping antenna, ac adaptor and 12 Vdc fused power cord included.
 Specifications are nominal and subject to change without notice.

Tone Control
Allows adjustment of tone for listening preference.

LED Indicators
LED indicators for modes and functions.

Two Time Zone 24-Hour Clock
Unique 24-hour clock keeps time in two programmable time zones (GMT and local). At the touch of 'clock' button shows time in 24-hour format on digital display. A second touch of the button shows the time in the second zone.

Direct Access Tuning
Use keyboard for entering frequencies. No bandswitching is needed.

Portable Battery Operation
Enjoy broadcast anywhere with self-contained 9 D-cell (flashlight) power supply.

Digital Frequency/Clock Display
Indicates frequency of station with reading accuracy of 1 kHz or at the touch of 'clock' button, displays time in 24-hour format, in choice of two time zones.

Analog Readout
Fine tuning dial is calibrated in 500 Hz segments for visual indication of frequency.

Fine Tuning
Varies the frequency ± 2 kHz to fine-tune stations. Especially helpful for tuning USB/LSB/RTTY/CW transmissions.

Calibrated Signal Meter
Includes scale to aid signal strength to comply with International recognized S/MPO code.

Tuning Knob
Adjusts frequency, covering 24 kHz per revolution in 1 kHz steps or 3 kHz per revolution in 100 Hz steps.

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Squelch receiver between transmissions in sideband and FM Modes.

Variable Tuning Rate Button
Selects the tuning rate of tuning knob: 100 Hz or 1 kHz steps.

Automatic Gain Control
Switches the AGC circuit to 'fast' or 'slow' release time.

Back Panel Features:
Remote Control Jacks One normally open and one normally closed for external equipment control.
Speaker Jack Miniature type 3.5mm.
Ground Terminal
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Antenna Terminals Includes SO 239 coax connector for 50 Ω screw connector for High Z.
Tape Output RCA type 800.

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Separate push buttons for selecting within AM, Lower Sideband (LSB), Upper Sideband (USB), CW, or FM modes.

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Three AA batteries hold memorized frequencies and clock if power fails.

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Front Mounted Speaker
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On/Off Button
Dimmer Button Allows dimming of the digital display, LED function lights, and S-meter light for minimum battery drain when operated on DC.
Manual Step-up/Step-down Advances the frequency either upward or downward in programmable frequency steps from 1 to 99 kHz.
10-Channel Memory Store and recall any frequency instantly, up to 10 channels.
Selectable Filter Bandwidths Select 12.6 or 2.7 kHz to minimize adjacent channel interference. Filter bandwidths are independent of mode selection.

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Can be programmed to turn radio 'on' and 'off' up to five different times on five different frequencies.

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 NBFM, WBFM, AM(W&N) AM/N & SSB*
 100 Memory Channels
 7(W) X 3(H) X 8 ½ (D) ins
 *SSB up to 460 MHz

MS8400A £249.00
 68 - 88, 118 - 136, 136 - 174, 360 - 512 MHz.
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 40 memories.
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Spin tune VFO, Keyboard Frequency Entry and Computer control optional on both these Yaesu Receivers.



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AE

FRG-8800



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FRV-8800 optional VHS converter (mounts inside) adds 118MHz to 173.999MHz coverage to the 8800 with full frequency readout.



£559.00
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**AMATEUR
ELECTRONICS AE LIMITED**

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DEWSBURY

ELECTRONICS



NEW PRODUCT NEWS

NEW PRODUCT NEWS



Following the unqualified success of the POCOMTOR AFR-2000, DEWSBURY ELECTRONICS are proud to announce the arrival of two complimentary products. The AFR-2010 which has the same performance/specification as the AFR-2000 but with the added facility of AUTOMATIC Morse decode. The AFR-8000 features a built in 40 character LCD display, serial and centronics compatible printer interfaces. All three decoders offer the AUTOMATIC decoding of RTTY (baudot) TOR (AMTOR, SITOR, SPECTOR) and FEC (Collective & Selective). THE AFR-2010 and AFR-8000 also offer automatic decoding of MORSE. The AFR2000 and AFR2010 also offer the off air decoding of ASCII up to 300 baud.

Operation could not be simpler, simply tune in the required station, select the mode, and within 5 seconds the AFR has selected the baud rate, the shift and the phase and has commenced displaying the received text.

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FOR THE RADIO AMATEUR AND AMATEUR RADIO



Maritime Mobile

Anyone who listens regularly to the maritime mobile net and the 'yachties' operating on it cannot but observe what a discrepancy there seems to be between the various stations. KV4FZ is quite certain that all is not correct in the maritime mobile world, and the writer is equally certain — both from his own observations and culling of the yachting press.

Without doubt there are some phoney callsigns purporting to be maritime mobile amateur radio operators who are upon the high seas.

Now, it could be argued that if these people use amateur radio as a safety provision, and if they do no harm, then they should be left alone. Personally, one would not object if there was evidence that they had passed either the RAE (or its national equivalent) and the mandatory Morse test — the latter, whether for amateur radio or marine HF band use is vital, with the ability of seawater to damage equipment. However, there is clear indication that a large minority have got their callsigns by no more than simple piracy. Should not this be taken up at international level as it rebounds violently on the image of the radio amateur? If only ten per cent of the energy wasted on pompously objecting to the word 'ham' (or even 'amateur') as applied to us were to be spent on stamping out piracy, then we would all be better off!

500th Issue

As proclaimed on the front cover, this is the 500th issue of *Short Wave Magazine*. Five hundred issues: a mind-boggling editorial thought indeed! But we tremble only for an instant and start collecting our ideas together for the next issue.

One of the most important points about this milestone is that it gives us a very good opportunity to thank all our readers and advertisers over so many years for their support. One supposes that we must have at least pleased "some of the people some of the time" over such a long span, and to please as many as possible as often as possible is really what we are here for when all is said and done. We shall continue to attempt to do just that for, who knows, another five hundred issues!

STOP PRESS: On May 13, at Clerkenwell Magistrates Court in London, Messrs. R. Glasscoe, B.D. Boyce and H. Dyer, all from south London, pleaded guilty to attempting to dishonestly obtain, by deception, an amateur radio licence value £12 from the D.T.I. Glasscoe and Boyce were also charged with three offences under Section 1(1) of the Wireless Telegraphy Act 1949, and Dyer with two offences under this Act. All three pleaded guilty to these charges. All were fined £200 each for the deception offence and £50 each for the offences under the W.T. Act. The court ordered all their equipment, valued at over £2,000, to be forfeited.

The D.T.I. is often criticised for apparently doing little to deal with this kind of illegal activity, so we feel these cases are worthy of the widest publicity in the amateur radio press. The D.T.I. has the full backing of this journal for its efforts to catch those who flagrantly break laws affecting our hobby.

*John
K3KFE.*

WORLD-WIDE COMMUNICATION

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

EVERY year one sees the spring peak in conditions coming — but sometimes things get in the way of the more concentrated DX chasing activity one would wish to indulge in at this time. After all, grass still grows, and if one's array of mowers all choose to turn their toes up at once, what is left to do but waste valuable DX-ing time in repairing them — assuming that at least one is not, as it were, "mended beyond repair!"

The Bands

In sum, one would define conditions as having been just plain grim; but, as always, there have been lighter moments — for instance there was one evening when the twenty-metre band was 'going well' up to well past midnight, and earlier in the same opening we heard the Woodpecker belting away on, believe it or not, 21 MHz, implying that things were indeed quite good. At other times when we looked, we were greeted with silence . . . and one evening by an S9 noise level! So there is still variety even in the grimness.

Ten Metres

There is still a strong need for amateur radio activity on this band, if we are not to lose it, whether we talk of allocations, or of the realities of CB infiltration. As far as allocations go, there are enough other services casting sheep's eyes at our band while being rich enough to make a noise at the next frequency allocation conference; but the CB menace is the most immediate. The degree of nuisance varies from place to place, but in general we can divide it up into two distinct areas, namely actual operation within our band, or — which locally seems worse — operation on the legal high-end CB channels with either excessive power and/or a 'power mike' to ensure no-one on either band can copy. The cure for one of these pests is to go as near as one legally can, and put out a long CQ with full power — and if one gets a reply to the CQ, so much the better! In principle, the same goes for dealing with intruders. A favourite place for these seems to be around 28.305 MHz, which sounds a nice place for a calling channel on SSB, on the *opposite sideband* to the one the CB-ers are using!

Now to the question of activity. G4HZ (Altrincham) was started on May 7 to hear the beacon in Pretoria, ZS6PW, at 1525z, Q5S6, on his Mosley V3 vertical; by twenty minutes later it had faded out.

It was the same evening that your scribe

noted things to be getting rather lively, and a spin round the lowest segment of Ten on the TS-830S dial yielded a few promising noises, so we rapidly tuned up on the low end of the band and put out a long slow CQ call. Unfortunately we were just too late: when we finished the call we just heard someone tuning up and disappearing into the mud as he did so.

We have an interesting report from SWL R. Cross, BRS 84869, who runs a cassette recorder to an R-600. Ron had his shop set out for business on April 23 between 1130 and 1230, as part of the UBA SWL survey. F6IVH was the first noted, working GW4BGD on 28016 kHz, and then 9J2BO in contact with G4BYG — the time of the latter contact would have been 1130-1150 and 9J2BO was 589. Ron says this was the first time he has heard an opening since he started in the UBA survey, back in January 1985.

G4JBR (South Molton), offers some eight countries worked on the band since the start of the year, but notes how things livened up this time: on April 29 he snagged Y22, SP, OK, DJ, UA, PY, and I, while the following day resulted in ZC4 (CW), LU, ZP, EA8, C53; May 1 gave YU, HB9, F6, OZ, EA6, SP6, SM, OE, DL, G4PTI, RB5, PY, plus a PA gotaway. May 3 gave a Z21 contact, and May 4 was very good with TR8, LU and VP8. Thus between April 4 and May 4 the countries score went up from eight to 35.

GW4BLE (Newport, Gwent) has been somewhat hampered by problems up at the top of the beam, where the four bolts holding the rotator in place on the tower top plate all fell out — and then there was a solar disturbance to complicate matters. The rotator problem occurred around NEC-time, and was only on May 4 that the wind dropped enough for GW4BLE to go aloft and make repairs. With the beam unable to move about all that was worked was HA9RT on May 3 at 0623 on SSB.

On now to Ivybridge, and G4VFG. Peter reports some interesting openings; PY2GOB was to be heard on 28050 kHz on May 23 and 29 — this could be a handy beacon to listen out for — and on the latter date much of Europe was audible, plus 6W1, C53, PY and LU. On 30th, YU and OK were worked on CW, though the opening was not so widespread; 28th was even better but G4VFG missed this. On a different tack, G4VFG is of the opinion that many of the CB 'intruders' are in fact spurious outputs from their stations. This is a point of considerable interest, and well

worth a look.

Now we come to two letters from G3NOF (Yoevil); April 3's letter, which was slow in arriving and hence 'missed the bus' last time indicates the season on Ten opened on March 30 with ZS6CDJ at 1134z. Next came March 31, when DJ1ZU, LU1E, and TL8CK were all audible around 1343z. Don normally listens pretty regularly on the band by routine, but doesn't seem to hear a lot. Turning to the second letter, G3NOF comments that there were several Sporadic E openings, but nothing of any interest and no QSOs were made.

Another one whose letter arrived late was G4ZZG from Warrington; Charles heard the beacons, 5B4CY on 28217.8 kHz, and 3B8MS on Mauritius on 28208.6 kHz, at 1310 and 1315 GMT respectively, both heard on a vertical. Thus encouraged a long string of CQs was sent, and netted G3UET from ten miles away! Nothing else heard.

Turning to the report from G4HZW (Knutsford) Tony noted openings to have occurred on May 1 and May 6; DLs and UP2BNE were worked, and at the same time the band was open to YU, I, EA, OH, SM; also worked were UB5KN, EA8TE, and C53FE, while at the same time there was a weak DX opening with PY, LU, and ZP all heard faintly.

So — in sum, things have been happening on Ten, and most of it due to more people listening to a few beacons, and arising from that, an occasional speculative CQ call. For the future, we would suggest there is much merit in the idea of the 'A' licensees grouping up into local natter nets, or CW practice QSOs on this band, and *reporting* their activity. If a list of ten-metre net frequencies, times and days was in existence one could see a vast increase in activity, and in the value of the band for experiment.

New Bands

Back in February we suggested in the editorial that the first weekend of each month should be described as an Activity Weekend on the new bands, with reporting to your favourite scribe — who would of course, we hoped, be your humble servant! Be that as it may, the idea seems to have taken off to at least some degree; may we now go a little further and suggest that all those who 'hate contests and can only operate when the contests are on' add a bit of fuel to the fire and get on the new bands and have QSOs . . . and

that the 'Phone only' boys and girls also get on the new band but with their rusty Morse — no-one will mind, the practice will be good and the band will be more used, which is really all that matters.

G4UZN (Leeds) is a regular supporter of these bands, who reckons conditions were "incredibly poor" all month (wonder if Tony was around when the 1976 minimum was in being? — but we know just how he feels!) but that didn't stop him having a few contacts. On 10 MHz, the score looks like FG5AM, KP4II, OZ1DBT/OX, OX3OA, VK2KM, VK3MR, V2AJI, DL2GG/YV5, 5B4OG, 6Y5FS/KP1, 8Q7ZL and 9H1GP, with TI2LK, ZS5LB, 3D6AK and 9J2BO all in the 'gotaway' role. On 18 MHz, four DLs were worked, plus hearings of weak signals from LU1DOW, LU5DJO, TR8SDP, and DL2GG/YV5. On 24 MHz nothing was heard.

G2HKU (Sheppey) seems to have had an all-CW month with no SSB on any bands. On 10 MHz, Ted notes OE6PN, OK3EQ, and SM0PPE.

It is interesting to note G4FLK's report — he has underlined the FOC members known to him and heard on the band in his lists; as he says, they haven't got cloth ears even if they don't want to work him. . . . Taking Saturday, May 5, 0615-0800z yielded G6HL, VK2YK, CT1CO, GW4RHW, SM0CCE, DL9MN, G4UYR, CT1UP, G4FM, VK2DUY, G4ODC, EA4BWR, G6CJ, F8MA, VK3MR, G2BY, OE9SLH, F6DNM, and OY7ML. Between 1600-1700 G4FLK turned his attention to 18 MHz, when the following were noted: I3BLF, 5N0BRJ, G3TWE, LU1DOW, and G3JFF. 24 MHz was dead all day. On Sunday May 6 an early start was made, with 0600-0700z targeted, and on 10 MHz LA2NEA, G6CJ, VK3XB, DL6ZZ, EA7CWW, FE3UA, VK3IM, GD3FXN, Y24DO, DJ9HQ, DK3RK, VK2VEA, G8PB, GI4VIV, SM5AKS were worked; conditions seemed good along the short path but only fair the opposite way. 1000-1030 was devoted to 18 MHz, and here SM5EDX on the seashore, DK6AD, I0FUQ, I3BLF, GW3AHN, and 5N0BRJ were logged, though conditions were punk and mushy with it. 24 MHz was again dead, apart from the odd weak commercial RTTY signals.

GW4RHW (Deeside, Clwyd) comes next and makes a first report. Barry also enclosed a log from his friend G4WXO — a kindly thought and appreciated. GW4RHW is, in the main, an operator who sticks to 7 MHz and 10 MHz; on the latter band, a very low sloper is in use, so in general it prefers to work Europeans, but a

few Ws and plenty of VKs are also in the log — for example VK2YK, VK3UJ, VK3CVT, VK3YD, VK3DQ, VK2AMB, VK2TT, VK7CH, and VK3MR (five times). Otherwise the most interesting station was V2AJI.

For G4VFG the 10 MHz band was the one, and here he managed to make contacts with N4ALO, SM2GCQ, PA3BXL, DJ1JC and W9UZZ.

Top Band

G4JBR's letter for this month was his first, prompted by his hearing of interesting sounds on Ten; however, Peter is not one to do things by half-measures, and so he has reported on the other bands. On April 9, he reckons Top Band was better than he had ever heard it; W1-2-3-4 and VE2 were worked, and there was a scratchy one with 6Y5NR/KP1 too. On the following evening HH7PV, HK0HEU and XE1HHA were all about, working YU but not audible to Peter. On April 14 3V8PS fell into the bag, and on 18th an *echo* was heard on VE3KQS which would imply the signal had been right round. However that was it, for only EUs were audible for the remainder of the month.

Although G3BDQ (Guestling) is less active on Top Band in the summer, that is not to say he doesn't have the odd look round. Thus it was that he came by SJ9WL (Morokulien), ZS5LB, 4X4NJ, UA0ABL (Krasnoyarsk), UA0LM (Vladivostok) both within a minute of each other at 1907, UA0AG/R, UA9KAA, UA9CBR, EO4AES, EM2C and others in European and near-Asia Russia, EA6NB, EA8ABR; a profitable morning on April 14 when KM1H, W1LQQ, W2KFG, W2CFU, W2JX; W2ADK, WA2MBX, W2AYS, N3II, W3GU, N4JJ, N4SF and, three times over the 'Big Yin' as they say up north, ZL3GQ. First a marginal contact at 1908z on April 13, then a good two-way at RST 549 at 1756z on April 15; and finally a long chat on April 19 when they were 579 both ways and able to ragchew at 1900z; after they had finished, G3BDQ reckons G3ZEM made it too.

SWL D. Whitaker (Harrogate) notes that last month we credited his eighty-metre report of VK9XG to Top Band — sorry. David notes that before he went on holiday April 9 was a good morning with Phone heard from TI2J, TI2JVA, TI2KD, C6ANI, 6Y5NR/KP1, HK3DDD, HK0HEU, W9SMY, YV2BYT, and EA8AAU, all heard between 0500 and 0530z.

There wasn't a lot of activity from G2HKU (Sheppey) as Ted had too many things to do; but his CW did reach out to

OZ1ABX, LA1IE, HB9BIN, HB9H and UP3BP.

Finally, the letter from G4AKY (Newport, Essex) which like so many others was delayed in the posts. Dave worked VO1HP, UL7TAQ, N4PN, 3A2GL, 9M2AX on CW, while SSB saw off PJ7A (Sint Maarten) and 7X5AB; heard, but missed, included (with tear-drops all over this part of the page!) WB0MIV/V4, YV3AZC on SSB, PY1JF, K5LZO/KP5, J28EI, 3B9CD, VE7UZ, UA0AG, UM8MLE, 6Y5FS, and TF3SZ. Known to have been on but neither worked nor heard included VQ9QA, KH6CC, K6DDO, and ZL3GQ.

Past and Future

As usual, this is gleaned from listening to the odd DX net, to the weekly *DX News Sheet*, which is a mine of useful information as edited by G4DYO, who is proving to be the best of the bunch since,

"CDXN" deadlines for the next three months:

July issue—June 6th
 August issue—July 4th
 September issue—August 8th
Be sure to note these dates

so sadly, Geoff Watts had to give up; and of course from *The DX Bulletin* which is also weekly and comes from the U.S.A. — this is the lineal successor to Hugh Cassidy's wonderful *WCDXB* of happy memory. Looking at *DXNS*, we notice that the Clipperton DX-pedition rattled up some 30600 contacts, of which some 8550 were on SSB; but as far as the Europeans went it was not a very useful activity for while there seemed to be the odd European on the organisation, there most certainly weren't many Europeans making contacts. Only *three* of the East German stations made contacts for example. Our own feeling is that this blatant bad sportsmanship on the part of the expedition should result in DXAC refusing to accept it as valid.

Turning to the KP1 effort by 6Y5NR and 6Y5FS to Navassa, this one was of course the old firm of G3RFS and GW3YDX — known to all Top Band ops with a mind to a bit of history. The QSLs and whatever will of course be handled in the proper way — send direct to G3YDX's Exeter address, and please include an

s.a.e. and a little something — 12500 QSL cards to write out alone justify that, even if the QSO didn't turn you on!

Still with the disillusion department, there seems to be lots of grumbling going on about the CE0AA effort last year; we understand G4DYO has written to Chile to ask what's gone wrong but meantime our own advice is not to waste any more money or pasteboard on this one until we have a better idea what is going on.

The Revilla Gigedo part of the Clipperton exercise was also somewhat of a busted flush, though for what reason we don't as yet know — although there is a smell of South American politics in the wind.

At the time of writing, Lundy Island will be active on all bands, 10-160m., signing GB4LI — this doesn't count for IOTA (why not?) but it does do for WAB area SS14 Devon.

On the better side of things, the BY, China activity seems to be building up all the time, with more Phone activity — all the Chinese stations have been reported on SSB at one time or another.

SM0AGD's St. Brandon operation had to be abandoned, we understand when the license was refused at the last moment.

80 and 40

GW4BLE had the tower wound down and the beam tied in one place with string for most of the time, so his eighty-metre support was lower too — good coverage of EU sums it up! However, Steve did get a tickle with the VK9XG/VK9XJ operation from Christmas Is. (wasn't it a treat to listen to a well-run job for a change!); but while the lads were showing us how there were some cretins yelling "List, List!" And the ON5NT activity from 9U5JB — Ghis also did a FB job there.

A quick note from G3JFS says that he is now in Hanover and awaiting a full DL call; at the moment he is only on VHF where he signs DL/G3JFS/M until his unaccompanied baggage containing his trusty KW-2000A arrives. See you on the band soon, Peter.

G2NJ (Peterborough) notes — a little too late to be fresh news — the activity of TOPS CW Club during the VE anniversary celebrations, when they were to sign GV2TOP. In August next year they hope to have GB2TOP allocated, to celebrate 40 years of existence without your scribe's membership! Turning to Eighty, Nick notes the onset of the QSB season on the band, but he did hear lots of OTs about on their lawful occasions; G5NX was worked from Oakham near Windermere, and then from Overstrand near Cromer where he was an excellent signal. G2RF was noted on from Seascale with one watt of RF. On a different tack Nick says someone passed on to G3KPO a copy of the 'gen' on the Minimitter rig as requested last time . . . and we can add

that reader W. Jones sent a copy of the handbook for the Cossor 1035 Oscilloscope which will be passed on to G3KPO.

G3ZPF has a forty-metre dipole up, which he kicks into activity also on 21 MHz after a fashion. However the main activity was working scads of DLs in their own language.

Now GW4RHW who finds Forty an excellent band. April's take — mainly CW — includes PT7AZ, PU3MER, PP5GS, PP2WV, PP2INC, PP5CT, PR8ET, PS7FF, LU1NBY, LU2YE, LU7KW, LU2FN, LU0ASC, CX9AV, OA4WM, VK2ZC, ZS2RM, HK3HFQ, ZL2BXY, ZL2MM, ZL4FT, ZL2ANR, ZL4BO, ZL4AV, J28EB, UJ8SAD, and lots of east coast Ws.

On Eighty, G4JBR came across HK4CYR, HH7PV, YB0JH, VK9XG for a sad gotaway, heard people copying 6Y5NR/KP1, OX3CX at 0345z, HK2JFF, 9U5JB, T1SEWL, J88BK/9Y4, ZL2BO, HC1OT, VY5, V2AO and 7S7SSE. As for 7 MHz, HK0HEU heard at 0815 but got away, FG5DL/FS, 9U5JB in the evening, and 8R1RPN. It is very clear that Peter is an early morning enthusiast.

G3BDQ was quite active all round last month. On 80m. SSB there was just the one QSO, with 4X6DI, but on CW HG40V, OT6NH (150th anniversary of Belgian Railways), JA4KGR, JA6GIJ, JF6CTK, A92E, UI8OAA, UA9YIP, UL7LTK, UL7JEG, UA9KCA, 4X4AW, ZL3GQ, were all worked two-way. Turning to Forty, there was VK3MR and UL7PGA.

On 3.5 MHz, D. A. Whitaker managed to hear both 6Y5NR/KP1 and FO0XX for Navassa and Clipperton; they were working only W5 and W6 at 0547z!

Finally, we have G2HKU; Ted used his four-watt QRP rig to work CW to GJ3EML, GW3ATM, ON5AG, and G4ELZ/P who was also QRP with just one watt. Turning on the Big Rig at 75 watts, Ted made it to W2BA, OY7ML, K3UOC/PJ5, K3UOC/PJ6, and K3UOC/PJ7. Forty was not so attractive, with just N3EA, EM1AA, EM9BWL, and HV1SJ operated by JA6BUX. Ted is now preparing for the summer invasion — the wasps are already putting out reconnaissance parties, and precautions are in hand against a massed attack.

Fifteen

While it is suffering from a severe touch of the no-sunspots, it is nonetheless trying hard.

G3NOF (Yeovil) first; Don found in his April letter (covering March activity) that the band was only open on the N-S axis with nothing from JA or the Pacific, and only one or two Asian or VK stations — and then follows up with possibly his longest list ever! Perhaps the most interesting of the crop was VQ9CK, who

visited Don on March 1 and indicated he is the only UK operator on Diego Garcia! During the April period, conditions were very poor, and no North Americans were worked; some South Americans were about in the early evening but no signals were heard from VK/ZL/Pacific/JA at all. SSB contacts were made with A4XYX, J28DN, J28EB, OD5AS, OD5SM, PY2AJK, VP8VK, VQ9CK, YC6TT, YC0BNA, ZC4AM/A, ZC4CZ/A, ZC4DY, ZS1ARL, ZS1SP, ZS6SARL, 4X4HQ, 7P8CM, 7P8DE and 9U5JB.

G6QQ (Hoveton) next, and David is reporting on his first full month back on the bands after his ZL/VK trip. Activity has been mainly in the afternoons, and despite the poor conditions picked up a brace of new ones to get him up to 158C — good going for someone who has only been back on the bands for a relatively short time. 21 MHz CW accounted for ZS6SARL, ZS6BI, 4X6NM, PY1BGJ, 3B8FK, LU2BC, DL8YR/ST2, 4X6NM, 9V1TL and UL7TV, plus SSB with 4S7EA and YV5IPZ for a change.

Thanks to the beam problem, GW4BLE managed just 7P8DY, XT2BR, VE3KFE/4U, ZC4CZ/A, Z21GN, but doubtless things are on the move again now.

An interesting one for G3ZPF was when a sked with G4JCP failed, but some noises off-frequency proved to be 9U5JB, hooked for an all-time, all-brand new one — quite odd, knowing you were in the middle of an inaudible but king-sized pile up; but he was hooked after a few minutes. Otherwise . . . zilch!

G4JBR found 6W1KA/M, ZC4AM, C53FE, 7P8CI, 9U5JB, A92DZ, JY9CL, 3B8CA, and 9L3WA, with VQ9CK as a gotaway.

It was a little CW for G3BDQ; he worked JY5ZM, JY5CI, 4X4KU, Z23JJ, VQ9FS and A4XYQ.

Finally Twenty

Here we kick off with G3BDQ; when John was not working on the ground system he did find time to raise VK9XG, VK3SX, HG0ZT, A92EB, J6LYZ/MM in Singapore, 4S7DA, EM5T, ST2FF, SV2XU, 9M2HB, and RW0AA; the CW list was a bit more lengthy and we have summarised it as ZL1AH, ZS's UL7, VK, VU2TTC, VU2IN, VU2SUX, 3B8AS, 3B8FG, LA7XB/3B8, ZD8KM, TK0KP, 9J2, 4S7, AP2AM, FM5WG, FM4CW, 9Y4GR, FG5XC, Y40SEE (and East German special that was extensively reported as a YV!), ZC4WW, OX3AX, various South Americans and a QRP contact both ways with J28EI who was only working other QRP types.

G4JBR offers 5H3HM, TA1A who is the only legal one and so is now demanding "3 IRCs, no surface mail in Turkey"



"Tonight's talk is about lightning precautions . . ."

(which sounds like the oldest game in the book from that part of the world), 9M2TR, EL8M, 9U5JB, 9M2DC, FY7AN, UI8FM, SV0DH/5, OD5QS who is a YL called Ola.

G4WYO's list was nicely pruned down by GW4RHW before it came in but it is still a long one. How does this grab you? DU1REX, VK3VY, AP2MQ, HH2YF, VK9XB, TR8SA, 5Z4EQ, PY7BUM, PY2WZ, BY1PK, VK4BKD/M, VS6CT, VK5WO, ZS6SARL, ZS6AN, VP8VK, 8P6OM, FM5BH, ZD7BJ, PJ3BW, ZF1JC, KL7Y, TR8SA, 7P8CI, OA4ZP, JA6ABG, DU6RT, G4DUW/DU1,

VK75A, VU2TTC, 4S7EA, VU2CJ, VU2OO, OD5CP, D44BS, J5WAD, OC3CX, FO8IW, J8LPS, 9V1IL, V85GA, 9Y4FS, JR6VRU, 9M2FZ, ZD7CW, ZP5CF, CX2CB, YB0JH, 4S7VK, 4S7NMR, HZ1AB, 5H3RC, 3D6AJ, XE3FP, 3B8FP, and C6ABP. Thanks for the first entry, OM.

For GW4BLE the star contact of the month was his FO0XX Clipperton QSO, on April 7 at 1836z, just before the rotator started to play up in earnest. Other contacts were with 6Y5NR/KP1 for Navassa, 5Z5EXP, 9U5JB and KA1BQ/VP2E.

Now G4VFG who says he worked plenty of the small fry, but only UA9LDF and UI8BIE were of any interest.

G6QQ was mainly into the Ws and the Russians on this band, but 5R8AL was an all-time new one on CW and 4S7EA was a worthy one on SSB.

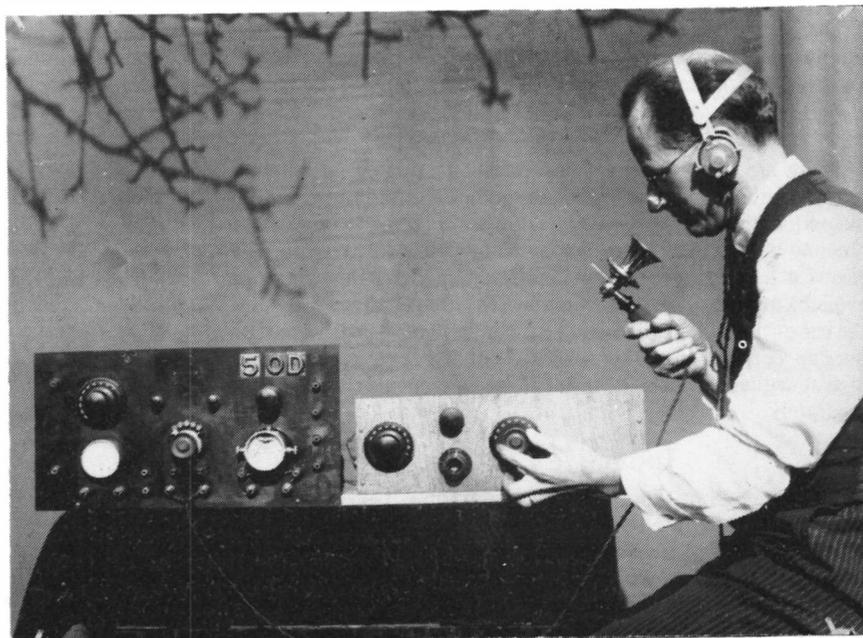
G3NOF must have been the best-known DX-er to miss Clipperton — it was heard but only weakly and no contact resulted. However Don managed SSB with F5SRV/TK, FM5DD, J28EB, J6LPS, J6LPT KA1BQ/VP2E, RF0RWW, OE3HGB/YK, OG1AA, TG9VT, TI2J, TR8KMJ, VE3AMW, VK6AKG, VP2MCG, VP2MDG, V85GA, VU2VKV, YB4FU, 5H3HM, 8R1RPN, 9M2DC, 9M2FZ, 9M2TR, and 9V1VY. Incidentally Don got his BY4AA QSL by return for his 343rd country all-time and 312 current. DXNS said that Don's shortages of current countries were G, GM, and GW — we know that's not true because G3NOF has one of our own prized QSLs for, believe it or not, a Top Band CW QSO!

Finally, G2HKU, who used his CW to catch hold of C30LBS, OX3UD, K2QTC, EM1AA, UJ8XDE, I4ALU/IB0, K3UOC/PJ5, W2BA and K2AGJ.

Finale

That's the lot, and a fine large lot it was too. Keep it rolling folks, we can always use the material, and it helps others to know what is about and what is workable. Deadline for your letters for next time is in the 'box', as usual addressed to your scribe, "CDXN", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. Meantime, keep the grass down!

Although this is the 500th issue of *Short Wave Magazine*, we don't go quite as far back as 1923 when this picture was taken, which shows Ralph Bates of Lincoln operating a state-of-the-art station of 62 years ago. Ralph, who held the callsign 50D, is believed to be still alive at the grand old age of 96! photo: G3KPO



HF Antennas for Restricted Sites, Part 1

A Practical Approach to an Everlasting Problem

A. P. ASHTON, G3XAP

THE author has been criticized on many occasions for writing articles on antennas that can only be erected by those lucky enough to have an above-average size site. These criticisms have taken the form of published letters, personal letters, and conversations — both on and off the air. It has finally sunk in that there are very large numbers of amateurs who either have very limited space for the erection of sky wires, or no space at all, and perusal of the standard literature has shown that what has been published on the subject is scattered over many periodicals and over many years.

The following is a serious attempt to bring together a number of methods of dealing with the problem of restricted space and to discuss them in a logical sequence. However, it must be understood right from the outset that compromise antennas will *always* give compromise results — you can neither get a quart into a pint pot nor out of it! It is the author's considered opinion that there is absolutely no substitute for a full-sized, self-resonant antenna and many tests over many years have done nothing to shake his belief in this opinion. This comment must be taken as constructive rather than destructive, however, and rather than react by saying "full sized or nothing" it is hoped that it will cause the reader to consider fully the following points:

(a) Do not erect a compromise antenna for any reason other than lack of available space — *always* erect the best device possible, and,

(b) If a compromise antenna must be used, be aware of the shortcomings of the intended design and do everything in your power to overcome them.

It is hoped that the second point will become more clearly understood as this series progresses. It should also be understood that planning regulations have the effect of restricting the space that can be used — hence the use of the term "available space".

As is the case with all articles written by G3XAP, every antenna discussed has actually been constructed and tested, rather than simply being lifted from other works, except for some 'disguised' antennas which the author did not construct, but has evaluated.

The Alternative Approaches

There are many different approaches to getting an antenna onto a site that is too small to accommodate a full sized device; the techniques that we will discuss include the inductive loading of an antenna in order to reduce its physical length while retaining its electrical length, the 'bending' of an antenna to fit it into the space available, the use of vertical antennas, the use of end fed wires and the use of 'invisible' antennas. There are obviously many areas of overlap between these approaches, but it is considered that a logical sequence can only result if we attempt to discuss them separately.

Inductive Loading

It is worth noting that when a triband trapped Yagi (such as the Mosley TA-33 or the High Gain TH3) is operated on 14 MHz, it is acting as an inductively loaded 3-element beam, and that these antennas give good results on this band is evidence of the fact that inductive loading is an acceptable technique. When a parallel resonant trap is subjected to RF energy at a frequency lower than

its resonant frequency, it behaves as an inductance, so the actual equivalent circuit of the elements of the beams mentioned above is as depicted in Fig. 1. The actual length of the driven element of such an antenna is typically 23ft. compared with about 33ft. for a full-sized element and the length reduction is, therefore, around 30%. It should be instantly apparent that an amateur with a span of 25ft. across his small garden could easily produce an inductively loaded dipole to fit the space. It is important to realise the effects that inductive loading have on the antenna, and we will firstly consider the distribution of current on the device.

It is convenient to look at this distribution on a quarter-wave antenna, and Fig. 2 shows the current on a full-sized device and three other antennas loaded at three different points along their length, namely base, centre and top loaded. Consideration of the diagram shows that in all cases the current increases from zero at its outer end to a maximum at the feed point and it should be realised that maximum radiation (and maximum signal pick-up in the receive mode) is at this point of maximum current. Conversely, radiation is at a minimum at the minimum current point (voltage antinode) — *i.e.* at the very end of the antenna. It should be immediately apparent from these facts that one objective in the design of inductively loaded antennas is to keep the current as high as possible in the non-loaded areas of the device. Obviously antenna B is poor in this respect in that maximum current occurs within the loading coil and it can be calculated that for such an antenna shortened by 50%, the current at the bottom point of the antenna itself (*i.e.* the point immediately above the coil) is only 70% of that at the feed point of a non-loaded antenna. If we reduce the antenna's length to one third of its unloaded length, this figure drops to 50% and it can be seen that base loading is unsatisfactory from this point of view.

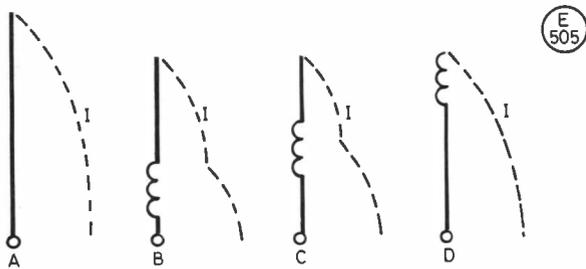
Considering antenna C, we note that the current in the bottom half of its length is identical to that in the bottom section of the unloaded antenna A (this assumes no losses in the coil), so in terms of radiation intensity this antenna is superior to antenna B. On the face of it it would appear that antenna D is superior to antennas B and C in that it has a high current down the whole of its length and this is certainly so if one looks *only* at antenna current, but there is another factor to consider which modifies this conclusion.

Fig. 3 shows the capacitance to ground at various points on a loaded antenna, and this capacitance decreases as we move further from the ground. As a direct result of this, we require more inductance to resonate an antenna at a specified frequency as we move the loading inductance further away from the feed



L2 and L3 = inductance of the 28MHz traps
L1 and L4 = " " = 21MHz "

Fig. 1 Equivalent circuit of a 14/21/28 MHz trapped element when operated at 14 MHz.



A = Full sized antenna
B,C,D = Antennae inductively loaded at different points.

Fig.2. Current distribution on 4 quarter wave vertical antennae

point. As there will be losses from the coil, and these losses will increase as the inductance of the coil increases, by top loading the antenna we have *apparently* increased its mean current, but in fact coil losses can reduce this current to a lower level than we might achieve with base loading! One way of rectifying this decrease in capacitance is to install a 'capacity hat' at the extreme end of the antenna in order that we may use a smaller inductance to tune the device to resonance, and this practice will no doubt have been noticed by readers who have seen various "mini-beams" and shortened verticals which employ this technique. Although this method will certainly increase the radiation efficiency of a short antenna, it is suggested that it is only appropriate for verticals and beams, and that for the majority of shortened antennas likely to be constructed by readers, simply inductive loading is the most appropriate method.

The author suggests that when inductive loading is used on antennas of the dipole or end fed wire type, the coil(s) should be positioned about mid-way between the feed point and the ends of the antenna as this is a good compromise between antenna current and coil losses. Fig. 4 shows the layout for a dipole and for a quarter-wave end fed antenna.

The next point to consider is to what degree can an antenna be shortened before performance deteriorates badly. It is a fact that as we decrease the length of an antenna and hence increase the inductance required to bring it back to resonance, two important changes take place: the radiation resistance of the antenna decreases and the RF resistance of the coil increases, and hence it can be seen that the 'loss' resistance as a percentage of the total feed impedance of the antenna increases dramatically. To put it another way, as we progressively shorten an antenna, the amount of power that radiates from it decreases, while the power dissipated by the coil increases. From this statement it should be clear that the quality of the coil used to resonate a short antenna becomes more important as the antenna becomes shorter. A graph of antenna length against feed impedance for unloaded antennas is shown in Fig. 5 — note that these values will apply to

an antenna mounted a quarter-wave above ground (or multiples of quarter-waves) and that an antenna mounted at heights below a quarter-wave (which will usually apply on 3.5 MHz and often apply on 7 MHz) will have an even lower radiation resistance which aggravates the situation even more!

With antennas shortened to less than about 33% of their self-resonant length, losses become very significant — it can be seen from the graph that at 33% the radiation resistance is only about 11 or 12 ohms, and a large coil will be required to restore the system to resonance. Having said this, it is true that mobile stations operating in the 1.8 and 3.5 MHz bands use very short antennas (in terms of wavelengths) and still obtain acceptable results — a loaded antenna 8ft. in length represents a "shortening" of 94% on 1.8 MHz and 88% on 3.5 MHz, which probably represents a much higher level of loading than the average reader will require for his loaded antenna! However, the secret of success with such mobile antennas lies within the loading coil, and lack of attention to this detail will give very mediocre results. The properties required of a low loss coil will be discussed later.

Readers who have used inductively loaded antennas will know that another property of the antenna which is degraded is the operational bandwidth of the device — *i.e.* the span of frequency over which an acceptable VSWR is obtained. The more the loading which is employed, the greater is the reduction in

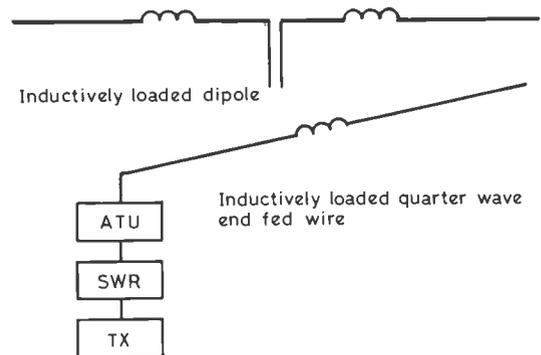


Fig.4 Suggested "loading points" for 2 types of inductively loaded antenna

E 507

bandwidth, and it can be seen that we are into yet another compromise situation.

Fig. 6 shows a graph of VSWR v. frequency for four antennas which were constructed by G3XAP in order to investigate this effect. The work was carried out at 14 MHz since this enabled the antenna to be erected sufficiently high to reduce ground effects to a minimum — in fact the devices were erected between two towers at a height of around 65ft. and took the form of half-wave dipoles fed with 75-ohm twin feeder, through a 1:1 balun into 75-ohm coaxial feeder in which the SWR bridge was inserted. No claims are made for the accuracy of the measurements, the aim being to compare readings on different antennas rather than produce absolute readings. One of the first things to strike the eye is the fact that antenna (d) in Fig. 6 gave a very unsymmetrical SWR curve which suggests that some other influence was coming into effect. The antennas were erected one at a time and their outer ends trimmed until resonance was attained at 14.2 MHz, this being determined by use of a GDO coupled to the input end of the feeder, the length of which was accurately cut to 1.5 wavelengths, thus ensuring that the energy from the oscillator could be effectively coupled to the antenna, and also making for slightly more reliable VSWR readings at the input end of the feeder. It is not proposed to discuss the graph in detail as it is largely self-explanatory and certainly indicates that bandwidth is adversely affected by inductive loading and that this process also affects antenna impedances.

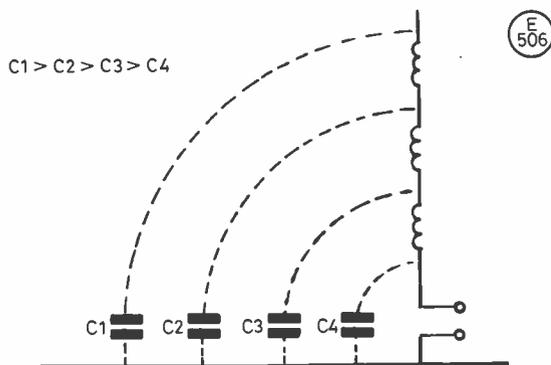


Fig.3 Capacitance to earth at various points on a vertical antenna.

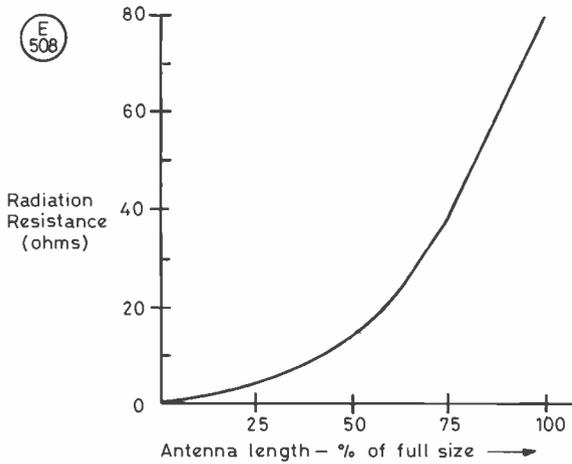


Fig. 5. Radiation Resistance of shortened dipole antennae. (Note: Figures do not include reactance)

The Loading Coil

As mentioned earlier, the effectiveness of a loaded antenna is greatly influenced by the quality of the loading coil(s) used in its construction, and the more an antenna is physically shortened the more important the efficiency of the coil becomes. In order to reduce coil losses to a minimum, the coil should have a high ratio of reactance to resistance — *i.e.* a high Q — and it is therefore necessary to understand what physical properties will enable us to meet this requirement. The properties required may be listed as:—

- (a) The wire used must be of the highest practical diameter.
- (b) The spacing between turns must be as high as possible and certainly not less than one wire diameter.
- (c) The coil former must be of a low loss material, or, preferably, the coil should be 'air wound'.
- (d) The diameter of the coil should be at least half the length of the coil.
- (e) There should be an absolute minimum of metal in the field of the coil (this precludes any ideas of mounting the coil in a metal container for the purpose of weatherproofing).

When antennas for frequencies of 7 MHz and below are considered, perhaps the most difficult of these requirements to meet is (d), since such coils will become very large and unwieldy, so some compromise is usually necessary with coil diameter.

As we know, the actual value of inductance required to tune our shortened antenna to resonance depends on the degree to which

the antenna has been shortened, the point on the antenna at which we place the inductance, and the frequency of the antenna itself. There are therefore an infinite number of variations, but Fig. 7 gives *approximate* inductances required to resonate a quarter-wave end fed device, physically shortened to 50, 33 or 25% of its full size — values being quoted for all nine bands from 1.8 to 28 MHz. (Note that for half-wave dipoles, each half is an end fed quarter-wave and for such antennas the inductance stated is that required for each of the two coils necessary to resonate the device). The values given have been calculated on the assumption that the loading coil is positioned mid way between the feed point and the antenna's end — coils closer to the feed point will require less inductance, those further from the feed point will require more. It must be remembered that the values quoted are very approximate indeed and are given only as a rough guide to enable the constructor to design a suitable coil.

Having determined the approximate inductance required, we can use the following formula to determine the number of turns our coil will require, having decided on a suitable diameter.

$$L(\mu H) = \frac{(Nr)^2}{9r + 10L}$$

L = Inductance (μH).
 N = No. of turns.
 r = Coil radius.
 L = Coil length.

To take an example, let us assume that we wish to construct a dipole antenna for 7 MHz, and that we wish to use the total available span of a small garden which is 19ft. wide. A full sized 7 MHz dipole is around 66ft. in length, so the available length is:—

$$\frac{19 \times 100}{66} = 29\%$$

From Fig. 7 we can see that if we place our coils in the centres of the two halves of the dipole, we will require inductances of about $42\mu H$ — 29% being approximately half way between the 33% and 25% figures quoted in the table.

Turning back to the requirements for a high Q coil, the first point to decide on is the gauge of wire to use, and the author would recommend 16 or, preferably, 14 swg for this purpose. The diameter of 14 swg wire is 0.08 inches, and looking at the next requirement of turns spaced by at least one wire diameter we can see that our turns will need to be 0.16 inches apart — *i.e.* a maximum winding rate of 6.25 turns per inch. If we decide on 6 turns per inch and assume a coil diameter of 2 inches, we can calculate the number of turns required to give us $42\mu H$ from the formula given above. Solving the equation gives an answer of 75 turns required, but reference to the high Q requirement that our diameter to length ratio should be at least 0.5:1 shows that the proposed coil is some way out, the diameter to length ratio being only 0.16:1. Obviously a coil that meets all the requirements for high Q will turn out to be a heavy, unwieldy device (as suggested earlier) and some form of compromise will obviously be necessary. By using 16 swg wire and increasing the winding rate to 10 turns per inch (which gives somewhat less than one wire diameter spacing), the number of turns required will be reduced to 50, and the ratio of diameter to length becomes 0.4:1. By compromising slightly on all the coil properties we have finished up with a design that will give us a coil of manageable dimensions, and it is hoped that the example will have shown readers that the task of designing suitable loading coils is a relatively simple one.

However, designing a theoretical coil is one thing, actually producing the finished article is another, since we now have the requirement of finding a 2-inch diameter coil former threaded at 10 turns per inch and made from low loss material! After some experimentation with high Q coils the author has found that if plastics are to be used as formers, the lowest loss devices result from using a technique that he has described before¹ in which the coil is formed by "threading" a preformed coil into holes drilled into a plastic sheet. The photograph, Fig. 8, shows such a coil and the device is constructed by carefully drilling the holes in the plastic sheet, preforming the coil by winding the wire onto a former rather smaller in diameter than the sheet is drilled for (the coils will spring open when the tension is released), and threading this loose coil into the drilled sheet. The turns may be held in place

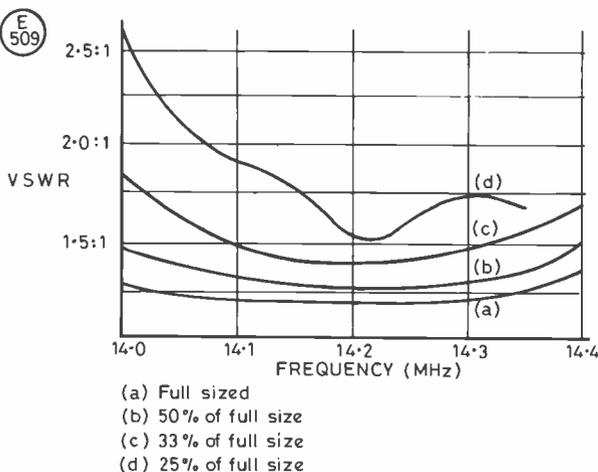


Fig. 6 SWR curves for 4 half wave dipoles — (b) (c) and (d) being inductively loaded to resonate as half waves. (N.B. Measurements made with a 75 ohm bridge in a 75 ohm feeder).

by cementing them to the former with a suitable adhesive such as Araldite.

Waterproofing coils of this type is relatively simple with small models such as those that we might build for the HF bands, since they can simply be inserted into plastic tubes with end caps of plastic glued into place — Fig. 9 shows the general idea. With coils for 7 MHz or below, such a method will produce a very heavy result and it is up to the individual constructor to decide whether the technique is acceptable — at G3XAP it has been found that if the coil is coated with a layer of polyurethane varnish, the effects of rain, snow, ice, etc., are surprisingly small, although there are times when the antenna is detuned to an unacceptably high level, this being indicated by steep increases in feeder VSWR. However, this happens infrequently and the reader may find this simple weatherproofing method quite acceptable.

One final point to remember with inductive loading is that if the antenna is of the dipole type, both halves should be as near identical as possible or problems may be found in establishing its resonant frequency when it is tuned. In order to achieve this condition it is clear that the two inductances used should be as near identical as possible and it is thus desirable to be able to compare inductances. This is a simple matter and is achieved by connecting the coils, one at a time, in parallel with a variable capacitor and adjusting the latter device to resonate the

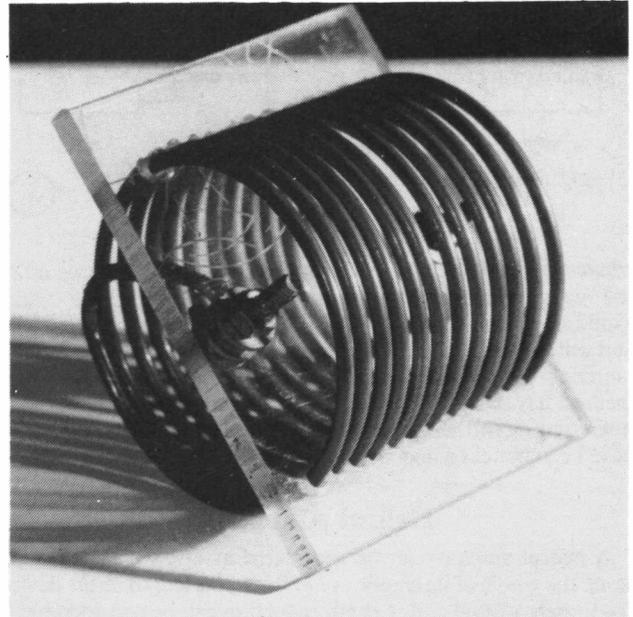


Fig. 8. An air-wound coil supported by a perspex former.

| Frequency MHz | Antenna length — % of full size | | |
|------------------|---------------------------------|-----|-----|
| | 50% | 33% | 25% |
| 1 8 | 84 | 142 | 186 |
| 3 5 | 43 | 73 | 96 |
| 7 0 | 22 | 36 | 48 |
| 10 0 | 15 | 26 | 33 |
| 14 0 | 11 | 18 | 24 |
| 18 0 | 8 | 14 | 19 |
| 21 0 | 7 | 12 | 16 |
| 24 0 | 6 | 10 | 13 |
| 28 0 | 5 | 9 | 12 |

Fig. 7. Inductance required to "centre load" an antenna to resonance.

E 510

coil/capacitor at some predetermined frequency. For example, with the coil discussed above having an inductance of about 42 μ H, we can calculate that if we connect it in parallel with a capacitance of 45pF, it will resonate at about 3.65 MHz. By connecting the components as shown in Fig. 10, and adjusting the frequency of both the signal generator and the receiver until the generator's output is heard in the receiver at about 3.65 MHz, the variable capacitor (which should be around 60pF maximum in this example) can be adjusted to give a deep null on the receiver's 'S' meter as the signal passes through the resonant point. It is suggested that with the variable capacitor 'off tune', the output level of the generator should be adjusted until the 'S' meter gives a reading of about S8 to S9 since applying too much RF energy will lead to swamping and the resonant point may be difficult to determine. The connections to the variable capacitor should be heavy gauge wire, and it is suggested that they should be soldered onto the capacitor and have crocodile clips attached to their other ends so that they may be quickly and easily clipped onto the end of the coil. When changing from one coil to another for comparisons, do not alter the position of the capacitor or the leads — in this way stray capacitance will be virtually the same for each component tested, and more reliable results will be obtained. If the capacitor is mounted on a suitable sheet of metal, and a suitable knob and pointer fitted, readings obtained for resonance can be noted and comparison is made easier. For the type of coil

described, inductance can be decreased by bending the outer turns away from the coil; conversely, bending the outer turns inwards will increase the inductance. Such adjustments should be made until a pair of coils require virtually the same capacitor setting to resonate on the test set-up.

Having erected the dipole with the coils in place, there are three methods of resonating the antenna, the first of which is to trim its ends until the device is resonant at the desired frequency. However, because the loading effect of the coils can vary from one antenna to another, the values given in Fig. 7 are approximate and it may be found that the antenna ends up being much shorter than the available span, which means that we will have a dipole which is slightly less efficient than it is possible to erect in the available span, or, the antenna could end up being far too long for the available span. The second method involves trying out the antenna with the finished coils before they are waterproofed, and then making a second set of either higher or lower inductance depending on whether the antenna resonates on too high or too low a frequency — this is a good, though time-consuming method. The third technique utilises the knowledge that the loading effect of a given coil varies in accordance with the position in which it is placed along the antenna's length. If the antenna resonates at too high a frequency, more loading is obviously required so we move the coils closer to the feed point —

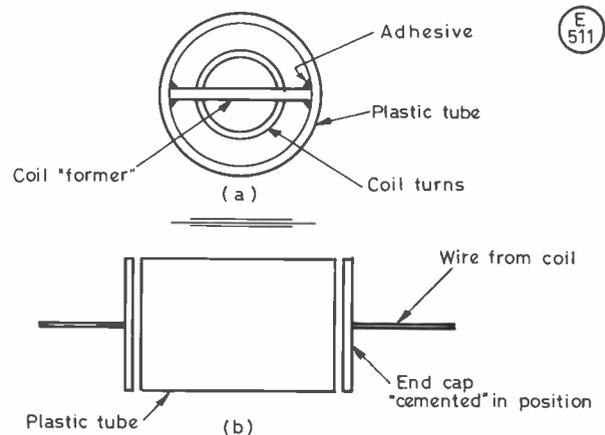


Fig. 9

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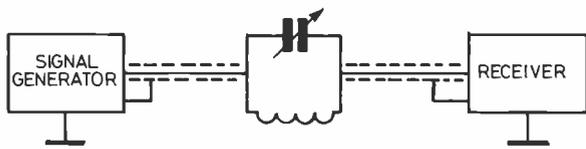


Fig.10 Test set-up for the comparison of inductances.

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conversely, if we need to raise the resonant frequency, we move the coils further away from the feed point. This initial experimentation should be carried out with pieces of scrap wire and will enable us to get close enough so that the final tuning of the 'antenna proper' should only need minor adjustments. This method has the advantage of using the full span available while not requiring further adjustment to the coils themselves after they have been matched and waterproofed.

Helical Antennas

A helical antenna can be considered as one which is loaded along the whole of its length — *i.e.* the whole length of the device is a loosely wound coil. Length reduction can be considerable if this technique is used and there are examples of this approach in (illegal) CB antennas which most readers have doubtless seen. This is, however, very much a trial and error technique in that it is not possible to give other than very rough indications of winding details. The only experience that the author has of this technique is in the winding of a helical vertical antenna for 7 MHz which was to have formed part of a multi-element driven array for that band. The device was 11 ft. high (*i.e.* one third full size) and it was found that about 75 ft. of wire had to be uniformly wound over the

wooden pole that constituted the former for the antenna — somewhat over double the length of wire required for a simple quarter-wave device. Because the impedance, and hence the RF voltage, at the outer end of such an antenna can be extremely high, it is possible for the top section to act as a Tesla coil and the resulting discharge can cause fire! To counteract this, a short rod, or better still a metal plate, should be installed at the top of the antenna — this will also lead to an appreciable increase in the bandwidth of the device. The 7 MHz antenna mentioned above had a very low feed impedance — measurement with a noise bridge indicated a value of well below 10 ohms (due to the low value, accurate measurement was not possible with the instrument available) and it was found necessary to use an 'L' network at the feedpoint to bring the impedance up to a reasonable match for 50-ohm coaxial feeder. However, operating at its resonant frequency the antenna did perform reasonably well and several W/VE contacts were made with 150 watts of CW. The antenna's bandwidth between 2:1 SWR points was only 25 kHz or so and the transmitter required retuning for quite small changes in frequency.

The technique is mainly for use with vertical or Yagi type antennas and the author would certainly recommend the would-be constructor to give it a try because much knowledge will be gained and if the device can be resonated and matched to the feeder, it will be found to give acceptable results.

The next article in this series will consider 'bending' antennas — in both the horizontal and vertical planes.

Reference:

"Traps and Trapped Antennas for the Home Constructor", by A. P. Ashton, G3XAP, *Short Wave Magazine*, Feb. 1984-June 1984.

'McEnroe' Microphones for the Yaesu FT-707 and FT-290

transmit /M in safety

IAN KEYSER, G3ROO

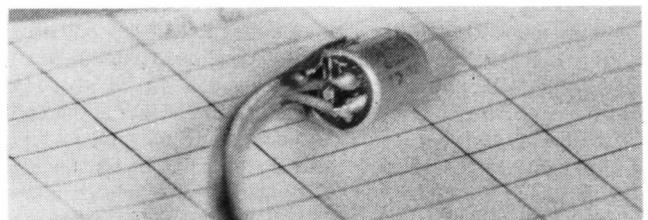
AFTER a couple of near misses while driving and holding a microphone I decided that it was about time that I did something about removing the danger of the microphone lead getting tangled with the steering wheel while operating my FT-707 in the car.

First experiments were with a cradle to hold the microphone which rested on the chest with a loop of cord around the neck to hold it in position. This worked fairly well, but if the head was turned to look out of the side window the VOX dropped out! What was needed was a system to hold the microphone in a fixed position in front of the mouth; it had to be light and cool to wear as it was to be used in the heat of the south of France while on holiday. The solution was revealed while watching tennis on TV and seeing a well known 'superstar' (who is prone to tantrums) wearing a sweatband. If a lightweight microphone could be mounted on one of these bands and adjusted to sit directly in front of the mouth the problem would be solved.

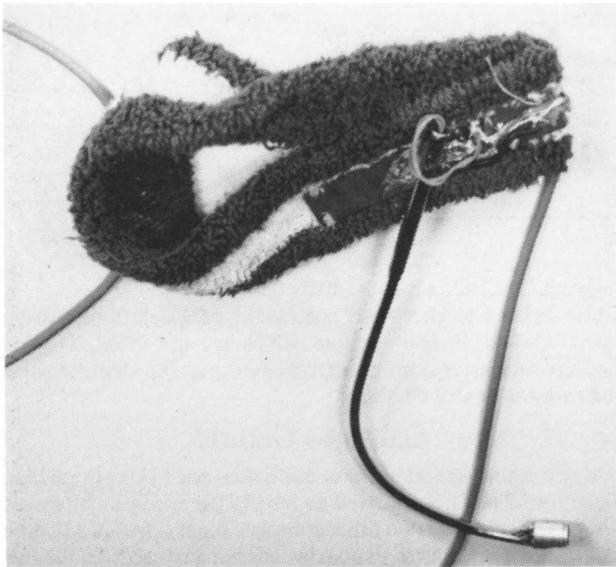
Having obtained a sweatband from the local sports shop the next problem was the boom itself. An old car aerial came to the rescue here, the second and third telescopic sections were used, the thinner one having an internal diameter of about one-eighth of an inch. On the bottom end of this tube there is a spring assembly

that makes it a friction fit inside the larger tube. The larger tube, if cut about two inches in length, can be mounted on the band and the tinner tube bent to sit in front of the mouth and still be fully adjustable in position. The fixing of the tube to the headband was a problem at first, until the stub was soldered to a small piece of PCB and this sewn to the headband.

With the boom problem overcome there came the problem of the microphone itself. First attempts were made using the tube as a pipe to pass the voice to the microphone on the sweatband but there were two problems here, severe loss of audio and a very unnatural frequency response. The next experiment was



Detail of microphone insert attachment.



Showing method of fixing the boom to the headband.

mounting the microphone on the end of the tube itself, and this was the answer. The microphone used was a little electret insert salvaged from an old tape recorder. To fit the microphone, the tube was cut up its length for about half an inch and carefully opened out; the microphone insert was then 'Araldited' to this 'plate' making a very neat construction. The tube is used as the earth return and two thin wires, one for the audio and one for the supply to the amplifier, built into the insert were passed up the tube to the headband where they were connected to the main lead to the microphone socket on the FT-707.

Next came the matter of the supply for the amplifier. At first I considered mounting a battery on the headband, but being a forgetful type of fellow I would be certain to forget to disconnect the battery after use and so find it flat next time I went out mobile! The answer had to be get the supply from the '707 itself. Investigation showed that there was no supply on the microphone socket, but the ACC. socket on the rear had Tx + 13.5v and the microphone input. For mobile use there was nothing against plugging the microphone into the rear of the set and so the necessary wiring was done. Having completed the wiring the microphone was plugged in for the test: MIC gain and VOX gain turned up, nothing happened! After a few minutes head-scratching it was realised that it was 13.5v on transmit. Back to the drawing board. . . .

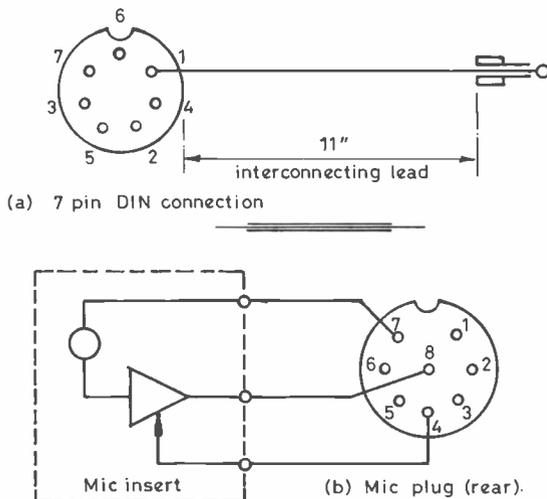


Fig. 1 MOBILE MIC FOR FT-707

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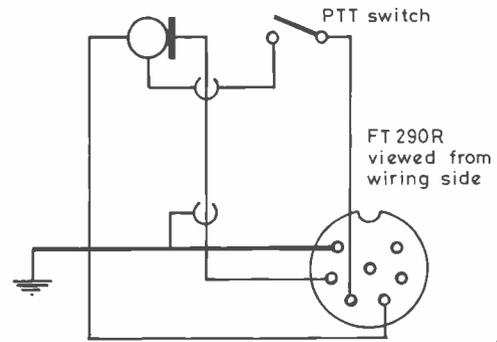


Fig. 2 MOBILE MIC FOR FT-290R

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The next idea was to rewire the microphone socket on the front panel, but this was rejected after realising the difficulty of getting to it; there had to be an easier way to get over this problem without major surgery. The answer came after looking at the circuit diagram again, when I noticed there are several wires from the microphone socket on the front to the ACC. socket on the rear; these are for scan control when the external VFO is in use. If a lead was made up to pass the 8v from the phono plug on the rear to one of these wires in the ACC. socket, 8v would be available on the microphone socket. This made a far neater and easier system than running a wire from the microphone socket to the 8v socket on the rear. As seven-pin DIN plugs are not easy to obtain I used a five-pin plug and a single wire from its pin 1 to the 8v phono socket and this puts the 8v on pin 4 of the microphone socket.

Having completed the first microphone for use with the FT-707 I decided that a similar unit for use with the FT-290 (definitely a Yaesu man here!) would be a good idea. The lack of positive supply on the microphone socket was not a problem with the '290, but the lack of VOX was. Could VOX be included in the set? There is not much room in there, and even less on the front panel for a switch!

If the microphone was worn on the left side of the head a push action switch could be included and operated with the left hand, after all the left hand is not used all the time when driving, so another task would not be too much to ask of it.

The construction of this unit takes the same form as the microphone for the '707 but instead of the piece of PCB a small plastic box is used. The box I used was one available in component shops, but any suitable sized tin could be utilised such as a snuff tin. The box is fixed to the headband by drilling four small holes diagonally through the four bottom corners of the box and the stitching done through these.

The wire enters the box and picks up on to the switch terminals and on to the wires from the microphone insert. The tube enters the box through a suitable hole in the bottom edge and is held in position by a piece of wire threaded through two suitably positioned 1mm. holes and soldered to the tube; this, in effect, 'stitches' it to the base of the box.

Conclusion

The FT-707 unit, which was the first one completed, has proved a great success. It completely removed the danger of holding the microphone and as the microphone is a fixed distance from the mouth the action of VOX is superb. When working friends it is possible to chat in the true sense of the word as the VOX delay can be set at minimum. It sounds in the car as if the transmitter is not working at times but I have been assured that only by very careful listening can it be detected that I am using VOX. The safety factor has been increased considerably and even my wife manages to sit there comfortably if I go on the air!

The unit for the FT-290 has also increased the safety margin, especially as I tend to use the 2-metre band in towns. The action of having to switch to Tx and Rx created no problem and the 'fumbling' for the microphone has been eliminated.

★ ★ ★ ★ Oblast Corner ★ ★ ★ ★

NIGEL CAWTHORNE, G3TXF

THE flood of special Russian prefixes celebrating the 40th anniversary of the ending of W.W.II, has given a hard time to prefix hunters trying to keep up with all the new ones. For oblast chasers, the struggle has been to identify the location and oblast of the special call stations.

EM0COR, although looking like a cross between an UM8 and a UA0 is in fact a UC2 in oblast 007! Similarly EM8CIL, EM8CCM and EM8CSB all look like UM8s, but they are all UC2s in oblasts 008, 009 and 010 respectively.

The list in Table 1 may help with identifying the oblast of some of the special USSR callsigns that were on the air from the beginning of the year to May 9th. Because of the new prefixes, the special callsigns have not followed the normal oblast identification rules.

For the special 'E' callsigns, the prefix appears to have no significance at all other than being an odd prefix. The first letter after the figure identifies the country: e.g. the 'C' after the '8' in EM8CIL indicates that it is a 'UC'. The 'I' indicates that it is 'UC-I', which is oblast 008.

As another example take EVIAN, which was heard many times on the bands. The 'A' after the 'I' indicates UA1. The 'N'

indicates 'UAIN', which is oblast 088.

Use Table 1 to check any special 'E' prefix stations that you heard/worked. Special stations which are not listed, provided they have at least two letters after the figure can be identified in the same way as described above.

Callsigns Galore!

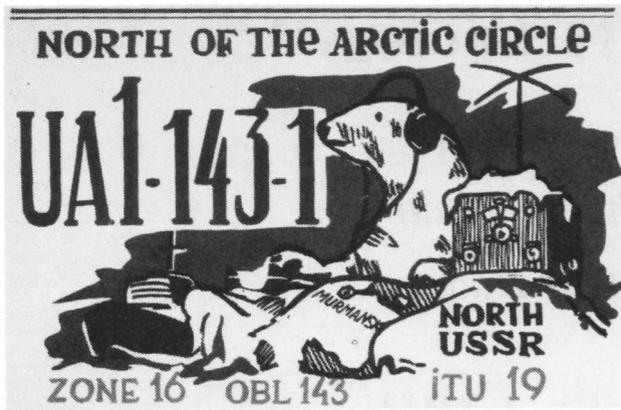
Major countries usually have more than one ITU callsign block allocation. The U.K., as well as having the whole G block, i.e. GAA-GZZ, also has two other complete blocks: MAA-MZZ and 2AA-2ZZ. These latter two series are not yet used for amateur callsigns, but are used for other purposes such as ships.

The USSR also has several ITU callsign block allocations and it is from these that all current series of 'special calls' are derived. Table 2 shows the USSR's entire callsign allocation including those of the three Baltic states of Latvia YLA-YLZ, Lithuania LYA-LYZ, and Estonia ESA-ESZ, which were 'absorbed' into the USSR.

With several callsign block allocations to choose from, a large number of prefix permutations is possible. The USSR has made use of these lesser known callsign allocations to create the wide

| Call | Oblast | Call | Oblast | Call | Oblast | Call | Oblast |
|--------|---------|--------|---------|--------|---------|-------|---------|
| EM0COR | UC 007 | EO3AQW | UA3 121 | EO7L | UL 190 | EV0AO | UA0 085 |
| EM0CWM | UC 006 | EO3ATD | UA3 122 | EO8I | UI 189 | EV0AQ | UA0 098 |
| EM2C | UC 188 | EO3AVK | UA3 119 | EO8M | UM 036 | EV0AY | UA0 159 |
| EM4BMG | UB 059 | EO3AWK | UA3 135 | EO9AAA | UA9 165 | EVIAN | UA1 088 |
| EM6AAK | UA6 101 | EO3AYB | UA3 118 | EO9AAC | UA9 165 | EV3FV | UF 013 |
| EM6AYM | UA6 102 | EO3AYD | UA3 118 | EO9AAM | UA9 165 | EV4AP | UA4 094 |
| EM8CCM | UC 009 | EO3AZB | UA3 117 | EO9AAZ | UA9 165 | EV4AS | UA4 091 |
| EM8CIL | UC 008 | EO4AES | UA4 156 | EO9ACI | UA9 154 | EV4AU | UA4 092 |
| EM8CSB | UC 010 | EO4AHK | UA4 133 | EO9ACP | UA9 154 | EV4AW | UA4 095 |
| EO0AAK | UA0 103 | EO4APK | UA4 094 | EO9ACS | UA9 154 | EV4AY | UA4 097 |
| EO0ACK | UA0 110 | EO4AWI | UA4 095 | EO9AFF | UA9 140 | EV5FQ | UF 014 |
| EO1ACK | UA1 136 | EO5BCK | UB 080 | EO9AHT | UA9 158 | EV6AI | UA6 089 |
| EO1ACL | UA1 136 | EO5BED | UB 060 | EO9AON | UA9 145 | EV6AJ | UA6 093 |
| EO1ACT | UA1 136 | EO5BEP | UB 060 | EO9AQK | UA9 134 | EV6AP | UA6 096 |
| EO1ANP | UA1 088 | EO5BGH | UB 078 | EO9AUN | UA9 130 | EV6AW | UA6 086 |
| EO1AOA | UA1 113 | EO5BIM | UB 073 | EO9AUP | UA9 130 | EV6AX | UA6 987 |
| EO1AOS | UA1 113 | EO5BIV | UB 073 | EO9AYB | UA9 099 | EV7DN | UD 002 |
| EO1AQW | UA1 120 | EO5BJF | UB 067 | EO9H | UH 043 | EV8IZ | UI 056 |
| EO1ATN | UA1 144 | EO5BLH | UB 077 | ER3A | UA3 170 | EV9AW | UA9 084 |
| EO1ATS | UA1 144 | EO5BQM | UB 064 | EU1Q | UQ 037 | EV9AX | UA9 090 |
| EO1AWL | UA1 149 | EO5O | UO 039 | EU1R | UR 083 | EW0CL | UC 005 |
| EO1AWP | UA1 149 | EO6AAS | UA6 101 | EU2C | UC 188 | EW1AA | UA1 169 |
| EO1AZK | UA1 143 | EO6AAT | UA6 101 | EU2P | UP 038 | EW2C | UC 188 |
| EO1AZM | UA1 143 | EO6AHG | UA6 108 | EU3A | UA3 170 | EW3A | UA3 170 |
| EO2CSM | UC 010 | EO6AHJ | UA6 108 | EU4F | UF 012 | EW3AP | UA3 160 |
| EO2CWO | UC 006 | EO6AHK | UA6 108 | EU5O | UO 039 | EW4AA | UA4 156 |
| EO2QGL | UQ 037 | EO6AHS | UA6 108 | EU5T | UB 186 | EW5T | UB 186 |
| EO2R | UR 083 | EO6AJO | UA6 093 | EU6D | UD 001 | EW6AA | UA6 101 |
| EO3ADN | UA3 142 | EO6ALR | UA6 150 | EU6G | UG 006 | EW7BF | UB 070 |
| EO3ADS | UA3 142 | EO6AWK | UA6 086 | EU7L | UL 190 | EW8TJ | UB 067 |
| EO3AEO | UA3 147 | EO6D | UD 001 | EU8I | UI 053 | EW9BJ | UB 067 |
| EO3AIR | UA3 126 | EO6F | UF 012 | EU8M | UM 036 | | |
| EO3ALE | UA3 155 | EO6G | UG 004 | EU9H | UH 043 | | |
| EO3ALS | UA3 155 | EO6GGL | UG 004 | EU9J | UJ 040 | | |

Table 1. Numerous special prefix USSR stations were active in the EM, EO, ER, EU, EV and EW series as part of the celebrations of the ending of W.W.II. Oblast identification appears to be based on (a) ignoring the prefix itself (b) using the first letter after the figure to identify the country (c) using the second letter after the figure to identify the oblast.



Ever wondered what to do with all those Russian QSL cards? How about drawing up an oblast list and checking your U.S.S.R. SWL cards against it. There are SWL's in rare oblasts too!

range of 'special callsigns' that have been heard across the bands during the first months of 1985.

Top-Band Extended

Since the beginning of 1985, USSR stations have had their usable frequency ranges in Top Band extended. Only a few years ago, USSR stations were totally unknown on 160m. Their arrival on the band has added interest to Top Band DX-ing.

Until the recent change, USSR stations on Top Band had to stay above 1850 kHz. Since most CW DX operating is well below this frequency, the USSR stations presumably missed out on much of the available DX. Similarly in order to work USSR stations on 160m., non-USSR stations had to make a point of going up above 1850 kHz to find them. With the extension of the USSR's Top Band allocation down to 1830 kHz all this has changed. Nevertheless even before the band extension USSR stations used to be occasionally heard below 1850 kHz, particularly when there was some juicy DX about!

The new USSR 160m. allocation is 1830-1930 kHz, split into sub-bands: 1830-1860, CW only; 1860-1890, CW and LSB; 1890-1930, CW, LSB and AM.

CQ-M Contest: Rule Changes?

Since going to press on the CQ-M Contest rules in the April issue of *S.W.M.*, rumours have been heard that there are to be changes in the contest exchange this year. Instead of sending their oblast number, USSR stations may be sending a serial number. The contest exchanges described in "Oblast Corner" were those that have been in use for many years in CQ-M. If the USSR stations are sending serial numbers instead of oblasts, this is not very good news for oblast hunters. The present run of special callsigns is expected to be finished before CQ-M and the 'normal' callsigns which are more easily identifiable will again be in use. Whether it is oblasts or serial numbers, let us know how you got on in CQ-M.

| | |
|-----------|-----------|
| EKA - EKZ | LYA - LYZ |
| EMA - EOZ | RAA - RZZ |
| ERA - ERZ | UAA - UZZ |
| ESA - ESZ | YLA - YLZ |
| EUA - EWZ | 4JA - 4LZ |
| EXA - EXZ | |

Table 2. As well as the 'U' and 'R' series, the USSR also has callsign block allocations in parts of the 'E' series. These have been the origin of many of the recent spate of special prefixes. The 4J and 4K prefixes are mostly used for Arctic and Antarctic stations.

| Station | 1985 | All-Time |
|---------------|------|----------|
| SWL F. Dunn | 89 | 169 |
| G2DAN | 86 | 99 |
| G3BDQ | 83 | — |
| G4MQC | 70 | 116 |
| SWL M. Ribton | 69 | 98 |
| G4OBK | 68 | 106 |
| BRS25429 | 64 | 127 |
| BRS32601 | 41 | 148 |
| G4UNH | 40 | 98 |
| G4WSX | 39 | 72 |
| G4XTM | 32 | 64 |
| G4XRX | 30 | 85 |
| G4TWK | 30 | 105 |
| BRS44984 | 25 | 82 |
| G4VDX | 25 | 50 |
| G4LZZ | 23 | 74 |
| G4VFG | 22 | 46 |
| G3ICG | 18 | 95 |
| G3RJB | 12 | 153 |
| RS86766 | 12 | 15 |
| G4YIR | 11 | 23 |
| G4VXU | 9 | 133 |
| G4YWG | 7 | 23 |
| G4GOF | 5 | 102 |
| G4ARI | 2 | 61 |
| G4EZA | 1 | 111 |
| SWL G1HGD | — | 34 |

Table 3. *S.W.M.* Oblast Table. Send your entries to G3TXF by 20th June for August issue. Table 1 will help you identify the oblast of some of the many special calls active during the first few months of 1985.

Victory 40 Award

The Victory 40 Award is available for working 40 points worth of special callsign stations (for Europeans each QSO with a special 'E' station or a 'R' during the period up to 9th May was worth 1 point). The 'Victory 40' award may be claimed by sending log extracts, verified by an official of a radio club or by two licensed amateurs, to the Ernst Krenkel Central Radio Club, Box 88, Moscow, to arrive no later than 1 January 1986. There is no charge for this award and it has been described over the air as one of the best looking USSR awards so far.

R-100-O: Fast Turn-Around

The R-100-O award is given to those submitting proof of contacts with 100 different oblasts. One way of claiming the R-100-O award is to use your CQ-M Contest entry as the basis for the claim. Along with his 1984 CQ-M log (which contained QSOs with 116 oblasts), the writer sent a separate detailed claim for the R-100-O award.

In February the R-100-O award duly arrived; it was dated November 1984. Considering the amount of mail that Box 88 must receive, a turn-around time of less than six months on an award based on a contest log entry is not bad going. If you are applying for the 'Victory 40' or the R-100-O awards, let us know how long they take to arrive.

Oblast Table

Send your entries for the 'All-Time' and '1985 In-Year' oblasts heard/worked tables to reach G3TXF at Holt Cottage, Kingston Hill, Kingston-upon-Thames, Surrey KT2 7JH, by June 20th for the August issue.

Many thanks to K1KI (USSR *Tidbits*), G4DYO (RSGB *DXNS*) and F6AJA (*Les Nouvelles DX*) for items extracted. Good hunting es DSW!

“Kitchen Table Technology”

*A Series of Occasional
Articles to put the ‘amateur’
back into Amateur Radio*

REV. G. C. DOBBS, G3RJV

No. 9: The “J.L.D.” Transceiver — a compact 20m. rig for portable or holiday use

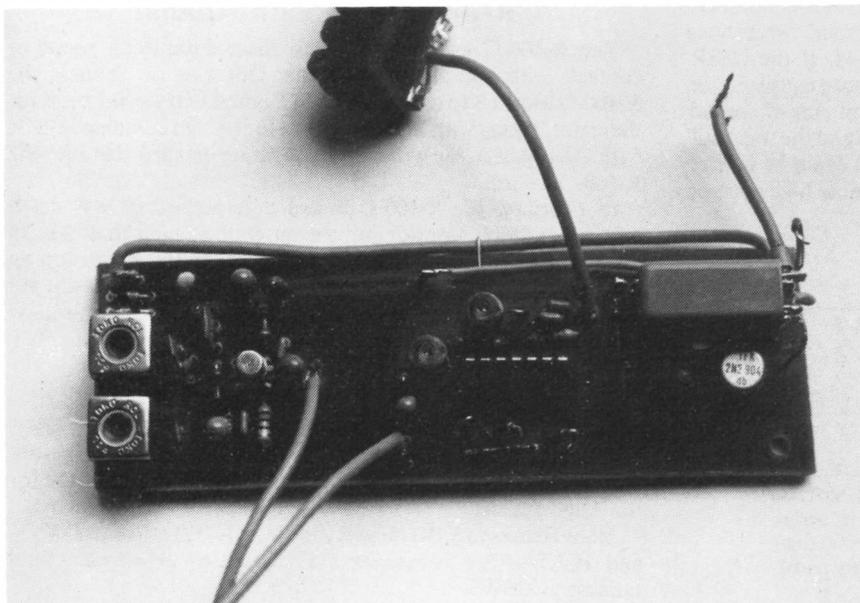
Part 2 — The Receiver

MODERN technology has a lot to answer for, both big and small. Amongst the smaller of its sins was the conception and production of the “Walkman” miniature tape players. You know the things. Worn by people on trains and buses to emesh them into their own little world, thereby ensuring no social obligation to pass the time of day or even acknowledge the passage of their fellow beings. And half-issuing from the headphones a series of hisses and thumps that annoyingly fail to convey to others the musical nature of their bondage. I remember only once being amused by someone’s “Walkman”. We were taking in the sights of Bourbon Street in New Orleans and suddenly coming towards me was an old lady, eighty if she was a day, in baggy trousers and a floppy hat, sailing along on disco style roller skates wearing her “Walkman” tape player!

Well, this project is physically the amateur radio equivalent of a “Walkman” 14 MHz transceiver. I wait to hear of the first sighting of an old lady on roller skates with a 14 MHz transceiver and Morse key sailing by trailing a 20-metre dipole!



The first part of this article showed the circuitry and construction of the small transmit board, and we now come to the completion of the transceiver with a receiver and changeover



The “J.L.D.” receiver board.

board. The transmitter section, described in last month's issue of *Short Wave Magazine*, is a small VXO/PA circuit which covers some 15 kHz of the 14 MHz band with one crystal. A selection of crystals could give an extensive coverage of the CW portion of the band. (A supplier of HC25U 14 MHz fundamental crystals suitable for this transceiver was given at the end of Part 1). The transmit board included a coupling capacitor (C3) which provides an oscillator output to drive a direct-conversion receiver board. The principle of the direct-conversion receiver has been described so often in amateur radio literature that it is sufficient to say here that the oscillator output mixes with the radio frequency input from the antenna and an audio difference is amplified to give the required CW tone in the headphones. The direct-conversion receiver is simple but for the amount of effort and expense, it gives excellent results. It also has the advantage that a direct-conversion receiver board added to a transmitter is the simplest way of producing a transceiver. That simplicity forms the heart of this transceiver.

The Circuit

The circuit for the receiver/changeover board is shown in Fig. 1. The signals enter the circuit at the input link winding on L1, having come via the antenna changeover circuit S1 (a). The input tuning has two tuned circuits, L1 and L2 with C1 and C2. These are loosely top coupled by C3 to give a reasonably selective front end. For the short tuning range of the CW portion of the band (14.00 to 14.10 MHz) there is no need for a peaking control on the input; the circuits are fixed tuned for this portion of the band. The mixer, a 40673 dual-gate MOSFET, is basic but it is a well proven circuit. A double balanced mixer was considered but the passive devices would have required extra audio amplification and the active devices tend to require a fair number of external components and are quite expensive. The signal and the oscillator appears at the drain load, R3.

The audio output signal from TR1 is RF decoupled by C8 and coupled by C9 to the only control in the receiver circuit, the volume control, VR1. The audio amplification is provided by a single integrated circuit, IC1. This is a LM747 dual op-amp which is very cheap and easy to obtain. The first stage acts as a simple audio active filter; C11, C12 and R8 filter at about 800 Hz. The output from the first stage, IC1(a), is coupled via R9 and C13 to the second stage IC1(b). This stage is operated as a high gain

Table of Values

Fig. 1

| | |
|---------------------------------------|---|
| R1 = 10K | C10 = 0.47 µF tant., 35V |
| R2, R4 = 100R | C11, C12 = 1nF polystyrene |
| R3, R13 = 1K | C13, C14 = 100nF dipped mica |
| R4 = 2K2 | TR1 = 40673 MOSFET, dual-gate |
| R6, R7, R10, R11 = 5K6 | TR2 = 2N2905 |
| R8 = 1M8 | IC1 = LM747CN |
| R9 = 39K | D1 = 1N914 |
| R12 = 1M | D2 = 1N4001 |
| C1, C2 = 100pF min. ceramic plate | RLY = 12V 2-pole changeover relay |
| C3 = 10pF min. ceramic plate | L1, L2 = Toko coil type KANK-333SR available from <i>Cirkit</i> . |
| C4, C6, C15 = 10nF min. dipped mica | VR1 = 10K log. min. potentiometer |
| C5, C7, C8, C9, C16 = 10µF tant., 25V | |

Note: *Cirkit's* address is 200 North Service Road, Brentwood, Essex. (Tel: 0277-211490).

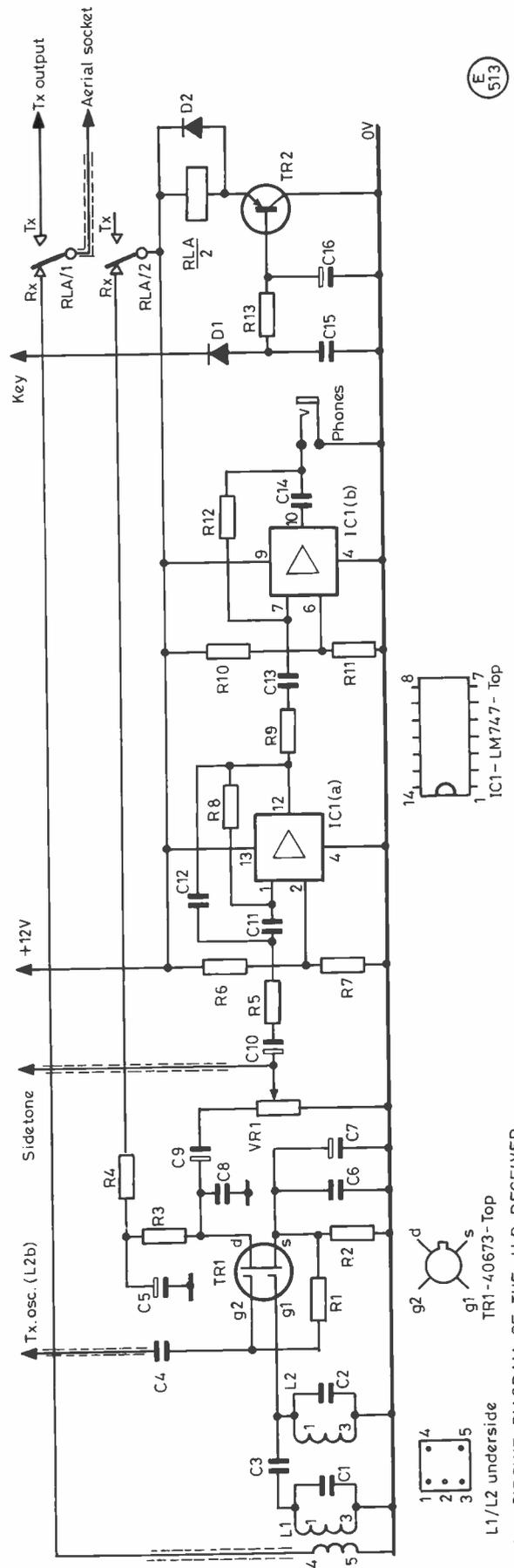


Fig. 1 CIRCUIT DIAGRAM OF THE JLD RECEIVER

E 513

amplifier to drive a pair of high impedance headphones. This sparse audio section was found to give enough gain for average operating on the band. If the constructor feels he wants a little more audio some small adjustment may be made to the value of R9. I built these stages with half a mind that the gain would not be enough. A quick glance at the photograph of the layout of the audio section of the receiver shows I felt enough space between TR1 and IC1 to add a small audio preamplifier, should it have been required. My view is that the extra stage is pointless, but no doubt avid constructors will add all sorts of things to this circuit in their own versions. The sidetone, which is part of the transmitter board, is fed into the audio amplifier ahead of C10.

Even with the simplest little transceiver I dislike a manual changeover switch. I always forget to operate it at the end of an over and wonder why I can't hear the other station. It is too easy to use the keying circuit to provide a simple form of semi break-in. TR2 is a DC switch operated by the keying action to switch a relay, RLY, and thus operates the changeover of the transceiver. The switching action of TR2 is slugged by a capacitor C16, the value of which gives enough time to hold the relay in during normal keying speeds. When the operator pauses at the end of an over the relay falls out to change from transmit to receive. The relay has two changeover contacts which are used to switch over the antenna from transmitter to receiver and also to provide some power supply switching. The only switching required for the power line is to take the 12 volts off the mixer stage during transmit. The power for the audio amplifier is still required so that sidetone can be heard. The transmitter board takes care of itself because the oscillator remains on during transmit and receive and the PA is controlled by the key. A fastidious builder might like to add a little shaping on the keying action by perhaps adding another capacitor (say 0.1 μ F) between the bottom of D1 and ground with another 1K resistor between the top of the added capacitor and C15. The timing is open to experimentation by adjustment of the value of

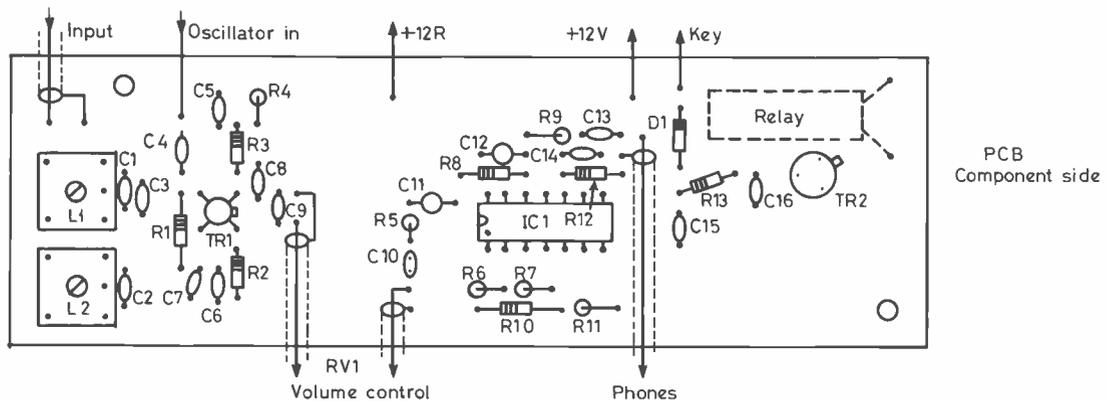
C16. When C16 is made larger the relay stays in for a longer period of time.

Construction

The whole of the receiver and changeover circuit is built on one printed circuit board. The layout for this board is shown in Fig. 2. The board is quite compact although the average constructor should find no difficulty in copying this layout. The board uses the minimum etch technique leaving as much copper as possible around the various interconnection strips. One underboard link wire is required to ease the production of a homemade PCB.

Like most receiver projects, it is easiest to work from the back to the front and test the stages as the construction progresses. In this case begin with the changeover circuit around TR2. A nice easy stage to handle — all simple DC switching stuff. The relay used in the prototype was a very small 12 volt relay with a double-pole changeover action; any similar relay could be used. I have no idea what make the relay in the prototype is or whence it came, but I pulled it out of my stocks with glee and inserted it into the circuit. It may be that the individual constructor may have to change the layout of this stage to accommodate a large relay for the change-over.

Note that TR2 is a *npn* type of transistor which is wired into the circuit with the collector to ground. Once the stage has been wired, check it over, including the polarity of D1 and D2, and apply 12 volts to the top of the relay. The relay will click over and return to the unenergised state. Touching the top end of D1, the lead that goes to the key socket on the transmit board, to ground should energise the relay. When the lead is lifted from ground there will be a slight delay before the relay falls out again. Check the keying action by tapping the lead against ground. The relay ought to hold in for normal keying speeds. The timing capacitor can be changed in value to suit the individual operator. The ideal value is one which ensures the relay holds in during normal keying



Note: Add link wire from pin 13 (IC1) to junction of R6/R10 under IC1

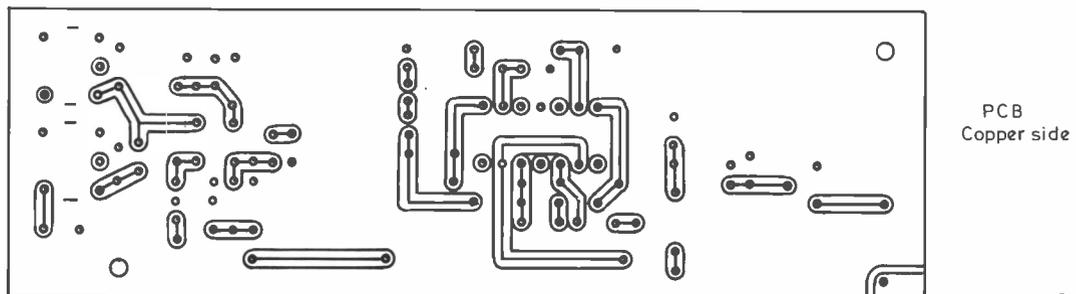
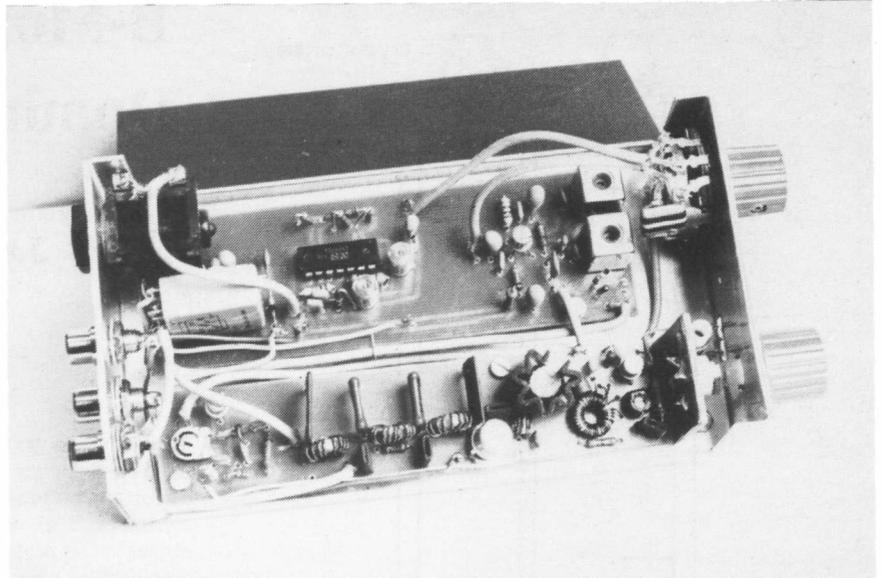


Fig. 2 JLD RECEIVER PCB LAYOUT (Actual size)

Inside view, from the top, of the "J.L.D." Transceiver.



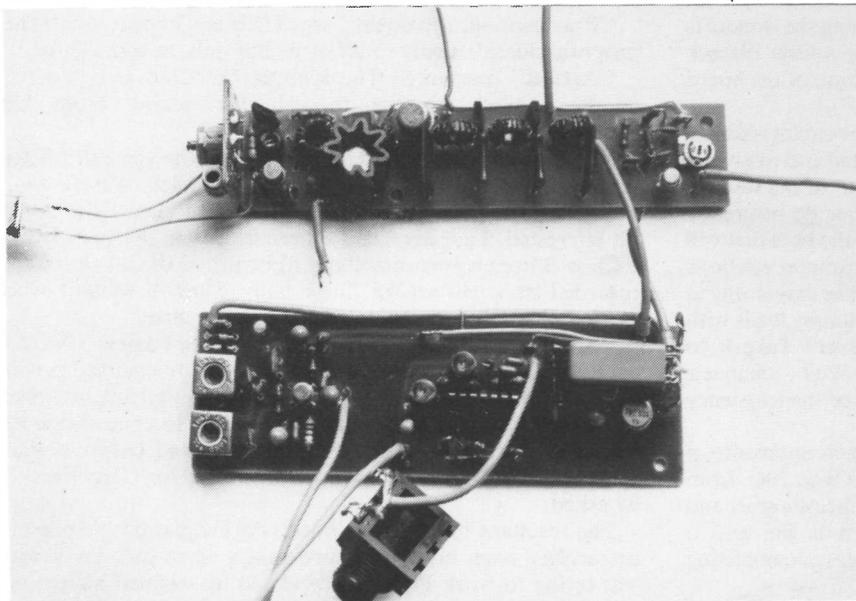
and falls out at the end of a keyed sequence. If the timing is too short the relay will rattle in and out between words, or even letters, in the keyed message.

The next stage to build is the audio amplifier around IC1. This can either be built in one go or IC1(b) first, followed by IC1(a). I do a lot of construction and still prefer to build and test small bits of circuits, so I would build IC1(b) and test it before going further. Build the circuit as far as C13 and take a screened lead to a headphone jack socket; high impedance headphones are required for this circuit. The cautious constructor might like to mount the IC in a holder rather than solder it directly into the board. The circuit around IC1(b) is just a simple high gain audio stage so testing is easy. Apply the power and the headphones and touch the input of C13 with a finger and hum should be heard in the headphones. The first stage, IC1(a), can now be added. This is another audio amplifier stage it acts as a bandpass filter for around 800 Hz. Touching the input should again give a 'hummy' signal but this will have a 'peaky' sound at around 800 Hz or so. Then wire in the gain control, VR1, as far as C10. Check that the control is connected the right way round and clockwise rotation increases the audio output.

The mixer stage around TR1 is added next. Some books warn about the mishandling of MOSFET devices but the 40673 is

diode-protected and I have never had one refuse to work through mishandling: I have pushed them in and pulled them out of boards, wired them in the wrong way round and generally abused them, all without failure. It is possible to test the mixer after a crude fashion without building the input tuned stages. Connect the transmit board "Osc out" line to the input of the mixer at C4. Power up the receiver board and the transmit board; this should produce a hissing in the phones. Then connect a piece of wire as a simple antenna to the input of the mixer at G1. Odd signals will be heard. 'Odd' may be the word because they are likely to be broadcast signals breaking through, but at least it does indicate a signal path through the mixer.

The input tuned filter, L1 and L2, is made up from two commercial inductors which are available from *Cirkit*. The pin layout for these is shown on Fig. 1. The tags from the screening can must be soldered onto the ground of the PCB. The value for C3 is open to experimentation. The filter is just two tuned circuits at 14 MHz lightly coupled with C3. The stated value seemed to work out well in practice but a larger value will allow more signal input at the expense of selectivity, and a smaller value better selectivity at the expense of signal strength. Pins 4 and 5, a low impedance winding, are only used on L1 to give a nominal 50 ohms input. With the tuned stages wired up the input filter can



The "J.L.D." boards: transmitter at the top, receiver beneath.

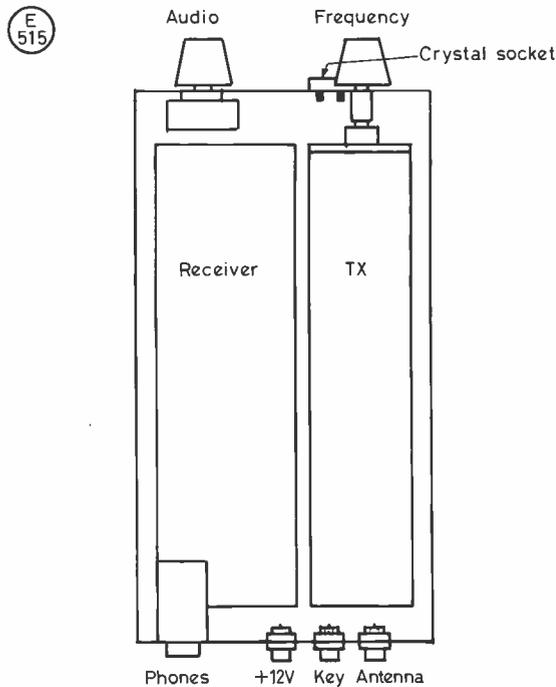


Fig.3. JLD TRANSCEIVER LAYOUT (Approx. half full size).

be peaked. The input tuning is fixed so alignment is best carried out in the centre of the CW portion of the band (14050 kHz) or at the frequency of the crystal, if only one is being used. For those without a signal source, it is a matter of turning the cores in the two cans to peak signals received on the band. If a signal generator is available this may be used to provide a stable signal at the required frequency for the peaking of the two inductors. In the prototype the peak (on 14060 — the International QRP Calling Frequency) occurred with the cores screwed about 3mm. into the cans.

The receiver board is now ready for use. The board could form the basis of a compact 20m. receiver with a small VFO to cover the whole band. The manner in which the receiver board is added to the transmitter board to form the complete transceiver is shown in Fig. 3. This can also be seen in the photographs. The inter-connection wires which carry signals would be screened leads. Miniature coaxial cable is best but I used cheap microphone cable, which is fine for short signal paths. The layout is compact but with care, and leads routed around the boards in tidy order, there should be little problem in making it all fit into the case. The fiddly bit is getting the standoffs under the PCBs before screwing them down to the bottom of the case. I cheat by aligning the standoffs under the board with a bolt and then pushing a little Blotack between the outside of the standoff and the bottom of the board to hold them in place.

Using the transceiver does take a little skill. The circuit is simple and has no form of receiver offset between transmit and receive. It is possible, without a little prior experimentation, to call stations away from their frequency and wonder why they do not reply. The operator has to learn to tune in a station to the note that will ensure that on transmit the frequency of the transmitter will be as close as possible to the frequency of the station. The easiest way to do this is to try trial QSOs across a bench into dummy loads with another transceiver. Not got another transceiver? Take it to someone who has. Not got a local who can help? Well — chance it on the band or arrange a sked to get the setting of the frequency correct.

This transceiver may not rival the latest high tech equipment, it won't cost as much either, but it will provide QSOs on 20m. from a little box which can be put into a brief case or suitcase corner and used with a throw-out dipole. It is cheap, it is fun and it works. . . . I got 579 from EA3WQ within minutes of completing the project.

B-Morse, and Cyrus, Dominate Club Night

JACK HUM, G5UM

PLANs to hold that full-dress debate on operating standards down at The Club had had to be shelved for two important reasons: and Mister Chairperson had taken hurried confab with his committee to make sure that they wouldn't object to the postponement, and even more important that the membership were not likely to mind, either.

The reasons? One of them was the news that Class-B licensees would be allowed to use the Morse code. The other was the arrival in the district — and at The Club that night — of one Cyrus B. Clickmeister from Opelousas, Louisiana. Both were events likely to repercuss somewhat at The Club, as Virginbus might have put it (he had taken lately, having grown out of his "quite honestly" condition, to developing new words and phrases in the hope no doubt that they would immortalise themselves by being heard on the air. If you can "destinate," he would claim, why not "incredulate"? And isn't "repercuss" a good verb to derive from "repercussion"?)

"Let us" Mister Chairperson had said to his confabulates (another Virginbus word), "let us devote the next meeting to a brief — and I mean brief — natter about Morse for Non-Morsers and most of the time to welcoming our new chum from Stateside." Agreement by the committee to this proposal was unanimous.

Any hopes of making the discussion about "Morse for Class-B people" a brief one were dashed when thirty seconds after Mister Chairperson had opened the proceedings for the evening Ethelbald had jumped to his feet and in his best football terrace voice had roared that all present should apply forthwith (well, he didn't say "forthwith": the word was not in his vocabulary) for the variation of licence to allow them to use the dit-dahs: "Anyway, if there's something going for free let's 'ave it!"

"Pray caution, Ethelbald" urged Mister Chairperson: "The proposal doesn't apply to all of us but only to some of us."

"Agreed" murmured The Man at The Club as he puffed another coiled message towards the ceiling from his saxophone-shaped pipe.

"Lots of us have applied already" came the voice of Mister Anonymous from somewhere towards the back of the room.

"As for me" clipped in Highly Technical Gent "I'm not a bit interested. I got my Class-B licence back in the years when a Class-B licence was something to be proud of . . . you were regarded as a cut above those puny Class-A wallahs who carried on endless monologues on eighty metres."

"So you do listen on eighty metres sometimes, HTG?" enquired Old Fangler *sotto voce*. If any reply emerged it was drowned by the sound of Mister Chairperson raising his voice to call the meeting to order and to attempt to concentrate its collective mind on the two big matters it had before it that evening: "Well, what do we think of Morse for Class Bees?" he asked.

The resultant hubbub reminded Old Fangler of the pile-up he recalled from his twenty-metre days when half the world was trying to work Pitcairn Island. As he strained his ageing

ears he heard such random comments as "Morse will certainly extend their horizons" and "Best thing that's happened for years" and then by contrast "Why can't they do the job properly and become fully fledged citizens of Class-A status?" To be countered yet again when HTG popped in a quick pulse above the random noise level: "No particular status about a Class-A person . . . may I remind you all that a Class-B system is electronically more efficient than a Class-A one?"

"We're not getting no place at a helluva speed" boomed Ethelbald with one of his characteristic double negatives: "Why don't we get on with the washing?"

"I think he's moving next business" said Mister Moneybags into the ear of Mister Chairperson.

"Next business!" Mister Chairperson took the hint: "Morse for Class-B people is a continuing subject and we'd better continue it in out next . . . anyway, we'd better hear what it sounds like on 'Two' and 'Seventy' before we get too dogmatic about it . . . now, next business brings me to something which give me great pleasure and that is to introduce you to our new friend who has come to settle locally here many thousands of miles from his home QTH back in the Deep South. Will Cyrus B. Clickmeister kindly stand up so he may be seen by all?"

From somewhere in the centre of the clubroom a slight, bespectacled figure rose to his feet. Those behind looked forward and those in front looked back. "A real live Yank!" Virginibus could not resist making the comment. "And just like any of the rest of us" added The Man at The Club.

"Cor', what a disappointment!" roared Ethelbald: "Where's his stetson and the fag drooping out of the side of his mouth? Where's his gun belt? And he's got brown eyes. All those Yanks I see on the telly have got blue eyes."

Mister Chairperson smiled with some embarrassment: "You remember, Cyrus, I told you before you joined the club that we are a pretty candid lot, so please forgive some of us if we shoot from the hip . . . h'm, an apt analogy, I think!"

Still standing, Cyrus allowed himself the flicker of a smile, and then in a voice that sounded much more like west country Bristol than U.S.A. said how pleased he was so soon after picking up his reciprocal licence to be allowed along to such a vital and active club.

"Mighty glad to have you here . . ." began Virginibus, aping a vernacular familiar from his goggle-box at home: but he was cut short by the voice of Mister Anonymous coming once again from half way back in the meeting room: "With respect, Mister Chairperson" it said "We've occupied a lot of time on the jejune and self-cancelling argument about Morse for Class Beemen and I'd like to suggest we hear Cyrus less formally over the teacups."

Upon which observation a wave of hurrahs descended, punctuated by a call from Ethelbald asking what 'jejune' meant and was it someone's girlfriend?

"Looks like a general exodus towards the teabreak" smiled Mister Chairperson to Cyrus, and taking him by the elbow he steered him in the direction of the evocative sound of escaping steam.

"I must warn you, Cyrus," he murmured confidentially into the W5 ear, "that one of our younger members tends, when we adjourn for tea, to say that the Yanks have never been the same since they tipped it into the Boston Harbour in 1776 . . . but take no notice if he does."

Virginibus didn't. He said something far worse:

"My dad useter tell me that during the war they useter say that the trouble with the Yanks was that they were overpaid, oversexed and over here."

Instantly there came the quietly authoritative voice of The Man at The Club: "Aren't you being rather discourteous to our guest, Virginibus . . . and tell me, didn't your dad ever consider that to say such things was to do the then-enemy's propaganda work for him and was nothing more than an attempt to divide the allies from one another?"

Blushing the colour of a 20K resistor, Virginibus confessed that the thought hadn't occurred to him, that he wasn't born at the time, and anyway (with a nervous laugh) he didn't take as gospel everything his father told him. His morale was salvaged when Cyrus B. Clickmeister added, equally quietly and authoritatively, that he in turn had heard similar things said about the British, and wasn't it perhaps time to forget battles long ago and instead address ourselves to the present?

"That's the most sensible thing which has been said here tonight" broke in Old Fangler: "but if you will forgive us for dwelling on the past for a moment I reckon we in this club ought to remember just how much American hams have done to make amateur radio the enjoyable thing it is today."

Cups were slowly lowered as the members detected Old Fangler warming to his theme at a surprising S7 level: rarely was he heard to speak much above S5.

"Why is English the universal language of ham radio all over the world? Because the Americans made it so simply by their sheer weight of numbers and their superb organisation. When I started in amateur radio one's main objective was to work one's first Yank. They were the standard we all looked up to when there were about two thousand of us and about twenty thousand of *you*, Cyrus, or was it 120,000? My failing memory doesn't retain the figures, but I do remember that you always seemed to have more hams in The States than in the rest of the countries of the world put together."

Cyrus looked slightly embarrassed: "Very kind of you to say so, er — what was your handle? Oh yes, Old Fangler," but before he could say more The Man at The Club broke in to ask: "Tell us something about the BPL, Cyrus, please."

"Wozzat, one of your football teams?" came the voice of Ethelbald at S9+.

"Er, no" replied Cyrus, smothering a smile "but you could say it was a kind of competition. BPL stands for Brass Pounders' League. Back in The States we've always competed enthusiastically against one another to see who could handle the most third party traffic every month, and the results would be published in our mag."

"A bit tiring on the voice, maybe?" came the question from Highly Technical Gent. Said Cyrus:

"Yes, it would be if it happened to be done on voice, but a lot of it has always been done on key . . . hence Brass Pounders' League."

"Phew? That must be a slow and longwinded business!" exclaimed Ethelbald, to receive the observation from Old Fangler that if they hadn't got their Morse highly organised then they wouldn't handle traffic by telegraphy, would they? "H'm, I s'pose not" grunted Ethelbald.

Upon being pressed to disclose more about how things were done in The States, Cyrus described some of the techniques used to talk in the Morse code and to convey a lot of information in a little time. "A great number of American hams take the stuff down on the typewriter," he explained, "because physically it's a bit difficult to write longhand on a message pad at much above twenty-five words per minute."

"You make 25-per sound positively slow" came the voice of Mister Anonymous from somewhere behind the serried rows of teacup-lifting arms: to which Cyrus B replied that, yes, perhaps it was when you were trying to clear the pile of messages on your hook. Often you'd need to send faster than that.

"For hours on end?" asked Mister Moneybags.

"Yes, for hours on end . . . but really, my English friends, there's nothing remarkable about that. The more Morse you do the better you get at it — just like drinking tea!"

A burst of genial laughter greeted this comment. Then, with the wisdom of the young, Virginibus had the last word:

"Doesn't what we've heard make Morse for Class Beemen look rather silly? Ah well, I suppose I'd better pay more attention to Monday Night CW Night on 'Two' and try to get my speed up. But twenty-five-per! Strewth!"

VHF BANDS

NORMAN FITCH, G3FPK

QUITE a big postbag this month with several new contributors. The main event was the unexpected *Auroral* manifestation on April 21, the result of a major magnetic storm which caused the "A" index to rise to 77 on the 21st. This activity was associated with a new region in the northern solar hemisphere.

Awards News

A bumper month for awards with four new members of the 144 MHz QTH Squares Century Club. Joe Brincat, 9H1CG, from Marsaskala (HV13b) is the first Maltese member, whose certificate no. 50 was issued on April 10 with stickers for 125 and 150 confirmed. First licensed in September 1969, he began VHF operation in December 1973, but did not start serious activity till acquiring a *Trio* TS-700 in 1976. Joe's present station consists of a *Yaesu* FT-902DM HF transceiver, FTV-250 transverter and *Microset* 45w amplifier. On receive, a 3SK88 pre-amplifier is used, the antenna being an 11-ele. *Yagi*. He is now active on MS, best DX being 1,933 kms. into CL square. *Via Es*, his best DX is GM6LXN (YS22f) at 2,886 kms. in the summer of 1983 and probably the first 9H/GM QSO. Joe lived in London for a time and was G4GTI (ZL50d).

The *Radio-Klub Ludbreg*, YU2EZA, from IG54f in Yugoslavia, have been awarded certificate no. 51 dated April 20. They have 210 confirmed. They participate in contests as YU2EZA/2 in IG61c, but confirmations for that location could not be accepted under Rule 4. Unfortunately, no station details were included with the application and QSLs. 152 QSOs were on CW, the rest on SSB. 69 QSOs were on tropo., 98 on MS, 37 *via Es*, 5 *via Ar* and one by FAI mode. This is the first award to a YU station.

Angelo Luthe, DL8NBN, (FI16j) from Konstein is member no. 52, his certificate being issued on April 22 for 101 confirmed. There were 56 tropo., 38 MS and 7 *Es* QSOs, 58 on CW and 43 on SSB. He was first licensed in October 1981 and started collecting VHF squares at the end of 1982. His first serious operation was in the June 1983 *Es* period. Angelo is 20 years old and his station comprises an *Icom* IC-

211E, 100w PA, *Gasfet* preamp. and 17-ele. *Yagi*. a new PA with a pair of 4CX250B valves is under construction. Konstein is a village of 2,000 people about 100 kms. northwest of Munich.

Prompted by last month's remark that only G stations in the British Isles featured in the membership list, Geoff Brown, GJ4ICD, (YJ70a) decided to put Jersey into the club. Certificate no. 53 was issued to him on May 8 for 215 squares confirmed from 39 *W.A.E.* countries. 214 QSOs were on SSB comprising 120 on tropo., 52 *via Es*, 32 *via MS* and 10 on *Ar*. The sole CW QSO was with K1WHS *via E-M-E*.

Alfred Pehmer, OE1APS, from Vienna, holder of certificate no. 37, now has 132 confirmed and his "125" sticker was dated April 4. 16 QSOs were *via Es*, 9 on MS, 6 by tropo. and one *via Ar* mode. His list included some interesting Russian stations:—UA6BAC (SE), UA6YBH (TE), UB5GID (RG) and RB5QGL (SG) all worked *via Es* on 21/5/84 and UW6MA (TH) *via Es* on 16/7/82.

It is over a year since the last 70cm VHF Century Club Certificate was issued, so it is a pleasure to report that no. 37 has been awarded to Mrs. Ela Martyr. G6HKM, issued on April 24. Her station consists of an *Icom* IC-490E with *BNOS* 50w amplifier and the antenna is a 21-ele. *F9FT* on a separate telescopic mast.

Beacon Note

Jan Andersen, OZ9QV, has informed the *RSGB* that 6m. beacon OX3VHF in IQ06PS on 50.045 MHz has been closed down. It is hoped to have it QRV again in July from another location in Greenland.

Repeater News

The Leicester amateur TV repeater has been re-sited and is now installed at the GB3CF/GB3LE repeaters and GB3LES/GB3LEX beacons location. Its call sign is GB3GV on channel RMT2 and transmits AM video on 1,318.5 MHz, receiving AM or FM video on 1,249 MHz Reports to G4MQS. *The Repeater Management Group's* News sheet no. 2 reports that FM TV repeaters seem to work better than AM ones.

There are three VHF repeater proposals for coverage of the area to the north of London. The *RMG* is trying to get the three groups concerned to work together to agree on one relay to best serve the North London, Hemel Hempstead and Luton areas. A proposal for a repeater for the Rossendale Valley in Lancashire has been accepted and the group will take over the franchise of the GB3WP repeater which never was. The new UHF relay will be GB3RV on RB11. Finally, TV repeater proposals for the Derby, Ipswich, Blackpool and Bournemouth areas have been dropped since no full proposals were submitted by the respective groups by the deadline.

Contests

The 144 MHz CW Contest on Feb. 3 was won by GW4MGR/P, the *Wirral and DARC* group, with a score of 1,377 points. Nigel Hadley, G4BSW/A, came second with 1,035 points.

From June 1 at 0001 GMT to 2400 on June 15, there is the 9H Falcon Contest organised by the 9H *VHF/UHF/SHF Group* in Malta. This is a 144 MHz event for all modes and all types of propagation except satellites and repeaters. To qualify for entry, British Isles station need to work one Malta station in this period. All other QSOs with anybody count for points which are calculated at one *per* kilometre. Each 9H station worked, apart from the first, earns double points as a bonus. The same 9H can be worked more than once provided it is on a different date. Logs must show date, time, call sign, both reports — no serial numbers necessary — locator (either variety) and points claimed. Final total is sum of all QSO distances. Logs to be sent to The Contest Manager, P.O. Box 144, Valetta, Malta to reach him by July 15. First prize is a trophy, diploma and one week's free stay in Malta for two people.

On June 8, 1600–2400 GMT, there is the 1,296 MHz contest and on the following day, 0900–1700, the 432 MHz event. Both are two section affairs; Fixed and All-other, with radial ring scoring. On June 16, from 0900–2000, the various Microwave *Cumulatives* are scheduled, the bands being 3.4, 10 and 24 GHz.

On Saturday June 22 the *AGCW-DL* CW contest takes place on 144 MHz. The rules are the same as for the earlier 432 MHz event — see page 10 in the March issue. Entries go to Edmund Ramm, DK3UZ, P.O. Box 38, D-2358 Kaltenkirchen, German Federal Republic, postmarked no later than July 31. *Worked All Britain* devotees have their VHF contests on June 23. The QRP section is from 1000 to 1200, and the QRO part from 1400 to 2100. For the rules and logsheets, send an *s.a.e.* to G4EOF at 7 Ashfield Road, Market Harborough, Leics.

Satellite News

The latest *UoSAT Bulletin* to hand is no. 124 dated May 3. These weekly bulletins usually run to five or six pages, regular features including the latest *Keplerian Elements* for the Soviet *RS-5*, 7 and 8 satellites, the *UO-9* and *UO-11* research ones, *Oscar-10* and *NOAA-6*, 7 and 9. The main purport is to carry the latest news of experiments with *UO-9* and *UO-11*.

From April 15, a new operating schedule for *O-10* was initiated which is;—Mean Anomaly 032 Mode B; MA 120 Mode L; MA 138 Mode B; MA 201 Off. If feasible, news bulletins are transmitted through *O-10* on Sundays aimed at *IARU* Region 1. Currently these are at somewhat

unsocial hours, viz:—June 2 0600 (181/18); June 16 0800 (225/6); June 23 0130 (145/17) and July 7 0530 (205/11). The figures in parentheses are the azimuths and elevations in degrees from the London area. No broadcasts are scheduled for June 9 and 30. Reception reports are welcomed and should be sent to *AMSAT-UK* at London E12 5EQ.

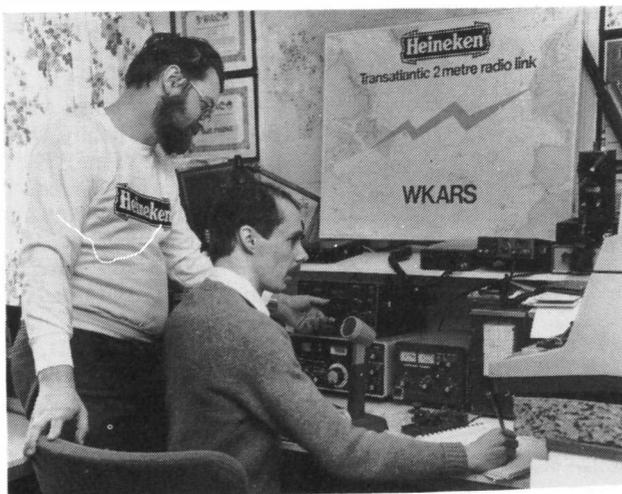
Bob Doran, G4VRC, from Chilworth in Surrey, is a new contributor and keen satellite user who currently receives good signals from *UO-9* and *UO-11*. He uses either an *FDK* Multi-750E on 2m. or 70cm. or a *Yaesu* FRG 7700 Rx with a *Microwave Modules* 2/10m. converter and *Timestep* BF981 preamp. He uses an *ICS Electronics* RM-1 radio modem feed into a *BBC* computer. Telemetry from *UO-11* is displayed in engineering units using the G4GPQ Real Time Decoder software from *AMSAT-UK*. Bob is building the G3RUH UoSAT Decoder using the PCB from *AMSAT-UK*. He is replacing his antennas with an *M.E.T.* 17XY for 70 cms. and a 6XY for 2m. and a *muTek* SBLA-144e masthead preamp. will be installed too.

Your scribe attended the A.G.M. of *AMSAT-UK* on April 20 in London along with about 30 other members. In his address, the Chairman outlined the Committee's decisions concerning the administration of the Society, with particular reference to the work of the Secretary. This was now on a more businesslike basis taking into account the wear-and-tear on the G3AAQ household.

Ron Broadbent, G3AAQ, gave some figures relating to his job which, in 1984, totalled 1,243½ hours on *AMSAT* business. About 1,500 letters had been written and a further 1,000 notes scribbled, plus over 20,000 items franked and mailed. His wife Beryl had made 15,000 entries on 102 pages of ledgers and dealt with an average of ten telephone calls a day.

The Treasurer's report revealed a healthy financial state and there was some discussion what to do with the surplus funds and of the organisation's liability to various forms of taxation. Richard Limebear, G3RWL, the *AMSAT-UK* Communications Officer, produced the result of a recent *Oscar News* survey in which members voted on what should be done, if anything, about building our own satellite. The results were not very clear and unhelped by several printer's errors in *O/N* No. 52. 301 people returned the questionnaire of whom only six suggested nothing be done.

The new Committee was re-elected *en-bloc* from the previous one with one vacancy to be filled by its co-opting someone. There was some inconclusive discussion about granting honorary life membership to Trevor Stockill, G4GPQ, and John Branegan, GM4IHJ, following a proposal by Jack Ward, G4JJ. This



Heineken lager is to sponsor West Kent Amateur Radio Society's attempt to make the first-ever direct transatlantic QSO on two-metres, and to assist by refreshing those parts that others cannot reach. Pictured here are Dave Green, G4OTV (left) and Nigel Peacock, G4KIU, two members of the group which will travel to western Ireland in August to establish a station 1500 feet up a Galway mountainside. Transmission will be entirely over the sea to the east coast of America and Canada, using high power to four stacked and bayed long Yagis. Skeds have already been arranged with several groups across the Atlantic, with round-the-clock operation from 19th to 30th August; modes will be CW, AMTOR and SSB, with HF talkback to assist the attempt.

suggestion was made as some tangible recognition of the work both had done on computer programs made available to *AMSAT-UK*.

Sporadic E 1984

Mike Morrissey, G6TUH, had a telephone call from YU6ZA who said he had received QSL cards from G stations for *Es* QSOs on 6/8/84. YU6ZA requests we inform readers that he did *not* work any Gs in this opening so either his call was being pirated or, more likely misread.

Four and Six Metres

Ken Osborne, G4IGO, (Somerset) says that *Es* propagation on 50 MHz started on Apr. 29. Michael George-Powell, G3NNO, (N. Yorks.) has written after a lapse of about ten years and is one of the 6m. permit holders. He reports on the *Aurora* on Apr. 21 from notes made off a tape recording between 0033 and 0250 GMT. G13RXV was the first station heard at 43A with the beam south. The *Ars* signals peaked at QTE 300° for best reception of GB3SIX in Anglesey. The GB3NHQ beacon was also copied reaching S7 around 0149. Although George called "CQ" many times on 50.1 MHz, no QSOs took place, nor were any other QSOs heard.

The following reports all refer to 4m. starting with Kev Archer, G4CMZ, (Derby) who has added another five counties, best DX being Oxfordshire. Terry Hackwill, G4MUT, (Berks.) has been monitoring 70.425 and 70.45 MHz

for *Es* indications but up to May 6 he had not heard anything from eastern Europe. He had a 20m. QSO with 5B4JE who said there was no 4m. activity in Cyprus at present, but that the 4m. and 6m. beacons are operating.

Roger Greengrass, G4NRG, (Essex) took part in the Apr. 21 contest but was unable to work further north than Nottinghamshire. Afterwards, he had a couple of QSOs in the *Ar*. These were GM4DIJ (YP) on CW at 1545 and GM4IGS (XP) on SSB at 1623. Jerry Russell, G4SEU, (Warks.) now has 38 counties worked and is finding it difficult to work new ones. G4WND/P in Dorset was an all-time new one on Apr. 7 and in the contest he found G4CAX (Cheshire) and G4IIL/A (E. Sussex). Other additions were G4IAL (Gtr. Mchstr.) with G4EGU, G4NBS, G4ASR and G6NB being worked for the first time. Jerry is looking for stations in the Isle of Wight and Wiltshire.

Martyn Jones, G4TIF, (Warks.) added G4DDC/P (Beds.), G4ZAP (Derbys.), G4FRE/P (Suffolk), G3PMH/P (Cams.) and GW4MGR/P (Clwyd) in the contest, all on SSB. John Lemay, G4ZTR, (Essex) has given more details of a trip to Wales accompanied by G4VIX, G8HGN, G8URI and GW4ZVQ, scheduled for July 25 to August 1. The group plan to operate from a site near Conwy in Gwynedd for county chasers. They are not keen to make lots of skeds but for those really needing the county on 4m. or on 2m., 70cm. and 23cm., both John and G4VIX are QTHR and, on receipt of

| Station | ANNUAL CW LADDER | | | | Points |
|---------|------------------|-----|------|------------|--------|
| | 4m. | 2m. | 70cm | μ Wave | |
| G4TWD | — | 285 | — | — | 285 |
| G4WHZ | — | 208 | 21 | — | 229 |
| G4SFY | — | 206 | — | — | 206 |
| G3GHY | — | 166 | 11 | — | 177 |
| G4UKM | 6 | 157 | 14 | — | 177 |
| GW4TTU | — | — | 106 | 29 | 135 |
| G4VXE | — | 127 | 7 | — | 134 |
| G4ARI | 7 | 118 | — | — | 125 |
| G4ZTR | — | 111 | — | 8 | 119 |
| G4WGY | — | 110 | — | — | 110 |
| GW4VVX | — | 79 | — | — | 79 |
| G4YIR | — | 75 | — | — | 75 |
| G4EZA | — | 70 | — | — | 70 |
| GM4CXP | 3 | 38 | 1 | — | 42 |
| G2DHF | 5 | 31 | 1 | — | 37 |
| G4CMZ | 15 | 11 | — | — | 26 |
| GW4HBK | 24 | — | — | — | 24 |
| G8VFN | — | 22 | — | — | 22 |
| G4LVE | — | 13 | — | — | 13 |
| G6VMQ | — | 8 | — | — | 8 |

No. of different stations worked since Jan. 1.

an *s.a.e.* will send details of times, frequencies and calls.

Jerry Lefever, GM4CAZ, writes that he is QRV on 4m. from IO85KV in the Lothians region. He can always copy the Buxton beacon and anyone wanting a sked can telephone him on 031-664 3891. In the Apr. 21 contest, Roy Webb, GW3CBY (W. Glam.) had 14 QSOs with 13 counties. He has been a reader for about 40 years and sent the cover of our December 1946 Magazine to prove it. Dave Lewis, GW4HBK (Gwent) noted *Ar* sounding signals at the start of the contest for the first hour which made SSB signals difficult to read. However, no *Auroral* reports were given.

Two Metres

First the new contributors. Joe Brincat, 9HICG, who has joined the 144 MHz QTHCC, has worked 257 squares including some "wet" ones in the Mediterranean. HG1YI/MM operates from a cargo ship in the Med. and into the Black Sea and in early April, Joe worked Gyula when he was in JM83 (IT) and JM84 (IU). I7OXH/MM has provided 9HICG with several other wet squares.

Dick Pascoe, G1DGO, from Folkestone in Kent has, "... been and avid reader ... for nearly three years ..." and was first licensed on Feb. 3, 1984. He uses a *Yaesu* FT-290R with external preamp. on receive and a single 4CX250B amplifier. The antenna is two 8-ele. *Yagis* 15m. *a.g.l.* the QTH being in the middle of the town backed by 300ft. of chalk. Best DX to date was Malta last June.

Mark Page, G1EGC, (Bucks.) runs two stations, the one at home comprising a *Yaesu* FT-221R with *muTek* modification, the antenna being a home made 12-ele. *ZL-Special* at 6ft. in the shack. This Great Missenden QTH is 170m. *a.s.l.* but operation is restricted till after midnight due to BCI problems. The other station is at his school in Amersham where he runs about 300w to a 19-ele. *MET Yagi* at 30ft. *a.g.l.* The site is 140m. *a.s.l.* In the contest on May 4/5 he worked

Germans in DJ, DK and EL and F1KSL in CI.

F. A. Denney, G4LVE, from Clacton-on-Sea, Essex is retired and gets a lot of pleasure from the hobby. He only operates on 2m. with a *Yaesu* FT-290R and 50w MM amplifier for CW and SSB, and an *FDK* 700EX for FM. Antennas are a five-eighths ground plane at 35ft. and a 9-ele. *Tonna Yagi* at 26ft. presently vertically polarised but to be turned horizontal any time.

Dick Phipps, G4TWD, from Sellindge in Kent is a CW fan and goes right to the top of the ladder with 285 worked this year, but he did not give any station and QTH details. He mentions the deep fading which has been so noticeable on many signals lately. Joe Singleton, G4WJR, from Skelmersdale, Lancs., runs a *Yaesu* FT-480R, a 100w amplifier and a 9-ele. crossed *Yagi* at 45ft. On Apr. 30, he worked GU2FRO in Sark, a rather rare county. Joe is very active in the WAB programme from SD40.

Graham Ratcliffe, G6WZO, from Ainsdale in Merseyside, has been reading this piece for some years. A student at Leeds University, operating from home is restricted to the holidays. At home he uses a *Yaesu* FT-290R with a 12-ele. *ZL-Special* antenna. A small amplifier is under construction. His QTH at YN35b is at sea level.

Mike Huggins, G6XRK, from Harold Wood in Essex is back on the band after seven months and remarks how crowded the SSB section is now. He uses an *Icom* IC-251E with *muTek* "front end," the antenna being a 17-ele. *Tonna Yagi* about 35ft. *a.g.l.* fed with *Pope* H-100 cable. Since Aug. 1983, he has worked 78 squares and 19 countries. C. Jones, GW1JCB, lives in Barry, S. Glam. and is a keen county and WAB square hunter. On Apr. 27 and 28, with an SWL friend, he went 2,700ft. up Pen y Fan in the Brecon Beacons in Powys to activate SO02. 50 new WAB squares were worked. Gales and snow forced them off the mountain a couple of times and they plan to go there again.

Now for reports from regular contributors starting with David Whitaker from N. Yorks. who heard a number of ON, F, PA and DL stations in the European contest on May 4/5. He asks if there are any "warning nets" for tropo. and *Es* openings. If so, he would like to know about them. His telephone no. is 0423 879084. Eamonn Gilmartin, EI8EF, from Donegal (VO49a) has written to report the band having been very poor for a long time. He missed the *Ar* events on Apr. 9 and 21 and they are usually quite good from there. Looking ahead to the *Perseids* shower in August, he will not be taking any skeds by letter but will occupy 144.443 MHz for random SSB QSOs from 0600 on the 12th through 0100 on the 13th. He will listen on 14.345 MHz for short skeds.

Steve Green, G1INK, (Worcs.) found a slight lift on Apr. 22 in spite of low pressure, and DL3YCV/P (EN) was a new square. He is looking forward to the *Es* season and has 200w available. Bob Nixon, G1KDF, (Lancs.) worked GM4RQI/P on Apr. 15 when they were in YU square on the island of Foula. GI4SXV in Co. Tyrone was a new one. In the Apr. 21 afternoon *Ar*, Bob worked GM4LER (ZU) and GM1JXV (XR) and others were heard working into SM and SP. He missed the early morning *Ar* though. Just before the start of the contest on May 4 he worked GM4YPZ (Grampian) and just after it the next day, GI4OWA (Londonderry). Best contest DX was PA0GUS/P (JO23).

George Haylock, G2DHF, (Kent) recently visited the Channel Islands and took a small handheld FM transceiver. He made 32 QSOs each from Guernsey and Jersey and met about a dozen amateurs at each club station. He took the same transceiver to the Derbyshire hills and made his first contacts through various repeaters, singling out the Leicester relay

"VHF Bands" deadlines for the next three months:

July issue—June 5th
August issue—July 3rd
September issue—August 7th

Please be sure to note these dates.

GB3CF (R0) as a particularly well organised one. The transceiver was a *Lowe* LS-202E running 1½w.

As last year at the peak of the *Eta Aquarids* meteor shower, some fleeting long distance contacts were reported. During the May 4/5 weekend, John Hunter, G3IMV, (Bucks.) worked I5HBQ in the contest. At 1004 on the 5th, he gave LZ1AG a 569 report but the QSO was not completed, likewise I6JKW at 1007. He also got bursts from DL9NN (IH), OK3BMN and YU4GJK/4. G1EGC also heard YU2?C (JN85) on 144.280 MHz at 1007. (Might have been YU2HCD/P. Ed).

Dave sellars, G3PBV, (Devon) discovered the Apr. 9 *Ar* at 1525 but the only station heard till 1550 was GM4IPK. Then the usual northern Gs and GMs were heard and GM4UFD (ZR) was worked at 1625 on CW for a new square. No continentals were heard but Dave reports that GM4UFD worked OH1AWW (KP10), OH2TI (KP20), Y23SB and some SMs, LAs and DLs. He missed the early morning *Ar* on the 21st but caught the second phase at 1455 when again GM4IPK was the first station heard.

Bob Matthews, G3ZNZ, (N. Humberside) specialises in European

awards, it seems. He has over 2,000 confirmed contacts with German stations on 2m. and has the *DARC's* DLD VHF (500) certificate with 600 sticker. He has recently achieved the *V.E.R.O.N.* PAMC award for confirmed QSOs with 1,000 Dutch stations on VHF, the first British station to qualify.

Colin Smith, G3GHY, (Hants.) added 57 new CW stations to his Ladder total in April including a couple of Class B folk and some Frenchmen. G4CMZ has made a simple half-watt CW rig using a VXO circuit which tunes +/- 15 kHz around the calling frequency. The total cost, including the Rx converter, was about £10 and Kev says, "I've had more pleasure than I've had for years with ham radio."

Paul Whotton, G4DCV, (Kent) found the *Lyrids* meteor shower very lacking in activity. The general consensus is that it was rather a non-event this year with some devotees reckoning they do better *via* random meteors. He made only one completed QSO with YU6VHF (JB) on CW on the 20th. In the Apr. 9 *Ar*, Paul worked GM3JJI (WS) on SSB and RQ2GAG (KO26AB) on CW, this station being worked again on the 21st along with GMs, OZ, etc. The 18th brought EI5EM (WN49d) on CW tropo.

Ken Osborne, G4IGO, (Somerset) operated in the Apr. 9 *Ar* working GMs on CW in XP, YP, YQ and YR between 1527 and 1639, QTE being 30°. On the 21st, 1455-1841, three worked in YP and ZP with other GMs, etc., heard. This time the QTEs were 30-35° and 55-60°. Ken heard YU2HCD/2 calling "CQ" several times on May 5 in the contest. G4SEU's most difficult annual table addition was G4WND/P in Somerset on Apr. 21 who was running 2½w to a halo.

Ray Baker, G4SFY, (Norfolk) was one of the few who discovered the first *Ar* on Apr. 21 when he switched on at 0010. His CW QSOs were LA5DW (CT), LA6QBA, LA8JF and LA8SJ in FT, LA6VBA (ES), LA8OW (EU), SM5MIX (HS), SM5BEI (JU), SM5CPD (IT), SM4KYN (HT), SM6CMU (FR) and OZ1FTU (GP) plus many GMs. The got-away was OH2FX and by 0247 all stations heard had been worked. Ray caught the next one at 1435 and worked four GMs, SM5GLC (HS) and OZ1GMP (FQ), the event over by about 1710. He reports poor conditions in the May 4/5 contest. On MS on May 3, YU3TS (HF) was worked in 105 mins., 3p, 4b 7 secs., and on the 4th, EA1OD (XD) in 2 hrs., 53p, 5b. 5 secs. Other skeds with EB5EHX, SM2LTA, YU7EW, were not completed and nothing was heard from OH7MA.

G4TIF did not complete QSOs with PA2GFL/MM (BN) on Apr. 16 due to QSB, or with EI8EF (VO) on May 3; very frustrating. Mini Page, G4UKM, (Bucks.) added another 36 CW stations to her ladder total and is pleased to hear many G0s on the mode. Her station uses a *Trio*

ANNUAL VHF/UHF TABLE

January to December 1985

| Station | FOUR METRES | | TWO METRES | | 70 CENTIMETRES | | 23 CENTIMETRES | | TOTAL Points |
|---------|-------------|-----------|------------|-----------|----------------|-----------|----------------|---|--------------|
| | Countries | Countries | Countries | Countries | Countries | Countries | Countries | | |
| GW4TTU | — | — | 83 | 19 | 55 | 8 | 23 | 5 | 193 |
| G1KDF | — | — | 79 | 11 | 37 | 7 | — | — | 134 |
| G4TIF | 15 | 2 | 59 | 10 | 39 | 6 | — | — | 131 |
| G4YCD | — | — | 72 | 15 | 28 | 3 | — | — | 118 |
| G4SEU | 38 | 2 | 48 | 6 | 17 | 3 | — | — | 114 |
| G6MGL | — | — | 41 | 9 | 33 | 4 | 17 | 4 | 108 |
| G6ZPN | — | — | 51 | 10 | 40 | 6 | — | — | 107 |
| G6XLL | — | — | 61 | 12 | 21 | 3 | — | — | 97 |
| G4MUT | 24 | 2 | 33 | 8 | 25 | 4 | 9 | 2 | 96 |
| G4WXX | — | — | 79 | 14 | — | — | — | — | 93 |
| G6HKM | — | — | 44 | 9 | 26 | 6 | — | — | 85 |
| G4VXE | — | — | 47 | 5 | 28 | 3 | — | — | 83 |
| G3FPK | — | — | 69 | 14 | — | — | — | — | 83 |
| G6ECM | — | — | 68 | 11 | — | — | — | — | 79 |
| GI1NK | — | — | 31 | 7 | 34 | 6 | — | — | 78 |
| GW3CBY | 14 | 2 | 40 | 7 | 8 | 2 | 2 | 1 | 73 |
| G6XVV | — | — | 32 | 7 | 28 | 4 | — | — | 71 |
| G4ARI | 16 | 1 | 47 | 7 | — | — | — | — | 71 |
| G1EZF | — | — | 37 | 13 | 9 | 2 | — | — | 61 |
| GM4CXP | 5 | 2 | 34 | 10 | 6 | 2 | — | — | 59 |
| GW6OFI | — | — | 51 | 7 | — | — | — | — | 58 |
| G8XTJ | — | — | 44 | 9 | — | — | — | — | 53 |
| GW1JCB | — | — | 46 | 6 | — | — | — | — | 52 |
| G4WHZ | — | — | 38 | 7 | 4 | 1 | — | — | 50 |
| G4YIR | — | — | 41 | 9 | — | — | — | — | 50 |
| G6XSU | — | — | 23 | 8 | 14 | 3 | — | — | 48 |
| G1EGC | — | — | 37 | 10 | — | — | — | — | 47 |
| G6AJE | — | — | 19 | 3 | 23 | 1 | — | — | 46 |
| G4WJR | — | — | 39 | 7 | — | — | — | — | 46 |
| GW6VZW | — | — | 39 | 7 | — | — | — | — | 46 |
| G6WZO | — | — | 4 | 1 | 25 | 3 | 8 | 2 | 43 |
| G8VJV | — | — | 37 | 5 | — | — | — | — | 42 |
| G4EZA | — | — | 35 | 5 | — | — | — | — | 40 |
| G2DHW | 5 | 1 | 22 | 4 | 2 | 1 | — | — | 35 |
| GW4HBK | 27 | 2 | — | — | — | — | — | — | 29 |
| GW4VVX | — | — | 25 | 3 | — | — | — | — | 28 |
| G4CMZ | 18 | 2 | 3 | 1 | — | — | — | — | 24 |
| G1DGO | — | — | 15 | 7 | — | — | — | — | 22 |
| G4WND | 20 | 2 | — | — | — | — | — | — | 22 |
| G8PNN | — | — | — | — | — | — | 12 | 2 | 14 |
| G1LAS | — | — | 12 | 1 | — | — | — | — | 13 |
| G6CSY | — | — | 5 | 1 | 5 | 1 | — | — | 12 |
| G6SIS | — | — | 4 | 2 | — | — | — | — | 6 |

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

TR-9000 and 9-ele. *Yagi*. Tim Kirby, G4VXE, (Gloucs.) staged a mini DX-pedition to Cornwall (XK) over the Easter holiday the first two days of which provided a good number of QSOs. At Moon rise on Apr. 6, SM2GGF was copied on CW and later SSB. The trip was abandoned because a storm with 80 m.p.h. winds wrote off GW4TTU's tent. The other members of the group were Chris, G8TFI and Jon, GW4LXO. In the *Ar* in the afternoon of the 21st, Tim worked lots of GMs, best DX being GM4ILS (YR).

Sue Frost, G4WGY, (London) just missed last month's deadline and is now up to 110 stations on CW this year. She mentioned that a "CQ" call on 144.050 MHz was answered by a Class B operator. Here the problem is that they must identify by voice and the *RSGB's* operating code of practice suggests this puts the exclusive CW section out of bounds. This was commented upon in the *Morse For All* paragraphs last month. Several readers have asked if CW contacts with Class B licensees count for the ladder totals. Provided call signs and reports are properly exchanged on CW, why not? Dave Cater, G4WHZ, (Essex) is a keen ladder participant and he picks out EI4GA on Apr. 18 as a nice one, also worked on SSB.

Jack Charnock, G4WXX, (near Wigan) reckons April to have been a pretty fair month. In the Apr. 9 *Ar*, five GMs were worked, best DX being GM6LXN in Highlands. He missed the start of the Apr. 21 affair which faded at 0300 to reappear at 0430. He got SM4GVF (JO79), and LA8OW (JP40) on CW, and OZ1JKY (JO46), GM4UPL (IO77) and GM6WQC on SSB. At 0550, GM3JJI (W. Isles) was worked before fade-out at 0615. Jack's tropo. successes include G14SXV, GW1JCB, EI7BJB (Kildare), EI8EF and GM1IHD/P (Orkneys).

Martin Lowe, G4YCD, (Avon) worked GM3JJI in an *Ar* on Apr. 1. The 12-15th period saw good conditions to the north with GI, GD and GM worked, while the east/west path was good around the 18th, with GI/EI worked. He had his first MS QSO on SSB with Y22ME on May 5 which was completed in 6½ mins. Dave Dibley, G4RGK, (Bucks.) reports MS successes with OE3JPC (II) on Apr. 8 and with YU7QFH (KF) on the 20th, but nothing heard from YO5AUV (LH) on the 21st.

June Charles, G4YIR, (Essex) has recently added G4FDX/LX and GU4ZEC/M to her countries total and added 16 more stations in April to her CW score. Mick Cuckoo, G6ECM, (Kent) caught a bit of the Apr. 21 *Ar* with

GM6LNM and GM8MBP worked. Other tropo. QSOs included G4FDX/LX/P, EI2CA (WM) and EI3BA (WN). Ela Martyr, G6HKM, worked the same GMS and GM1BLC/P (XQ) in this *Ar*, her first such contacts. In the *Barking* club's contest, she made 91 QSOs with 33 multipliers.

Richard Mason's G6HKS, (Norfolk) station now comprises a *Yaesu* FT-290R with BF981 and 250w to a 9-ele. *F9FT*. On Apr. 5, he worked G4PCS/LX (CJ) and on the 7th, GM6WIX/P (YP), EI9FK/P (WN) and GM4RQI/A (YR). In the Apr. 9 *Ar*, he lists GI, GMS and OZ1OSK (EQ). Dave Ackrill, G6VMQ, (Birmingham) uses his licence variation and has been working some CW around 144.155 MHz. He hears all the activity in the exclusive CW part so wonders if a friendly Class A licensee could act as a "catcher" to get them out of the exclusive part? He uses a *FT-290R* with 25w to a full size G5RV or a "Slim Jim" antenna.

DL4VB has been operating from GD a lot and Colin Morris, G6ZPN, (W. Midlands) was one who worked Wolf on May 4. Neil Clarke, G8VFF, (W. Yorks.) has been brass-pounding and managed to work some GMS on this mode in the Apr. 21 afternoon *Ar*. Up to May 1, he had had 27 CW QSOs with 22 different stations.

Andy Steven, GM4IPK, (Edinburgh) sent a lengthy account of his activities from Feb. 2 to Apr. 15 before the big *Ar* events on Apr. 21. His station now comprises an *Icom* IC-251E with MGF1200 preamp., 3CX800 PA and four 16-ele. *F9FT* antennas with LDF4-50 feeder from power splitter to the PA and separate RG213U from the preamp. His main interest now is *E-M-E* and in the contest, March 30/31, he worked 20 stations including KH6HI, KG6DX and ZS6ALE.

Andy takes full advantage of any *Ar*, however weak, and has sent a *NAG* amplifier to Jon Dam, OY9JD, so that they can explore this mode of propagation more fully. During several *Ar* events, GM4IPK beams due north and OY9JD at 35° but some inexplicable effects have been recorded just before *Ar* proper fade-out. Andy sent a tape recording of Jon's SSB signal which is fascinating to hear. There is much to understand about *Ar* propagation between stations in the very northern latitudes. OY9JD worked UA1ZCL (RC) *via Auroral Es* on Feb. 28, Andy reports.

Another keen *Ar* operator further north than Andy is John Eden, GM6LXN, (IO88HP) whose reports always make interesting reading. In the Apr. 9 event, his QTE was 25-30° and between 1415 and 1630, 31 QSOs were made with G, GI, GM, PE, LA, SM and D stations. John reckons that SK4MPI (HU46d) is now QRV again; it was S7A. In the afternoon event on Apr. 21, the QTE was 25 to 50° and between 1500 and 1700, 19 QSOs were

made with G, LA, OZ, PA and SM stations. OY9JD was *Auroral* all around the compass, but was best when beamed at directly. Jon mentioned a green *Aurora* visible in the Faroes earlier in the day.

Kelvin Weaver, GW4TTU, (Gwent) lists OT7EF (BL) on Apr. 4, G6TRC and G0AJZ in Cleveland on the 12th, F1GXB (XI) on the 16th, and a number of F, ON, D and PAs in the May 4/5 contest. On MS, he completed with OE3JPC (II) on CW on Apr. 20, but not with SM2LTA or 9H1CD on May 5. *Via* the Moon, he has heard SM2GGF, DL8DAT, YU3WV, KH6HI and SM7BAE. He was also QRV for the Apr. 9 and 21 *Ar* affairs. Clive O'Hennessy, GW4VVX, (Gwent) is bedevilled with hash from an *Acorn* computer 60 yards away. While a *BBC* micro was successfully cured by the insertion of a highpass filter in the lead between it and the TV set, the *Acorn* did not respond as its case was radiating. He is also getting 90 secs. bursts of QRM from a nearby central heating system, hardly the scenario for serious low signal DX-ing. However, he did manage to work 22 more CW stations through these noises.

Ian Morgan, GW6OFI, (Gwent) just caught the last hour of the Apr. 21 *Ar* when GM1BLC/P (XQ) gave a new square and county. His two 10-ele. *Yagis* have been replaced by a single 16-ele. *Tonna* due to severe weather conditions. Paul Baker's, GW6VZW, *Trio* TR-9130 had developed a PA fault, so he was off the air for a while, but GJ and ON were new countries for the table.

Seventy Centimetres

Best DX heard in the May 4/5 contest for David Whitaker in Harrogate was FC1KAW/P calling "CQ" with no takers. Stations in AK square, north and south Wales were also copied. G1INK added DJ9BV (JO43) and DL2KBB (JO30) for new squares on Apr. 22. Steve found the contest "uninspiring" his best DX being DF1VW (JN39) at 709 kms. and a new square. G1KDF is looking for new contacts on 70cm. Bob worked the Cornish portables G4VXE/P and G8TFI/P on Apr. 6. In Ireland, EI3BA (Dublin) and EI8EF have been worked, while EI7BJB (Louth) and EI9ED (Meath) are QRV. His best contest DX was FC1KAW/P (JO00).

G4DCV is suffering worse-than-ever *Syledis* QRM from his local beast which is only a mile away on the cliffs. From Nuneaton, G4SEU worked GD8EXI for the first time, other new ones being G8TFI/P, G8AGU/P (Devon), G4VXE, G3YXZ (Herts.) and G8YDG (Salop). G4TIF highlights FC1KAW/P, GM8TSI/P (Fife) and G4THB/P (N. Yorks.) on May 4, and G8TFI/P on Apr. 5. G4VXE finds activity nights — Mondays — to be good and he works G1HGJ (ZP) each week. On Apr. 18, Tim worked G14OPH (XO) for an all-time new

one. On the 22nd, G1EZF (Leeds) who was using 3w, was worked.

Don Palmer, G6CMV, (Worcs.) has 53 squares worked but only runs 10w on the band. G6HKS uses a *Yaesu* FT-790R at 3w to a 21-ele. *F9FT* antenna and on Apr. 6, G4TTU/P (XK) and G1ENX (YM) were new squares. G6WZO also runs an *FT-790R* but with a 30w *MM* amplifier. Graham has built a single 4CX250B amplifier and tested it, but the PSU is yet to be completed. G6ZPN added G14OPH on Apr. 28 and G4TTU/P in Cornwall on the 5th.

April brought some nice DX for GW4TTU including GU2FRO on the 25th and G1HGJ (Tyne & Wear) on the 29th. In the May contest, Kelvin worked GM8TSI/P (YQ) on the 4th, the next day bringing F, ON and PE stations. On the 8th, G4CJG in Durham was contacted.

The Microwaves

G2DHV has been out portable with 3cm. gear near Tatsfield in Surrey and further activity on wideband FM is contemplated. G4MUT is now QRV on 23cm. with an *MM* transverter, 23-ele. *Tonna* through 15m. of *H-100* coax. G4ZTR reports contest conditions as awful and John's best DX on 23cm. was G4JKN/P in N. Devon and G4HWA/P in N. Yorks. G6CMV runs 2w on 23cm. and hopes to be on 13cm. this year. G6WZO uses an *FT-290R*, *MM Gasfet* transverter with 2w to a 23-ele. *Tonna Yagi*.

Gordon Emmerson, G8PNN, (Northumberland) listed his 23cm. QSOs for the year, and is now up to 18 squares, 13 counties and six countries on 13cm. Don Hughes, G8WPL, from Stockport has a 2C39 PA going on 23cm. and is on most afternoons 1530-1630 GMT and on Tuesday nights 1830-2000. He is looking for skeds before 1900 and for GM. He says that G14OPH and G14CXH are on the band. In the May contest, GW4TTU worked W. Glam. at last, GW3NAT/P, plus G3OHM/P (Here. & Worcs.), G4MAW (Devon), G4LIP/P (Lincs./AN) and PE0MAR/P (CL).

GW3CBY would like us to run a separate *Microwave Commentary* for part of the year, concentrating on 23cm. and including lists of stations active and their gear. The problem is space, OM. This month, the Squares Table is not included due to lack of it, for example.

Sign Off

Thanks for all your news and views and apologies for not mentioning more. The deadlines for the coming months are in the box, so please make a note of them. All your news, etc., to:— "VHF Bands", SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts. AL6 9EQ. 73 *de G3FPK*.

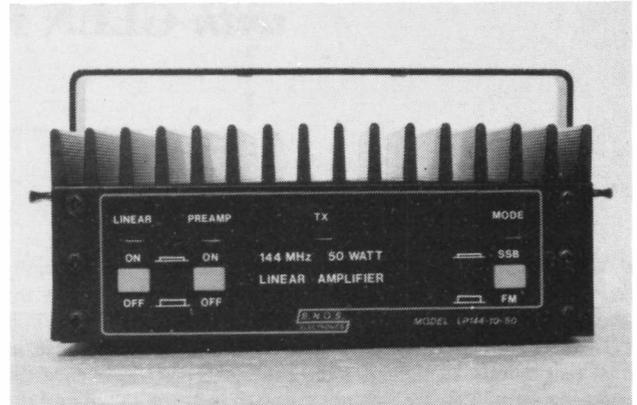
CONTEMPORARY BRIEFS . . .

Antennas

SATELLITE users have more exacting antenna needs than those only interested in terrestrial communications. While most satellite enthusiasts prefer to communicate through transponders on Oscar-10 for instance, a growing number is using the two UoSAT orbiters to receive all the diverse data they constantly send out. Others want to receive the weather map images from the TIROS and NOAA satellites. A proper antenna system is essential for satisfactory reception and Messrs. Halbar have sent a leaflet describing two models. The first is designed for use in the 145.8–146.0 MHz amateur satellite allocation and is identified as *I.T/u*. The second, type *I.T/tn* is designed for 137.5 and 137.62 MHz reception.

Both models consist of crossed dipoles with crossed reflector elements underneath, “. . . to increase the gain and upwards directivity of the aerial,” to quote from the leaflet. The necessary phasing harness is incorporated to provide left-hand circular polarisation for the UoSAT band and right-hand circular polarisation for the TIROS/NOAA satellites version. The cost of either antenna is £19.50 including U.K. VAT, plus £2.50 for postage and packing. A mounting bracket is not included. For details, contact Mr C. P. Meadows, G4KWH, at Halbar, Unit 1, Bury Walk, Bedford, MK41 0DU. The telephone number is Bedford (0234) 44720.

AERIALTECH is the brand name given to a comprehensive range of VHF antennas manufactured by Weston Developments from Hampshire, covering the range 28-180 MHz. In addition to products for the amateur 10, 6, 4 and 2 metre bands, antennas are listed for the 47-68 MHz TV band, the 63-73 MHz East European FM band, the 117-138 MHz air band, the weather satellite frequencies and the 156-164 MHz marine band. All elements are made from 16 gauge, half-inch diameter



B.N.O.S. Electronics Ltd. announce the addition of two 50-watt r.m.s. output models to their wide range of two-metre amateur band Linear Amplifiers. The LP144-3-50 and LP144-10-50 are 3-watt and 10-watt input versions respectively, and feature B.N.O.S.'s switchable low-noise preamplifier as well as the usual PTT or VOX switching. BNC sockets provide compatibility with the latest 3-watt transceivers, and the standard mobile mount allows versatility for shack or car use. Each unit retails at £108.00 inc. VAT.

seamless hard drawn alloy tube and the booms are one inch diameter. All open ends are plastic plugged and elements cut for 50 MHz and below are damped to counteract self resonance which might otherwise lead to metal fatigue failure. Boom mounting clamps are provided and all steel hardware is bright zinc plated.

The company also stocks the popular Revcone discone antennas including an up-dated version covering 47-470 MHz. Other items in the catalogue include antenna transformers, combining filters and stub filters. For full details of the *Aerialtech* antenna range, write to Mr Roger Bunney, G8ZMM, Weston Developments, 33 Cherville Street, Romsey, Hants, SO5 8FB including a foolscap size s.a.e. The telephone number is Romsey (0794) 517497.

Battery Charger

PPETER Rush Associates have sent a press release about a new light-weight battery charger developed by **Avel-Lindberg Limited**. The *Supercharge 3* is a basic 24v, 40A charger weighing only 12kg, about one-fifth the weight of an equivalent 50 Hz type. It can be used as a battery charger with constant current limits adjustable from 10-40A; as a power supply with fold-back current protection of 43A, and as the “front end” of an uninterruptible power supply system. The device operates off 240v AC at about 90% efficiency, voltage stability being better than 0.1v for a 0-40A load change. The dimensions are 430 wide, 126 high and 200 deep in millimetres and the unit is cooled by natural convection. The manufacturer is **Avel-Lindberg Limited, South Ockendon, Essex, RM15 5TD**. Further information from managing director Mr. Rowland Mattin. The telephone number is South Ockendon (0708) 853444 and the Telex code is 897106.

N.A.S.F.



Two new **Davtrend** bench power supplies, models **BP301** and **BP302**, provide continuously variable voltage outputs from 0 to 30 volts and offer adjustable output current limits up to 1 amp and 2 amp respectively. Each supply combines a switch-mode preregulator and a linear regulator to give high efficiency, low noise (1mV r.m.s.) and fast transient response. Designed primarily for laboratory use, the **BP301** costs £77.69 and the **BP302** is priced at £99.23, and both are available either from the manufacturer, **Davtrend Ltd., Sanderson Centre, Lees Lane, Gosport, Hants. PO12 3UL** (tel: Gosport 520141), or from their distributor, **Verospeed, Stanstead Road, Boyatt Wood, Eastleigh, Hants. SO5 4ZY** (tel: 0703-641111).

● ● ● “Practically Yours” ● ● ●

with GLEN ROSS, G8MWR

Noise

ONE of the points of interest to most operators and especially those who are active on the bands above 21 MHz is the amount of noise contributed by the front end of the receiver. This is crucial to the system's ability to receive weak signals because, as must be obvious, if the generated noise exceeds the level of the incoming signal you are just not going to hear the signal and the old maxim 'if you can't hear them you can't work them' is as true now as it ever was. Before delving into the mysteries of noise figure and related topics it is worth mentioning that you should already have your aerial system arranged in such a manner so as to pick up as little locally generated noise as possible. There is little point in having a low noise receiver if all it does is to help you to hear the local thermostats more clearly. The aerial should therefore be mounted as high as possible and the down lead carefully routed to avoid undue noise pick-up.

Signal and Noise

Random noise may be generated outside the system and this is taken care of along the lines already indicated. Below about 21 MHz the largest noise contribution is due to that from galactic sources such as the sun. Connect a resistor having the same value as the normal aerial system across the input to the receiver and check the noise level; now disconnect the resistor and connect the aerial system and the background level should rise considerably, indicating that the limitation on receive sensitivity is due to external noise. If this same test is tried on the average VHF system it will be found that the system is not externally limited.

Noise Sources

All components generate noise due to the random movement of electrons in them due to the effects of heat. If all the equipment could be held at absolute zero (-273°C or 0°K) then you would have no noise problem. Whilst the electrons are moving they tend to collide with the ions that make up the bulk of the material so that the end effect is that there is no regular current in either direction but rather a lot of random pulses constituting what is known as Johnson noise.

As the pulses are of a random nature they produce power over a very wide bandwidth and, if we examine the power which is contained in a given bandwidth, it will be found that the power is constant independent of frequency. This power can be calculated using $p = kTB$, where p is the noise power, k is that old favourite Boltzmann's constant (1.374×10^{-23} joule per degree K), T is the absolute temperature expressed in degrees Kelvin and B is the bandwidth in Hertz.

One from Three

Noise temperature, noise factor and noise figure are all ways of expressing the same thing, with the results presented as temperature, a ratio, or decibels depending on which one you are using. Unfortunately manufacturers of similar equipment all seem to specify in different ways, therefore making it very difficult for the average amateur to compare the probable results.

To convert from noise temperature to noise figure we have, in fact, to go through the step of calculating noise factor which is defined as: the ratio of the total noise power in the output to the

input noise power when the input termination is held at 17 degrees Centigrade.

The Maths

The output noise power is simply the noise power of the input termination when held at 17°C multiplied by the gain of the stage and is expressed, N power input = $GkBT_0$, where G is the gain of the stage and T_0 is 17°C .

The sum of the noise from the termination and the internally generated noise constitutes the total noise power and is expressed as, N total power = $GkBT_0(T_0 + T_e)$, where T_e is the effective input noise temperature.

Another frequently seen term is noise factor, f , and this is calculated as, N power total/N power input.

This equals $\frac{GkBT_0 + GkBT_e}{GkBT_0}$, or $1 + \frac{T_e}{T_0}$

The more usual term, Noise Figure, can then be calculated using

$$\text{NF} = 10\log_{10}f, \text{ or } 10\log_{10}\left(1 + \frac{T_e}{T_0}\right)$$

and is expressed in decibels.

If the noise figure of the device to be used is known then the noise temperature can be calculated using

$$T_e = 290(\text{antilog}(\text{NF}/10) - 1)\text{K}$$

remembering to express the NF in decibels.

Signal-to-Noise Ratio

The noise factor of a system can also be stated as a signal to noise ratio and this is calculated as

$$f = \frac{\text{S/N at input}}{\text{S/N at output}}$$

and the noise figure can then be found from

$$\text{NF} = 10\log_{10}f.$$

There is rather more to the picture than just the first stage of the receiver. All the stages contribute some noise but the later these stages occur in the system the less important the noise performance becomes and in normal usage only the noise contributed by the second stage may be significant. This noise can be virtually overcome by designing sufficient gain into the first stage so as to nullify the effects of second stage noise, and this is the way that most pre-amps are designed. However, there is a price to pay for this and that is that the overload and third order intercepts are degraded in relation to the additional front end gain that is used. It is really a matter of "swings and roundabouts" and in the end a suitable compromise must be reached; on most modern VHF rigs somewhere around 12 to 15dB of gain seems to be about right. Gains of around 20dB may improve the NF dramatically but will do terrible things to the other parameters and usually leads to accusations of nearby signals spreading when in fact most of the problem is in your own receiver system.

CLUBS ROUNDUP

By "Club Secretary"

ONCE again we must look at the goings-on around the clubs — and once again it is time to remind everyone to check the club details and send us a correction if there is anything amiss.

The Mail

A fairly quiet month, but, as usual, lots of indications of thriving clubs — so let's take them in alphabetical order, as always.

We start with **Abergavenny & Nevill Hall** which means Thursday evenings in the room above Male Ward 2 at Pen-y-Fal Hospital, Abergavenny; they also have regular Morse classes at the same venue. Ask the Hon. Sec. for more details.

The **Acton, Brentford & Chiswick** group has to be one of our longest-running regular customers, and still with the same Hon. Sec. They foregather at Chiswick Town Hall, High Road, Chiswick, London W4, on Tuesday June 18; there will be a demonstration of members' equipment on this night, the starting time being 7.30 p.m.

Turning now to **Antrim** we find the locals have been cutting their number of meetings down; so we must refer you to the Hon. Sec. — see Panel for his vital statistics.

At **Bangor** the local lads head for the Royal Hotel in Bangor (this is a recent change of Hq.) on the first Friday of each month.

Every Thursday evening the **Barry** group is to be found in the Annexe to the College of Further Education, at Weycock Cross, Barry.

On to **Basingstoke** now, and the first Monday in each month at Forest Rings Community Centre, Sycamore Way, Winklebury, Basingstoke, at 7.30 p.m. June 3 is down for a talk on antennas by Roy Powers, G8CKN. July will see them preparing for VHF NFD of course, on July 1.

St. Mark's Church Hall, Biggin Hill is home to the **Biggin Hill** club, and on June 18 they have a talk on the performance and measurement of HF equipment, starting at 8.30 p.m.

Notice of change of address for the Hon. Sec. at **Bishops Stortford** as shown in the Panel. The club continue to get together at the British Legion Club in Windhill, Bishops Stortford, on the third Monday in each month. In addition, there is an informal gathering in the saloon bar of the "Nag's Head" pub, on the A120 Dunmow Road, next door to the Golf Club.

B.A.R.T.G. is the club for all the fans of 'mechanised amateur radio' such as RTTY, AMTOR, packet radio and so on. Details from the Hon. Sec. — see Panel. We note that BARTG are prepared to put on a talk if local club secretaries will but ask — contact is Ian Wade, G3NRW, 7 Daubeny Close, Harlington, Dunstable, Beds. LU5 6NF.

Away north now, to **Borders** and here we see they have booked the first and third Friday evening of each month at the Tweed View Hotel, in Berwick-on-Tweed. On June 7 they have a talk on the Royal Observer Corps.

Next stop is at **Bury**, which means every Tuesday evening at Mosses Community Centre, Cecil Street, Bury. The second Tuesday is the main meeting and the others are informals. June's main meeting will be a film show.

For **Cheltenham** the Hq. is at Stanton Room, Charlton Kings Library, Cheltenham. On June 7 they have a talk on moonbounce operation by G4ASR and on 21st there is the natter night.

Every Wednesday evening it is for **Cheshunt**, with the proviso

that on one evening each month in the summer they are out /P on Bass Hill Common, Broxbourne. For June they combine NFD weekend with a barbeque, and on 5th there is a natter. June 12 they are on Bass Hill Common, and on 19th there is another natter; finally on June 26 they have a progress report on the club project. The venue is Church Room, Church Lane, Wormley, near Cheshunt — but as they are on the lookout for a new place, a check with the Hon. Sec. might be in order — see Panel.

Chester are based at Chester Rugby Union Football Club, Hare Lane, Vicars Cross, Chester. The dates are June 11, 18 and 25 — June 18 is a barbecue event for the family.

Now we head for **Chichester** and hence Fernleigh Centre, 40 North Street, Chichester, on the first Tuesday and the third Thursday each month. June 4 will see G5RV giving his talk on wire antennas for HF in the Green Room, and on June 20 they will be considering Goodwood Evening Rally.

The **Colchester** crowd can be found at Colchester Institute, Sheepen Road, on June 13 for a talk on the Danbury repeaters by G4OAD, and again on June 27 for the members' Radio Construction Competition. More details from the Hon. Sec. at the address in the Panel.

There is some extra activity at **Cornish** in June; the normal meeting is on June 6 and is a talk on solid-state transmitters by G3PPT. The extra meeting is on Thursday June 20 and is on meteor scatter and VHF, by G4ASR who will be in the area on holiday then. The Computer Section have a special meeting on June 20; all these are at the Church Hall, Treleigh, on the old Redruth by-pass.

Now to **Coventry** and here the routine is to meet every Friday evening at Baden-Powell House, 121 St. Nicholas Street, Radford, Coventry. On June 7 they have a visit to IBM at Warwick, while June 14 and 28 are nights-on-the-air. That leaves June 21, which is for a Top Band D/F demonstration.

Deadlines for "Clubs" for the next three months —

July issue — May 31st

August issue — June 28th

September issue — July 26th

October issue — August 30th

Please be sure to note these dates!

The informal for June 12 at Crawley is at a member's home, so we suggest you contact the Hon. Sec. if you would like to attend this. The main meeting is on June 26 at Trinity Church Hall, Ifield.

June 15 is the date for the monthly gathering at **Crystal Palace** and at the time of writing the details were still "in the pipeline." The venue is at All Saints Parish Rooms, Upper Norwood; this is at the junction of Beulah Hill and Church Road, opposite the IBA mast, and the routine is 'third Saturday at 8 p.m.'

Next we head for **Dartford Heath D/F** club. For details of the venues of the hunts and of the dates of the gatherings at the "Horse and Groom", Wilmington, we must refer you to the Hon. Sec. — see Panel.

It's a while now since last we heard from **Denby Dale** group; they are still based on the Pie Hall, Denby Dale, and seem to foregather every Wednesday evening. However, you can always double-check with the Hon. Sec. — see Panel.

Next year **Derby** club will be seventy-five years old, and already they are thinking of some sort of a celebration. Meanwhile, find them on the top floor at 119 Green Lane, Derby, as follows: June 5 for a junk sale, and June 12 for a talk entitled "Feeders — the Missing Link?" This will be followed up with a night-on-the-air on 19th, and on June 26 they will have a barbecue at Drum Hill, Little Eaton. There are also noises being made about coach trips to various places.

Names and Addresses of Club Secretaries reporting in this issue:

- ABERGAVERNNEY: J. B. Davies, GW4XQH, 109 Croesonon Parc, Abergavenney, Gwent NP7 6PF. (0873 4655)
- ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London W3 8LB. (01-992 3778)
- ANTRIM: B. Sheepwash, G14KIS, 204 Donore Crescent, Antrim, BT41 1JB.
- BANGOR: S. Mackay, G14OCK, 11 Dellmount Park, Bangor, BT20 4UA. (Bangor 454049)
- BARRY: (Coll. of F/Ed.: Mrs. M. Beynon, GW4GSH, Bungalow No. 1, Racial-Decca Station, Llancarfan, Barry, S. Glamorgan. CF6 9AE.
- B.A.R.T.G.: I. Brothwell, G4EAN, 56 Arnot Hill Road, Arnold, Nottingham NG5 6LQ.
- BASINGSTOKE: D. A. Birleigh, G4WIZ, 14 Winchfield Gardens, Tadley, Basingstoke, Hants. RG26 6TX.
- BIGGIN HILL: I. Mitchell, G4NSD, Greenway Cottage, Tatsfield, Westerham, Kent TN16 2BT. (09598 376)
- BISHOPS STORTFORD: S. Mammett, G6HKK, 11 Twyford Gardens, Bishops Stortford, Herts. CM23 3SH. (0279 52297)
- BORDER: A. M. McCreadie, GM8YPI, 16 Fancove Place, Eyemouth, Borders TD14 5JQ. (Eyemouth 50492)
- BURY: B. Tyldesley, G4TBT, 4 Colne Road, Burnley, Lancs. (Burnley 24254)
- CHELTENHAM: Mrs. G. Harmsworth, G6COH, 42 Leckhampton Road, Cheltenham, Glos. (Cheltenham 25162)
- CHESHUNT: R. Frisby, G4OAA, 2 Westfield Road, Hoddesdon, Herts. EN11 8QX.
- CHESTER: A. Warne, G4EZO, 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, Essex. (0206 70189)
- CORNISH: N. Pascoe, G4USB, Bosuathick Farm, Constantine, Falmouth, Cornwall. (Falmouth 40367)
- COVENTRY: R. Tew, G4JDO, 4 Chetwode Close, Coventry CV5 9NA. (Coventry 73999)
- CRAWLEY: D. L. Hill, G4IQM, 14 The Garrones, Worth, Crawley, W. Sussex RH10 4YT. (Crawley 88264)
- CRYSTAL PALACE: G. M. C. Stone, G3FZL, 11 Liphook Crescent, London SE23 3BN. (01-699 6940)
- DARTFORD HEATH D/F: A. R. Burchmore, G4BWV, 49 School Lane, Horton Kirby, Dartford, Kent DA4 9DQ.
- DENBY DALE: G. Edinburgh, G3SDY, 37 Westerly Lane, Shelley, Huddersfield HD8 8HP. (0484 602905)
- DERBY: Mrs. J. Shardlow, G4EYM, 19 Portreath Drive, Darley Abbey, Derby DE3 2BJ. (0332 556875)
- DEVIZES: P. Greed, G3MQD, 18 Nurstead Park, Devizes, Wilts. SN10 3AN.
- DROITWICH: E. G. Tayloe, G4HFP, 6 Marlborough Drive, Stourport-on-Severn, Worcs. DY13 0JH. (5-on-5 3818)
- EAST LANCES: S. Westell, G6LXU, 19 Sussex Road, Rishton, Blackburn, Lancs. BB1 4BJ. (Great Harwood 887385)
- EDGWARE: J. Cobby, G4RMD, 4 Briars Close, Hatfield, Herts. (Hatfield 64342)
- EXETER: R. Tipper, G4KXR, 11 Chancel Court, Chancel Lane, Pinhoe, Exeter. (Exeter 68065)
- FARNBOROUGH: P. Taylor, G4MBZ, 12 Dunbar Road, Paddock Hill, Frimley, Surrey GU16 5UZ.
- FYLDE: H. Fenton, G8GG, 5 Cromer Road, St. Annes, Lytham St. Annes, Lancs. FY8 3HD.
- G-QRP CLUB: Rev. G. C. Dobbs, G3RJV, St. Aidans Vicarage, 498 Manchester Road, Rochdale, Lancs. OL11 3HE. (0706 31812)
- GRAFTON: J. Kaine, G4RPK, 74 Camden Mews, London NW1 9BX.
- GREATER PETERBOROUGH: F. Brisley, G4NRJ, 27 Lady Lodge Drive, Orton, Longueville, Peterborough, Cambs. (0733 231848)
- GRIMSBY: G. J. Smith, G4EBK, 6 Fenby Close, Gt. Grimsby, South Humberside DN37 9QJ.
- HARROW: D. Atkins, G8XBZ, 25 Maxwell Close, Rickmansworth, Herts. (0923 779942)
- 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)
- HOLYHEAD: Mrs. B. Anziani, 12 London Road, Holyhead, Anglesey, Gwynedd.
- IPSWICH: J. Tootill, G4IFF, 76 Fircroft Road, Ipswich, Suffolk, IP1 6PX. (0473 44047)
- I.R.T.S.: C. Hunter, EI9V, 30 Coolgariff Road, Beaumont, Dublin 9.
- ISLE OF MAN: Mrs. A. Matthewman, GD4GWQ, 20 Terence Avenue, Douglas, I.O.M. (0624 22295)
- LEICESTER (Rep. Gp.): D. Lunn, G3LSL, P.O. Box 180, Leicester.
- LINCOLN: Mrs. P. G. Rose, G4STO, Pinchbeck Farmhouse, Mill Lane, Sturton-by-Stow, Lincoln LN1 2AS. (Gainsborough 788356)
- LOUGHBOROUGH: J. S. Smith, G4DZL, c/o 91 Anson Road, Shepshed, Loughborough, Leics LE12 9PT.
- MAIDENHEAD: J. Hicks, G8RYW, 2 Fieldhouse Way, Marlow, Bucks. SL7 1PF.
- MALTBY: I. Abel, G3ZHI, 52 Hollytree Avenue, Maltby, Rotherham, Yorks.
- MAXWELLTOWN: C. D. S. Rogers, GM4NNC, 5 Elder Avenue, Lincluden, Dumfries DG2 0NL.
- MEDWAY: A. Faram, 6 Regent Road, Gillingham, Kent. ME5 7JE.
- MIDLAND: N. Gutteridge, G8BHE, 68 Max Road, Quinton, Birmingham B32 1LB. (021-422 9787)
- NORTH WAKEFIELD: S. Thompson, G4RCH, 2 Alden Close, Morley, Leeds. LS27 0SG.
- PLYMOUTH: R. B. Weston, P.O. Box 46, Plymouth PL1 1S.
- R.A.I.B.C.: Mrs. F. Woolley, G3LWY, 9 Rannoch Court, Adelaide Road, Surbiton, Surrey KT6 4TE.
- R.A.O.T.A.: Miss M. Gadsden, 19 Drummond House, Font Hills, Long Lane East, Finchley, London N2.
- REIGATE: T. I. P. Trew, G8JXV, Hoath Meadow, Church Hill, Merstham, Redhill, Surrey.
- S.A.R.U.G.: P. Newman, G4INP, 3 Red House Lane, Leiston, Suffolk IP16 4JZ.
- SCARBOROUGH: N. Hill, G4YWR, 7 Harewood Avenue, Newby, Scarborough, N. Yorks. YO12 6DH. (0723 360587)
- SKELMERSDALE: 41 Mill Dam Lane, Burscough, Ormskirk, Lancs. L40 7TG. (0704 894299)
- SOUTH BRISTOL: L. Baker, G4RZY, 62 Court Farm Road, Whitechurch, Bristol, Avon BS14 0EG.
- SOUTHDOWN: T. Rawlance, G4MVN, 18 Royal Sussex Crescent, Eastbourne.
- S.E. KENT YMCA: A. Moore, G3VSU, 42 Nursery Lane, Whitfield, Dover, Kent CT16 3HG. (0304 822738)
- SOUTHGATE: R. Snary, G4OBE, 12 Borden Avenue, Enfield, Middx. EN1 2BZ.
- SOUTH MANCHESTER: D. Holland, G3WFT, 32 Woodville Road, Sale, Greater Manchester. (061-973 1837)
- STOURBRIDGE: M. Davies, G8JTL, 25 Walker Avenue, Quarry Bank, Brierley Hill. (Lye 4019)
- STROUD: P. R. Gainey, G1DCT, Prencott, Harley Wood, Nailsworth, Stroud, Glos. GL6 0LD.
- SURREY: R. Howells, G4FFY, 7 Betchworth Close, Sutton, Surrey SM1 4NR. (01-642 9871)
- SUTTON & CHEAM: A. Keech, G4BOX, 26 St. Albans Road, Cheam, Surrey.
- THORNTON CLEVELAYS: Mrs. E. Milne, G4WIC, 426 Queens Promenade, Norbreck, Thornton Clevelays, Blackpool.
- THREE COUNTIES: R. S. Hodgson, G3TBT, Brackendene, Hollywater Road, Passfield, Bordon, Hants. GU35 0AE.
- TODMORDEN: Ms. J. Gamble, G6MDB, 283 Halifax Road, Todmorden, Lancs. OL14 5SQ.
- TORBAY: B. Wall, G1EUA, 48 Pennyacre Road, Teignmouth, Devon TQ14 8LB. (Teignmouth 78554)
- TROWBRIDGE: G. Callaghan, G4SPE, 16 St. Mary's Gardens, Hilperton, Trowbridge, Wilts. (0224 4532)
- TYNE-WEAR (Rep. Gp.): J. W. Laverick, G4PFE, 5 York Crescent, Newton Hall, Co. Durham DH1 5PU.
- VERULAM: H. Claytonsmith, G4JKS, 115 Marshalswick Lane, St. Albans, Herts. (St. Albans 59318)
- WACRAL: L. Colley, G3AGX, Micasa, 13 Ferry Road, Wawne, Hull, Yorks. HU7 5XU.
- WAKEFIELD: W. Parkin, G8PBE, 14 Cleveland Grove, Lupset Park, Wakefield WF2 8LD. (Wakefield 378727)
- WEST MANCHESTER: T. Chapman, G6YOI, c/o Astley & Tyldesley Miners Welfare, Meanley Road, Gin Pit Village, Astley, Tyldesley, Manchester.
- WESTMORLAND: G. Chapman, G11IE, 61 Rusland Park, Kendal, Cumbria LA9 6AJ. (0539 28491)
- WIRRAL (W. Kirby): G. Scott, G8TRY, 19 Penkett Road, Wallasey, Merseyside L45 7QF. (051-630 1393)
- WOLVERHAMPTON: K. Jenkinson, 10 Avondale Road, Wolverhampton WV6 0AI, W. Midlands. (0902 24870)
- WORCESTER: D. W. Batchelor, G4RBD, 14 Oakleigh Heath, Hallow, Worcester. (Worcester 641733)
- WORKSOP: C. Gee, G4ZUN, 100 Plantation Hill, Kilton, Worksop, Notts. (0909 486614)
- 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.

Every Friday evening the **Devizes** club foregathers, with the monthly programme having the general form of a formal on the first Friday, with a lecture or whatever, then a social evening with other clubs on the third Friday; the intervening ones are purely social evenings for the members. The venue is Devizes Town Football Club premises; more details from the Hon. Sec. — see Panel.

Turning to **Droitwich** we find the locals on the second and

fourth Monday of each month at the Scout Hq., Union Lane, next to the railway station, starting at 8 p.m. We note the group has **GB2PWB** for the birthday of Prince William, and will air it from the home of **G4PQZ** during the month, plus over the weekend of June 15 – 16 when it will be operated from the field-day site near the BBC masts at Droitwich.

We now go to **East Lancashire** where the locals have a place at the Conservative Club, Cliff Street, Rishton, on the first Tuesday

for a formal lecture, and on the last Tuesday for an informal; in between there is a club net on Two — 145.400 at 8 p.m. June 4 is a computer/RTTY night and on June 25 they have a talk on Japanese Morse.

Never a dull moment at **Edgware** as the newsletter shows! If you go to 145 Orange Hill Road, Burnt Oak, on June 13, G4RMD will show you how to cope with RTTY on the BBC 'B' computer, while on June 27 the activity will be directed towards VHF NFD.

Exeter meet at the Community Centre, St. David's Hill, Exeter, and it appears to be on the second Monday. However, it would be as well to check with the Hon. Sec. — see Panel.

The Railway Enthusiasts Club Access Road, off Hawley Lane, is home to the **Farnborough** group; Wednesday, June 12 is down for a talk on VHF aeralis by G8CKN and on 26th they have a VHF NFD preview.

Fylde has got on to a good thing by combining the club subscription with one to the Kite Club at Blackpool Airport; so members can go there when they like and watch the aircraft or use the other amenities, as well as attending the radio club meetings which are on the first and third Tuesday. On June 4 they entertain John Gibson who will talk about gliding as a hobby; June 18 is an informal with Morse class.

Now the **G-QRP Club**; this has to be the one for all those who like operating home-brew gear. And, of course, perhaps the best part of all is the amount of social activity among the club members, usually accompanied by much laughter and practical joking. Details of the club from the Hon. Sec. — see Panel for his address.

Turning to **Grafton** we find them nowadays in the "Five Bells", East End Road, East Finchley, on the second and fourth Friday, and there is always some sort of programme arranged. More details from the Hon. Sec. — see Panel.

Turning to **Greater Peterborough** we notice they have a shortwave-listener/RTTY evening on June 27, at Southfields Junior School, Stanground, at 7.30 p.m.

At **Grimsby** they have a preparation for VHF NFD on June 13, and a talk on guide dogs by G1EMS on 27th; the only snag is they don't tell us where they foregather! That you will have to find out from the Hon. Sec. — see Panel. Incidentally, it looks as though they meet on the same evening in the intervening weeks between the 'official' ones.

Harrow are to be found every Friday evening at the Harrow Arts Centre, High Road, Harrow Weald, opposite "The Alma" pub which is next door to the bus garage. They have some odd members . . . The Gremlin, Katy Kathode, Uncle Oscar, and even Auntie Agnes!

The main meeting of the **Hastings** club is on the third Wednesday in each month, at West Hill Community Centre. All the other sessions are at Ashdown Farm Community Centre, and include every Friday evening for natters, plus other more specialised stuff.

Turning to **Havering** we have the programme for July–September — but nowt for June! Anyway, find them at Fairkytes Arts Centre every Wednesday evening, and for the rest of the gen contact the Hon. Sec. — see Panel.

Hereford are at the County Control, Civil Defence Hq., Gaol Street, Hereford, on the first and third Friday of each month. At the time of writing we have no details of what's on — but from past experience there will certainly be something interesting.

A new reporter this time is from **Holyhead** where the locals get together at the "Foresters Arms", Kingsland Road, Holyhead, on alternate Sundays. We were interested to note that on July 28 they propose to run a station from Skerries, where the lighthouse is; it used to be active as GW3UUZ years ago, but next year it will go automatic.

The Grand Opening of the refurbished Hornsea Mill is now history, according to the club programme; they are there on June 5 for a natter, June 12 for a chat on data transmission by G4EEV, June 19 for a film show, and June 26 for a talk on operating and logging. And where is the Mill? — try Atwick Road, **Hornsea**, or ask the Hon. Sec. — see Panel.

At **Ipswich** they have a place in the Club Room of the "Rose and Crown" at the junction of the A45 Norwich Road and Bramford Road, on the second and last Wednesday; on other Wednesdays there is often something doing at the same place, barring a clash with holiday times or a Martlesham club meeting. Details for the June meetings were being sorted out at the time of their newsletter printing — so get the details from the Hon. Sec., or just go along!

Now over the water to the **I.R.T.S.** group and their knowledge of all that goes on in terms of amateur radio in EI, both in national terms and as far as local activities go. Details from the Hon. Sec. — see Panel.

On the way back we drop in at the **Isle of Man** where the Hon. Sec. notes they have a DX-pedition to the Calf of Man in June — the details will be given at the last moment *via* the RSGB News as the site is a bird sanctuary and final permission will be at the eleventh hour. Once you have the news, look out for GD4RAG. As for the local meetings they have moved their Hq. to the Howstrake Hotel in Onchan (Harbour Road) on Mondays. In addition, local sub-sections have developed, and these meet as follows: Peveril Court Hotel, Ramsey, on Tuesdays; Tynwald Inn, St. John's on Thursdays; and Perwick Bay Hotel at Port St. Mary's on Fridays. Visitors are welcome at all these meetings.

"Support" is what it is all about, say all the clubs, at one time or another; this month it is the gang at **Kidderminster**, which is based at Aggborough Community Centre, Hoo Road, Kidderminster. Tuesday June 11 is down for the VHF NFD preparations and discussions, on Sunday June 16 they will be at Clee Hill for the *Practical Wireless* Two-Metre QRP contest, and on June 25 they are back at Hq. for an on-the-air-night plus RTTY demonstration. They return to Clee Hill, we notice, for VHF NFD as well.

Leicester Repeater Group sent along a copy of the very professional information pack which they hand out to all new members, covering all the repeaters they have in hand, and projected, plus details of the interesting activities you can get involved in. Details from the Hon. Sec. — see Panel.

Next **Lincoln**, who have been rather quiet recently at least in the matter of reports; however the Hon. Sec. says she is now putting things to rights and encloses a full programme to September. June 2 is a committee meeting, and on 5th there is CW/RAE/Lincoln Hamfest all to be talked about. June 12 is an activity night with the station on the air, and on June 16 they have a fox hunt followed by a barbecue. June 19 is CW and RAE, and on 26th they start at 7.30 p.m. for a junk sale. The venue is the City Engineers Club, Central Depot, Waterside South, Lincoln.

The **Loughborough** club is based on the Top Floor, Brush Social Club, 18 Fennel Street, Loughborough, which lies opposite the car park by the bus station. They are to be found on Fridays starting at 8.30 p.m. and Tuesdays — these are the construction nights — from 7.30 p.m. On the Fridays we see June 7 as a junk sale, June 14 as a night-on-the-air, June 21 for a D/F Hunt starting at 8 p.m. and on June 28 a session of contest organisation. In addition, the club members also attend the VHF/UHF talks put on at Leicester by the Repeater group.

At **Maidenhead** they meet in the Red Cross Hall, The Crescent, Maidenhead, on the first Thursday and the third Tuesday of every month. Details from the Hon. Sec. — see Panel.

The **Maltby** gang gets together every Friday evening at the School Buildings, Church Lane, Maltby. June 7 is a D/F Hunt around Maltby on Top Band, and on 14th G8DRQ will give a talk on homebrew construction, and show some of things he has made. June 21 is a "three-in-a-row" meeting — three short talks by three different members. June 28 is a Field Event activity night at Micklebring, Details from the Hon. Sec. — see Panel.

Maxwelltown group is to be found in the "Tam o' Shanter Inn" twice monthly; this venue is in Queensberry Street, Dumfries, and all visitors are welcome. Contact the Hon. Sec. for full details.

For details of the **Medway** club activities you will have to ask the new Hon. Sec. — see Panel for his details.

For once in a way we have to refer you to the Hon. Sec. for the

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details of the **Midland** goings-on at 294A Broad Street, Birmingham, although we believe that there is someone in the clubroom on most Tuesdays and several other evenings each week, too. Details, see Panel.

There is a new venue for the **North Wakefield** club, who has transferred its affections to the "White Horse" pub in Thorpe Lane, off Bradford Road, East Ardsley, West Yorkshire, which lies about half a mile from the old place at Carr Gate WMC; the new place offers a private room and of course the normal pub facilities, plus somewhere to put up an aerial farm with a good take-off. Find them on Thursday nights each week.

For the **Plymouth** club, you look first for Plymouth Albion Rugby Club; the lads get together on alternate Mondays, and the remaining details are available from the Hon. Sec. — see Panel.

Next **R.A.I.B.C.**; this is the one for all those amateurs and SWLs who are disabled or blind. For more details, the Hon. Sec.'s name and details are in the Panel.

At the recent NEC exhibition, the **RAOTA** crowd had a Special General Meeting to get things back on a sound footing. This has now been done and applications are invited for membership from radio amateurs and SWLs who can demonstrate they have been into radio for 25 years or more. More details from the Hon. Sec. — see Panel.

Now **Reigate**, and the Constitutional and Conservative Centre, Warwick Road, Redhill, in the upstairs meeting Room, on the third Tuesday of each month. June 18 is a junk sale.

SARUG is the one for those who have Sinclair computers in use for amateur radio purposes — whether ZX81, Spectrum or QLs. All the details from the Hon. Sec. — see Panel.

It looks as though the **Scarborough** lads meet every Monday evening at the Club Hq. which is the Cricket Pavilion, North Marine Road; June 3 is a surplus equipment sale, and on June 10 G4ZNZ introduces the "ZNZ Special".

If you are in the catchment area of **Skelmersdale** then look for Beacon Park Golf Club, every Thursday evening. We understand there is a solid programme being set up; details from the Hon. Sec. — see Panel.

A nice thing about the **South Bristol** club is the Event Calendar they put out — all the details you could want on meetings, venues and so on, all on a standardised format print-out. From this we see they are at Whitchurch Folk House, East Dundry Road, Whitchurch, Bristol, each Wednesday evening, in room 3. June 5 is a talk by the Bristol Repeater Group, and on June 12 a talk on CW operation. June 19 is down for GW3CDH to come and do a talk about U.S. county hunting. June 23 is the Whitchurch Folk House Open Day and of course the gang will be supporting it; then the month is rounded off by June 26 and a briefing for VHF NFD. Just a reminder, that Longleat Rally on June 30 is a must for all the local clubs.

At **Southdown** they gather on the first Monday in the month at the Chaseley Home for Disabled Ex-Servicemen, Southcliffe, Eastbourne, for the 'main' meeting; they also have a place at the Clubrooms, Wealden District Council Offices, Vicarage Fields, Hailsham, on Tuesdays and Fridays.

The newsletter of the **SE Kent (YMCA)** club, which is for all practical purposes the Dover group, is this time rather devoted to the AGM and contests. However, you can find them every Wednesday evening at Dover YMCA, Godwynehurst, Leyburne Road, Dover, and they usually have something doing.

At **Southgate** we have to refer you to the Hon. Sec. for the details of the monthly meetings of the club at St. Thomas Church

Hall, Prince Georges Avenue, Oakwood, near the underground station. However, a look at the dates of past meetings suggests that the second Thursday might be the answer.

Sale Moor Community Centre, Norris Road, Sale, is home, on Fridays and Mondays, to the **South Manchester** group. Fridays are the 'main' ones and for June the first two were still to be finalised when they wrote, but on June 21 they have a Midsummer Night D/F Contest and on 28th a visit from the RSGB RR.

Stourbridge foregather on the first and third Monday at the Robin Woods Centre, School Street, off Enville Street, Stourbridge.

The club reporting as **Stroud** was formerly known as the South Cotswold ARS; they have moved to a new Hq. at Nelson School, Stratford Lodge, Stroud, and they will be there on June 12 and 26, and we gather a programme is being put together.

The **Surrey Hq.** is at *TS Terra Nova*, 34 The Waldrons, South Croydon, and they are there on the first and third Monday; since they had an AGM just before you read this, the new committee are doubtless beaver away on the programme for the rest of the year.

Sutton & Cheam has a return of their inter-club quiz against Coulsdon, on June 21, at the Downs Lawn Tennis Club, Holland Avenue, Cheam; in addition they have an informal at the Downs Club Bar on June 3.

Thornton Cleveleys has its Hq. closed for structural repairs; thus the meetings are all visits. For the latest details and information as to whether there is a vacant place, contact the Hon. Sec. — see Panel — or ring (0253) 821827.

Three Counties foregather at the Railway Hotel, Liphook, Hants., on June 1 for a talk on amateur radio insurance, and June 26 for an on-air night with the HF and VHF stations.

The first and third Monday it is for **Todmorden**, and on June 3 they have a car treasure hunt for the G4HYY Trophy. The venue is the Queens Hotel, Todmorden.

The **Torbay** group has settled in nicely at their new Hq. at the ECC Social Club, Ringslade Road, Highweek, Newton Abbot, with good attendances every Friday evening. As ever the last Saturday of the month is set apart for a formal meeting — on June 29 G3YLJ will be giving a talk on aircraft construction.

Trowbridge has grown out of its club room; but they are lucky insofar as there is another larger room available at the same venue, namely Southwick Village Hall, where they will be meeting in future on the *fourth* Tuesday of each month instead of the third.

Tyne-Wear Repeater Group have written with details of the machines they are responsible for and of their organisation; they would welcome new members who should get in touch with the Hon. Sec. — see Panel.

Verulam has a talk on contesting set for June 25, at the R.A.F.A. Hq. in New Kent Road, off Marlborough Road, St. Albans. The speaker is none other than Old Wolf himself, Al Slater, G3FXB, so this will be the Good Gen.

Now **WACRAL**; the group for committed Christian radio amateurs and SWLs world-wide. We note with interest their SP get-together is still on course — we hope to hear it was a great success when it comes to pass at Lublin in mid-August.

Alternate Tuesdays at Ossett Community Centre is the form for **Wakefield**; June 11 is an on-the-air night, and on 25th they have a treasure hunt; June 29 is an extra, with a demonstration station for Horbury Scout Group Jubilee.

West Manchester seems to meet every Wednesday at Astley and

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Tyldesley Miners Welfare, Meanley Road, Gin Pit Village. They have two rallies planned — one for August 18 at Haydock Park and the other is on November 24 at Pembroke Halls, Walkden, Manchester.

What a pity the Hon. Sec. at **Westmorland** didn't send in his notice of the AGM on May 14 a month earlier! However, what's done is done, and so it leaves us to say that the group are to be found at the "Strickland Arms", Sizergh, Near Kendal. More details on the club from the Hon. Sec. — see Panel.

Now to what we prefer to call the **Wirral (West Kirby)** club, to differentiate it from the older Wirral group. They are to be found on the second and fourth Wednesday every month at Irby Cricket Club, Mill Hill Road, Irby. June 12 is down for a talk by the RSGB's RR, G3XSN, and on June 26 they have a D/F Hunt for the Eileen Medley Challenge Cup, starting from the Heswall layby at 8 p.m. More details of these and of the informals from the Hon. Sec. — see Panel.

June 1 sees the **Wolverhampton** crowd doing their GB2WM act for the Wolverhampton Millenium. June 4 is a junk sale, June 11 a discussion night, June 18 a demonstration of RTTY and AMTOR by G1DIL; and on June 25 they have the first night-on-the-air from the new Hq. at Wolverhampton Electricity Sports and Social Club, St. Marks Road, Chapel Ash, Wolverhampton.

There are two venues for **Worcester** and both are in New Street. Club night to 'test your rig' is on June 3, at the Oddfellows Club, and on June 17 they are informally at the "Old Pheasant". Visitors welcome to both.

Every Thursday evening the **Workshop** lads meet at the Unicorn Hotel, Bridge Street, Worksop; they alternate lecture sessions with evenings devoted to RAE and Morse.

On to **Yeovil**; on June 13 G3MYM takes them through the complexities of cosmic radio noise, and on 20th G3GC gives Part 3 of his series on computers, this on on programs. June 27 is a natter night, and on July 4 G3MYM takes issue with sines and cosines.

Help!

A plea from the Hon. Sec. at **York**; they are trying to trace details of *Eric William Morris* who became a silent key in 1960; his 13-year-old grandson has become interested in the hobby and would dearly love to know his grandfather's callsign. It is believed he lived at Bridlington, then Kirkstall and then Sheffield. Any information gratefully received by the Hon. Sec. — see Panel. Reverting to the club, they are at the United Services Club, 61 Micklegate, every Friday evening.

Rallies

June 2, Spalding Mobile Rally, Springfields Arena, Spalding, 10 a.m. to 5 p.m., admission 50p (children and handicapped free), trade stands, flea market, Springfields Tulip Gardens nearby, refreshments, free parking, talk-in by G1DSP/A on SU8 and G4DSP/A on S22. Further details from D. Hoult, G4OO, on Risegate 382. **July 21, Home Counties** Mobile Rally, McMichael Sports and Social Club, Bells Hill, Stoke Poges, Bucks, doors open 11 a.m., trade stands, flea market, amateur TV and packet radio demonstrations, vintage wireless, many family attractions, refreshments and CAMRA beer tent. **September 22, Harlow** Mobile Rally, Harlow Sports Centre, Hammarskjold Road,

Harlow, Essex, doors open 10.30 a.m., bookstall, bring-and-buy, free parking, refreshments and licensed bar, talk-in on S22. For more details ring 0279-725876 or 0279-22365 (daytime).

Special Event Stations

27-28 July, Reading D.A.R.S. will be operating **GB0RAR** on all HF bands, 2m. and 70cm., from Shire Hall, Berks. County Council Hq., Shinfield, Reading, Berks., as a fund raising event to help the people of Ethiopia and Sudan. Visitors will be asked to 'sponsor' each contact (or 10's of contacts) for an amount of money, in much the same way as a sponsored walk. Those outside the Reading area who would like to contribute to the success of GB0RAR should write to Andrew Barrett, G8DOR, 38 Haw Lane, Bledlow Ridge, Bucks.

17-18 August, Tamworth A.R.C. will be operating **GB2TC** to celebrate the 500th anniversary of Henry Tudor's visit to Tamworth prior to the Battle of Bosworth. The station will be sited at Tamworth Castle, working on 3.5 and 144 MHz; special QSL cards will be issued. Full details from G4SRI, QTHR.

Finale

That's it once again. Deadlines are in the 'box' in the piece, and are for the arrival of your letters, addressed as ever to "Club Secretary", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ.

Amateur Radio Exchange

We recently received from Amateur Radio Exchange the following announcement: "Amateur Radio Exchange and Amateur Electronics Ltd. confirm that Amateur Electronics Ltd. of Birmingham has purchased the lease and goodwill of the shop occupied by Amateur Radio Exchange of London. Amateur Radio Exchange of London will continue to operate under the ownership of Amateur Electronics Ltd. of Birmingham, but both Bernie and Brenda Godfrey will be available to Amateur Electronics Ltd. on a consultancy basis for continuity of the London business for a limited period.

Customers who frequent the London shop can be assured that Amateur Electronics Ltd. will continue to offer the same policies adopted by the previous owners, offering good service and a friendly welcome to all callers.

This sale, of lease and goodwill, is for the London shop only and the Northern branch of A.R.E. will still continue under the ownership of both Bernie and Brenda as before, managed by Peter Roberts, G4KKN, and trade as *A.R.E. Communications*. Under this banner they will continue to exhibit at rallies and exhibitions throughout the U.K., and both Bernie and Brenda will attend at as many as possible."

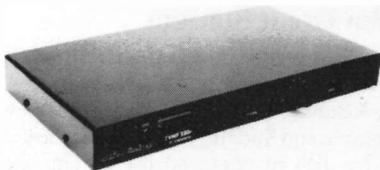
Correction

In part 1 of the "J.L.D." Transceiver in last month's issue, C12, C13, C14, C16 (Fig. 1, p. 119) should be as specified in the Table of Values, *i.e.* 0.01 μ F.

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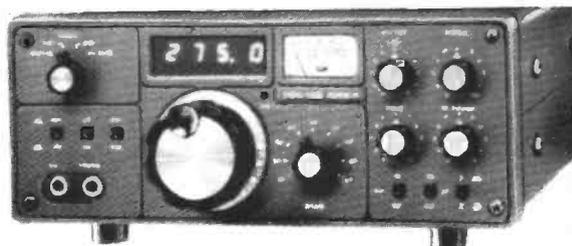
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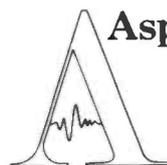
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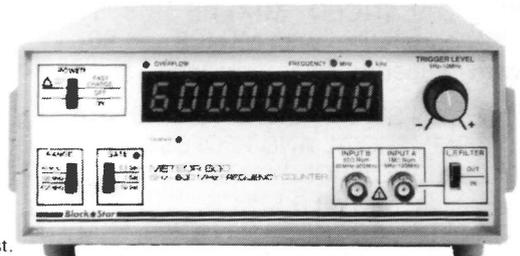
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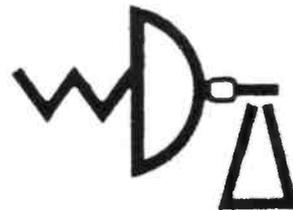
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