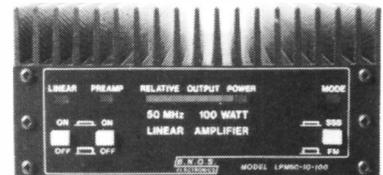


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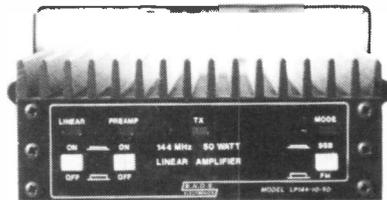
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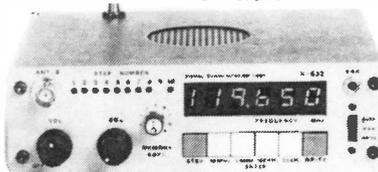
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SHORT WAVE MAGAZINE

(GB3SWM)

ISSN: 0037-4261

VOL. 43

NOVEMBER, 1985

No. 505

ADVERTISERS' INDEX

	Page
J. Birkett	400
B.N.O.S. Electronics Ltd..... <i>inside front cover</i>	
British National Radio and Electronics School.....	400
Colomor Electronics Ltd.	402
Datong Electronics Ltd.	399
Dewsbury Electronics	399
E.M.A.....	403
G2DYM Aerials	402
G4TNY Amateur Radio.....	400
Hately Antenna Technology.....	402
D. P. Hobbs Ltd.	400
KW Ten-Tec Ltd.....	398
muTek Ltd.....	398
P.M. Electronic Services	398
Quartslab Marketing Ltd.	398
F. G. Rylands	402
Small Advertisements	401, 402, 403
South Midlands Communications ...	364
Stephen-James Ltd. <i>inside front cover</i>	
S.W.M. Publications..... <i>inside back cover</i> <i>back cover, 400, 403, 404</i>	
Thanet Electronics Ltd.....	362, 363
Uppington Tele/Radio (Bristol) Ltd.	400
Reg. Ward & Co., Ltd.....	400
Geoff Watts	402
Wood & Douglas	401

CONTENTS

	Page
Editorial — <i>RSGB Articles of Association</i>	365
VHF Bands , by <i>N. A. S. Fitch, G3FPK</i>	366
Top Band for the Yaesu FT-77 Transceiver , by <i>Ian Keyser, G3ROO</i>	371
An American Experience, Part 3 , by <i>Christopher Page, G4BUE, and Colin Turner, G3VTT</i>	374
South Midlands Communications Ltd., Its Birth and Growth , by <i>Ken Michaelson, G3RDG</i>	378
Converting the "Colt 295" 40/80-Channel AM/FM CB Set for Use on the 10-Metre Amateur Band, Part 1 , by <i>Roger Alban, B.Sc., C.Eng., MIEE, GW3SPA</i>	381
Computing Elliptical Orbits , by <i>J. M. Osborne, M.A., F.Inst.P., G3HMO</i>	384
"Practically Yours" , with <i>Glen Ross, G8MWR</i>	385
Communication and DX News , by <i>E. P. Essery, G3KFE</i>	387
Contemporary Briefs	390
"SWL" , by <i>Justin Cooper</i>	391
Clubs Roundup , by <i>"Club Secretary"</i>	393

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

Advertising: **Charles Forsyth**

Published at 34 High Street, Welwyn, Herts. AL6 9EQ, on the last Friday of the month, dated the month following. Telephone: 04-3871 5206 & 5207

Annual Subscription:

Home: £16.00, 12 issues, post free
Overseas: £16.00 (\$21.00 U.S.), post free surface mail

Editorial Address: **Short Wave Magazine,
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AUTHOR'S MSS

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.

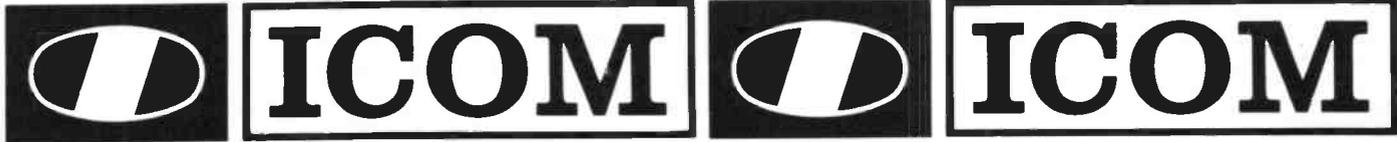
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361

Thanet Electronics



IC-3200E Dual-band

A new exciting set is the ICOM IC-3200E FM Dual-band transceiver (144-430/440 MHz).

The IC-3200E employs a function key for low-priority operations to simplify the front panel. LCD display is easy to read in bright places, showing frequency, VFO A/B, memory channel duplex mode and S/R/F meter information.

Other features include a 10 channel memory able to store operating frequencies, Simplex or Duplex. A memory lock-out function allows the memory scan to skip programmed channels when not required. The IC-3200E has a built-in duplexer and can operate on one antenna for both VHF and UHF. Options include: IC-PS45 DC. power supply, HS-15 mobile mic, SM6 and SM8 desk mics, SP-10 external speaker and UT-23 speech synthesizer.



IC-735, The Complete HF Radio

This new HF transceiver from ICOM is compact enough to make mobile or portable use a possibility. The IC-735 covers all Amateur frequencies from 1.8MHz to 30MHz including the three new bands 10, 18 and 24MHz. Modes include SSB, CW, AM and FM, all circuits are solid-state and output is approximately 100 watts.

Tuning ranges from 100kHz to 30MHz, made continuous by using a high-side IF and a CPU control system. RTTY operation is also possible. Dynamic range is 105dB with a 70.451 MHz first IF circuit. The direct feed mixer rejects spurious response and gives higher sensitivity and wider dynamic range. Pass-band tuning and a sharp IF notch filter provide clear reception even under duress. Preamp is 10dB and attenuator 20dB.

The new IC-735 from ICOM is easy to operate and versatile, it has various scanning functions, comprehensive LCD and 12 memories. Computer remote control is possible via the RS-232C jack.

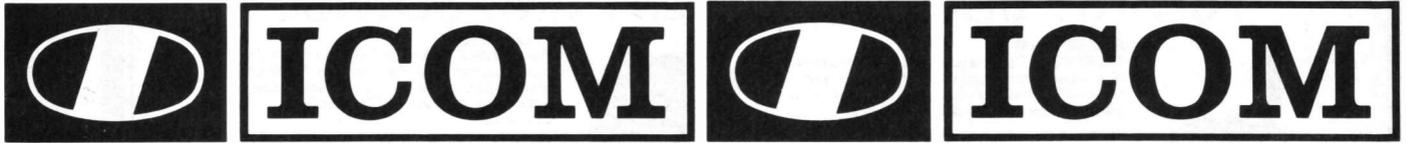
Options include: the AT-150 automatic antenna tuner and shown here the PS-55 AC power supply and SM-8 desk mic.

Please contact Thanet Electronics or your local ICOM dealer for even more information on this latest HF transceiver - the IC-735.

Attention All Amateurs
If you are thinking of buying an ICOM product call us. Just pick up the 'phone and dial 0800-521145, our FREE Linkline telephone service for Amateur Sales Enquiries.
Polite Notice: this service is strictly for Amateurs and we regret that NO dealer or other enquiries will be processed via this special free link. Thank you.



Electronics



IC-290D/290E



290D is the state of the art 2 meter mobile, it has 5 memories and VFO's to store your favourite repeaters and a priority channel to check your most important frequency automatically. Programmable offsets are included for odd repeater splits, tuning is 5KHz or 1KHz. 25KHz option.

The squelch on SSB silently scans for signals, while 2 VFO's with equalising capability mark your signal frequency with the touch of a button. Other features include: RIT, 1 KHz or 100Hz tuning/CW sidetone, AGC slow or fast in SSB and CW, Noise blanker to suppress pulse type noises on SSB/CW.

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ICOM can introduce you to a whole new world via the world-communications satellite OSCAR. Did you know that you can Tx to OSCAR on the 430-440 MHz IC-471 and Rx on the 2m IC-271.

By making simple modifications, you can track the VFO's of the Rx and Tx either normally or reverse. This is unique to these ICOM rigs and therefore very useful for OSCAR 10 communications. Digital A.F.C. can also be provided for UOSAT etc. This will give automatic tracking of the receiver with digital readout of the doppler shift. The easy modifications needed to give you this unique communications opportunity are published in the December '84 issue of OSCAR NEWS. Back issues of OSCAR NEWS can be obtained from AMSAT (UK), LONDON E12 5EQ.

This range includes the IC-271E-25W, 271H-100W and the 70cm versions IC-471E-25W and 471H-75W r.f. output. The 271E has an optional switchable front-end pre-amp. The 271H can use the pre-amp AG-25, with the 471E and 471H using the AG35 mast-head pre-amp. Other options include internal switch-mode PSU's: the 271E and 471E use the PS25 and the 271H and 471H use the PS35.

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Thumbwheel frequency selectors (with 5kHz up button) plus standard repeater shift. Volume and Squelch controls are on the top panel along with jacks for the antenna (BNC), external microphone and earphone.

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Also included is an S/P/O meter for monitoring of relative power output and signal strength. (As FT209R).

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FT209R/FT709R

The FT209R/FT709R with two 4-bit CPU's and a lithium backed RAM offers features far beyond anything yet conceived, in a package smaller and lighter than any previous CPU-controlled transceiver.

Ten memory channels allow storage of either standard +/- shifts, or independent Tx and Rx frequencies for any split/repeater shift on any channel, with touch-key reverse or simplex on either frequency. Scanning capabilities include step-programmable full or partial band memory bank priority scanning etc.

Battery life is greatly extended with a programmable Power saver which activates the receiver momentarily at programmable intervals.

Nineteen soft rubber dual function keys provide greater control than ever, yet operation remains easy: the keypad is carefully arranged, colour-coded and most commands are one-touch operations.

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IF's: 10.695 - 0.455 MHz
Selectivity: ± 5kHz
@ - 6dB (2:1SF)

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Supply: 5.5 - 13V DC
IF's: 21.6 - 0.455 MHz
Selectivity: ± 12kHz
@ - 6dB (2:1SF)

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IF's: 10.7 - 0.455 MHz
Selectivity: ± 7.5kHz
@ - 6dB (2:1SF)

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Supply: 6 - 15V DC
IF's: 21.6 - 0.455
Selectivity: ± 15kHz
@ - 6dB (2:1SF)

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Sensitive, quality 2k OHM condenser mic. ± 5kHz max. dev., 16kHz max. bandwidth. Transmitter spurious output - 60dB.

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2.5/0.3W c/w FNB3 CSC6 65W, 34D, 153H, 482gms	2.5/0.3W c/w FNB3 CSC6 65W, 34D, 153H mm, 480gms	2.7/0.3W c/w FNB3 CSC10 65W, 34D, 168H, 512gms	3.0/0.3W c/w FNB3 CSC10 65W, 34D, 168H mm, 555gms	3.7/0.4W c/w FNB3 CSC10 65W, 34D, 168H mm, 512gms
3.5/0.4W c/w FNB4 CSC7 65W, 34D, 172H, 490gms	3.5/0.4W c/w FNB4 CSC7 65W, 34D, 172H mm, 495gms	3.7/0.4W c/w FNB4 CSC11 65W, 34D, 168H, 520gms	4.0/0.4W c/w FNB4 CSC11 65W, 34D, 168H mm, 570gms	5.0/0.5W c/w FNB4 CSC11 65W, 34D, 168H mm, 590gms

FT 209R c/w FBA5	£175.00
FT 209R c/w FNB3	£195.00
FT 209R c/w FNB4	£199.00
FT 709R c/w FBA5	£215.00
FT 709R c/w FNB3	£235.00

FT 709R c/w FNB4	£239.00
FT 209R c/w FBA5	£219.00
FT 209R c/w FNB3	£239.00
FT 209R c/w FNB4	£245.00
FT 209RH c/w FBA5	£225.00

FT 209RH c/w FNB3	£245.00
FT 209RH c/w FNB4	£249.00
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FOR THE RADIO AMATEUR AND AMATEUR RADIO



EDITORIAL

The RSGB Articles of Association

Some readers who are RSGB members will have received a letter from Mr. Lundegard, G3GJW, with an agenda for an Extraordinary General Meeting of their Society and some explanatory notes entitled, "The RSGB: A need for reorganisation." There are twenty-five clauses in this lengthy agenda and we cannot examine each one in this space. The main thrust of the notes is that, "All is not well within the RSGB."

The first complaint is that some people serve for too long on too many Committees so he proposes that, when anyone has served for a total of six years, they be compulsorily retired: no distinction to be made between ineffectual members and dynamic, dedicated useful folk. This rule would apply to working/advisory groups, the *RadCom* editorial panel, etc. Next he suggests that members should elect the President and Vice-President, as they do Council members, these offices only being open to U.K. radio amateurs of at least ten years standing and resident here. All ballots should be supervised by The Electoral Reform Society as Mr. Lundegard states that some past elections have not been "... above all criticism."

He is not happy with the Council Proceedings as published in *RadCom* which he suggests do not always give an accurate account of meetings, so he wants "... complete, confirmed and unedited minutes of all Council meetings ..." to be available to all RSGB members on request.

His most radical proposal is that the publishing and book selling activities, including *RadCom*, should be undertaken by a wholly owned Society subsidiary with a Managing Director who would be responsible for the appointment of staff. This company to "... take over all the commercial responsibilities, health and safety aspects of managing Lambda House." Finally he proposes that a Supervisory Committee be formed to oversee all these changes, its Chairman being elected at the EGM and who "... will be free to co-opt not more than five members ..."

As an independent publisher, *Short Wave Magazine* has been very critical of some past RSGB policies, activities and attitudes. No such organisation can possibly hope to please all its members all the time. Amateur Radio is an evolving hobby. We are doing things now which were undreamed of twenty years ago, such as communicating through satellites, making colour SSTV transmissions, computer-generated RTTY and data communication to mention just four. The RSGB must evolve to take account of these developments.

Some readers may be wondering who Mr. Lundegard is, anyway. He has been a member of the RSGB Council and was frequently mentioned in the Council Proceedings pages in *RadCom*, particularly during 1984 and early 1985, as was his colleague Mr. Smith, G4AJJ. We advise all RSGB members to read all these minutes carefully in order to make their own assessments as to their motives. We feel entitled to ask whether Mr. Lundegard's leaflet and EGM agenda were produced solely because he genuinely feels the RSGB needs drastic reorganisation, or whether they were prompted by the fact that he "... felt he had been treated like an outcast by Council for four years" (*RadCom*, October 1984, page 841), and was not chosen as President-elect by his fellow Council members (*RadCom*, December 1984, page 1036).

Notwithstanding whether his motives are genuinely altruistic, our considered opinion is that this EGM agenda is too woolly, too hastily conceived and too full of loose ends to merit support. Indeed, it is a recipe for chaos and disaster since the new rule would require a large percentage of Council and Committee members to resign immediately thus destroying any continuity. Such a scenario could lead to a virtual, but legal, hijacking of the Society by an unrepresentative, opportunist minority. Democratic elections sound fine, but we should remember how opportunist, extremist groups have used them to take over many constituency political parties.

Evolution we want: revolution we can do without, so our advice is that RSGB members should ensure they vote against this agenda either by attending the EGM in person or by using their proxy vote. Full details will be communicated in the proper way to members, so don't ignore this vital matter and make sure you register your vote.

WORLD-WIDE COMMUNICATION

VHF BANDS

NORMAN FITCH, G3FPK

FOR much of September, the country's weather was dominated by a high pressure system and the first really fine and warm period of an otherwise awful summer. Many expected this high pressure to bring about superb tropo. conditions on the VHF/UHF bands. Some seem to have been lucky, the majority, however, were rather disappointed. It is worth mentioning that a stable anti-cyclone sitting over the country or close by will generally not produce any spectacular tropo. propagation.

Those who fare best are the coastal stations. The sea temperature remains fairly constant on a daily basis whereas the land gets quite hot in the day time. At sundown and when there is no cloud, the land cools and the warm air rises often resulting in the air temperature at a few thousand feet being several degrees higher than that at ground level, producing a temperature inversion. These are good news for VHF operators since radio waves which would otherwise mostly travel straight into space are refracted. In some cases they propagate parallel to the Earth's surface for many hundreds of kilometres with little attenuation, enabling some real DX to be worked, often with low power.

This seems to have been the case in September when inland stations listened with frustration and envy to the east coast operators working into OK, etc., the DX stations being quite inaudible. Some of this will be apparent from subsequent reports.

Award News

Two more readers have joined the 144 MHz QTH Squares Century Club. Certificate no. 57 was issued to Ray Baker, G4SFY, (AM17c) from North Walsham in Norfolk, on September 18 for 102 confirmed. He is a regular contributor to VHF/B and a keen participant in the Annual CW Ladder. Hence it is no surprise that 59 squares were worked on CW. 42 were SSB QSOs with just one on FM. 91 contacts were on tropo., eight *via Ar* and three *via Es*. Ray is now into MS operation which has helped to lift his total worked to 183.

Congratulations to Fredi Kubitzsch,

DK2LM, (EJ21f) from Bolanden in West Germany, who receives QTHCC No. 58 for 153 confirmed. His certificate was dated October 7 and included the 125 and 150 stickers. 85 QSOs were on CW, the rest on SSB. Tropo accounted for 71 contacts, MS on CW for 56, *Ar* for 14 and *Es* for 12. Fredi's 2m. station comprises a Yaesu FT-225RD with 4CX250B amplifier, the antenna being a 16-ele. *Yagi*. A preamp. is used. He is also QRV on 70cm. using an Icom IC-451E with 200w to a 19-ele. crossed *Yagi*, and on 23cm. with a transverter running one watt to a 23-ele. *Yagi*.

Jim Rabbitts, G8LFB, (ZL30f) was awarded his "150" sticker for his 144 MHz QTHCC certificate no. 24 on Sept. 10. Three QSOs were *via Es*, two *via Ar* and 20 on tropo. mode. The choicest *Es* QSL was from OH5LK (NU37g) worked on June 9 this year.

Two more readers have joined the 144 MHz VHF Century Club, member no. 376 being Ian Cornes, G4OUT, from Staffordshire. His certificate was issued on Sept. 11 endorsed for all CW contacts. Ian's station details were published on page 344 last month. He wondered if this was the first "All CW" award but since your scribe took over, the records show that no. 283 went to G3BTO in June, 1977.

The other recipient is Maurice Webb, G1AMR, from Whiston in Merseyside to whom certificate no. 377 was sent on Sept. 14 and endorsed, "Telephony 10w only". He began his AR career at the age of twelve using an old RAF R-1155 Rx and was an s.w.l. for about for about 17 years before becoming licensed in Sept. 1983. Maurice's station consists of a Trio TS-700, the antenna being a wide-spaced 8-ele. *Quagi* on a 15ft. boom at 30ft. The QTH is 275ft. a.s.l.

He likes constructing antennas, the current project being to complete a four-*Quagi* array. Another interest is SSTV using the 128 line system and he plans to build a slow/fast, fast/slow digital scan converter which, with two extra memory boards, will give Tx/Rx frame sequential colour. He would be pleased to hear from any other reader interested in SSTV topics.

Finally, Henry Souchet, 9H1CD, has sent details of a new Maltese award called the "9H-VHF Award" for which a number of different Maltese stations have had to be worked since Jan. 1, 1973. All the British Isles stations must work four 9Hs to qualify. Claims in the form of a signed log extract indicating the date, time and reports exchanged should be sent to the Awards Manager, c/o the 9H VHF/UHF/SHF Group, P.O. Box 31, Valletta, Malta. The fee is U.S. \$3.00.

Beacon Note

In the September VHF/B, mention was made on the actual location of the new 6m. beacon GB3RMK at Rosemarkie, there

being some confusion about its exact QTH. Brian Bower, G3COJ, and William Forsyth, GM1OVJ, have clarified this matter, the latter enclosing a colour print of Avoch, Black Isle, in Ross and Cromarty. The site is actually at the old I.B.A. Band 3, 405-line TV station at Mouteagle, so the IO77UO locator that G3PBV heard *via* MS would be correct. Quite why its callsign should refer to a place about five miles to the east is unclear. For real QRA lovers, it is XR39a based upon GM1OVJ's latitude/longitude estimate.

Contest News

9H1CD has sent the results of this year's 9H Falcon contest which attracted 55 entries from 15 countries. The winner by quite a handsome margin was 4X4MH with 549,762 points. YU2EZA with 332,030 was runner up, SV10E coming third with 326,299 points. The only two English stations to qualify for entry by working one Maltese station on 2m. were readers Kevin Piper, G8TGM, who scored 32,263 pts. for 40th place, and Mick Cuckoo, G6ECM, with 20,536 pts. for 42nd place.

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

December issue — November 6th
January issue — December 4th
February issue — January 8th

Please be sure to note these dates

A reminder that the 70 MHz Fixed contest is on Oct. 27, 1000-1500 GMT as per page 342 in the previous issue. The last four sessions of the 1,296/2,320 MHz *Cumulatives* are on Nov. 1 and 17 and Dec. 3 and 19, 2030-2300 GMT. The three final legs of the 432 MHz *Cumulatives* are on Nov. 9 and 25 and Dec. 11, 2030-2300 GMT.

The weekend Nov. 2/3 sees the 144 MHz Marconi Memorial CW contest from 1400-1400 GMT with scoring at one point *per* kilometre. For the last six hours, *i.e.* 0800-1400 on the 3rd, there is the RSGB's CW event with normal radial ring scoring, the idea of the timing being to create more activity towards the end of the main event.

The 144 MHz Fixed contest is scheduled for Dec. 1, 0900-1700 GMT. As in previous years, participation by individual stations on their own is the basis of the event. However, this year a new element has been introduced to encourage inter-club activity similar to the popular Affiliated Societies event on 80m. Single-op. and multi-op. stations can enter and radial ring scoring is the order of the day.

Full details are given on page 807 of the October issue of *Radcom*.

The *Verulam ARC's* 2m. Club contest is on Nov. 24, according to their September *Newsletter*. Unfortunately no details were given so better contact G4JKS who is QTHR if you require precise information.

The Space Scene

As mentioned in the September VHF/B, the *N.A.S.A. Shuttle* flight STS-61A will have as crew members Dr. Medderschmid, DG2KM, and Dr. Furrer, DD6CF, who will be involved with the seven-day *Spacelab D1* mission. It has now been confirmed that a Dutch radio amateur, Dr. Wubbo Ockels, PE1LFO, will be in *Columbia's* crew. At the time of editing, the lift-off date remained unconfirmed and Nov. 27 seemed possible. No doubt definite news will be available from *GB2RS* on Sundays and via the *RSGB's* Hotline news service on Potters Bar 59312.

Amateur radio activity is planned to commence during mission day 3, lasting about five days until 12 hours before landing, using the callsign DP0SL. There will be about six passes each day with a maximum contact time of 12 minutes and activity will be focused on Europe. A specially developed VHF/UHF transceiver by *Bosch* will be used with a 10w power output on FM mode in the 2m. band. The Rx operates on 70cm. and an *e.i.r.p.* of 20 dBw — 100w — should suffice; *e.g.* 10w Tx to a 10dBi gain antenna, *az-el* controlled.

The antenna will be mounted outside the *Spacelab* and is a 50cm. aluminium whip, one-quarter wave resonant on 2m. and five-eighths wave resonant on 70cm. The transceiver's six receiving QRGs are 437.125; .175; .225; .275; .325 and .375 MHz designated channels 0-5 respectively. Its four Tx QRGs, designated channels 0-3, are 145.450; .475; .550 and .575 MHz. Only 437.275 and 145.575 MHz are a dedicated pair.

There will be three operating modes. One will be a simple beacon transmission with callsign, running at one watt. Another will be beacon operation with automatic recording of incoming calls on an inbuilt cassette in which the Tx will send in F2, "CQ de DP0SL record on tape K". Ground stations can call on any of the six 70cm. uplink QRGs in the following one minute on FM. The last mode is two-way voice using FM with the choice of Tx and Rx QRGs exclusively decided by the astronauts. The normal pair will be 3/3 but in heavy pile-ups, the operators will alter their Rx QRG without notice. This means ground stations will take pot luck with any of the six QRGs.

All calls and QSOs will be recorded on tape and evaluated after the mission. They will be confirmed by a special QSL from the *D.A.R.C.* During the mission, *RSGB* HQ will keep in touch with the *N.A.S.A.* for the latest information and there will be

QTH LOCATOR SQUARES TABLE

Station	QTH LOCATOR SQUARES TABLE			Total
	23cm.	70cm.	2m.	
G3IMV	—	103	380	483
G3POI	—	—	433	433
GJ4ICD	43	116	238	397
G8GXP	5	71	289	365
G4NOQ	61	90	211	362
G3JXN	72	110	172	354
G8KBO	34	99	214	347
G3PBV	41	106	199	346
G3XDY	62	114	163	339
GW4LXO	35	76	228	339
G4IJE	—	—	338	338
GW4YYU	31	78	224	333
G3UVR	35	92	202	329
G3BW	15	38	269	322
G4DCV	10	68	244	322
G4KUX	—	36	277	313
G3COJ	42	97	170	309
G4MCU	25	82	201	308
G8TFI	51	109	126	286
G8VR	2	24	251	277
G4RQK	20	67	182	269
G4DHF	—	—	265	265
G6DER	33	74	155	262
G4TIF	—	94	168	262
G8PNN	50	83	126	259
G8ULU	36	91	127	254
GM4IPK	—	—	245	245
G8XVJ	—	73	169	242
G4DEZ	—	—	242	242
G4OAE	—	46	190	236
G8HHI	22	77	135	234
G4BWG	—	68	160	228
9HICG	—	—	225	225
G4FRE	42	112	68	222
G6MGL	29	57	132	218
G6CMV	18	53	144	215
G6HKS	—	39	175	214
G3FPK	—	—	209	209
G6HKM	—	75	132	207
G4MUT	6	76	123	205
G4MAW	45	106	52	203
GM4CXF	—	27	175	202
G1EZF	9	50	135	194
G6ECM	—	—	194	194
G8WPL	16	70	105	191
GW8UCQ	1	70	120	191
G4HFO	—	70	120	190
G4HMF	2	35	152	189
G6DZH	—	68	119	187
G8FMK	36	70	80	186
G4SFY	—	—	183	183
G8LFB	—	—	182	182
G8TGM	—	—	181	181
G3BDQ	—	—	177	177
G4ZTR	35	57	82	174
G4NRG	5	40	125	170
G6JNS	1	48	117	166
G4IGO	—	—	164	164
G4MEJ	—	—	163	163
G4YUZ	—	—	162	162
G4TJX	—	60	100	160
GM0BPY	—	50	110	160
G4FRX	—	66	93	159
GW3CBY	11	38	106	155
G4ROA	25	61	65	151
G4DOL	—	—	141	141
G8ZDS	—	31	104	135
G8ROU	1	43	88	132
GM8MJV	3	26	101	130
G6XLL	—	33	95	128
G4CQM	—	52	75	127
GW8VHI	—	41	83	124
G4GHA	—	6	112	118
G4RSN	2	26	89	117
G6AJE	—	32	85	117
G6YLO	17	38	61	116
G8RWG	—	12	103	115
G4XEK	—	—	112	112
G6HCY	—	—	109	109
G6CAS	—	—	108	108
G1KDF	—	31	76	107
G1LSB	—	48	55	103
G6YIN	—	20	77	97
G1EGC	—	—	97	97
G6XRK	—	—	89	89
G1INK	—	42	42	84
G8XTJ	—	—	84	84
GM8BDX	13	29	41	83
G6XVV	1	30	52	83
G6XSU	—	50	32	82
G4UYL	—	—	81	81
G6CSY	16	25	34	75
GW6OF1	1	—	67	68
G4WHZ	—	8	49	57
G0BPS	—	—	50	50
G1JOU	—	—	44	44
GW6/ZW	—	—	42	42
GM4WLL	—	—	39	39
G8UDV	—	—	38	38
G4WJR	—	—	37	37
G6SIS	—	1	31	32
G2DHV	—	3	17	20

Starting date January 1, 1975. No satellite or repeater QSOs.

According to Ron Broadbent, G3AAJ, *AMSAT-UK's* secretary, things have been rather quiet of late on the amateur satellite scene. However, the first operation through *Oscar 10* from Sri Lanka took place recently from 4S7EA. Earlier, an *IARU* team from Geneva had visited the local 4S7s to teach them how to use *O-10*. Ron mentioned that *AMSAT-UK* has a lot of computer software to offer satellite users. An *s.a.e.* to *AMSAT-UK*, London E12 5EQ will bring details.

Richard Mason, G6HKS, (NOR) used *O-10* in September. On the 4th, he contacted YV5ZZ, OH5LK and IW1PMY and the following day, LU8EBH, IK4GMB, DL7ZL, OE3RGA and T26FE. During September there were some changes in the *O-10* operating schedule to permit more battery charging time. Users are advised to check the general beacon on 145.810 MHz for the latest developments.

In *UoSAT Bulletin* no. 145, G3IOR reported that Soviet satellite *RS-9* was somewhat behind schedule and that they are trying to get it ready for launch with *RS-10* which has been tested and which is performing well. A launch in January is possible.

DX-Peditions

Bryn Llewellyn, G4DEZ, and his colleagues, made their trip to the Inner Hebridean island of Colonsay during the August Bank Holiday weekend. They endured one day of torrential rain, but the remaining days were better. However, radio conditions were poor on VHF and they only made about 60 QSOs on 2m. from WQ square. They were heard in the southern part of England but did not hear any long DX at GB0CIH.

On the penultimate weekend in September, Tim Kirby, G4VXE, and friends operated portable from a new site in YK62b, Start Point (DVN) and it proved to be quite good for possible future contest work. Best DX was PE1AAP (CM) at 661 kms. on 2m., while on 4m. G4BVY/P managed GM4LIP/P (WP) during the Trophy contest and hopes for a reasonable placing in the event.

Looking way into 1986, in a letter to Mark, G1EGC, Pierre Redon, F1ADT, says he will operate from AD and AC squares either in June or September. When he was 14 years of age, a railway accident left him with a damaged left arm so it is not too easy for Pierre to put up antennas on mountains when he operates from portable sites. He has promised to keep us informed about his 1986 plans.

WC square in Spain is a rarity so it is satisfying to learn via Kelvin Weaver, GW4TTU, and others that EA1OD and EA1CYE are planning 2m. and 70cm. activity from it in late July. Charlie and Pedro are good operators with good equipment and MS activity on 2m. will be available.

2m. and 80m. broadcasts over *GB2RS* at 1200 and 1900 local time on the usual QRGs.

Six Metres

Still no news about the general release of the 50.0-50.5 MHz band to British licensees, so we must be patient. There is far more to this matter than discussions between the *DTI* and the *RSGB*; other U.K. services and several European countries are not too enthusiastic about our government's decision to allocate part of this spectrum to radio amateurs, so progress has to be very tactful and diplomatic.

Dave Sellars, G3PBV, (DVN) now has 100w available from a *B.N.O.S.* amplifier, but reports little activity. Mike Johnson, G6AJE, (LEC) should be doing some listening on the band by now using a converter and single *Quad* loop antenna. Dave Lewis, GW4HBK, (GWT) reports reception of ZB2VHF *via Es* on Sept. 6 and 7 at 1700, otherwise only the normal, 150 miles type of QSO.

John Baker, GW3MHW, (DFD) was due to enter hospital on Sept. 23. Before setting off for the "bandage factory" he wrote that he had contacted 70 of the 6m. permit holders and had worked 12 countries. He has acquired a *Yaesu* FT-680R transceiver which is much more compact and hernia-proof than his 19 inch rack equipment. John mentioned that EI2CA reported that the Irish government was expected to announce a decision about 6m. band for EI amateurs "... in the near future".

Four Metres

In the contest on Sept. 22, Martyn Jones, G4TIF, (WKS) found three new British counties plus EI2VWP/P (Wexford) towards his 1985 table total. Ian Parker, G4YUZ, (HFD) worked G3EDD/A (CNL) on Sept. 7 and in the contest 34 stations, best DX being GM4LIP/P (SCD). Ian is QRV most evenings and is looking for MS skeds with the more distant stations.

John Jennings, G4VOZ, (LEC) reports increasing activity and reckons that mention of rare locations in VHF B has prompted activity. He says that Tuesday night is activity night and that EI2CA is often QRV when conditions are fair. John would welcome some activity from Cleveland, the Isle of Wight, S. Glamorgan, Lincs. and GJ and GI, the two last only heard in NFD. He worked G4VVS (SOM) on SSB on Sept. 17; Jim was using a converted CB set and home made transverter and told John that there are a number of people on from the county on FM only. In the contest, the better DX included G4BVY/P, GW4MGR/P (XM), GW2VLT/P (YL), GM4SIV/P (DGL) and EI2VWP/P (WM). He requests that

Station	ANNUAL CW LADDER				Points
	4m.	2m.	70cm	μ Wave	
G4TWD	—	580	—	—	580
G3GHY	—	472	11	—	483
G4WHZ	—	330	28	—	358
G4UKM	6	295	24	—	325
GW4TTU	—	—	217	48	265
G4WGY	—	235	15	—	250
G4SFY	—	244	—	—	244
G4YIR	—	224	—	—	224
G4NZU	7	162	2	—	171
G4ZTR	—	135	—	16	151
G4ZVS	—	135	—	—	135
G4VXE	—	127	7	—	134
GW4VVX	—	132	—	—	132
G4CMZ	39	92	—	—	131
G4ARI	7	118	—	—	125
G4EZA	—	75	—	—	75
G4OUT	—	74	—	—	74
GW4HBK	57	—	—	—	57
G2DHV	21	34	1	—	56
G6VMQ	—	55	—	—	55
G6ZPN	—	44	5	—	49
GM4CXP	3	38	1	—	42
GM4WLL	8	22	—	—	30
G4LVE	—	23	—	—	23
G0CAS	—	22	—	—	22
G4PSS	—	10	1	—	11
G0BPS	—	11	—	—	11

No. of different stations worked since Jan. 1.

anyone planning activity at short notice contact him or G4SEU so that they can spread the news.

John Lemay, G4ZTR, (ESX) and friends operated from S. Glamorgan in the contest using the call GW4VIX/P and made 60 QSOs from this rare county. The QTH was at sea level in Barry docks. GW3MHW listened during the contest and copied strong signals in XM60d from EI2VWP/P, EI9Q and EI9BG (Co. Clare). John reckons some operators were a bit sloppy in not giving their callsigns sufficiently and missing the final over altogether. He mentions cordless telephone QRM on 70.080, 70.123, 70.180 and 70.225 MHz and has built up a gadget for tracking down these illegal pirates.

David Dodds, GM4WLL, (FFE) writes that his is quite active on 4m. and wishes that more people would use the band. He stated that in the early 1970s an attempt was made to make Wednesday nights, activity nights, so suggests this idea be resurrected. However, this seems to be at variance with G4VOZ's report. David sent his letter to the Chairman of the *RSGB's VHF Committee* so let us hope that it will come up with a sensible plan, taking into account current practice. Meantime, GM4WLL promises to be QRV every Wednesday evening from either his home in Dunfermline or from his University QTH in Glasgow. (Your scribe has suggested he contacts G4YUZ, who has a list of over 250 4m. active stations, and G4VOZ). David's station from YQ73c consists of an *Icom* IC-202S and *MM* transverter running 12w to a 3-ele. *Quad* at 12ft.

GW4HBK was also on for the contest and worked EI2VWP/P and GM4SIV/P, but after the first couple of hours, Dave found nothing new to work. He now has 57 different stations worked this year on CW.

Two Metres

For a while during the contest on Sept. 7/8, conditions were very good towards HB and Mark Page, G1EGC, (BKS) worked a dozen or so HB9s. Because he did not associate JN46 with EG square, he overlooked that he needed it. The path to SW France was open on Sept. 10 at 0630, on the 12th at 1800 and on the 14th at 1000. Paul Martin, G1JOU, (KNT) has been using his new amplifier to good effect around his favourite QRG of 144.285 MHz. He mentions DF8DO/P (EL) and EI9FK/P (WN) in the contest and being called by GM6LNM (XP) on the 16th. Paul wonders where he can get a European QTH Locator map for his wall.

Bob Nixon, G1KDF, (LNH) thought September was a flat month. New for him were EA1CYE (YD) on the 12th and F6DBP (YI) on the 29th, though. Brian Bower, G3COJ, (BKS) writes that it is nearly a year since he last worked a new square and he has not heard a single *Es* signal this year. During September, Colin Smith, G3GHY, (HPH) found another 65 CW stations of whom 15 were outside the U.K.

G3PBV reports a little tropo. propagation into mid-Germany in the last week of September. Apart from that, Dave's only other DX-worthy QSO was *via E-M-E* with W5UN in Texas, back on Aug. 17. The Texan now has 32 KLM 17 LBX *Yagis* and is thus able to work single *Yagi* stations. In a letter to G3PBV, Dave says he will call "CQ" during British moonset times at weekends. So those readers with decent receiving capability might care to point their antenna at the Moon. His Maidenhead square is EL29 and new QTH is:— Dave Blaschke, 9102 Kings Drive, Manvel, Texas, U.S.A., 77578.

Paul Wharton, G4DCV, (KNT) worked HB0/PA3DCF (EH) on CW tropo. on Sept. 7 for a new country. During the contest, 22 HB9 QSOs were made in what he describes as, "... a terrific opening to Switzerland and the south of France with far too many worked to list". Even so, no new squares resulted. On the 15th, EA1BLA (VD) was new on SSB, while on the 26th Paul found SP6ASD (HL) and SP6GZZ (IL) on CW tropo. plus a couple of OKs in HK. Next day he lists Y23OM (GL) on SSB and two portable OKs in GK on CW. The 29th brought SSB QSOs with

Y25CD (GM) and OK1AXH/P (HK).

Peter Atkins, G4DOL, (DOR) also enjoyed the lift to HB in the contest working 15, most portables in DG, DH and EH, and HB9LU/P who was in EG. Other DX included EA2AA (YD) and EA2AWD (ZD), F6BUL/P (DF) the furthest French station contacted and DK0BN/P and DL6GCK/P, both in FH.

Ray Baker, G4SFY, (NOR) has had tape recorder problems so has no MS activity to report. In the contest he worked Fs in YI, BH, CI, DF and DG and HBs in DG and DH. On Sept. 9, EIs were heard working over to LX and on the 10th the EIs were all S9. Ray got 9ED (WN), 8EF (VO), 6BHB (VN) and 4FP and 7BXB in WN. Best DX on the 11th was OK1JKT/P (GK). On the 26/27th, PA and DL stations could be heard working to OE, OK and SP, but nil at North Walsham. At 0100 on the 29th, Y23SB (FN) was worked on CW, followed by DK5AI (FL) who was very loud, OK1AXH/P and OK2BWP/P, both in HK. The PAs were working SPs in HL, IK and JK at this time.

In the period Sept. 9-11, G4TIF worked five new EI counties, Kildare, Meath, Donegal, Clare and Galway, all on SSB. Best DX for Dick Phipps, G4TWD, (KNT) was HB9BVR/P (DG) on CW on the 11th, apart from which he thought conditions were poor. G4VXE has upgraded his tape recorder to copy 1,000 l.p.m. with the help of GW4LXO, but MS skeds have been hard to find due to lack of activity on the 20m. VHF net.

Sue Frost, G4WGY, (LDM) now has a B.N.O.S. amplifier with Rx preamp. but still needs a PSU for it. On low power she has 235 worked for her CW Ladder total. Bob Ainge, G4XEK, (SFD) is nearing 100 squares confirmed. In the contest he worked three HB9s in DH and heard nothing of real interest. Band conditions have been generally poor in the northern part of ZM square up to mid-September, it seems. Martin Lowe, G4YCD, (AVN) had little time for the radio in the summer but wrote in to update his scores. He hopes for a big tropo. opening soon.

June Charles, G4YIR, (ESX) missed the good tropo. on Sept. 8/9 being on holiday but did add another 30 CW stations to her table tally of which 18 were continentals. Now that G4IJE has moved and "retired" from the 2m. band, G4YUZ has taken over Paul's Saturday MS skeds with I3LGP. All five from Aug. 31 through Sept. 28 were completed. Colin Ford, G4ZVS, (WMD) another CW fan, worked GM for the first time on Sept. 28 to bring his 1985 score to 135.

G6AJE felt very frustrated watching that September "high" over the continent and hearing coastal stations working all the DX which was inaudible in ZM24d. However, Mike has worked some new counties and squares, pick-of-the-month being DK8SG (EI13j) at 2012 on the 29th using just 8w. Graeme Caselton, G6CSY,

ANNUAL VHF/UHF TABLE

January to December 1985

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		23 CENTIMETRES		TOTAL Points
	Counties	Countries	Counties	Countries	Counties	Countries	Counties	Countries	
GW4TTU	—	—	95	34	69	16	38	10	262
G6DER	—	—	68	22	61	14	36	9	210
G4TIF	41	4	73	14	57	15	—	—	204
G1KDF	—	—	92	18	73	9	—	—	192
G4SEU	59	6	60	11	37	10	—	—	183
G4MUT	40	4	59	17	30	6	12	2	156
G4YCD	—	—	77	20	43	8	—	—	148
G6ZPN	—	—	76	17	46	8	—	—	147
G6HKM	—	—	63	17	48	14	—	—	142
G6MGL	—	—	50	14	38	9	21	6	138
G6AJE	—	—	61	12	50	9	—	—	132
G6WZO	—	—	47	7	45	7	18	4	128
G1EZF	—	—	64	19	38	6	—	—	127
G4VXE	—	—	65	15	38	5	—	—	123
G3BW	34	5	36	22	—	—	13	5	115
GW3CBY	32	5	46	8	16	4	7	3	111
G6XVV	—	—	64	12	31	4	—	—	111
G4WXX	—	—	90	21	—	—	—	—	111
G4HGT	2	1	63	20	18	2	—	—	106
G6ECM	—	—	77	23	—	—	—	—	100
G6XLL	—	—	61	13	21	4	—	—	99
G3FPK	—	—	76	18	—	—	—	—	94
G6YIN	—	—	54	9	25	5	—	—	93
GW6OFI	—	—	65	19	—	—	1	1	86
G1INK	—	—	32	9	37	8	—	—	86
G8RWG	—	—	50	10	23	3	—	—	86
G1EGC	—	—	60	17	—	—	—	—	77
G8PNN	—	—	—	—	33	9	26	8	76
G8XTJ	—	—	58	15	—	—	—	—	73
G6XSU	—	—	35	9	21	7	—	—	72
G4ARI	16	1	47	7	—	—	—	—	71
G4YIR	—	—	54	13	—	—	—	—	67
G4VKE	—	—	60	7	—	—	—	—	67
GW6VZW	—	—	51	13	—	—	—	—	64
GW1JCB	—	—	53	8	—	—	—	—	61
G1JOU	—	—	50	10	—	—	—	—	60
G0CAS	—	—	51	9	—	—	—	—	60
GM4CXP	5	2	34	10	6	2	—	—	59
GM0BPY	—	—	31	10	9	9	—	—	59
G1LAS	—	—	49	10	—	—	—	—	59
G4CMZ	26	3	23	4	—	—	—	—	56
G6XRR	—	—	42	14	—	—	—	—	56
GW4VVX	—	—	44	9	—	—	—	—	53
G4WHZ	—	—	38	7	4	1	—	—	50
GW4HBK	44	5	—	—	—	—	—	—	49
G2DHF	10	1	28	6	1	1	—	—	47
G4WJR	—	—	39	7	—	—	—	—	46
G4WND	25	2	—	—	14	4	—	—	45
G1HGD	—	—	36	8	—	—	—	—	44
G4EZA	—	—	36	6	—	—	—	—	42
G0BPS	—	—	30	7	—	—	—	—	37
G6CSY	—	—	11	5	5	1	13	1	36
GM4WLL	9	2	13	5	—	—	—	—	29
G6SIS	—	—	19	5	1	1	—	—	26

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

(LDN) operated portable from a previously untried site in the contest. The first good DX was worked around 2140, Fs in DH and DI. From 2148 seven HBs were worked including HB9/OE8KVK/P which must have put him at a disadvantage with a call that long. GM4RAH/P (YP), GM3BSQ/P (YQ) and OT5AJV/A (BL) were also contacted. The equipment was a Yaesu FT-225RD running 30w to a 9-ele. Yagi at 38ft. the site being about 3ft. a.s.l. Keith Killigrew, G6DZH, (HWR) remarks on the similarity of this year's 2m. IARU contest with last year's in that there was a SE lift during each. During the evening of the 7th, he contacted 26 Fs in YI, BH, BI, CF, CI, DG, DH, DI and ZH. The lift into HB9 started at 2016 and 14 were worked.

Mick Cuckoo, G6ECM, (KNT) also worked some good DX on Sept. 7 including EA2LU/P (ZD), 16 HB9s and I2FAK (EF). It was Irish night on the 9th and 10th with six, all in WN, contacted,

plus FIADT/P (BF). The 14th yielded EA1s BLA and QJ (VD). On the 24th Mick had QSOs with DA2CD, DJ3ZG, HB9BNI and HB9RZH, all in DH, and HB9RYA/P (EH).

In the contest Ela Martyr, G6HKM, (ESX) operated for 17 hours and made 198 QSOs in 42 squares, her best DX being F6DUI/P (DF) at 829 kms. On the 9/10th F6CCH (ZG) was new and five EI QSOs produced two more 1985 counties. In an opening to the east on the 29th, Ela worked OK1AXH/P for a new 1985 country. During the contest, G6HKS heard at least 25 HB9s and worked some in DG and DH. F6BUL/P (DF) was a new square for Richard. GM3ZBE (YR) was contacted on the 9th, EI4FP (WN) on the 10th, while the 11th brought EI4AQB (VN) for a new square and OK1JKT/P (GK) who heard him on 2½w. On the 12th, EA1CYE (YD) was worked again.

Dave Ackrill, G6VMQ, (WMD) is up to 55 on CW and mentions G4UIP (NLD)

worked at 0610 on Sept. 8 in the contest. He has passed his morse test and awaits his Class "A" call. In these cases, the table scores carry on and there is no need to start all over again. Mike Huggins, G6XRK, (ESX) managed EI9FK/P (WN) and F6CCH (ZG) for a couple of new squares on the 9th. Jim Rabbitts, G8LFB, (LDN) cites F6BUL/P (DF) and HB9LU/P (EG) as new squares on the 7th. Although 18 stations were worked to the SE, no Italians were heard.

Welcome to Tony Frost, G8UDV, from Gunnislake in Cornwall and who enters the squares table with a total of 38 worked from two fixed stations less than 50 kms. apart. He asks if squares worked from portable sites can be included. Sorry but no. His station is the Icom IC-251E with *muTek* front end and a 9-ele. *Yagi* at 12ft. *a.g.l.* In the contest, Tony contacted a couple of HB9s and 10 EAs plus his first Belgian, ON5FF.

John Fitzgerald, G8XTJ, (BKS) reckons he got bored working HB9s in the wee small hours of the contest as they all seemed to be in DG and DH, but GD4IOM was new this year. GU3EJL (ALD) on the 10th was another new one for '85. The many EIs seemed uninterested in G contacts, however. Best northerly DX was GM0BQM/P (DGL) on the 20th. From Jersey, Geoff Brown, GJ4ICD, made 1,097 scoring QSOs in the contest as a single-op. station for the record total of 16,885 *RSGB* points and over 425,000 *IARU* ones. 600 continentals were worked, best DX being FK square at 956 kms. in good conditions.

Clive O'Hennessey, GW4VVX, (GWT) continues to be plagued with computer hash but in between times has added 23 more stations on the key and six more assorted G and EI counties. Paul Baker, GW6VZW, (GWT) was restricted to one watt in the contest due to TX failure so heard much more than he could work. Nevertheless, he did get F6EZV/P (BH) and F6BDN/P (AG) for a couple of new squares, plus EAs in YD. He has yet to work to Cambridge and wonders if there is any activity from that county. Paul is working away at his morse so might find G3EDD who uses CW from there.

Seventy Centimetres

G1KDF is still winking out new counties and is now up to 73. On Sept. 10/11, Bob found G6WZA (SOM) and EI9ED (Meath) plus PA0RDY (CM); G3YDZ (HFD?) on the 16th and GJ4ICD on the 29th. He asks if anyone is QRV from Mid-Glam., Central and Tayside. Anyone interested in a sked can ring him on 0695 74868 after 7 p.m. most evenings. Paul Brockett, G1LSB, (KNT) reports above average conditions on Sept. 25-29 resulting in QSOs with GB4LIE on Lundy Is., G8XVJ (YN), GM4LIP/P (WP), DK5AI (FL), DF3DJ (EL), DC3KP (DK) and three Ds in DL.

G4TIF was pleased with EA1RCA/P (WD) on Sept. 7 and EI7BJB (Kildare) on the 11th. Martyn found GW3KJW (GDD) on the 17th in XM17j which is a bit of a rarity on the band. For G4VXE, EI9Q (WM) was a new square on the 9th. G4WGY often gives CW a whirl but has only managed 15 stations. She is quite amazed by GW4TTU's enormous total, now 217 different stations, and wonders just where Kelvin finds them all. Some of Sue's 15 were "QSYs" from 2m.

G6AJE has been working down to Kent and up to Yorkshire. Mike got S8 from GW4SMW (GWT) on one watt on the 28th. F/ON4AJB/P (AK) was worked the same day, as was GU1DWO (GUR). G6CSY's initiation to the *RSGB*'s Monday Night Award was G6ICR (MSY), the evening ending with nine stations towards this award. GM4LIP/P on Islay was contacted, too. G6HKS's short list was EI9ED (WN) new on the 11th and DK3FB and DH0EAQ, both in DL on the 12th.

On Sept. 12, GW4TTU (GWT) found beacon FX4/THF (ZD52c) on 432.864 MHz S9-plus at 1147 but the only Frenchman around was F1FHI (ZH). The beacon remained at the same strength till 1436 when it rapidly faded as a cold front arrived. On Sept. 10-12, Kelvin reports "exceptional conditions" to EI and GI with EI7EW (Dublin) the strongest signal by far. EA1BLA (VD) and EA1CYE (YD) were also contacted in this period.

G8AAY telephoned from Corfe Mullen (DOR) to report that when a local called "CQ" at 2015 on Aug. 26 on 432.2 MHz, an OK1 portable replied. He wonders if anyone else in the south west heard any OKs that night?

The Microwaves

John Quarmby, G3XDY, (SFK) worked GB2XJ (XJ) on 23cm. and on 13cm., G4CBW (SFD) in YN, G4KDH (ESX) and DK0NA (FK) though did not mention any dates. He is one of the two participants in the 13cm. All-time Table. Perhaps other readers would like to enter the squares, counties and countries contacted?

THIRTEEN CENTIMETRES ALL-TIME TABLE				
Station	Counties	Countries	Squares	Total
G8PNN	14	6	22	42
G3XDY	5	5	11	21

G4DCV has got going on 23cm. from Aug. 29 with just 2w to a single *Yagi* at 40ft. The first night brought four PAs and an ON and the first G was not worked till the 31st. Two more PAs were netted on the 14th Sept. and on the 25th, Paul contacted DK5AI (FL) on CW and DJ6JJ (DL) on SSB. OK1AXH/P was nearly worked but read the call as G4BCV. More PAs and

DLs were worked on the 27th and 29th. He hopes to have a 2C39 PA running soon.

G4ZTR has at last worked over 600 kms. thanks to DK5AI. John will be QRV in the *Cumulatives* and will be listening for WLT, BFD and Welsh counties. G6CSY's only completed QSOs were with G6ICR and G8JHL in YN. Gordon Emmerson, G8PNN, (NLD) added G4VCJ (CVE) on Sept. 8, probably the only station on 23cm. from Cleveland. On the 9th, he worked G8AGU (YSW) in YN for a new county and square, all-time, on 13cm. and is now up to 22 squares on this band.

GJ4ICD worked HB9AMH/P on Sept. 11 for his 43rd square on 23cm. but Geoff forgot to say which square. GW4TTU will be making some improvements to his 23cm. station in the winter and to increase his power from 70 to 150w. Kelvin's September successes included GW3JXN/A (XM) on the 2nd, G4CBW (YN) on the 11th and F1FHI (ZH) on the 12th, while on the 28th he managed G3OSS (ZL) and GU8FBO (YJ) with 1.3w.

The Locator Debate

Two readers have written to state their unreserved support for the Maidenhead locator system. G3COJ disagrees with the idea of reviving E-QTHL since using two systems is as unnecessary as using both *Fahrenheit* and *Celsius* temperature scales. Brian reckons it would be akin to reviving the old pounds, shillings and pence currency. G6DZH likes it as it is easy for computer scoring, is unique, and Keith thinks it will really come into its own when "super DX" on 6m. is worked.

Opposing, Rod Burman, G4RSN, has sent a well reasoned, sober case why he feels it unnecessary to adopt it for European use, while G8LFB is more forthright condemning it as, "... an utter disaster". Whatever Maidenhead supporters may claim, the fact is that of the many contributors to VHFB, only two have so far given it their complete support and another two do not mind which system is used. A few others would like to see a swift resolution on which system to use. But the great majority of those who have commented are anti-Maidenhead, including members of some of the leading contest groups.

Finale

That's it for another month. Next time may be some reports on an *Aurora* which your scribe happened across for about five minutes at 2315 on Oct. 5? All your reports, claims, news and opinions to:—"VHF Bands", SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts. AL6 9EQ. The all-important deadlines are in the box, so please note them. *73 de G3FPK.*

Top Band for the Yaesu FT-77 Transceiver

IAN KEYSER, G3ROO

HAVING 'Top Banded' the FT-707 (see July and August 1985 issues of *Short Wave Magazine*) I decided to turn my attention to a similar project for the FT-77.

It was hoped when this modification was started that Top Band could perhaps be added without removing one of the other bands. However we have the same problem as in the FT-707: lack of space and the difficulty of making tuned circuits have sufficient passband to include two bands in one set of coils (see July '85 *S.W.M.*). There is the added problem that the switch wafers do not have spare terminals in the blank position, and it is therefore necessary to accept the fact that the 160m. band will have to be in the position of the old 12m. band on the bandswitch unless the bandswitch is completely rewired!

The FT-77 uses a phase lock loop for the local oscillator instead of the crystal mixer system used in the '707. If anything, this makes the set easier to convert and set up because if there is a fault the system will just refuse to work! The RF stages are very similar in design to the '707, just a little more basic in design.

Modifying the RF PCB

First the PCB must be removed from the set. Next remove T1017 and both sections of T1009; the plastic cover can be eased off the pair of transformers if necessary, but with a solder sucker there is no need. Modify three Toko RF chokes as shown in Fig. 1 clearly marking them for future reference. Now replace T1017 (see Fig. 2) and then neatly wire a 180pF capacitor in between pins 1 and 2 of the coil; replace T1009A and B and wire a 22K and 180pF in parallel between pins 1 and 4 of T1009A and another 22K and 180pF in parallel between pins 1 and 3 of T1009B.

The High Pass Filter

This is also situated on the RF PCB. This filter is needed to reduce the amount of RF energy that is radiated in the medium wave broadcast band from reaching the RF stages of the receiver section, causing problems. As the FT-77 is only designed to work from 3.5 MHz upwards the designer set the cut-off frequency at about 3.0 MHz. This has the undesirable effect of attenuating the 160-metre signals by about 60dB. All that is required to reduce the cut-off frequency of this filter is to add three 1nF capacitors (C5, C6 and C7 in Table of Values) to the underside of the PCB in parallel with the capacitors C1002, C1003 and C1005.

These capacitors can be found by placing the RF PCB on the table, components uppermost and with the RF transformers T1017 and T1009 furthest away from you. The capacitors are located about half-an-inch in from the left-hand side of the board. Firstly locate the L1001, L1002, L1003 and L1004, and then by reference to the track side of the board and the circuit on page 57 of the handbook there should not be too much trouble finding them.

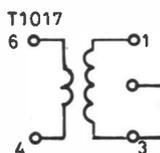
Modifying the PLL PCB

To ensure these are done correctly it is best if I list the modifications, but before I do that a brief description of how a PLL works may be in order.

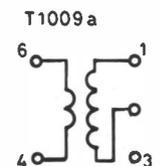
We require a VFO running on the required signal frequency plus the IF frequency so that we can beat this with the signal from the aerial and so produce a 'chinese copy' of the aerial signal at the

IF frequency for amplification. We have to precisely tune this oscillator and maintain a high order of stability to enable SSB signals to be resolved. In the FT-707 this was done by mixing a low, and therefore stable, oscillator with a crystal oscillator and selecting the required beat with an L/C filter. In the FT-77 there is an oscillator on the required frequency and we alter its frequency by changing the voltage on a varicap diode; there is also a crystal oscillator and we beat these two signals together in a mixer and extract the low frequency component. If we now compare this resulting low frequency component with a stable signal of nearly the same frequency in a phase detector we can get a voltage out which is proportional to the phase error between the two signals. We can use this voltage after a little tailoring to correct the 'voltage controlled oscillator', modifying its frequency so that the frequency out of the mixer is the same as the frequency of the reference VFO. It follows that the VCO is now 'in lock' with the VFO, so if we shift the VFO the VCO will follow.

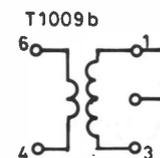
RF PCB: Three TOKO 4261A5871 RF Chokes



Add internal link between pins 2 & 3
Add 4 turns between 4 & 6

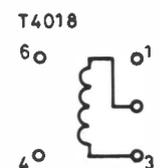


Remove wire from pin 3, remove five turns and reconnect to pin 2.
Add 4 turns between pins 4 & 6



Add internal link between pins 1 & 2.
Add 4 turns between pins 4 & 6

PLL PCB: TOKO 30099 (Orange core).



Remove all windings and capacitor in base.
Add 16 turns between pins 2 & 3

Fig.1 COIL MODIFICATIONS



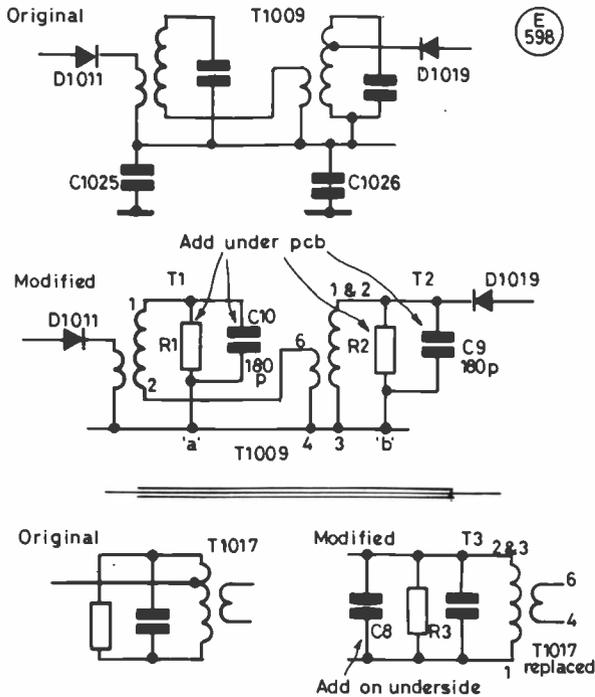


Fig. 2 RF STAGE TRANSFORMER CIRCUITS (Original and mod'd.)

Table of Values

R1, R2 = 22K, 1/4W	C12 = 60pF ceramic
R3 = 3K3, 1/4W	C13, C14 = 100pF ceramic
R4 = 22R, 1/4W	C16 = 25pF ceramic
C1 to C4 = 1500pF ceramic high-voltage	L1, L2 = 28t, 22 swg enam. wire on T68-2 core
C5, C6, C7 = 1nF ceramic plate	T1, T2, T3 = Toko 30099
C8, C9, C10, C15 = 180pF ceramic plate	T4 = Toko 5871 (modified)
C11 = 56pF ceramic	RLA = miniature 2-pole 2-way 5V coil
	X1 = replacement 15.987 MHz xtal

That is a simplified description and its operation is, in fact, considerably more complicated. However it is sufficient to enable the following modification to be followed.

The first thing to do is to change the 24.5 MHz crystal oscillator to one suitable for 160 metres. The VCO has to run between 10.4875 and 10.9875 MHz for the set to cover 1.5 to 2.0 MHz. The reference VFO runs between 5 and 5.5 MHz and so we require a crystal oscillator on 15.9875, as the IF frequency is 9.9875 MHz. To do this carry out the following while referring to Fig. 3.

1. Replace X4007 for crystal on 15.987 MHz.
2. Replace C4030 situated alongside crystal with ceramic 25pF capacitor.

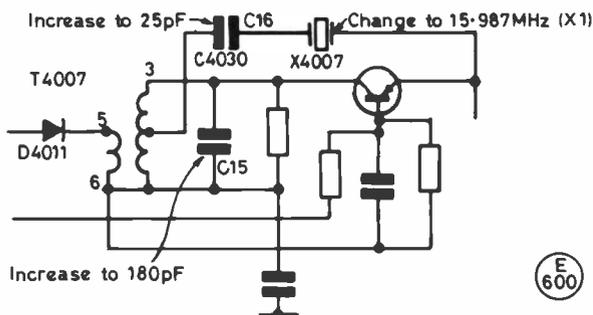


Fig. 3 ALTERATIONS TO CONVERSION OSCILLATOR (PLL PCB)

3. Add 180pF ceramic plate capacitor (C15) to pins 1 and 3 of T4007 on the underside of the PCB.
4. Apply 8 volts to J4005, pin 1 negative, pin 2 positive.
5. Using a 'scope or RF voltmeter check for oscillation of Q4007 when J4001 pin 5 is earthed.
6. Peak core T4007 for max RF on cathode of D4011.
7. Remove 8 volt supply from J4005.

That completes the modification of the crystal oscillator. The next section is the voltage controlled oscillator, see Fig. 4. The original circuit oscillates on about 35 MHz and we require it to work between 10.5 and 11 MHz. We have to alter a few component values and change the coil, which we have to wind. Take a Toko 30099 10.7 MHz IF transformer and remove its cover, carefully break all the wires to the pins and clean them with an iron. Then remove all the windings from the bobbin and the capacitor in the base. Take a length of fine wire and wind 16 turns onto the former between pins 2 and 3. Carefully replace the cover and check with an ohm meter that the windings are intact. It is very easy to break the windings on replacing the cover.

Now follow the list for modifying the VCO:

1. Remove T4018 and replace with the new coil.
2. Replace C4065 (of the two capacitors between Q4018 and T4018 it is the one next to Q4018) with a 60pF ceramic.
3. On the underside of the PCB add 60pF capacitor between pin 1 of T4018 and the cathode of D4030 (this was originally inside the can of the old coil).
4. Check for solder bridges and replace the PCB in the set.

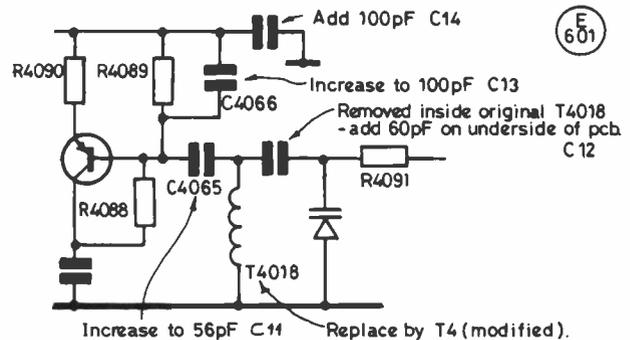
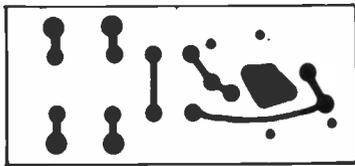


Fig. 4 ALTERATIONS TO THE VOLTAGE CONTROLLED OSC.(PLL.PCB)

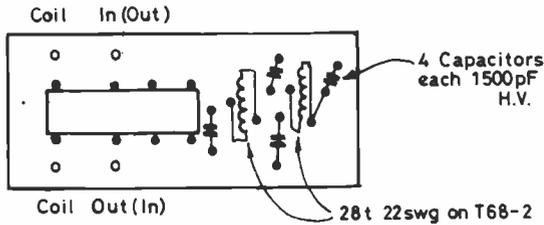
Now for the moment of truth! Apply power and switch to 24.5 MHz; with luck a frequency between 1.5 and 2.0 MHz will be displayed on the dial. If not, swing the tuning from one end to the other and see if the dial springs into life. If the dial is blank this is because the PLL is "out of lock". The inhibit line is used to extinguish the dial to warn the operator of this condition. If all is well with the work carried out correctly, the frequency will indicate on the dial at some point. It will then be necessary to play with the core in T4018 to make the dial indicate over the entire range. Having done this measure the DC voltage on the inner conductor of the coax lead that joins the PLL PCB alongside PJ4001 and check that it changes within the range 2.5 and 6.5 volts as the dial is tuned from one end of the band (1.5 to 2.0 MHz) to the other. If it does not adjust the core until it is between these limits.

The Low Pass Filter

The circuit and layout of this unit is shown in Figs. 5 and 6. It is fitted in exactly the same manner as for the FT-707, described in the August 1985 issue of *Short Wave Magazine*. The low pass filter could have replaced the existing 12m. filter on the low pass filter PCB, but for the effort involved in removing the board from the set and the risk of breaking wires in doing so is not worth the cost of the relay and small PCB. The PA box is removed by removing the outer covers and then applying pressure to the side



(a) Foil side



(b) Component layout

Fig 5 LOW PASS FILTER PCB.

flanges of the rear screening box at the same time as easing the heatsink away. Remove the screened cable from the rear of the SO239 aerial socket and move it out of the way. Also, to get more room, it is best to remove the 8 volt line from the phono socket.

The low pass filter PCB is fixed in position by soldering the groundplane of the PCB to the earthing lugs, slackening them and moving them if necessary. It sits at an odd angle, but the fixing is firm and that is far more important.

The inner of the SO239 aerial socket is connected to one of the input/output terminals of the filter (they are interchangeable). The coax inner removed from the SO239 is connected to the other input/output terminal and one side of the relay coil is connected, via a 22-ohm resistor, to the 8 volt terminal phono socket, along with the wire removed earlier. To the other side of the relay coil connect a length of mauve wire (about 12 to 18 inches) and route this along the back of the PA box and into the cableform that passes out near the band switch. Locate the 24.5 MHz position on the switch and having trimmed the new wire to the correct length solder it to the terminal. When the bandswitch is switched to the 24.5 MHz position the relay will energise, inserting the 2.5 MHz LPF into the aerial line.

Tuning-Up

When carrying out this phase of the conversion it is essential to remember that the biggest problem with transistor power

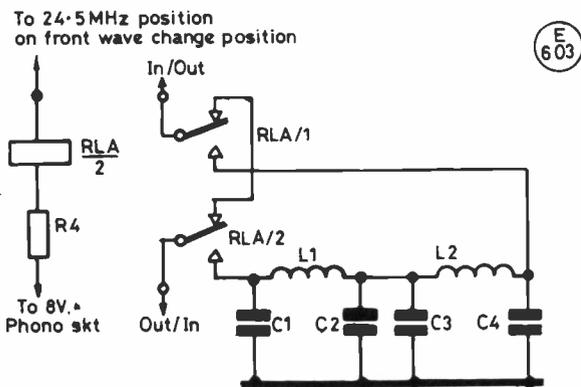


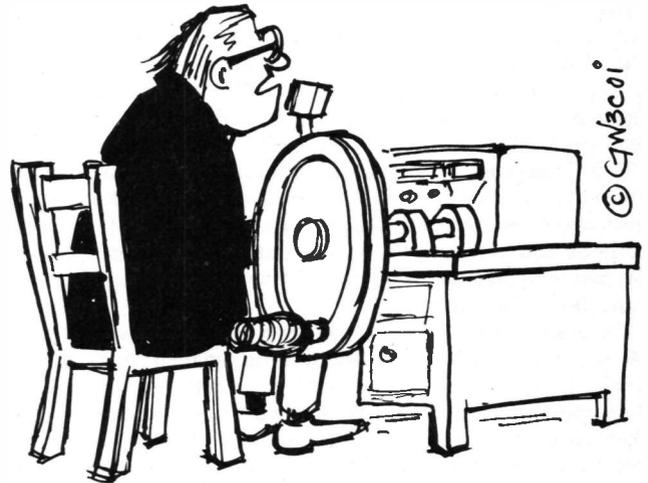
Fig. 6 LPF CIRCUIT DIAGRAM

amplifiers is dumping the heat generated. I would recommend that if the fan starts at any time, leave the set with power applied until it stops and if any part of the tuning operation does not go exactly to plan allow a resting period of at least five minutes after each minute of tuning. This may sound drastic but with replacement transistors costing over £60 who can afford to be rushed!

The phase lock loop has already been tuned so all that remains is the tuning of the RF stages.

With power connected, SWR bridge and dummy load connected to the aerial socket and microphone plugged in, position the set in such a way that it is possible to get to the RF transformers T1009A and B and T1017.

Switch on the power and tune to 1.9 MHz; push the PTT button with the set switched to CW and advance the drive until a few watts are indicated on the bridge. Tune T1019 for maximum output and release the PTT button. Allow the set to cool and while waiting tune to 1840 kHz. Press the PTT and peak T1009B, retune to 1960 kHz and peak T1009A. Reduce the drive so that the power is again only a few watts and swing the tuning between 1.8 and 2.0 MHz; the output power should remain reasonably constant. For a final test wind up the power to full and do the



“... I say you can't have too much bandwidth ...”

check again, the maximum power should be in excess of 60 watts dropping to about 40 watts on 1.9 MHz. Do not worry if you have excess power, but if it is less there may be either a tuning or wiring error somewhere.

The first two sets modified produced a full 100 watts at the two peaks, dropping to about 70 watts at 1.9 MHz.

Conclusion

The conversion was very painless indeed and proved very easy to tune up. The set is now permanently fixed in my car for mobile operation and with a small aerial only four feet long on the bumper mount it is possible to have completely reliable mobile contacts between the towns of Dover and Folkestone, both of which are in very deep valleys and fifteen miles apart.

Kits for this modification are available for £22 plus p/p of 50 pence from: Ian Keyser, G3ROO, "Rosemount", Church Whitfield, Dover, Kent CT16 3HZ.

Coming soon from "Kanga Electronics":
50 MHz Receive Conversion for the FT-707

An American Experience

Part 3

Three Weeks to Remember

**CHRISTOPHER PAGE, G4BUE,
and COLIN TURNER, G3VTT**

The F.O.C. North American Dinner

THE 24 hours on the Greyhound from Kentucky to Massachusetts seemed to go quicker this time, which suggested to us that we were beginning to get used to that mode of travel. The purpose in travelling to New England was to attend the 13th North American Dinner of the First-Class CW Operators' Club (known as F.O.C.). In addition to having a mutual interest in QRP, we are both members of F.O.C., and it was very fortunate that the Dayton Hamvention and F.O.C. Dinner had been arranged for successive week-ends.

F.O.C. appears to be one of those radio clubs about which amateurs, outside of the membership, do not seem to know very much about. We are continually being asked what F.O.C. is, both on the air and whilst attending clubs and rallies, so the purpose of this part is to describe the Club and what it stands for, together with a little of its history.

The aim of F.O.C. is to foster and encourage a high standard of CW operating ability and behaviour on the amateur bands, and to observe the principles of band planning. It is a British based Club, but membership is open to amateurs in any country of the world. There are currently members in 49 countries. Members have to be able to operate at a speed of not less than 25 words per minute and have capabilities for working on several of the HF and LF bands.

The rules of the Club state that membership is restricted to 500 amateurs, (a figure set in 1966), and because of this you cannot join F.O.C. as you would join other radio clubs, *i.e.* by completing an application form and sending off your first subscription. You have to wait until you are invited, which is in the form of a letter from the Secretary. Election to membership is on the recommendation of at least five sponsors from at least two continents, with not more than three sponsors from any one continent. One of the sponsors must be a member from the U.K. The sponsors will have been in contact with the nominee on the air on CW on at least two bands during the preceding 12 months and satisfied themselves that the person is able to comply with the rules of the Club. The idea of the sponsor system is an attempt to retain the high standards and prestige of the Club, in that amateurs who fall short of this should not be sponsored for membership.

After an amateur has been sponsored, his call sign, together with his five sponsors, appears on the "Starred List" in the monthly News Sheet. This enables members to see which amateurs are being sponsored and to object to them if they regard them as being unsuitable. One of the methods of retaining the high standard of the Club is to carefully monitor membership, and this is done by enabling any member to object to a nominee. Objections are usually made on the grounds of an insufficient standard of CW or bad operating practices. When an objection is made the matter is referred to the Committee, who either uphold or overrule it.

The Club has adopted frequencies of 025 kHz up from the bottom edge of each band (*i.e.* 3525, 7025, 14025, 21025 and 28025), where members look for other members. Anyone wishing

to improve their CW receiving capabilities can usually find members ragchewing on these frequencies.

When an amateur joins F.O.C. he is allocated a membership number which is personal to him. When he leaves the Club his number goes with him, and this has resulted in the numbers of the present members ranging from 7 (G5RV) to 1483 for the latest member (N2UU).

The membership numbers form the basis of the Club's awards programme, WAFOC (Worked All F.O.C.), WAFOCC (Worked all F.O.C. Countries) and W6 WAS-FOC (Worked all States F.O.C.) For a QSO to count for an award membership numbers have to be exchanged. It does not matter where the member is operating from or what call sign he is using, it is the membership number that is important.

The WAFOC award is based on points, and these are accumulated by working members on as many bands as possible. One point is awarded for each QSO and a bonus of ten points is given for working the same member on five bands, with a further bonus of five points for working the same member on six bands. Each QSO with a member in a different country counts as two points, and the six continents each count five points each. With members scattered throughout the world, the award encourages DX-ing on the LF bands and working local members on the HF bands.

In addition to the above awards two new ones have recently been introduced, the Nickel Trophy and the Bill Windle Trophy. The Nickel Trophy is in memory of Augie Nickel, W4GK, who became a silent key in 1977. It is awarded to any member who can claim valid contacts with every other member of F.O.C. on at least one band. Since its introduction the trophy has been awarded to over fifty members.

The Bill Windle Trophy has just been introduced in memory of Bill Windle, G8VG, Secretary from 1967 to 1981. Bill was one of the longest serving members of F.O.C. at the time of his death in 1983. The trophy is awarded annually to the member who has contacted the highest number of other members during the previous year; 1986 will be the first year it will be awarded for contacts made in 1985, and at the half way stage the leading contender has already contacted over 400 of the 500 members.

By now the reader will appreciate that F.O.C. is a club for active radio amateurs, and this cannot be better demonstrated than during the annual contest for members called the Marathon. It is held over a 48-hour period during the first week-end of February and scoring is based on the WAFOC rules explained above. The Marathon, which was first held in a completely different form in 1947, is a very popular event amongst the members. In the 1985 Marathon 88% of the membership participated, which illustrates the high level of activity. Plaques are awarded to the Continental winners and W3LPL, who won the plaque for North America in 1985, had a total of 930 QSOs during the week-end. From the logs received it was calculated that the 500 members were responsible for a total of 73,600 CW QSOs



The Ethan Allen Inn, Danbury, Connecticut where the North American F.O.C. Dinner is held each year.

in the 48 hours! A point to make to those amateurs opposed to contests is that all the QSOs were made within 10 kHz of the Club's frequencies mentioned above, thereby causing very little disruption to other amateurs using the bands.

An interesting feature of the Marathon is the number of five and six band inter-continental QSOs that are made every year. This is clear support for the theory that the bands are often open for DX, but lack of activity is the main reason QSOs are not made.

Amateurs regularly ask how one becomes a member of F.O.C. The answer is to be active on the Club's frequencies and take part in CW QSOs which consist of something more than the usual RST, name, QTH and "QSL sure via Buro" type of QSO. If your CW is up to the required standard together with your overall operating ability, you will soon draw attention to yourself from members who QSO and hear you. Many members leave their receivers on 025 when they are working in the shack and listen to QSOs. They are continually looking for up and coming good CW operators who are likely to make the grade who they can sponsor for membership. One word of warning though: actual touting and asking for membership is strictly against the rules of the Club and is very much frowned upon.

The origin of F.O.C. can be traced to a letter from R. B. Webster, G5BW, under the heading "A British A1 Operators' Club?" in the March 1938 edition of the *T. & R. Bulletin*, (forerunner to *Radio Communication*, published by The Radio Society of Great Britain).

The letter read as follows:-

"At a time when the standard of British amateur-band operating is deplorably low, may I draw the attention of readers to the "A1 Operators' Club"? Details regarding this club may be found in the *ARRL Handbook*, and while membership is international, I believe the number of British members is comparatively small.

Briefly, the object of the club is to encourage a high standard of operating in the amateur bands, and no doubt there is room for a similar organisation over here. There must be a considerable number of first-class G operators who are not members of the ARRL club, and the formation of a British club would be very beneficial.

British amateurs who are already members of the "A1 Operators' Club" could be foundation members and form an election committee. The rules as laid down in the *Handbook* can be applied when considering the eligibility of candidates, and membership would be for a worthwhile distinction. It would be interesting to see what support, if any, is forthcoming for this proposal."

In the May 1938 edition of the *T. & R. Bulletin* is a note which says that G5BW had said that as a result of his letter being

published in the March issue, a First Class Operators' Club (F.O.C.) had been formed. Its object was to encourage and maintain a high standard of operating on the amateur bands. A committee had been appointed and was already at work. The note continued that there had been a remarkable show of interest from the letters received, and it was hoped to publish a list of members.

The June edition of the *T. & R. Bulletin* mentions that F.O.C. members are primarily concerned with "experiments in W/T" and the Club's slogan is "Genuine experimental work and first class operating technique." It is suggested that such experimental work can in most cases be performed more easily, quickly, and in such a manner as to cause less QRM, if the experimenter's theoretical knowledge is supplemented by good operating technique.

Up to 30th May 1938 over eighty applications for membership had been received, but only eighteen were accepted. It was explained that due to the nature of the Club, the membership would be considerably restricted, and that it was not expected to enrol more than 100 members, even under the most favourable conditions! Whatever the number, however, under no circumstances would the standard be lowered to increase Club membership. The magazine listed the following members as at 30.5.38:-

G2AO	G2RO	G2SG	G2UJ	G2ZQ
G3FB	G5KV	G5LP	G5OQ	G5UA
G8AX	G8CK	G8HA	G8IT	G8PG
G8QR	G8W1	E15M		

Of the above only G8AX and G8PG are still members approaching fifty years later.

The following month, the *T. & R. Bulletin* announced that F.O.C. was well and truly launched. G2ZQ was President, G5BW Manager and the Committee consisted of G2RO, G5OQ, G8AX and E15M.

By now the *T. & R. Bulletin* was featuring a regular column, under the heading of First-Class Operators' Club, which contained news about the Club, call signs of new members, and suggested operating procedures to improve overall standards on the bands. It was probably the last of these items which caused a number of critical letters to be written about the Club, complaining about the "self-appointed unqualified experts" who were putting themselves forward as an example to other amateurs. This may have been the reason that the RSGB stated soon afterwards that F.O.C. was not connected with them in any way, and it was only to assist the Club in getting established that they had allowed their columns to be used for F.O.C. news. Shortly



One of the tables at the Dinner with (left to right) K1ZZ, G3TXF, W0KZV, Linda XYL of W0KZV, Judy XYL of W9KNI, G3VTT, and W9KNI who is holding a double current railway key which was donated to F.O.C. by G6HB. It is awarded to the winner of the annual "Pump Handle party", a straight key activity week-end held in November. In 1983 it was jointly won by G3VTT and G3WUX.



G3FXB (right), Secretary of F.O.C., presenting WIRM with a certificate confirming his elevation to a Vice-Presidency in recognition to him and Bobbie (his XYL, WBIADL) for all the work that they have done for the Club over the years. Maud (XYL of G3FXB) and G3HDB look on.

after this the RSGB announced that F.O.C. news would no longer be appearing in the *T. & R. Bulletin*. A few more months later and World War II commenced and all amateur activity was closed down for the duration of the war. At that time the membership stood at 70, and of those, the following are still members:-

G2SO (now Z23JO)	G4CJ	G5RV	G6HB
G6WY (now VE3BWY)	G6ZO	G6ZY	G8AX
G8PG			

Another criticism of the Club in those early days was that it was only for the "fast CW merchant", but the August 1938 column made it quite clear that membership was open to any station, phone or CW, the only proviso being in the case of phone stations that their technique was good and orthodox, and that they had adequate knowledge of the code. It was immaterial whether members worked on phone or CW, except that the practice of sticking exclusively to phone was deplored. In the same news item it was announced that ZB1P had been elected to membership becoming the first overseas member. At that time F.O.C. was strictly a British club and membership restricted to British amateurs only, although it did not matter in which country they operated or what call sign they used. G8VG was also listed as having been elected to membership, and Bill was later to become Secretary from 1967 to 1981.

F.O.C. was revived in 1946 with G6FO, in his capacity as editor of *Short Wave Magazine*, using the magazine to publicise the Club. The July 1946 edition of *Short Wave Magazine* announced the reformation of the Club, and the November edition set out the Club rules, which differed somewhat from those used before the War.

The rules included the aims of the Club, which were to foster and encourage a high standard of operating ability and behaviour on all the amateur bands. This wording is still used almost forty years later. Requirements for membership included the ability to send and receive CW at 18 words per minute, and to be able to work break-in on at least three bands. Another new feature of the post-war rules was that election to membership was to be on the recommendation of three sponsors, and this formed the basis of the present sponsoring system.

A new feature of the post-war F.O.C. was the issuing of membership numbers. As a member joined he was issued with his own Club number, as described earlier for the present day F.O.C. Number 1 was issued to Austin Forsyth, G6FO, after he won a toss of a coin with G2ZC to decide who should have that honour.

In 1947 the first Club News Sheet appeared and the "Marathon" contest for members was held for the first time, although completely different from the present day contest. Also

in 1947 the first member from the U.S.A. joined, W1BUX, who is still a member to-day, membership having been extended after the War to include amateurs abroad.

In 1948 the first Annual Dinner was held, on the last day of the RSGB Exhibition in November. Since then the Dinner has been held every year in London, and for the last few years has been held at the Lords Cricket Ground on the first Saturday of October. It was in 1973 that the first North American Dinner was held and this, too, has become an annual event, being held on the first Saturday of May.

The immediate post-war years saw the Club continue to grow, with valuable support being given by G6FO through the pages of *Short Wave Magazine*. The Club gradually leaned towards CW, and it was in 1967 that the name of the Club was changed to The First Class CW Operators' Club to reflect this change.

Twenty-four hours after leaving Lexington, Kentucky, the Greyhound coach stopped in the suburbs of Boston, Massachusetts, where we were met by George, W1DA. We had to admit we were very impressed that after a 24-hour journey, the coach was exactly one minute early!

We had met George at the F.O.C. Dinner at Lords in 1976, and as with so many other members, had built up a friendship on the air since then. We were originally going to stay with a QRP-er in the Boston area, but shortly before we left the U.K. he and his wife parted, (nothing to do with our visit we hope!), and we did not wish to add to his problems. During a QSO with Chris, George asked where we would be staying in the Boston area and when Chris told him about our friend parting from his wife, George immediately said we both had to stay with him. Such is the friendship that exists between the members of F.O.C.

George drove us to his house where a barbecue had been arranged for some of the other U.K. members of F.O.C. who were in the U.S.A. for the Dinner. Stan G3LQI, and Jim G3HDB and his wife Margaret were all on their first trip to the U.S.A., and it was very interesting to exchange stories and experiences with them. Jim is the President of F.O.C. for 1985 and it was therefore an ideal time for him to attend the Dinner. He was staying with W1HX whom we were able to meet for the first time after nearly ten years of QSOs.

The barbecue culminated in us all attending the Old North Bridge at Concord, together with a large Union Jack which we hoisted by the monument commemorating the start of the



G3HDB (right), President of F.O.C. for 1985, presenting W1CCN with his Augie Nickel Award.

fighting with England which eventually led to the U.S.A. acquiring its independence. We are glad to report that the meeting between U.S.A. and U.K. F.O.C. members was a great deal more friendly than the meeting between our respective soldiers on the same spot over 200 years ago.

The evening was spent exploring the amateur bands, especially the LF bands, contacting other members for the WAFOC Award. The following day George's wife Carol took us sightseeing. Visits were made to the local amateur radio store and the Heathkit shop, where once again the difference in price of amateur radio equipment in the U.S.A. was very noticeable.

The following day, Friday, we drove the 200 miles to Danbury, Connecticut. The Dinner is held at the Ethan Allen Inn on the Saturday evening, but activities commence on the Friday afternoon when members start arriving from all over the U.S.A. Friday evening was spent in meeting old friends and many members for the first time. Everyone asked us the same question, "How did you two guys get your wives to let you spend three weeks on your own in the U.S.A.?" And the answer? — we are keeping it a secret!

Amongst the 500 members of F.O.C. are many famous call signs from the world of amateur radio. Dave Sumner, K1ZZ, is the General Secretary of the American Radio Relay League (ARRL); Stew Perry, W1BB, is known as "Mr. 160"; Hugh Turnbull, W3ABC, is the Director of the ARRL's Atlantic Division; Al Kahn, K4FW, is President of Ten-Tec; Bob Locher, W9KNI, is part-owner of Bencher; and in addition there are many famous contest winners and record holders, DX-peditioners, and DXCC Honour Roll members. As you can therefore imagine, a great deal of information, advice, assistance and opinion is exchanged between the members at such gatherings.

We got to bed very late that night and regret to report that we disgraced ourselves the following morning. We both woke up at the same time and, thinking it was around 8 a.m. slowly started to shower and get dressed when there was a knock on the door. We answered it and were confronted by a rather shy chamber maid who wanted to know how long it would be before she could get into our room to clean. She explained it was after midday and ours was the only room she had left to clean. Since we had been in the U.S.A. we had spent two nights on Greyhound coaches travelling and had not had more than four hours sleep during the others. We assume it caught up with us that night and so when we went down for lunch had to take all the leg-pulling and jokes from the other members who had been wondering where we had been all morning.

The afternoon was spent continuing from where we had left off in the early hours of the morning in chatting and meeting new members. It is customary at Danbury for one of the members to put on a presentation on the Saturday afternoon, and this year Bill, K1MM, gave an excellent slide presentation of China.

The Dinner itself commences with the cocktail hour held around the indoor swimming pool, and then the Dinner itself in the banquet room. After the speeches, presentations and raffle, members adjourned to various parts of the hotel to continue the rag-chewing.

After breakfast the following morning, and checking out of the hotel, the majority of members make their way to Burlington to the QTH of Pete, W1RM, and his wife Bobbie, WB1ADL. For the last few years Pete and Bobbie have had their "Open House", which is in fact a barbecue for members before starting their journeys home, and has become an established part of the weekend.

So ended our first attendance at the F.O.C. North American Dinner, and during the Monday evening we reflected back over it with W1RM and K4FU, who was also staying with Pete and Bobbie for a few days. Pete described F.O.C. as "one big family", and we guess that about sums it up.

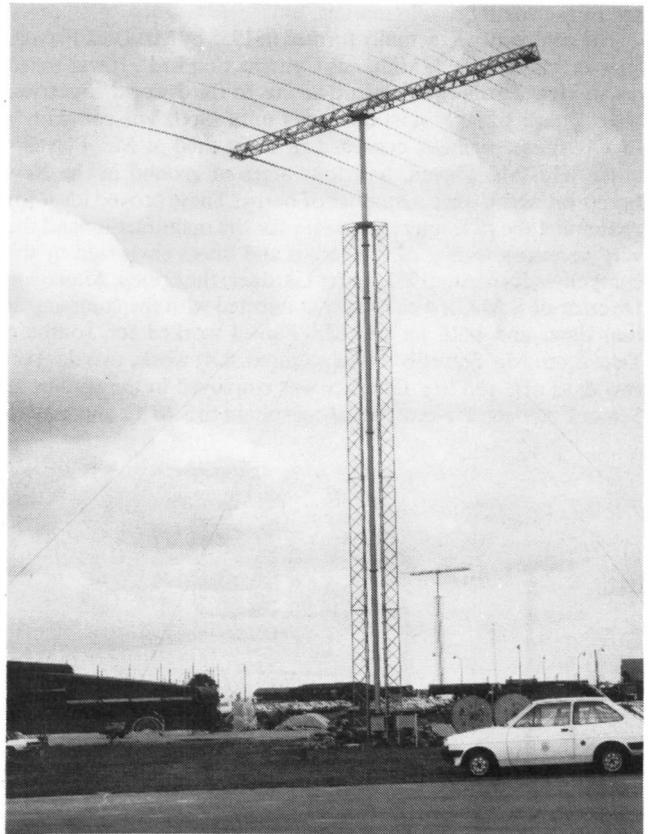
Over the years in the amateur radio press there has been a continuing controversy on the virtues of CW as a mode of communication on the HF bands. From time to time there is a very strong lobby for the mode to be either done away with

completely, or deleted from the U.K. requirements in obtaining a full amateur transmitting licence. We feel that if those persons who were so strongly opposed to CW could have spent an evening or two in the company of F.O.C. members, although they may not have altered their views, they would almost certainly have tempered them.

The average F.O.C. member is absolutely dedicated to CW and with this mode makes regular and reliable QSOs on the Club's frequencies with other members. That is not to say that F.O.C. members do not use other modes, but CW is their first love. When you join F.O.C. you find you have 499 other amateurs waiting on the air to welcome you to the Club, but friendships go much further than QSOs on the air. At the time of writing there are members in 49 countries in all continents, and personal meetings between members are common place as they travel around; F.O.C. members never find themselves short of hospitality, help and assistance when they are in a country where another member resides. It is the common love and interest in CW that draws members together.

As to the argument that CW is a 'dying method of communication in to-days technological world, a listen on the Club's frequencies at almost anytime of the day or night will testify this is not the case. In addition to the five hundred members of F.O.C. there are many amateurs who enjoy CW as a means of communication, and want something more than "rubber stamp" QSOs.

to be continued



This interesting log-periodic array is sited at R.A.F. Alconbury and would appear to cover 12-30 MHz, the longest element being in the order of 40 feet or so. The photograph was taken by Peter Waters of Waters and Stanton Electronics during a recent air display there, and we wonder if his firm could supply a rotator for it!

South Midlands Communications Ltd., Its Birth and Growth

*First of an Occasional Series featuring
well-known Firms in the Amateur Radio Market*

KEN MICHAELSON, G3RDG

SOME three months ago I had occasion to take a piece of Yaesu amateur radio gear to South Midlands Communications Ltd. at their headquarters branch in Southampton. I was so impressed with the courtesy I received from the members of the staff there and the range of specialised service equipment available that I thought a description of the commencement and growth of this well-known and respected company would be of interest to readers.

This, then, is the history of the company which in addition to handling a very large range of amateur equipment, has a great number of customers in the commercial field, and of its beginnings and steady growth. It is visible proof of straight business dealings, first class products and the inbuilt attitude that the customer is the most important person in any transaction. Which is more than can be said for some other firms, either in or out of the amateur radio market.

The company was actually formed in 1958 by Mr. Dick Flavell, and was called 'South Midlands Construction Ltd'. It was based on an idea to supply masts and aerials to third-world countries, but it didn't actually start operating until 1960. The company's first business premises consisted of a tin shed at Mr. Flavell's home. He, Mr. Flavell, had four acres of ground in the New Forest on which were a number of barns. These proved ideal for containing the machinery necessary for the manufacture and the very necessary testing of the aerials and masts envisaged by the company's formation. Mr. Barry Gardner, the present Managing Director of S.M.C., was loosely connected with the company at that time, and both he and Mr. Flavell worked for Southern Television. Mr. Flavell's duties required shift work, two days on two days off, and Mr. Gardner was employed in the studios as Senior Engineer. He became the consultant to S.M.C. and used to

design the masts, aerials and the large rhombics that were sold to foreign countries. Most of the designing was based on theory that he had learnt at college. He says that he had not had any practical experience, but was greatly interested in aerials and transmission lines.

These aerials were supplied to customers like the Portuguese Navy, and other governmental authorities. The name 'South Midlands Construction Ltd' remained until 1974, at which time it was changed to South Midlands Communications Ltd. (See below as to why this took place). Mr. Gardner joined the company full time in December 1964, as a junior director/shareholder. The firm was still selling aerials and masts, of which 99% went to export. Just prior to this Barry Gardner was offered the position of Chief Engineer for Southern Television, at Dover, but he turned that down and joined S.M.C. at approximately half the salary. He commented that he had had a very exciting career up till then. He said he had been in many things, radar during his National Service, radio mechanic in the aircraft industry, then returning to college full time. This was followed by becoming a development engineer specialising in radar flight testing. Later on he worked as a project engineer in television, and he was responsible for the installation of many TV stations throughout the world. He was also responsible for the engineering standards of the televised shows at "Sunday Night at the London Palladium", promoted at that time by Mr Lew Grade. He also travelled abroad extensively and went behind the Iron Curtain as engineer in charge of certain television developments there. He said he worked an average of 14 hours a day, six or seven days a week during his first two years of marriage, only being at home a few months, and he felt that he should settle down for a while and get to know his family.



Between 1964 and 1969 business was not too good, and on one occasion only one order for £32 came in during the whole month. The staff, which had at one time been about eight in number, was gradually whittled down to just the two of them, Dick Flavell and Barry Gardner. They decided that if the following month was as bad, then they would go into voluntary liquidation. However, they managed to stagger on, and business gradually improved until Barry Gardner designed a new HF Manpack Antenna which was sold by the thousands to semi-military users mainly with the Racal Mobical equipment. Racal were awarded eight Queen's Awards in a row and S.M.C. not only survived but laid the foundations for its continued expansion. In 1969 Dick Flavell decided that he wanted to retire but would remain as consultant, so he sold his shares to Barry Gardner who then became the Managing Director. He reckoned that about 10% of their customers were radio amateurs so the company started selling various parts from their complete aerials as separate units, insulators, dipole centre insulators, nylon cord etc, all of which were hard to obtain by amateurs (as I well know, having at that time become interested in trying out various types of long wire antennas). This led by word of mouth, or perhaps by word of QSO(!) to the company enlarging their connection with the amateur market. At that time, Dick Flavell spent less and less time with the business, and Barry Gardner thought it would be a good idea to amalgamate with another firm. He went, as he termed it, head-hunting, and although a number of companies were unsuitable, he came across a schoolteacher, who was manufacturing aerials and masts. His name was Hal Perkins and he operated from Swindon under the name of Western Electronics.

At about this time he was thinking of selling amateur radio equipment as there were not many importers in the business, most of the advertisements being for ex-WD gear. So he obtained the balance sheets of all the companies he could and went through them. He saw that the amateur market looked likely to grow into very big business. It really was an accidental decision, brought about by the joining up with Western Electronics and the commencement of the 'black box' era. By the 'black box' era I mean the time when radio amateurs preferred to buy ready-made units which did not require any work to be done to them, and were ready to switch on. A company called Western Electronics Ltd was set up which assigned the trading rights to S.M.C. Ltd, so the state then existed that the commercial equipment was sold under the name of South Midlands Construction Ltd., and the amateur gear through Western Electronics Ltd. The first brand of amateur equipment handled by this group was Sommerkamp. This was at the beginning of 1971, but when sales increased, bearing out Barry Gardner's view, Sommerkamp could not provide volume deliveries, and later in 1971 or early 1972 Yaesu Musen agreed to supply what was then Western Electronics Ltd. direct, thereby making the group virtually distributors and main dealers for Yaesu products. Some amateurs may have thought that the amateur business at this time was a licence to print money, but Barry Gardner strongly denies this. He told me that during the first eighteen months of trading on the amateur side there was a loss of over £15,000, and the profits from the Manpack aerials mentioned above were used to build up the amateur side. He said he thought it was a better idea to invest in the future of the amateur business than have to pay a large tax bill. Barry Gardner now believes that S.M.C. are Yaesu Musen's largest customer in Europe. S.M.C. Ltd. ran in parallel with Western Electronics Ltd. from about 1971, but unfortunately, Barry Gardner and Hal Perkins had different views as to the running of the business and in 1974 they agreed to separate. Hal Perkins took Western Electronics Ltd. away and started up on his account. S.M.C. sold approximately half the amateur equipment they had in stock to him and kept the other half. Both Western Electronics Ltd. and South Midland Construction Ltd. traded in Southampton at this time.

Mr. Gardner then decided to change the name of the firm to South Midlands Communications Ltd, previously believing that if one tried to sell amateur and commercial equipment through the

Vice Admiral Sir Lindsay Bryson, KCB, BSc, FEng, FIEE, FRAeS



Controller of the Navy

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Mr B D Gardner
Managing Director
South Midlands Communications Ltd
South Midland House
Osborne Road
Totton
Southampton SO4 4DN

RECEIVED 10 JUL 1982

780/13

6 July 1982

Dear Mr. Gardner,

I would like to express my appreciation for the excellent service that your Company rendered to the Royal Navy in the Falklands Crisis through the supply of ancilliary equipment for communication outfits, and providing valuable intelligence with regard to radio equipment supplied to the Falkland Islanders prior to the conflict. I would be grateful if you would extend my thanks to all in the firm who played a part in meeting our demands.

Yours sincerely

Lindsay Bryson

same firm, there was a definite prejudice shown by the commercial buyers: they considered that the firm was not sufficiently businesslike. As it turned out, this was shown to be incorrect. When it became known that South Midlands Communications Ltd were handling commercial units as well as amateur equipment, since so many of S.M.C.'s customers throughout the world were radio amateurs, it had a beneficial effect overall and the company expanded fast. At the present time though, Barry Gardner is of the opinion that a greater percentage of S.M.C.'s business is done with commercial firms throughout the world than with radio amateurs, but he tries to keep a balance with the amateur market, and at the present time is manufacturing several items of amateur gear for both the domestic and export markets, primarily to the U.S.A. and later they hope to penetrate the Japanese market.

The extension from masts and aerials to radio equipment sold under the brand name of S.M.C. was very gradual. In the first instance it was necessary to get 'type approval' from the various governmental bodies for the 'hand held' transceivers. This usually took a year or so. The 'hand held' units are manufactured by Yaesu Musen to S.M.C.'s specifications and bear the S.M.C. brand name. In order to get this done Yaesu required a minimum of 500 units, and from this initial step into the supply of commercial radio, they expanded to having 40 different transceivers 'type approved', from MF to UHF, from land and sea handheld to base station transceivers and have a further range of 60-100 models either being prepared for 'type approval' or available for export. Even in the recent past Barry and his wife Daphne have worked through the weekend to assist on the testing and despatch of a complete radio system comprising sets, aerials, masts etc. for an urgent order received on the Thursday, which was crystallised, tested and despatched on the Monday to a third

world country who urgently needed the equipment for medical reasons.

In passing, of interest to the amateur was the occasion when the Marketing Director was giving a £200,000 order to the executives of Yaesu, when the President, Mr. Hasagewa, entered the room. He glanced at the order, pushed it to one side and turned the discussion to his latest "secret model" in amateur equipment, which shows where his first loves lie! Other projects which S.M.C. has felt proud of were working through the weekend, day and night, to provide radio beacon antennas to the Red Cross for urgent use in Africa, manufacturing equipment for his Royal Highness Prince Philip to present to the Galapagos Islands Supply, supplying and installing antenna systems in Ethiopia last month and being a major supplier of communications equipment for the British base in Antarctica. Barry Gardner told me also that when a South American country was devastated in a recent hurricane, and all communications were lost, it was S.M.C. who supplied Versatowers off the shelf until permanent towers were built. He said that the latest job at the time of writing was the supplying of replacement equipment for the Greenpeace *Rainbow Warrior* after she was sunk in New Zealand. He thought that the strangest was the supplying of radio equipment for the nomadic tribes of Mongolia, in the U.S.S.R.

S.M.C. found business very good in the amateur market during the late 1970's and decided to expand. The first branch was opened in Leeds, since it is a busy centre of population. The next shop came about perhaps rather by accident than by design. It happened this way. One of the most respected dealers in the amateur world, Jack Tweedy by name, operated from Chesterfield. He decided to move to Lincoln, leaving Roger Baines in charge of the Chesterfield premises. However, having arrived in Lincoln, he found himself at a loose end, so he obtained a Portacabin, put it in his garden and started up operating from Lincoln! One day, without any warning, Mr. Gardner called on Mr. Tweedy in Lincoln and asked him if he would be interested in selling out. The end of this encounter was that S.M.C. bought out Jack Tweedy about five years ago, giving them two branches, one in Lincoln and one in Chesterfield. The opening of other branches followed, the next one being in Stoke-on-Trent, and others in Buckley (North Wales), Edinburgh, Jersey (Channel Islands) and Bangor (Northern Ireland). All the four main shops have a full time Service Engineer and the others deal with the 'first line' servicing, but if the problem is too great, then the offending piece of gear is shipped down to Head Office, where the facilities of very expensive and highly specialised test equipment are available.

As I mentioned at the beginning, the customer comes first, and this is born out by the courteous, interested and helpful attitude of all the staff. But when questioned about this, Barry Gardner considered that it really was a form of natural selection of people attracted by the environment and there has been no question of staff training as happens in supermarkets and big stores: it would be quite obvious if a prospective employee would be interested in the job he or she was applying for. But in the particular case of the telephone switchboard operator/receptionist, she was chosen because she had worked in that capacity in a big store for some time before applying to S.M.C. for the job. Before this, Barry Gardner said that his wife Daphne acted in this position, and I understand that she still works full time for the company having done so for the last 10 years; the ones who don't like the pace leave within a very short time! Barry Gardner himself, as Managing Director, believes in travelling around to visit his branches at intervals and to visit other countries, and so is able to keep in touch with customer requirements, business trends etc, in the running of all the branches. All the other directors, Nigel Curzon, Richard Diamond, David Peaty and Sheila Spacagna joined or were connected straight from university or college and became directors in their mid twenties. Barry Gardner considers that the vitality of the company is maintained by cheerful enthusiasm and very hard work. All the directors travel the world extensively looking for new orders or markets and he says that the combined total of overseas travel is between 75,000 and 100,000 miles a year.

As regards the attendance of S.M.C. at rallies, I am sure that you have noticed the excellently assembled and decorated stands of the company: Barry Gardner is of the opinion that it is more of a publicity exercise than a case of doing a lot of business. The firm, of course, gets a certain amount of business from their attendance, but as much appears to come afterwards, as customers say they saw this or that on the stand and they would like to buy it. This is apparently not the case in the north of England as it is noticed that customers in that part of the country are in the habit of buying whatever they wish, on the spot. But Barry Gardner feels that the situation is changing now, and customers like to take some time to make up their minds and actually try out the equipment they propose to buy. All the branches have the same type of display bench where all the equipment is laid out and connected. Customers can therefore go from one set to another and appreciate the actual difference on the spot. Mr. Gardner feels most strongly that *all* the equipment should be available for trial, and it is the wrong attitude for a customer to be shown one make of set, and then, if he wants to look at another model, for this to be taken off a shelf and plugged in. The customer is embarrassed, he feels, to have to ask for all this to be done. It is this viewpoint, I feel, that goes right through the company at all its branches, and bears out my opening remarks. At the present time it is not anticipated that there will be any more branches: the object now is to increase the turnover of the business, and Mr. Gardner hopes to double it in three years from now to a substantial sum of £10,000,000.

I was taken on a tour of the premises, where extensions are being made all the time to accommodate extra stock, larger servicing areas etc. The stockrooms are a real eye opener. Barry Gardner told me that they hold nearly £2M worth of equipment. The complete range of Yaesu gear was seen, and where S.M.C. deals in antenna rotators, for instance, every model is stocked, even the less popular types. Of course, a large part of the stockroom area is devoted to holding stock of aerials and ancillary parts for the commercial side of the business, and one only has to see the size and feel the weight of, say an insulator, to realise that we amateurs use very little power indeed. Insulators measuring 12" long by about 2" in diameter are intended to handle *POWER!* I was also shown the assembly shops, where an order for large rhombics was being made up for a foreign country and where, also, a special type of whip antenna was being tested for attachment to Landrovers which were going to be driven over the desert with its many corrugations. The uneven terrain had caused the previous whips to vibrate at their resonant frequency, and eventually snap off. So it was necessary to alter the design so that the resonant frequency was moved. It is interesting to note that S.M.C. are expanding so fast that accommodation for part of their stocks etc. had, until quite recently, to be housed in 'freight containers' of the type that one sees carried by articulated juggernauts. It appears that these units can be purchased separately, at least in the Southampton area. Extensive use was also made of Portacabins which were lifted onto S.M.C.'s land by large mobile cranes and joined to the main buildings. This 'make do and mend' situation, Barry Gardner says, has now come to an end. Planning permission for a new service department, offices, warehouses and an extension to the front part of the premises has been granted, and only within the last few weeks the extra shop area and servicing facilities have been opened. A photograph of the new front view of the Southampton premises is shown elsewhere.

S.M.C. took part in the Falklands war, in that they supplied ancillary equipment for Royal Navy communications, and also provided information with regard to the radio equipment supplied to the Falkland Islanders prior to the conflict; a copy of a letter from the Ministry of Defence to Barry Gardner, thanking him and his staff for their efforts, is reproduced here.

This, then, is a profile of a success story which is the result of far-sighted business acumen, and as I mentioned in the beginning, attention to the wishes of the customer. For my part I can only wish Barry Gardner and his staff good fortune in their further efforts and feel sure that they will reach their turnover target in the time set by him.

Converting the "Colt 295" 40/80-Channel AM/FM CB Set for Use on the 10-Metre Amateur Band

Part 1

ROGER ALBAN, B.Sc, C.Eng, MIEE, GW3SPA

DURING the early seventies CB sets were manufactured containing frequency generation which was produced by either discreet crystals, one for receive and transmit for each channel, or by a complicated frequency synthesizer which was constructed out of many discreet components. This technology was replaced by Phase Locked Loops, constructed from a single integrated circuit comprising phase detector, reference oscillator, frequency divider and an externally programmable divide-by-N frequency divider. The two most popular integrated circuits available were the Motorola MC145106 and the PLL02. The main disadvantage of these early PLL chips was that their speed of operation was slow compared with the technology of today, and the maximum operating frequency was in the order of around 4.5 MHz. This means that if these PLL chips are to be used in CB equipment operating at a frequency of around 27 MHz, then some form of frequency multiplying, prescaling or down mixing will have to be employed to retain the input to the divide-by-N input, F_{in} , below 4.5 MHz. The vast majority of early American CB sets employ down mixing with either a separate crystal oscillator or by doubling the output of the reference frequency oscillator.

amount of traffic. The CB lobby brought pressure to bear on the FCC to increase the allocation of channels. During this period in time the set manufacturers were marketing sets capable of operating on 40 channels. Some set manufacturers using the MC145106 and PLL02 integrated circuits introduced a second crystal oscillator in the down mixer and extended the frequency coverage to 80 channels.

Some of the more expensive sets contained additional circuitry to enable the set to operate on other modes of modulation, such as FM and SSB. These additions were a ploy adopted by the set manufacturers to exploit the problem of over-crowding of the CB channels in an attempt to sell even more sets. In 1976, after two years of discussion the FCC gave way and allowed 40 channels for CB use. The CB lobby was at the time demanding a minimum of 80 channels, but the FCC would not agree to more than 40 channels being used because of the probable bandwidth restrictions that would be experienced by loaded mobile aerials, and the pending interference problems that may arise.

Colt 295

The American AM CB set that was found in a second-hand shop and purchased by the author and modified for use on the amateur ten metre band was a Colt 295, which originally operated on 80 channels and also contained an FM board. The set printed circuit board is identified by a number PT8M106AOX which indicates that the set originated from the stables of *Ham International*.

FCC Specification

Originally the FCC released 23 channels for CB use in America. It soon became apparent that with the overwhelming demand for CB that 23 channels was not sufficient to carry the ever-increasing

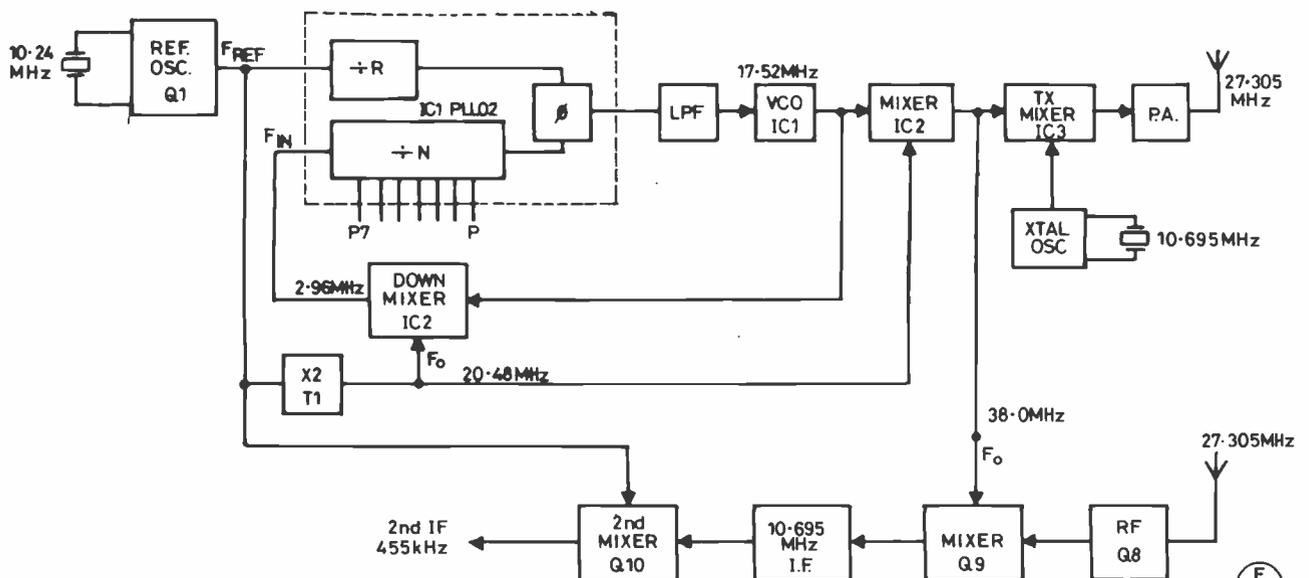


Fig.1 BLOCK DIAGRAM OF ORIGINAL 40 CHANNEL SET OPERATING ON CHANNEL 30

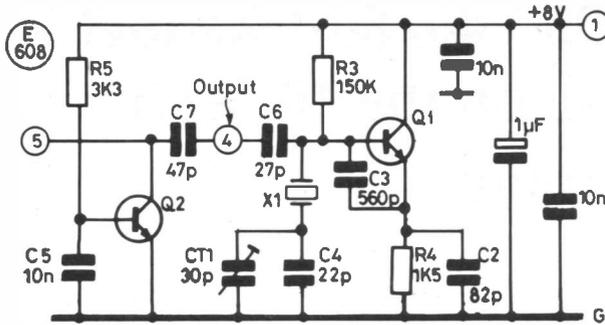


Fig.2 CRYSTAL OSCILLATOR PCB No. PT05005AQX

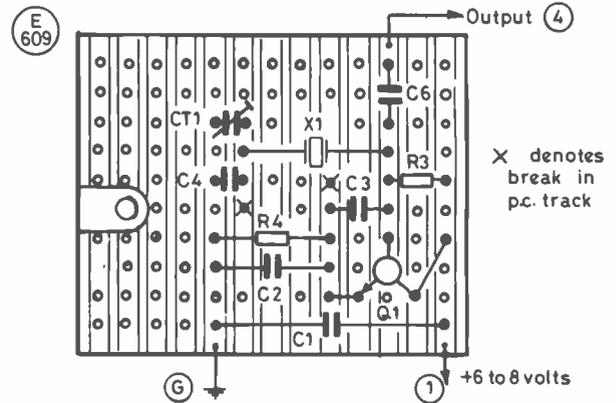


Fig.3 CRYSTAL OSCILLATOR COMPONENT LAYOUT

The Original Design

The original set design started off life as a straight 40-channel AMCB set operating to the FCC specification. The original block diagram of the set is shown in Fig. 1, and the frequencies shown are with the set switched to channel 30 operating on a frequency of 27.305 MHz. The PLL integrated circuit IC1 uses a PLLO2 chip which can accept a maximum F_{in} frequency of approximately 4.5 MHz. For the PLL to work at higher frequencies associated with CB down mixing has been used. The reference crystal oscillator frequency of 10.24 MHz is doubled to produce a frequency of 20.48 MHz which is injected into the down mixer to keep F_{in} operating at frequencies below 4.5 MHz.

The Voltage Controlled Oscillator, VCO, operates at a frequency of around 17 MHz, and is constructed from part of the down mixer circuit comprising IC2. The tuned circuit is coupled to the input of an internal wide band R/F amplifier at pin 1 on IC2. The output of the RF amplifier is internally coupled to the down mixer. The other input to the mixer appears on pin 4 of IC2 and is fed with 20.48 MHz from the tuned circuit of T1 which is connected to the collector of Q1, the 10.24 MHz crystal oscillator, and doubles the reference frequency. The output of the mixer appears on pin 6 and is fed to the receiver first mixer Q9, and also to the input of the transmit mixer pin 1 of IC3. The output of the down mixer appears at pin 9 of IC2, and is fed to the F_{in} input of the PLL chip IC1, on pin 2. The phase detector output of the PLL chip appears at pin 5, and is fed to the low pass filter which consists of a resistor-capacitance network comprising C1, R1, R2,

C2, C3, and R3. The output of the low pass filter is connected directly to the capacitance diode D1 forming part of the tuned circuit of the VCO. The regulated voltage supply for the PLL circuit is derived from a simple voltage regulating circuit comprising of a pass transistor Q8, and zenor diode D5. The output of the reference oscillator Q1, is fed from the emitter *via* a 1,000 pF capacitor to the reference input to the PLL chip IC1 on pin 3. The channel switch code outputs are connected to the divide-by-N program inputs P0 through to P6. P7 is permanently connected to ground, logic level 0, and P8 is connected to the PLL supply V_{dd} , and is at logic level 1.

On Transmit

A DC switching PNP transistor, Q7, on transmit connects the output of the regulated supply produced by Q8 to the transmit mixer IC3 and the transmit crystal oscillator Q2, which operates at a frequency of 10.695 MHz. The output of the transmit mixer IC3 is fed to a RF pre-driver Q3, which in turn feeds the RF driver transistor Q4; the RF power amplifier is Q5. The supply voltage to the driver and RF power amplifier is fed *via* the audio impedance matching transformer to the 13.8 volt supply, to produce amplitude modulation of the carrier on transmit. The hand mic. press-to-talk switch disconnects the loud speaker on transmit and also connects the 500-ohm moving coil microphone to the input of

Channel	Channel Frequency in MHz						
1	26.965	21	27.215	41	27.415	61	27.665
2	26.975	22	27.225	42	27.425	62	27.675
3	26.985	23	27.255	43	27.435	63	27.705
4	27.005	24	27.235	44	27.455	64	27.685
5	27.015	25	27.245	45	27.465	65	27.695
6	27.025	26	27.265	46	27.475	66	27.715
7	27.035	27	27.275	47	27.485	67	27.725
8	27.055	28	27.285	48	27.505	68	27.735
9	27.065	29	27.295	49	27.515	69	27.745
10	27.075	30	27.305	50	27.525	70	27.755
11	27.085	31	27.315	51	27.535	71	27.765
12	27.105	32	27.325	52	27.555	72	27.775
13	27.115	33	27.335	53	27.565	73	27.785
14	27.125	34	27.345	54	27.575	74	27.795
15	27.135	35	27.355	55	27.585	75	27.805
16	27.155	36	27.365	56	27.605	76	27.815
17	27.165	37	27.375	57	27.615	77	27.825
18	27.175	38	27.385	58	27.625	78	27.835
19	27.185	39	27.395	59	27.635	79	27.845
20	27.205	40	27.405	60	27.655	80	27.855

Table 1. Frequency table of modified set operating on 80 channels.

Mode of Operation	Operating Frequency (MHz)	Frequency at First Mixer (MHz)	Xtal Osc. (MHz)	VCO (MHz)	F _{in} (MHz)	÷ N
AM CB Chan. 1	26.965	37.66	20.48	17.18	3.3	330
AM CB Chan. 30	27.305	38.00	20.48	17.52	2.96	296
AM CB Chan. 40	27.405	38.10	20.48	17.62	2.86	286
10m. FM Chan. 1	29.26	39.955	21.6275	18.3275	3.3	330
10m. FM Chan. 30	29.60	40.295	21.6275	18.6675	2.96	296
10m. FM Chan. 40	29.70	40.395	21.6275	18.7675	2.86	286

Table 2. Frequency table for the Colt 295 rig.

the audio amplifier. The audio amplifier is IC4, and is impedance matched by an auto transformer T11, which has different impedance tappings for transmit and receive. The output of the audio amplifier is sampled and applied to the base of Q14, which is connected across the input of the audio amplifier and provides automatic level control of the resulting audio to control the percentage of amplitude modulation on transmit. The level of amplitude modulation can be adjusted by altering the amount of audio which reaches the base of Q14, by adjusting RV2.

The Receiver

The receiver comprises of Q8, an RF amplifier which feeds the first mixer Q9. The output of IC2 is fed to the base of the receiver first mixer to produce the first IF frequency of 10.695 MHz which is filtered by the wide-band ceramic filter CF1. The output of CF1, is fed to the receiver second mixer Q10, which has a proportion of the output of the reference oscillator fed to the base of Q10, to produce the second IF frequency of 455 kHz. Noise blanking is achieved by placing transistor Q20, across the second mixer output. The base of Q20, if fed from the output of the noise blanking circuit comprising Q18 and Q19, which derives its input from the output of the receiver first mixer. The 455 kHz signal is filtered by the narrow band ceramic filter CF2, and is then amplified by transistor Q12. The AM detector and AGC is derived from the output of T10, which is connected to the collector load of Q12. The output of the AM detector is fed to the input of the audio amplifier via the volume control, VR1. On transmit a small proportion of the regulated voltage is fed to the emitter of the receiver RF amplifier and noise blanking circuit muting the receiver.

80-Channel Modification

To boost the sale of sets, the manufacturer produced a modified set capable of operating not only on the American 40 channels, but also the next group of 40 channels higher in frequency. This is achieved by altering the injected frequency into the down mixer. The original injected frequency is obtained by doubling the reference frequency of 10.24 MHz up to 20.48 MHz. If the set is in operation on channel 30, at a frequency of 27.305 MHz, from the previous description the F_{in} will be operating at a frequency of 2.96MHz (Fig. 1). From Table 1, if we select the next group of 40 channels higher, the set will now be operating on

channel 70 at a frequency of 27.755 MHz. F_{in} will remain unchanged and therefore we require to change the injected frequency into the down mixer, if the set is to operate on a frequency of 27.755 MHz. To determine the new frequency which is required to be injected into the down mixer, we need to examine closely the frequency relationships associated with the block diagram of the set shown in Fig. 1. We know that:—

$$F_{vco} = F_o - F_{in} \dots \text{equation 1,}$$

and that:—

$$F_{tx} = F_{vco} + F_o - 10.695 \text{ MHz} \dots \text{equation 2.}$$

By substituting equation 1 into equation 2, we obtain:—

$$F_o = \frac{F_{tx} + F_{in} + 10.695}{2} \text{ MHz,}$$

where F_o is the injected frequency into the down mixer;

F_{tx} is the transmit/receive frequency;

F_{in} is the frequency injected into the input of the divide-by-N counter.

So, if we are to retain F_{in} at 2.96 MHz and produce a transmit/receive frequency of 27.755 MHz, the value of the injected frequency into the down mixer will be:—

$$F_o = \frac{27.755 \text{ MHz} + 2.96 \text{ MHz} + 10.695 \text{ MHz}}{2} = 20.705 \text{ MHz}$$

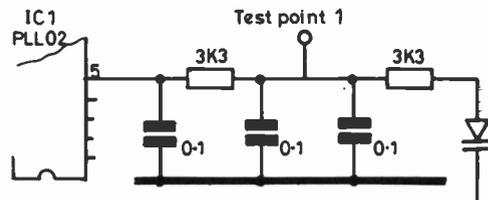


Fig. 5 PHASE LOCK LOOP TEST POINT

(E 611)

Crystal Oscillator

The manufacturer has modified the set by introducing a small printed circuit board which contains the 20.705 MHz crystal oscillator and a electronic switch to select either the 20.48 MHz or 20.705 MHz down mixing injected frequency. This printed circuit board can be identified by the PCB number of PTO5005AQX, which is clearly printed on the component side of the board. The circuit diagram is shown in Fig. 2. Q1 is a third overtone crystal oscillator and operates when 8 volts is applied from the PLL supply to terminal 1 on the PCB sub assembly. This also causes Q2 to conduct, short circuiting the 20.48 MHz input at terminal 5, and preventing it from reaching the output on terminal 4. When the bandswitch is set in the low position, the 8 volts is removed from terminal 1, and the overtone crystal oscillator ceases to operate, Q2 no longer conducts, and therefore 20.48 appears at the output on terminal 4.

If you happen to be one of the unfortunate readers who has an original 40 channel set without the down mixer crystal oscillator board, the crystal oscillator circuit can be constructed using the circuitry shown in Fig. 2. A BC107B works well in place of

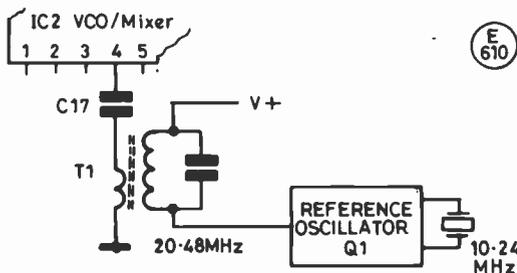


Fig. 4 FREQUENCY INJECTION INTO DOWN MIXER

(E 610)

transistor Q1. The circuitry surrounding Q2 will not be required. The circuit was constructed on Veroboard and the component layout is shown in Fig. 3.

Ten-Metre Modification

If the set is to be used on the amateur ten-metre band the frequency injected into the down mixer will require to be changed; Fig. 4. The frequency is injected into the down mixer IC2 on pin 4, via a capacitor C17 on the unmodified 40-channel set. On the modified 80-channel set this capacitor has been removed and terminal 4 connected in place of the capacitor on the IC2 side, and terminal 5 (the 20.48 MHz input) connected to the reference crystal oscillator side of the capacitor.

The frequency of the crystal oscillator can be determined using the equation previously devised:—

$$F_o = \frac{F_{ix} + F_{in} + 10.695}{2} \text{ MHz,}$$

If we require channel 30 to correspond to the calling frequency of 29.6 MHz, then from the previous example, F_{in} will be operating at 2.96 MHz. The frequency of the down mixer crystal oscillator will be:—

$$F_o = \frac{29.6 + 2.96 + 10.695}{2} = 21.6275 \text{ MHz}$$

The frequency table for the 40-channel and modified set is shown in Table 2.

Before commencing work to modify the rig it is advisable to take a measurement of the output voltage from the phase detector on pin 5 of IC1. This is best undertaken with a digital voltmeter connected to the test point shown in Fig. 5. Take a voltage reading on channel 1, 30, and channel 40. Remove the existing 20.705 MHz crystal in the 80-channel set and replace it with the 21.6275 MHz crystal. In the case of the original 40-channel set, insert the home-built crystal oscillator and ensure by adjusting the trimmer CT1 that the output frequency of the crystal oscillator is 21.6275 MHz. Do not forget in the 80-channel set to ensure that the front panel switch is set to select the high group of channels. At this stage in the proceedings, the loop will not be locked. It is now necessary to connect the digital voltmeter to test point 1 (Fig. 5) and adjust L1 to obtain the same voltage readings previously obtained. Observe that the voltage readings change when the channel select switch is rotated throughout the 40 channels. The loop should now be locked.

to be concluded

Computing Elliptical Orbits

J. M. OSBORNE, M.A., F.Inst.P., G3HMO

IN the past all amateur satellites, weather satellites and most of the others have been in circular orbits. That is to say for most practical purposes the orbit could be treated as a perfect circle. This makes predictions of the satellite's position (Latitude, Longitude of the sub point) relatively easy since it is rotating with uniform angular velocity at a constant distance from the centre of the earth. In the case of OSCAR-10 we have a highly elliptical orbit to consider. The distance and angular motion are continuously changing. To make ones own computer programmes requires some additional mathematical information. The purpose of this article is to provide the appropriate formulae and explain how to implement them. If the reader wants ready to run programs then he can obviously beg, borrow or steal existing material. If he is interested in devising his own prediction programme the following should provide the basic maths to work on.

Terminology

Fig. 1 shows an ellipse. The major and minor axis, the two focii, the apogee and perigee are marked. In common with all planetary motion the satellite S will follow an ellipse with the centre of the earth at one focus. The angle between the line to the satellite from the centre of the earth and the line to the perigee we shall call V . The distance of the satellite from the centre, not surface, of the earth we shall call R (for range). If we know V and R we have fixed the position of the satellite. The satellite sub point, inclination of the plane of the orbit and related matters can be dealt with as with the familiar circular orbit.

Eccentricity

An important quantity in an ellipse is eccentricity e . This describes the relation between the semi major axis a and the semi-minor axis b . It is given by:

$$b^2 = a^2 (1 - e^2)$$

Normally we are given, in the orbital data, a and e and we do not need b . It is of interest to note that if $a = b$ then eccentricity is 0 and we have the familiar special case of ellipse — namely the circle.

Kepler's Laws

John Kepler (1571-1630) discovered that the motion of the planets about the sun (a) followed the path of an ellipse with the sun at one focus and that (b) the radius vector, line R in Fig. 1, traced out equal areas in equal times. What this means in practice is that when passing the perigee the OSCAR-10 is shifting through the sky at great speed and when out around the apogee it is moving so slowly that viewed from the rotating earth it remains almost stationary for several hours.

The Eccentric Anomaly

The way astronomers calculate V and R is well suited to the computer. The underlying process is first to pretend that V increases uniformly. This is true for circular orbit, nearly true for orbits of small eccentricity and a rough approximation for the more eccentric. This is M , the mean anomaly. It is the angle that the satellite would have moved through by a given time had it been rotating at a uniform rate, e.g. if the Period P is 720 mins. then 120 min. after perigee, M would be 60° . We then attempt to find E , the Eccentric Anomaly shown in Fig. 2. E is related to M by: $E - e \sin E = M$. The first step is to let $E = M$ (approximately) and evaluate a correction C to E given by

$$C = (M - (E - e \sin E)) / (1 - e \cos E).$$

We then get a better value of E by adding the correction; E now equals $E + C$. This is used to re-evaluate C with the better value E , add the correction (and get a still better value of E). This is repeated until the correction is too small to matter.

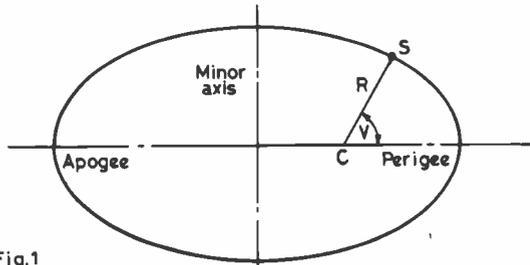


Fig.1

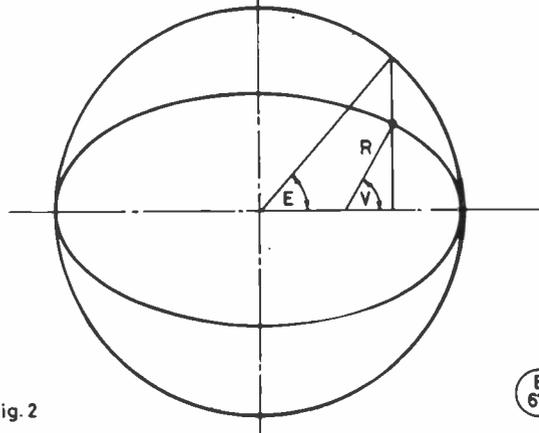


Fig.2

The Radius Vector:

Using the final correct value for E we can find R from the semi major axis *a* by

$$R = a*(1 - e*cos E).$$

The True Anomaly

We can also find V from

$$\tan V/2 = \frac{\tan E/2 * \sqrt{1+e}}{\sqrt{1-e}}$$

This is most conveniently rewritten

$$V = 2 * \tan^{-1} [\tan E/2 * (\sqrt{1+e}) / (1 - e)]$$

```

) L. 760, 840
760 FOR T= 0 TO 675 STEP 25
770 M = 2*PI*T/699.53
780 E = M : e = 0.6077259
790 FOR N = 1 TO 4
800 C = (M - (E - e*SIN(E))) / (1 - e*COS(E))
810 E = E + C: NEXTN
820 R = 26105.926*(1 - e*COS(E))
830 V = 2*ATAN(TAN(E/2)*SQR((1+e)/(1-e)))
840 IFV<0 V=2*PI+V
    
```

Fig. 3

Fig. 3 shows a few lines from a Basic program to illustrate the moves. This program is for a BBC but could be run on any micro with trig functions. The purpose of each line is as follows:

- 760 700min. period in 25 min. steps.
- 770 M is the angle in radians at time T. T=0 at perigee.
- 780 E is put equal to M to start with: e is the eccentricity.
- 790 Repeat the correction four times.
- 800 C is the correction to E.
- 810 Add the correction to E and go again.
- 820 R is the distance from the centre of the earth: the semi-major axis is 26105 km.
- 830 V is the true anomaly, i.e. the angle from the perigee.
- 840 This line makes angles positive.

The program may be tested by tabulating the values of R and V, or better by plotting using the graphics. The three lines of a program may look like this:

1. Let X = R*cos V + 900
2. Let Y = R*sin V + 500
3. PLOT 5, X, Y

The 900, 500 point on the screen is the focus (i.e. the earth), other numbers being needed for other resolutions on other micros.

Appendix. In Fig. 2 a circle is drawn with a radius equal to the semi-major axis of Fig. 1. A perpendicular is dropped from the point where the radius makes an angle E with the semi-major axis. This is divided by the ratio of the axis to find the point S. This enables R and V to be found at different times as at lines 820 and 830.

• • • "Practically Yours" • • •

with GLEN ROSS, G8MWR

Marker Generator, Part 2

LAST month we described all the "plumbing" part of a marker generator for use on 10 GHz and said that there were several methods of driving the unit, of which two will be described. The part of the band now generally used for wide-band FM is from about 10.37 to 10.42 GHz with most activity centred around 10.38; this is a convenient spot to use as it falls just below the frequency of most of the few beacons which are available, these being on around 10.4 GHz.

If we accept that 10.386 would be a good spot for our marker frequency to operate then this can be achieved by multiplying up from a 144 or 432 MHz transceiver. Using multiplication factors of 72 or 24 times respectively, the drive frequencies needed are 144.25 and 432.75 MHz.

Circuit

All that is required is a small circuit to couple about 100 milliwatts of RF into the multiplier, and the circuit for this is

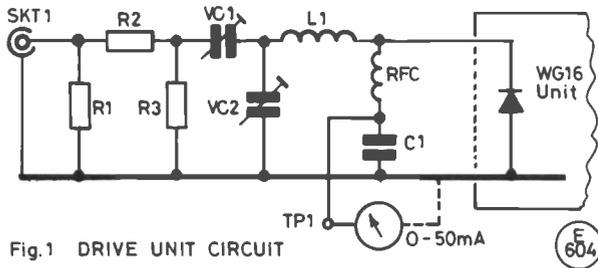


Fig. 1 DRIVE UNIT CIRCUIT

shown in Fig. 1. The circuit contains a low power attenuator which will reduce the power down to a safe level to drive the multiplier and also provides a good match for the transceiver to look into. The second part of the circuit is an impedance matching system to provide the correct drive impedance for the diode. The 100mA meter shown in the circuit is only required for original setting up of the unit, a bench multimeter could be used. If this idea is used then the test point TP1 must be shorted to earth when the multimeter is removed. Some people prefer to use a small 'tape recorder' meter, suitably shunted, left in circuit at all times so as to give a continuous check on the operation of the unit. This unit will operate with either two-metre or 70cm. drive the only change required is to fit the appropriate size coil as shown in the component list.

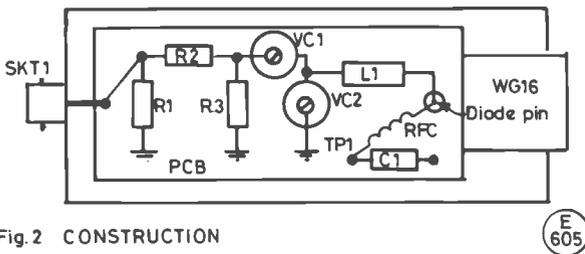


Fig. 2 CONSTRUCTION

Setting-Up

The unit is built on a small metal plate which is soldered to the WG16 multiplier unit, described last month. The construction of the unit is self explanatory from a look at the sketch (Fig. 2). Setting up is very simple: connect a low power transmitter (a handheld?) to the input socket and set the frequency to 144.25 or 432.75 MHz depending on the driver used. Set the power to around 1/2-watt and adjust the matching network C1/C2 for maximum current through the diode, ensuring that this does not exceed about 25 milliamps. You are now producing a very stable low power signal on 10 GHz which can be modulated as wide-band FM. Due to the multiplication used, the usual 5 kHz deviation used on VHF will appear as about 350 kHz with two-

metre drive or 100 kHz if driven at 70cm; this should give very clean sounding audio in the 10 GHz receiver.

Alternative Drive

The other way of driving the unit is to build a crystal controlled driver similar to the one recently described for use on 23cm. (see Fig. 3). This does have some drawbacks in that it is not easily possible to arrange for the drive to be 'clean' in that it will contain many harmonics of the crystal oscillator frequency, all of

Tables of Values

Fig. 1

- R1 = 100R, 1W
- R2 = 68R, 1/2W
- R3 = 100R 1/2W
- C1 = 1nF feed thru or disc ceramic
- VC1, VC2 = 2-10pF trimmer
- RFC = 47 mH
- L1 = for 144 MHz: 8t, 20 swg, 5mm. i/d.
- for 432 MHz: 3t, 20 swg, 5mm. i/d.
- SKT1 = to choice

Fig. 3

- R1, R6 = 220R, 1/2W
- R2 = 47K
- R3 = 10K
- R4 = 330R
- R5 = 3K3
- C1, C2, C4, C6 = 1nF feed thru or disc ceramic
- C3 = 5p6
- C5 = 4p7
- VC1 = 5 pF
- D1 = 1N4001
- TR1 = BF224
- TR2 = 2N3866
- L1 = 7t, 20 swg, on 6mm. dia. former
- L2 = 4t, 20 swg, 6mm. dia., tapped at 1 turn from earth end
- X1 = 48 MHz xtal
- RFC = 1 mH

which will produce 10 GHz signals of varying levels. It is therefore essential to have a fair idea of the frequency that the 10 GHz system is set to before attempting to finally calibrate it. The circuit shown is a standard one that has been circulating in the microwave world for some time and is believed to have been originated by G3ZIV.

The oscillator runs at 96 MHz and drives an amplifier, TR2, which is coupled to the diode multiplier unit. It would be possible to run the oscillator at 48 MHz with only small changes to L1. The unit is built on a small piece of PCB material which may be etched or could use the 'island' technique. Setting up is very simple, consisting of checking that the oscillator is running and then tuning VC1 for the highest current through the multiplier diode. The signal level from this unit is much lower than from the other system but if your receiver is half way decent you should be able to hear signals when the generator is a foot or so away from the receiver waveguide.

Health Hazard

Neither of these units will produce anything like enough RF to produce a health hazard but, in common with all gear operating at these frequencies, it should be used with care.

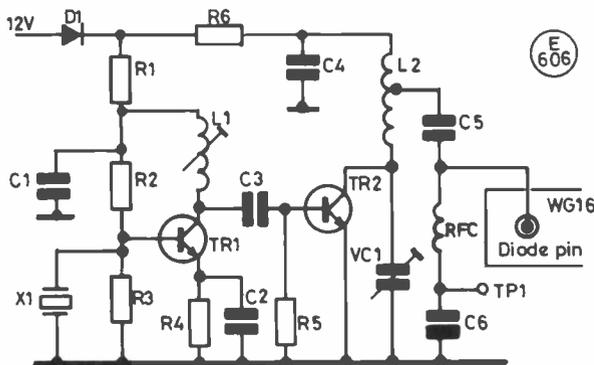


Fig. 3 CIRCUIT FOR AN ALTERNATIVE DRIVE UNIT

Correction

In "A Direct-Conversion Receiver for the LF Bands" in last month's issue, there are three errors in Fig. 1 on page 326: TR2 should read TR5; TR8 should be a BC321 or BC477 or any pnp signal type; there should be a 4K7 resistor between point 'Z' and the junction of R8 and C17.

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

DURING this past month we have had times when there hasn't been much doing on any band — even for the chaps with the good aerial systems. For those with mediocre systems, there has been even less to crow about. As always, whatever the conditions the man with the good aerial is far ahead of the rest.

Eighty

G4HYY (Todmorden) has a version of the latest GM3OXX mini-transmitter — this one David has built on to a one-inch square bit of board. It is crystal-controlled and gives two watts out, with no other tuned circuits, so is fed to the G5RV aerial through a filter designed and built according to W3NQN's article in *Short Wave Magazine* for August, 1983. A few days of CW operation with about 1 kHz shift on the VXO yielded contacts with GW4LZA, G3DOV, G3DNU, G3RJF, G4NBI, G3XJS, G4RAW, and G4OBF, all two-way QRP, plus GM4LZO, GM0BK1, PA3CKT all with decent reports, and ZB2HX/MM. The last-mentioned heard the G4HYY signal from the little rig, but the QSO was knocked about a bit by G4/ZL1BFZ, so the power had to be jacked-up to complete the QSO. On a totally different tack, G4HYY, plus XYL Jennifer G8WWO, Duncan G8TRP, and Esde G0AEC, put on GB0FUN, at the 'Fun Day' organised by the N.E. England Guides to celebrate 75 years of Guiding. They had a good audience — some 60,000 guides, from 7-year old brownies to rather more mature leaders; one fifteen-year old stayed at the station for some 4½ hours and became a very efficient logger. A nice thing was the behaviour of the pile-up whenever the operator wanted to speak to someone in the crowd — instant silence from the pile-up until GB0FUN announced they were back in business. A notable contact was with G3RJV on SSB, (that must be something of a record!) and George's XYL Jo-Anna, making one of her rare appearances on the band. Thanks from G4HYY and the gang to all those who called, raised, or tried for a contact with GB0FUN.

G3ZPF (Kingswinford) has been waving paint-brushes around the place when the weather permitted, but also counted up his QSL's, only to find that while he has worked well over the magic 100 on Eighty, he still lacks quite a few cards to make the number up — David wants them for his 5BDXCC of course. Hope is the word — or get in and work a

few more!

G2HKU (Sheppey) is another one who pleads gardening and paint-pots; but his 'gardening' should really be called 'aerial-farming' since it consisted of getting the feeder to the verticle aerial up to a height at which the risk of decapitating the XYL is reduced.

Forty

There is pay-off to be found on this band; what a pity it is that so many people won't go near it! What is needed above all is skill in driving a receiver, and as an extra the enthusiasm to rise before breakfast TV starts, while the noise level is still low. G3ZPF worked quite a lot on this band, and comments on how the low sunspot count seems to be slowing down the generation of the D and E layers in the mornings — there is usually DX about long after daylight. David mentions contacts on CW between G3ZPF and ZL2IH, VK3XU, VK2EO, VK2EVJ, K2RD, ZS6FS, K1REX in the first four morning sessions, followed later by EA6KZ, HP1XKR, SV1LV for a new country (!), YN1CC, PY1RI, PR7AEN, DL0MAR/9G, VE2FL, HH7PV, VE1AUU, VE1BVL, W1MK, VE1ALZ, 4X4KT, TK/DL4FF, CN2AQ, and KP2H — not a bad collection for one month.

G2HKU used his CW to get over to DJ2BW/CT3, YV1AD, and TK/DL4FF.

G4VFG (Ivybridge) reckons he has heard some DX but not been all that successful at working it; however, Peter did come to grips with UA1ZBO/UD and UF6VB, plus various CW contacts around Europe.

Bits and Pieces

CDXN contributor G3BDQ, has been nominated for RSGB Council; if it should come to an election, it would be nice to have on Council someone who is not only a DX-er of note but — and this is even more important — a DX-er on Top Band and Two Metres. It is about time more real radio amateurs were nominated for Council, to back up the efforts of such as G3HCT and G3FKM.

The TOPS Activity Contest on 3.5 MHz CW runs from December 7 at 1800z to 1800z December 8, the bands in use being 3.5–3.585 MHz, only the lower 12 kHz being allowed for DX contacts — if you make a non-DX contact (outside your own continent is defined as DX for this) then you will have your QSO deducted from the log. Score one for own country, two for contacts in same continent, six for contact

with another continent; a QSO with a TOPS member gives two bonus points. The contest exchange is the usual RST plus serial number from 001, but TOPS members will follow this with their membership number, e.g. 599001/999. Total score is the number of QSO points so obtained times the number of Prefixes worked in accordance with the WPX List. Three classes — single op, multi-op, and QRP up to five watts input. Send your entry to Bertil Arting, SM3VE, Bergesvergen 26, S-823 00, Kilafors, Sweden, not later than January 31. The contest call is *not* "CQ Test" but either "CQ TAC" or "CQ QMF".

"CDXN" deadlines for the next three months:

December issue — November 7th
January issue — December 5th
February issue — January 9th

Be sure to note these dates

We have a letter from G4HPU as Publicity Officer for WAB. As from January 1, 1986, they are introducing a Worked All British Islands Award. Their definition of an Island is "a naturally formed piece of land lying off-shore from the mainland of Great Britain and Northern Ireland (to include the Channel Islands), which at some time is surrounded by the sea. The construction of a man-made bridge or causway does not negate an island's status. However it must be named on the Ordnance Survey 1: 50,000 map; where the group of islands only are named on that map, then only the group will count as one for purposes of the Award". Details and logs from Brian Morris, G4KSQ, 22 Burdell Avenue, Sandhills Estate, Headington, Oxford OX8 8ED, on receipt of an s.a.e. The award is open to everyone regardless of existing WAB affiliations. This does seem to have been worded with a view to avoiding a clash with the IOTA (Islands on the Air) awards which have been around for several decades — but we wonder whether they are aware of IOTA, all the same.

A special event station was set up over October 5-6, with a view to re-launching the Sheffield Award; what a pity that they didn't send the letter until mid-September,

by which time it was far too late to offer useful publicity. However, we still like the idea of the Sheffield Award, and wish them every success for the future; get the details from P. A. Cardwell, 223 Chesterfield Road, Meersbrook, Sheffield S8 0PR. Claims go to G3PHO, at 146 Springvale Road, Sheffield. It is of interest to note that this one has a separate Microwave Section, covering 1296 MHz and upwards QSOs — it all helps to get things rolling!

Turning to the WIWY 'Contest Calendar' for the current month, Frank mentions that during the November 1-7 period, the HA QRP CW Contest is on; activity between 3.5 and 3.6 MHz only, power below five watts input, single and multi-op categories, and the exchange is RST, QTH, and name; contacts in own country count one point, outside one's own country two points. Final score is QSO points times DXCC countries worked. All entries will receive a Memorial Leaf, and outstanding entries will receive a year's subscription to Radiotechnika Journal. Send log and description of your station to Radiotechnika, Budapest PF603, H-1374, Hungary, to arrive by November 21. This one is a world-wide affair, and so is the next one.

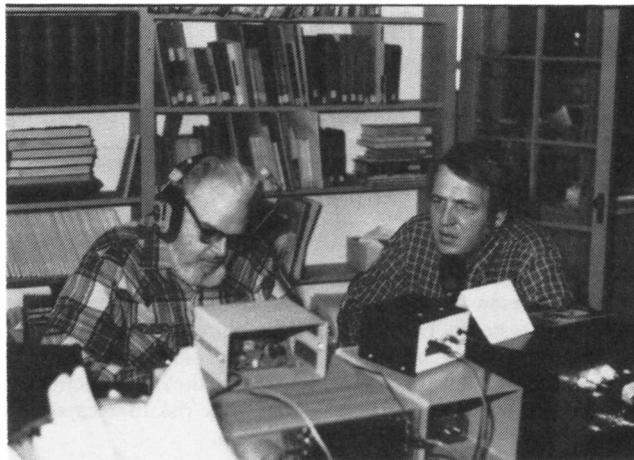
This is the Czechoslovakian Contest, covering 1.8-28 MHz, noon GMT to noon GMT November 9-10. This one is Phone or CW for QSO and multiplier credit; they recommend that 3.5-3.56, 3.6-3.65, 3.7-3.8 MHz, 14.0-14.060 and 14.125-14.3 MHz segments be used. Score one point per QSO or three for an OK (but one point only for OK4/MM), but own country is only valid for multiplier credit. Total is QSO points times ITU zones with the proviso that duplicate QSOs claimed for scoring will be penalised by the deduction of three contacts of the same worth from the score. Entries by December 15, to Central Radio Club, Box 69, 113 27, Praha 1, Czechoslovakia.

November 16-17, 1900z-0600z, for the Austrian Top Band Contest. The OEs are worth two points, but other countries one, with a multiplier of one for each country *prefix* worked. Mailing deadline December 31, to Osterreichischen Versuchssenderverband, AOEC 1983, Postfach 999, A-1014, Wein, Austria.

And of course November 23-24 is the weekend for the CQ WW DX Contest CW leg. Notice that all logs for this one must go to CQ Magazine, WW DX Contest, 76 North Broadway, Hicksville, NY 11801, and indicate Phone or CW on envelope.

JY Celebration

To celebrate the fiftieth birthday of King Hussein, the Jordanian amateurs will be using the special prefix JY50 between November 7 and 21, and the intention is to get as much JY activity as possible during the period, for all those looking for JY on



The fifth annual "Mayflower" event, the Thanksgiving Day link between the U.K. and New England, will be held on November 21st. when commemorative station WAINPO will be operating from Pilgrim Village at Plimoth Plantation in Plymouth, Massachusetts. WAINPO, which will be supported on this side of the Atlantic by GB0UST in Nantwich and SM0FQW in Stockholm, will be looking for contacts with any U.K. station on 14275 kHz SSB from 1300 to 1700 and from 1900 to 2000; on 21375 kHz SSB from 1300 to 1600 and from 1800 to 2000; and on 10120 kHz CW from 1700 to 1900. All times GMT. A certificate featuring the *Mayflower* and suitable for framing will be available for all confirmed contacts and SWL reports. Above, at WAINPO last year: the 20-metre station on the air with, left, Ray ("Top Cat") W1TC operating and Jim, WB1CNM, logging.

the bands 1.8-28 MHz, CW, SSB, RTTY and probably Oscar as well, with His Majesty active as well, using not JY1 JY50. There will be special commemorative QSLs and certificates about. More details from the Royal Jordanian Amateur Radio Society, PO Box 2353, Amman, which is also where the entries should go. Incidentally, the JYs are getting quite keen on the contesting business from the Club Station, having recently rumbled how the time-scales suit their physical location.

DX News

One wonders why BY1PK can be calling QRZ EU and getting no takers; this occurred one morning when your scribe heard G3UML working the station and then no more. H44IA is said to be interested in putting up some serious 7 MHz activity from the Solomons; try the lower 8 kHz, and 0600-0730z.

Around the same time, it might be possible to snag KH6XX on Top Band, although we hear he QSYs to 7 MHz at 0800z. Top Band merchants should be aware that in fact he could appear as early as 0500z.

It is said that a station signing VO1GC/S2 has been checking into SEANET on Sundays, but, along with DXNS, we have to say that we don't think he has a properly-authenticated licence.

If you are looking for TN8, try for TN8EE, there to the end of the year — 14119 kHz at 1830z might be a good starting-point for the search.

Many people have commented to the

writer about the 9G expedition by DJ5RT and DJ6SI which must have done a lot to clean up the demand.

By now the Galapagos DX-pedition will have pulled the Big Switch and gone home. If all goes well, there will be some 19 operators from W and HC, signing HC8X; and they will be operational from various parts of the Ecuadorean mainland before and after the contest signing their own calls /HC.

YI1BGD seems to be doing his thing again, and there is another QSL address, namely POB 6100, Baghdad, Iraq.

The Colvins, Lloyd and Iris, are off on another of their trips; this one will take them to ZS3, A2, 7P, 3D6, S8, ZE, 7Q, 9J and CR8, in that order, and will try for about three weeks at each stop, the timing allowing for the CQ WW Phone contest to be taken in from ZS as the starter.

The arguments over Pribilof Is. and DXCC goes on. After the DXAC had voted in favour by 9-7, the matter went to the ARRL Awards Committee on September 17, and after a lot of discussion they turned it down on a 7-0 vote. What happens now? We don't know, but we suspect we haven't heard the end of this yet!

Top Band

Not a lot of input really. However this gives us the room to mention the vexed question of the 'DX Window' concept. K1MEM notes that of 25 letters received by the ARRL committee discussing band-planning on Top Band, only 20% were from Top Band DX operators at or near

the DXCC level. K1MEM would like to see continuation of the present DX Window, as a refuge for weak stations both CW and SSB, *who will work split frequency*. Jim also wants to see separate CW and SSB segments — 1800-1825 and 1830-1840 kHz CW only, 1840-2000 kHz for SSB, thus giving both groups access to the Window area. Thirdly, he doesn't like the idea of a 'rubber' band, which would stretch one way or another on CW or SSB contest times. Finally, he does urge everyone who uses the band to write to ARRL's Membership Services Committee and put their penn'orth in; ARRL are, of course, at 225 Main Street, Newington, Conn., U.S.A. 06111.

On the same subject, GM3WTA wrote to *TDXB*, and we feel Mike has some useful words, culled from his many years on the band — we recall him reporting in to the Counties scene in this piece years ago. He is against the single-frequency operation that is rapidly becoming the norm on Top Band, as he notes how, for 'skip' or other reasons, callers often don't know the DX has gone back to someone and so continue calling and generating QRM. Management of the net — we think Mike meant group — becomes all but impossible once a rare one crops up and pile-up conditions arise. GM3WTA sums it up like this: use the DX Window scheme and operate split; and keep SSB contacts above 1840 kHz. Above all, educate — GM3WTA lost three chances of JA while he explained to the local net on 1911 kHz that there was only a 20-minute opening.

Now to the operating... G2HKU offers TF3KG and FP/W3ESU, both snapped up on CW.

Quite a long list this time from G3BDQ (Hastings) who has already pruned out some small fry. CW gave UA9FAR, UA9KAA at 599 both ways, UA9UCO, UA0AG, ZB2FK, TK/DL4FF, HB0/DL6DK, FP5HL for a new one, OZ3QN/OY, JY9MG in Aqaba and QSL to JR3XMG; plus sundry Americans in the mornings between 0500 and dawn, like KA1PE, W1ATQ, KA1SR (Rhode Island), W2AYS, K2GHV, K2RIH, WB2CJ, WA3EUL, W3NX, W3RCQ, WG5NB, WA8TXT, WA8FZU, also VE2FYR, and VE3MFP for whom John was his first G station.

Twenty

G2HKU used his SSB to hook up with JY5RBM, plus CW contacts with OY2H, D68AZ, (Comoros Is.), W9SFR, FY/DA1OP, IK1CJT/3A, GM3NHQ/EA8, KZ7M, N7DF/TT8, TK/DL4FF, DJ2BW/CT3, W2FC, TF3XUU/8, and HP1XKR.

G3BDQ also was a key-bashing addict on this band, and worked 3V8AL and KH6IJ; also a gotaway in J5COX.

G3NOF (Yeovil) didn't think much of the month, but maybe Don was a bit biased in outlook by the failure of his

rotator... in the mornings the only DX noted was VE8RCS, heard several times around 0800z, with the odd short-path openings to VK/JA around 1100, and again occasionally around 2200. 1700-1900 was best for Africa, with the best period probably 2000-2200z when the Americans were around. G3NOF worked AP2AU, D68DX, FM4DN, FY5YE, J37AH, J42TIF(=SV), N17J (Montana), PZ1AP, S79CW, UI8ZAA, VE3LVO/AM over mid-Atlantic, VE4AAZ, VE5LG, Y11BGD, ZS1SL, 5B25MB, and 5H3HM.

Finally on this band G4VFG: his CW made it to UA9QA and VE1BVD, while SSB accounted for CP6JX, 8P6AW, KA4JRT/TT8, UM8MF, UH8EA, EA9LZ, PT7BR/PY6, C6ANU, W14K, JD1FVZ/5N0 (pity he was in Nigeria, else he would have been Peter's first JA!), M10A, LU3DDP, VP2EZ, 4Z4VG, 7X0HAB, 7X2LS, VP9CP and smaller fry.

New Bands

Not a lot of reports this time. G2HKU worked W2QT and VK3MR on CW on 10 MHz, but his calls on 18 and 24 MHz didn't do him any good at all.

At G2ADZ (Chessington) the Wonder Wire has gone up in the world, after Bill co-opted his lad to sling a stone tied to a string right over the oak-tree. The end is tied off to a branch and the thing still doesn't run to an insulator. Signals have been improved by this modification, and on 10 MHz G2ADZ worked VK3MR several times, VK3DQ, VK3SE, VK2BKH several times, VK2FIP who is in fact G6ZO, VK2QM, VK2ALN, FG5XC, ZL3BJ, and JA5BLZ/MM off Namibia and headed for Japan, while the gotaways included ZS3KC, VK7CH, VI3XB, W6YHM, and VE7VC. Operating time 0700-0800 and again for a while in the evening. On 18 MHz, no DX was worked, just T77C and some locals, while on 24 MHz a CW contact with LU4DJO was the sum total — nothing else even heard! Bill is very unhappy at the 'junk' on the band, but of course that is a penalty of a shared band, which 10 MHz definitely is.

G4VFG reckons 10 MHz is a good band; he found TR8DR (QSL *via* W2PD), worked him and got the QSL card back as well, several DLs, OE5HE, and CT2FN.

21 and 28 MHz

Ever a chap who is 'different', G3ZPF uses 21 MHz to talk to some of the locals, but on one occasion when his 'oppo' was otherwise occupied, David worked TR8CP for an all-time new one, and 9U5JB for a band new country.

G3NOF says he hasn't heard much on 28 MHz, except for the Europeans, though LU7HEA was heard, and 9Y4BA was worked at 2019 on September 6, when

he peaked and then faded away. On 21 MHz the earlier part of September was better, with SSB contacts to C53EK, OA4BHZ, P29NSM, PY5NW, VQ9YR, W4ZR, YB0BST, YC3CCU, YC5RJ, YC0EJG, ZD9CS, ZP5CDB, 9H3DX/A, and 9Q5RW.

Turning to the letter from G4JBR (S. Molton) we see Pete is very interested in the RSGB "40 counties on 28 MHz" award, but has some problems in that if he hears one, say, working a DL, they have difficulty grasping that he wants them and *not* the DL! On a different tack altogether, G4JBR wonders what has happened to 10-UK: he wrote to the address quoted some four months ago but hasn't had a reply! Peter is, like others, keen on the idea of a calling frequency and suggests 28.333 and 28.133 MHz, these being out of the way of everyone with the possible exception of the Essex group who are on 28.305 kHz — not, we would have thought near enough to worry them.

On now to G4HZW (Knutsford), who went away on holiday and came back to find his Quad had pined away and fallen on the ground in his absence! Hence, most of the time has been spent on Quad Mark IV, which, it is claimed, has got to be good enough to last a full 11 years! (It sounds a very nice design — wonder if G4HZW will write it up and photograph it for the benefit of us all? For a 10' x 10' garden it sounds quite the thing). Tony made his mark with LU1BJW and PY7ZZ on the day it was put up, followed later by EA8AMT and some inter-G contacts.

Not a lot, says G2HKU; Ted worked PU1WDS and PY1HQ on 21 MHz CW, but despite regular checking of the band, nothing was heard on 21 MHz.

G2ADZ couldn't keep away from 28 MHz, and notes that on August 31, the beacons ZS6PW, 3B8MS, 5B4CY were all pounding in, but nary a squeak of a contact could Bill scare up!

The best days on 28 MHz, says G4VFG, were 6, 12, 13, 14 and 22nd September; so far this year Peter has made it to 30 countries on the band, with CW to EA3DZ, DJ1LQ, and DF7LF/M, and SSB out to HA1UF, CE5FSB, EA1BZZ, GOBMP, and EA8EK this month. On 21 MHz, Peter has found his 28 MHz vertical to be the best aerial(!) and it out-performs both the 7 MHz dipole and the 14 MHz one. CW yielded the odd DL and SM, and PY2OH, while SSB gave C53EK, 4Z1A, 4Z4VG, ZS6BXD, and LU3MCJ.

Conclusion

That's the bottom of the pile again; we would like to see some more support, on all the bands covered, to make a broader and more rounded picture of the activity, so send your letter addressed to your scribe, by the date for arrival given in the 'box' to "CDXN", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. See you next time.

CONTEMPORARY BRIEFS . . .

THERE are quite a few companies which hold comprehensive stocks of a very wide range of components and accessories for the electronics industry. Some, like *RS Components Ltd.* and *Farnell Electronic Components Ltd.*, deal only with *bona fide* manufacturers, developers and dealers and will not supply the amateur hobbyist. Other supply houses, such as *MS Components Ltd.* and *STC Electronic Services* do deal with anyone although their stocks are mainly of interest to the commercial user.

One of the companies catering particularly for the electronics hobbyist is *Circuit* and their **Autumn 1985 Electronic Components Catalogue** has been received. This company formerly traded as *Ambit International* and has built up a reliable reputation. The catalogue follows the usual format with items being listed in 22 sections in the first of which, *Batteries and accessories* (one page) are just Ni-Cad types. *Books* (6p.) lists titles ranging from beginners' books, through reference manuals to D-I-Y projects and computers. In *Cables and wires* are to be found equipment wire, mains, coaxial and audio cables, 'speaker and ribbon cables and two ounce reels of silver-plated copper wire for fastidious VHF types. Various accessories, such as strain relief bushes and heat shrink sleeving are included.

The one page *Calculators* section lists eight *Texas Instruments* models while the *Capacitors* part (5p.) includes electrolytics — but nothing over 80v. working — ceramic, including leadless types, polystyrene, polyester, mylar, silver mica, variables and miniature ceramic and foil trimmers. *Computers and computing* (8p.) features the popular *BBC Model B* machine, though its price tag of £328 plus VAT will attract few buyers. Peripherals listed include the *Epsom* compatible *Admate DP-100 NLQ* Dot Matrix Printer at £155, a three-colour plotter, 5¼ inch disc drive, acoustic modems, assorted interfaces and software. Low priced modems for the *ZX Spectrum*, *BBC B*, *Commodore 64* and *Amstrad* computers are listed.

The *Connectors* section (8p.) lists components ranging from miniature 2.5mm. jack plugs and sockets, through coaxial — including N-types — mains and PCB types to telephone connectors. In the two-page *Crystals and resonators* section there are crystals for 32.768 kHz miniature watches to 116 MHz overtone types for 144/28 MHz converters, plus a few low cost resonators. The next six-page section is devoted to *Filters* and features ceramic, SAW, crystal and mechanical types, helical ones and assorted braid-breaker filters.

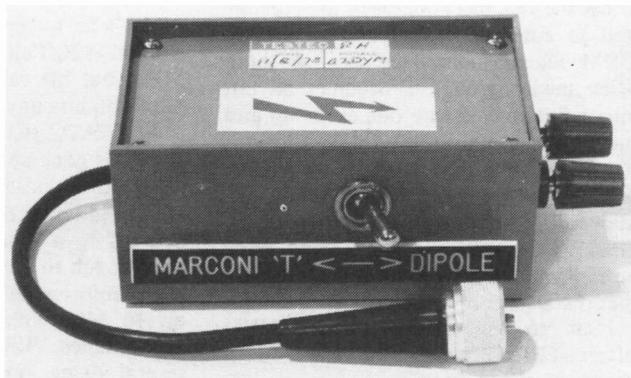
The *Hardware* section (8p.) lists a good range of metal, diecast and plastic boxes and cases, knobs, *Vero* products, heatsinks, fuses, lubricants, etc. The ten page *Inductors* part lists a host of *Toko* coils and would seem to cater for all conceivable amateur projects. Ferrite rods, rings and toroids, too. The *Kits and modules* section (22p.) now includes the popular *WPO* range of amateur radio kits for the first time along with many items including FM tuner heads, stereo decoders, DFMs, DVMS, masthead preamps., speech processors and so on. This is followed by a couple of pages of analogue type *Meters*.

The *PCBs and materials* section (2p.) includes the usual single and double-sided boards, drafting aids, transfers and etchants. It also features the *Seno Etching System* where all the etching is done in a sealed bag, each kit suitable for 160 cm² of board to be etched. Decent coaxial relays are not too easy to find but the two-page *Relays* section lists three 50 ohms types rated to 300w PEP on SSB at 1 GHz, with either BNC or N-type sockets for £32. The two-page *Resistors* section features the usual fixed types as well as single and multi-turn potentiometers, including a novel 20K single-turn one with a built in 5:1 epicyclic reduction drive for £1.60.

Semiconductors occupy 13 pages and you should find almost any type likely to be needed in amateur radio projects. The 2SC2097 PA transistors used in the *Icom IC-730* transceiver, for example, are stocked at £14.75 each. This section includes seven popular Schottky diode balanced mixers costing from £5.72 for

the SBL-1 to £32.45 for the SRA1-H high level type. In *Speakers and sounders* (2p.) are listed piezo buzzers, headphones, assorted miniature, low- and hi-fi loudspeakers and cross-over networks. Four pages are devoted to *Switches* of the key, push-button, DIL, toggle, thumbwheel and rotary varieties. *Test equipment* (5p.) features oscilloscopes by *Hitachi*, *Crotech* and *Thandar*, the 'Meteor' range of frequency counters from *Black Star Ltd.* and assorted function generators, analogue and digital multimeters. There is a comprehensive range in the *Tools* part (7p.) including the ingenious 'helping hands' stands with and without magnifier lens, and the catalogue ends with a couple of pages of low voltage mains *Transformers*.

All items are priced on the page, excluding VAT and this 128 page, A4 size catalogue includes four one pound discount vouchers for each £15 worth of goods ordered. There is a minimum order value of £5.00 and a flat 60p. postage and packing charge. Postal orders must go to the Broxbourne address and '... most orders are filled and despatched within 24 hours ...' they claim. As well as Broxbourne, there are regional sales centres at Brentwood, Essex, and Portsmouth in Hampshire. The main address is **Circuit Holdings PLC**, Park Lane, Broxbourne, Herts. EN10 7NQ. (Tel. no. 0992 444111). Sales counters are open 0900-1730 on Mondays to Saturdays. This catalogue is available from main newsagents for £1.15 and is well worth buying.



New from *G2DYM*: the *G2DYM* balun to match unbalanced output of a transmitter or input of a receiver to a balanced anti-TVI 75-ohm twin feeder. The unit incorporates a change-over switch to switch the mode of the aerial from dipole or trap dipole to Marconi 'T' for 160 metres, shipping, long and medium wave. With a rating of 1.5 to 30 MHz, 500 watts p.e.p. SSB or CW, the unit with the Marconi 'T' facility costs £19.50, or without that facility £17.00; post/packing for either model is £1.50. *G2DYM*, Uplowman, Tiverton, Devon EX16 7PH (Tel: 03986-215).

I.C.S. Electronics

I.C.S. Electronics Ltd., of Arundel, West Sussex, announce that they have been appointed the exclusive U.K. distributor for a new range of hand-held and mobile transceivers from *Alinco International Ltd.*, of Osaka, Japan.

The first product to be introduced is a hand-held transceiver, the new 2-metre ALM-203E. This push-button, keypad operated transceiver is housed in a robust high-impact/cast-aluminium case and, they say, provides all the most wanted features needed for pleasurable 2-metre operation, but at a price similar to that of comparable limited-facility thumbwheel operated units; quality and reliability levels are claimed to be well up to normal Japanese standards.

Included in the price of £209.00 inc. VAT (plus £2.50 p/p) is a 400mAh Ni-Cad battery pack to give 3-watt output, an AC battery charger and, amongst other features, a built-in 'S' meter. The ALM-203E is available direct from *I.C.S. Electronics Ltd.*, P.O. Box 2, Arundel, West Sussex BN18 0NX. (Tel: 024365-590).

• • • SWL • • •

SHORT WAVE LISTENER FEATURE

By Justin Cooper

PERHAPS it would be interesting this time to talk about *propagation* — a vital mechanism which lies behind all our short-wave listening — and how it works. First the bands below 30 MHz; here we are looking at the sunspot cycle usually referred to as being of about 11 years from peak to peak (it has been known to be as low as nine and as high as 14 years) which in fact seems to be astronomically a 22-year cycle. This cycle is the prime factor, but we must also take into account such things as the rotation of the earth, the rotation of the sun, and the seasons.

At the sunspot minimum, the observer of the sun won't see many spots, and those he does see will all be near the solar equator. At the start of a new sunspot cycle, the spots will appear near one of the solar poles, and of course at the sunspot peak there will be many more sunspots visible. *Don't look at the sun directly, or through a telescope or binoculars* — that is unless you wish to go blind. The way to observe is by means of a white card on to which the image of the sun can be focused as it comes out of the back of the telescope/binoculars; and even then, look at it through a neutral density filter.

If we consider our amateur bands, we will have noted that the lower frequencies are open at night and only good for ground-wave use in the day. The higher bands tend to be much more daylight bands, and after dark they will only support ground-wave propagation. At a sunspot peak we will see 28 MHz often open to the world for most of the day, 21 MHz rather more so, 14 MHz open the clock round, while 7, 3.5 and 1.8 MHz are only open at night. At the sunspot minimum, very little can be expected of 28 and 21 MHz day or night, 14 MHz will only be open by day, 7 MHz may be open in the day but will be better at night, and 3.5 and 1.8 MHz are largely as before.

The sunspots are the reason for the *ionosphere*, the layers of ionised gases which shroud the earth at heights of between 50 and 250 miles. Of these layers the lower one — the E layer — is primarily an absorber of signals at lower frequencies. It ceases to exist as soon as the earth rotates into darkness, and so we get the phenomenon of night time propagation on the lower bands, as the E-layer absorption stops. The bending is done by the F-layer — sometimes it splits into a lower F1 and a higher F2 layer, in which case F1 is more of an absorber and F2 does the refracting or bending. The degree of refraction of the F (or F2) layer is related quite directly to the amount of particles reaching the earth from the sunspots; it is more pronounced at the peak of the sunspot cycle, and therefore supports the propagation of higher frequencies at those times better than it does in the minimum years. Note that, from what we have said, unusual combinations of circumstances can arise to cause a normally daylight band to support propagation at odd times, to the delight of the SWL, if the F-layer is good and the E-layer not too absorbent.

Now consider the rotation of the earth around the sun. Apart from the daily rotation which gives us day and night, and hence daytime and night-time propagation on the various bands, the earth orbits the sun once a year, wobbling about its axis as it goes. From the astronomer's observation (and our own common-sense!) we can guess that in winter the axis of the earth points away from the sun in the northern hemisphere (and by the same token the southern hemisphere is having its summer) so that day-time, when the sun can 'see' the ionosphere, is short, and the night, when the ionosphere is fading away, is long.

Clearly the best compromise between night and day occurs at the equinoxes, in March and September, when all the world gets

an equal share of day and night and the axis of the earth is tangential to the heavenly sphere. Thus, as we would expect, at the equinoxes we see a peaking of conditions regardless of the state of the sunspot cycle (that is, in any given year these are the best periods for world-wide propagation). In summer there is more static and noise, and in winter less propagation.

One will usually notice a distinct 'twenty-eight day' effect throughout the year; this can be explained as resulting from the rotation of the sun's surface, bringing a good group of spots back round again 28 days after they last did their useful work. An active group of sunspots may in fact even still be useful when it comes round for the third time, and in essence this is the principle behind the propagation predictions for a month ahead which appear in most of the world's DX newsletters.

All this of course, is a greatly simplified attempt to inter-relate the effects of the sun and the earth. It takes no account of the openings which are often referred to as 'short-skip' which occur on the higher bands (14/21/28 MHz, and particularly noticeable on the latter), the result of propagation modes usually discussed in the context of VHF, and which are more likely to be related to the weather-map. Neither does it account for the fact that keen watchers on 28 MHz will almost always note an opening to U.S.A., even at sunspot minimum years, in late June or July — even though it may be quite brief and at an unexpected time. No-one has yet produced an adequate answer to why this happens; and indeed that applies to a lot of funny things in the way of propagation! It also, of course, is half the fun and the fascination, too.

The Mail

Firstly we must mention *C. Burrells (Stevenage)* who is in the wars again; Charlie has had to put in a 'Nil' return as he is due to go into hospital for a cataract operation and seeing, as he puts it, is "a bit dim at the moment". All our best wishes to Charlie and we hope to hear soon of a good recovery and renewed activity.

Another reader who hasn't been too active lately is *Mrs. R. Smith (Nuneaton)* who has been having holidays and visitors to keep her entertained.

Those suffixes on YU calls are clarified both by G4KTI and G3ZPF; the position is that the son of a YU callsign can use the call /X, and his XYL the suffix /Y.

J. Singleton (Withernsea) wrote at a time when the holiday season was peaking, and he looks forward to October when holiday-makers' cars won't be parked in his drive any more! Activity has been somewhat low thanks to a lot of time being spent with the local drama group, producing, building, directing and so

ANNUAL HPX LADDER

Starting date, January 1, 1985

SWL	PREFIXES		
A. Vest (Durham)	331	L. Marquardt (Hereford)	286
D. Pye (London W2)	330	T. Ross (Edinburgh)	232
M. Probert (Basingstoke)	288	W. J. Prior (Lochcarron)	213

Minimum of 200 Prefixes to have been heard from January 1, 1985 for an entry to be made. At score 500, transfer to the All-Time list is automatic. In accordance with HPX Rules, see p. 302, September issue.

forth, and taking the production round the local hospitals. Great fun — and now the pantomime season looms up!

D. Pye (London W2) has been somewhat inactive due to pressure of work; when he has been able to get on, he has been frustrated by hearing an I on an otherwise dead band working strings of Ws that Don couldn't hear at all, and giving out RS59 reports, so attention is being turned to an RAE class at Paddington College.

S. Baker (Cwmbran) obviously didn't approve of Dad's disposing of the rig, so they have now come back on the band with an FR-100B receiver and QM70 transverter for 144 MHz (Dad is GW6VZW), using the two-metre Quad as the aerial on HF too — by strapping the feeder legs together and tuning against earth which acts as a vertical.

Nice to hear from *N. Jennings (Rye)* who seems to be operational again; Norman would like the address of J. Goodrick in the Isle of Wight, to whom he owes a letter — John having changed his address.

F. Dunn (Chester) has given the ribbon-feeder beam project best for the moment and put up a V-shaped long wire, which seems to like being tuned by the ATU somewhat better. Additionally, Frank has changed his receiver from the R-600 for an FRG-7700 plus VHF converter and looks forward to various experiments with aeriels for the band — although his first reaction is that the band isn't much different to 27 MHz CB!

W. Prior (Lochcarron) hasn't been too active, as the salmon and sea trout were running and that distracts the attention of a fisherman from his shack! On a different tack, Bill had half his trap dipole brought down by the wind; trying the receiver on the remains gave a couple of Ws, one from Venezuela, one from Malta, one from Cyprus, and small fry too — as he says, "was that aerial trying to tell me something or was it just conditions?"

W. Forsyth (Avoch, Ross and Cromarty) was interested to see Bill Prior's letter in the last SWL, as he himself lived in Lochcarron; the family's first wireless set was used there, back around 1927. William reckons that if Bill were to go the top of the hill behind Lochcarron on the Kishorn road, or to Bealach on the Applecross road, and listen with his VHF gear, he will be able to pick up GB3BI easily enough — its aerial is on the former Band 3 TV mast at Mount Eagle, and William has heard amateurs on Skye, Aberdeen, and up to Wick and Thurso in the other direction. Incidentally, we owe some congratulations; we have just noticed GM1OVJ by the signature.

B. F. Hughes (Harvington) is still in the process of checking his logs right through, but he still found time to enter some new ones; however, he didn't bother to offer the BY3AK/MM he heard — doubtless some piratical yachting type of which there are far too many around these days.

Over to *P. Lincoln (Aldershot)* who spends most of his time on RTTY and SS/TV. However the activity this time has been more practical — dropping the mast and renewing as necessary after it was noted that the angle bracketry was beginning to show signs of rust. The two-metre beam was 'sad' and so was not renewed, but it was of interest to note that the Datong active aeriels, AD270 and AD370, have both been tried and found to be as good as the beam despite their being specified only to 100 MHz — is this saying something about the old beam and its mortal sickness?

A. Vest (Durham) comes in with a further CW list and one for SSB too, to maintain his steady progress up the Ladder.

SWL Contest

The White Rose Radio Society is running this one on January 18, from 1200 GMT to the same time on 19th. Operators can log for up to 18 hours out of the 24; it is a world-wide contest, and there will be two sections, namely Phone and CW. No mixed-mode entries; transmitters holding only 'B' licences are permitted to enter as SWLs. The bands are 1.8, 3.5 and 7.0 MHz. The practice of logging a series of contacts made by the same station is deprecated, and so log entries must *not* show the same call in the 'Station Worked' column more than ten times on any band; a station appearing in the 'Station Worked' column can, obviously

HPX LADDER (All Time Post War)

SWL	PREFIXES		
PHONE ONLY			
B. Hughes (Harvington)	3033	J. J. Sales (Lancaster)	676
E. M. Gauci (Sliema, Malta)	2621	G. Caselton (Orpington)	672
Mrs. R. Smith (Nuneaton)	2506	M. Hudson (Folkestone)	590
E. W. Robinson (Felixstowe)	2428	N. Fox (Wakefield)	561
H. M. Graham (Chesham)	1813	S. Wilson (St. Andrews)	529
S. Baker (Cwmbran)	1483	I. Thompson (Rye)	519
M. Rodgers (Harwood)	1552	C. Burrells (Stevenage)	506
P. Oliver (Paisley)	1436	J. Singleton (Withernsea)	506
N. E. Jennings (Rye)	1406	Mrs. T. Carmichael (Lincoln)	502
N. Askev (Coventry)	1367		
N. Henbrey (Northiam)	1369	CW ONLY	
F. Dunn (Chester)	1326	J. Goodrick (I.o.W.)	1763
R. Fox (Northampton)	1305	F. Dunn (Chester)	1731
G. Shipton (Rye)	1091	R. Fox (Northampton)	463
G. A. Carmichael (Lincoln)	1077	A. Vest (Durham)	429
M. Ribton (Gillingham)	1005	RTTY ONLY	
J. Routledge (Hartlepool)	963	N. E. Jennings (Rye)	668
P. Lincoln (Aldershot)	887	P. Lincoln (Aldershot)	510
J. Heath (St. Ives, Hunts.)	788	J. Routledge (Hartlepool)	337
B. Patchett (Sheffield)	782	N. Henbrey (Northiam)	293
R. Wooden (Staines)	761	R. Fox (Northampton)	233

Minimum score for an entry to be made is 500 for Phone, 200 for CW or RTTY. Listings to be in accordance with HPX Rules — see p. 302, September issue.

only be claimed once for points. Log as many stations in as many countries as possible, and score one for each station claimed on one's own continent, or five for a different continent. Total points on each band to be multiplied by the number of countries heard on that band, total score the sum of the totals so generated for each band. Call areas in W, VO, VE, VY, VK and ZL each count as countries, the rest are in accordance with the ARRL Countries List. No CQ, QRZ, or similar calls to count for points. Log sheets to show the following: Date, Time (GMT), Band, Station Heard, Station being Worked, Report at SWL QTH. If both stations are being claimed for points, they must appear in the 'Heard' column. A separate log and list of countries heard must be furnished for each band. Logs to be sent, to arrive by February 24, 1986, to J. Hart, G3ZGA, White Rose ARS, 146 Street Lane, Leeds LS8 2AD. Certificates of merit at the discretion of the White Rose ARS, and their decision shall be final.

All we can say is that we applaud their efforts, and hope we shall see some sensible degree of support from U.K. — it is hard work laying-on an activity on a world-wide basis and it deserves to be supported.

Mail Again

N. Henbrey (Northiam) has been talking to Norman Jennings and comments that the latter seems to be much better — good! — but spends more time with the computer than the rig. Norman's own FR-DX400 had gone off to be revived, leaving him with the old KW-77 — the FRG-7700 just doesn't rate against these old-timers in his view and we tend to agree. On a different tack, a four-metre Quad is being built as it has been determined(!) that the TA31Jr doesn't match on that band.

J. J. Sales (Lancaster) has G0AZJ, and so his SWL-ing is now done with an FT-200 and a TET five-band vertical. Activity has been on two-metres CW, trying to improve the sending. . . .

What a poor period it has been, says *E. W. Robinson (Felixstowe)* who found 16 in the four-month period, of which two arose through log checking! However, the long-wire aerial has been taken down and replaced by a dipole of home-brew, firing East-West, which will it is hoped put some more zip into the bands.

"How can they be so cheerful at 7 a.m. on a Saturday morning?" wonders *P. Oliver (Paisley)* of the Early Birds Net on Eighty, he being 'on auto-pilot' if he is awake at all at that time of

day! Pete reckoned that as his car was off the road for seven weeks being repaired, he would have more time for SWL — but of course the bands chose those weeks to go dead. Another manifestation of Finagles Axiom, which states that in all cases, Murphy's Law is *optimistic!*

Now we come to *L. Marquardt (Hereford)* who took our comments to heart a little last time round, and has made a serious effort to get his HPX list straight. What is really needed is to start with a good filing system to check that a given prefix doesn't appear in the HPX list twice. A good way of doing this is to utilise something akin to the check-sheet used by the local club on NFD or any other contest activity to define whether the call is 'already worked' or 'wanted'. And of course, a careful reading of the HPX Rules, both when you start and again whenever an 'oddball' prefix appears, is desirable.

S. Wilson (St. Andrews) accounts for his lack of activity of late — Stuart has been in hospital but is now better and back at home, although he has a different room and less space for aereals as a consequence. Get well soon, Stuart.

E. M. Gauci (Sliema, Malta) had a go in the Cray Valley contest, and reckons that after the eighteen hours were up he was totally shattered — one knows the feeling! However, he will be entering a claimed score around 34K points from some 493 stations; he awaited the needful from G4DFI before sending off his log.

H. M. Graham (Chesham) found more time this period to play with his radio, but on the other hand didn't find all that much on the bands. Very little was heard on Ten and not much more on Fifteen, leaving 14 MHz to be the band where the DX was to be found. Eighty was looked at, but as he says, there is so much QRM on the interesting stuff on this band; some accidental but more is just deliberate bloody-mindedness. Finally, Maurice notes that there are G prefixed stations noted in the current RSGB *Call Book* in Northern Ireland, Scotland and Wales, and wonders

whether this is a move on the lines of the American one to simplify licensing. No, so far as we know all that has happened is that the RSGB prints the *Call Book* from a computerised database, which in its turn comes from the DTI information. RSGB got a load of garbage from DTI, and it all came out in the print. Doubtless there is a lot of work going on to check the data where possible at Headquarters, and indeed we would hope at the DTI.

W. G. Shipton (Rye) is going to be out of action by the time this comes to be read, as he is going into hospital to have two artificial knee joints fitted — no doubt the result of too many hours spent playing bowls! Seriously you have our thoughts and good wishes, George.

Results

For the Midsummer Contest of the White Rose club, on the HF Bands. Conditions were abysmal, and it was noted by the organiser, D. A. Whitaker, that the openings were very definitely localised with stations quite near to one another reporting very different areas heard. The ten logs which were entered showed J-J Yerganian of Belgium top — congratulations — and all the rest from U.K. save one ON and one DL listener. Interestingly enough, lots of people asked for a short contest . . . but in the event none of those asking put in an entry!

Finally three letters each with an HPX score but no other comments; these came from *M. Ribton (Gillingham)*, *N. Askev (Coventry)*, and *J. Routledge of Hartlepool*.

Complete

That's the end of the letters, and so we now must give you the deadline for next time — to arrive by **November 21**, addressed as always to your J.C., "SWL", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. Till then keep your ears peeled and hope for an upswing in conditions!

CLUBS ROUNDUP

By "Club Secretary"

BEFORE we get into the letters, may we appeal to all club scribes to check that the data we publish giving the club QTH and the Hon. Sec's name, address and telephone number (including exchange name and STD code) is correct and up to date. If not, *please* let us know accordingly!

The Mail

Abergavenny & Nevill Hall members are to be found every Thursday at Pen-y-Fal Hospital, Abergavenny, in the room above Male Ward 2; they also have an RAE class going on Tuesdays, and Morse before meetings. More details on everything from the Hon. Sec. — *see* Panel.

At **Acton, Brentford & Chiswick** at all happens in Chiswick Town Hall, in Chiswick High Road; November 19 is down for a discussion on 'Members Problems', starting time 7.30 p.m.

AMRAC caters for the computer buffs who are radio amateurs in the Fareham area — they are to be found at "The Crown" pub in Bishops Waltham on November 4 and every four weeks.

At **Biggin Hill**, November 19 sees a talk on the work of the

Radio Interference Service, at St. Marks Church Hall, Church Road, Biggin Hill.

Binstead is in the Isle of Wight, and the club meet at the 1st Ryde (1st Binstead) Scout Group Hq in Binstead every Wednesday evening.

Bishops Stortford has its main meeting on the third Monday of each month at the British Legion Club, in Windhill. This usually includes an activity of some sort. In addition the majority of the members forgather informally in the saloon bar of the "Nags Head" on the Dunmow Road, A120, going out of town on the east side.

New One

This is a club called **Borehamwood & Elstree** which has its base at the Organ Hall Community Centre, Bairstow Close, Borehamwood, Herts. Full details from the Hon. Sec. — *see* Panel.

Room 1 at the Community Centre, Victoria Street, Braintree, is the current home of **Braintree**. November 4 is an informal session and on November 18 they have a visit from Alan Owen, the RSGB RR.

Bristol RSGB lives in the Small Lecture Theatre in Queens Building, University Walk, Clifton, Bristol, where they start at 7.30 p.m. November 25 is a homebrew competition.

November 12 for **Bury** is the date for a visit from the Region 1 RSGB RR, G3XSN; however, if you go to the Mosses Centre, Cecil Street, Bury, on any Tuesday evening, you will find the club in session — the other weeks are informals.

Cambridge Repeater Group is the one that looks after the repeaters on the Barkway site, amongst others; they put out a good newsletter, and the members near enough get together at the

“Pike and Eel” pub, Chesterton, Cambridge, on Friday lunchtimes from 12.30 on.

We had to turn to the back page of the **Cheltenham** newsletter to find what was on in the Stanton Room at Charlton Kings Library, Cheltenham. November 1 is a junk sale, and on 15th they have a natter night—this gives a bit of slack before the AGM on November 15.

Now to **Chester**; November 4 is a quiz at the Ellesmere Port club, and on November 12 Dr. Spencer from Jodrell Bank will talk about Radio Astronomy. November 19 is a chat about Raynet by Guy Wood, and November 26 is still (at the time they wrote) to be finalised. The Hq is at Chester Rugby Union Football Club, Hare Lane, Vicars Cross, Chester.

The **Chichester** club lives at the Fernleigh Centre, 40 North Street, Chichester, on the first Tuesday and third Thursday; thus November 5 and 21, the first one in the Green Room and the other in the Long Room.

November 7 and 21 are the dates for the re-formed **Cirencester** club, their Hq address being the Phoenix Centre; this is in Beeches Road, and we gather the general routine is alternate Thursdays.

On Thursdays the Colchester Institute in Sheepen Road is host to the **Colchester** club; we suggest you check the Hon. Sec. for the latest details, as they have only just had the AGM, and so will be putting the show together for the coming year.

November 7 is a surplus sale, and December 5 the Christmas Party at **Cornish**; they also have a constructors’ group and a computer section. The venue is the Church Hall, Treleigh, on the old Redruth by-pass.

Crawley has its junk sale on November 16, at the usual Hq in Trinity United Reformed Church, Ifield, Crawley. We were rather entertained by the description of G3IPP’s Morse test—quite hilarious in fact!

November 16 is the date for the **Crystal Palace** meeting, at All Saints Parish Room, Beulah Hill, Upper Norwood, opposite the IBA mast. The topic is ‘Basics’ by G4AVV.

The **Dartford Heath D/F** lot is the only club in the country, as far as the writer knows, to be primarily a D/F hunting group. They have their informal meetings on the Tuesdays before a Sunday hunt, at the “Horse and Groom”, Dartford Heath—this means November 5 and then December 3.

The weekly meetings of the **Derby** club are held on Wednesdays at the club Hq at 119 Green Lane, Derby, where the whole top floor is theirs. Incidentally this is the oldest club in the country—it was formed as far back as 1911. In November they have a junk sale on 6th and a natter night on 13th. November 20 is ‘Technical Topics’, and on 27th home construction techniques. The next month again starts with a junk sale.

Now to **Dorking**, where the routine is to get together on the second and fourth Tuesday of the month; the main meeting is at Ashcombe School, and the informals are at the Star and Garter Hotel, both of which are close by Dorking railway station. November 12 is informal and the November 26 date is given over to a junk sale.

Turning to **Edgware** we see that they continue to have their base at the Watling Community Centre, 145 Orange Hill Road, Burnt Oak, Edgware, where they are to be met on the second and fourth Thursdays of the month. For both November 14 and 28 the calendar was ‘open’ at the time when they wrote—doubtless it is different by now.

We haven’t got the latest information on the **Exeter** goings-on, and so we must refer you to the Hon. Sec. — see Panel for the needful.

On the first and third Wednesday of each month, the **Falkirk** crowd heads for the Grange Centre, Brightons, near Falkirk, for the regular meetings; in addition, on Tuesdays, they are running a Morse class.

Farnborough has November 13 for the AGM, and then on November 27 it is Chairmans Evening; both are at the Railway Enthusiasts Club, Access Road, off Hawley Lane, Farnborough, Hants.

November 5 for **Fylde** is an informal with a Morse class thrown

in, and on November 19 they have an equipment sale. Both are at the Kite Club, Blackpool Airport.

Up north again, to **Glenrothes** and here we must refer you to the Hon. Sec. — see Panel for his details. The Hq is at Provosts Land, Leslie, Fife.

If you are into low-power operation, or for that matter homebrew, then you should join the **G-QRP** Club. All the details from the Hon. Sec. — see Panel — who has seen this grow from a tiny group to over 3000 members!

The **Greater Peterborough** group has its place at Southfields Junior School, Stanground, Peterborough. On November 28 Sheila, G3HCQ, will be talking to the members about the problems involved with EMC.

Every Thursday evening the **Grimsby** club heads for Cromwell Social Club, Cromwell Road, Grimsby; we have no details of the latest programme for which we have to refer you to the Hon. Sec. — see Panel for his details.

Turning to **Harlow**, we understand that, before the November regular Tuesday meetings, they will have entertained *KW Electronics Ltd.* in the person of G8KW, at Mark Hall Barn, First Avenue, Harlow, on October 22; a pity we didn’t know about this one earlier!

Now to **Harrow** where on November 1 they have G4ZES on ‘Astronomy for Amateurs’. November 8 is an activity night on Top Band, and on 15th the BBC will be telling all about their World Service. November 22 is an activity session on 21 MHz, and on 29th they have a junk sale. All these events are at Harrow Arts Centre, which is in High Road, Harrow Weald, opposite “The Alma” pub which is next-door to the bus garage.

Deadlines for “Clubs” for the next three months—

December issue—October 25th
January issue—November 29th
February issue—December 19th
March issue—January 31st

Please be sure to note these dates!

At **Hastings** the main meeting is on the third Wednesday at West Hill Community Centre, Croft Road, Hastings; plus every Friday evening informally at Ashdown Farm Community Centre, Downey Close, off Harrow Lane. On November 16 the talk is on two-metre DX and is given by Ken Willis, G8VR.

November at **Havering** is a routine of weekly meetings, starting with the informal on November 6; November 13 is down for G3EUR to talk about his ‘Q’ meter and indeed about ‘Q’ itself. Constructors will be flocking in on November 20 when they have the Cup to compete for; and on 27th, G3AAJ will be giving his ‘RR’s Miscellany’. All are at Fairkytes Arts Centre.

The **Hereford** club has its base at County Control, Civil Defence Hq, Gaol Street, Hereford; November 1 is the Annual Junk Sale, and on November 15 they have an informal night.

Every Wednesday is the time to meet the **Hornsea** members; try looking for them at the Mill, Atwick Road, Hornsea, East Yorkshire.

We go now to **Ipswich**, where the group is still using the “Rose and Crown” at the junction of Bramford Road and Norwich Road. November 13 sees them listening to John Nelson, G4FRX, talking about RSGB. November 20 is a bangers and mash supper for those who hold tickets, and on 27th there is a repeater group meeting.

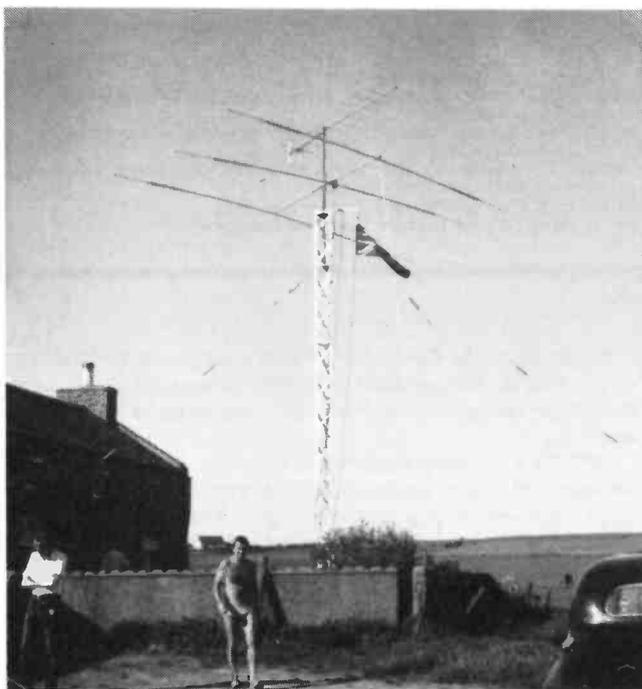
Over to EI, and **IRTS**; apart from being the national society for Eire, it also has local groups and indeed knows all about what goes on in the way of club activities generally. Details from the Hon. Sec. — see Panel.

For details of the amateur radio club in Jersey, we have to refer you to the Hon. Sec. — see Panel.

On to Lincoln and the City Engineers Club, Central Depot, Waterside South, Lincoln. November 3 is a committee meeting, and on 6th they have Morse and RAE studies. November 13 is an activity night with a station on the air, and on 20th they are back to CW/RAE. Finally, on November 27, G3MGX will talk about simple test equipment for the radio amateur.



In early summer Chester & District Radio Society organised a DX-pedition to Deerness in the Orkneys. The participants, above, were (left to right) Howell Morris G3ATZ, Paul Hollands G3TZO, Roger Booth G1LCG (apparently ascending!), Dave Ollerhead G4JMF, Harry James G3MCN, David Hicks G61FA, and Tony Green G3TRL. Harry James, G3MCN is the principal of *Stephens-James Ltd.* of Leigh, Lancs., and his firm loaned the primary HF equipment and tower. The HF gear consisted of a JRC JST-100 transceiver with a TL-922 operating through a Daiwa 2kW ATU (on 10-80m.); back-up HF equipment was a Trio TS-520S through a Trio AT-230 for 160m. operation. For VHF operation a Yaesu FT-225RD was used with a Trio TR-9000 as back-up. An AR-2001 VHF/UHF receiver completed the shack equipment. Mounted on the 30-ft. Alumast at the Orkney QTH, below, was an A3 3-ele Cushcraft Yagi beam for 10-15m. and 20m., a 160m. dipole and a RAK double trap dipole for 10-80m.; for VHF operation the group used a Cushcraft 14-ele 2m. 'Boomer' and for reception a Discone VHF/UHF aerial.



Over 2000 stations in 75 countries were worked during the Chester & D.R.S. DX-pedition week, the great majority on HF — and Harry, G3MCN (above), and Paul, G3TZO, between them worked nearly all the HF contacts. One of the major features of the week was the pile-up of stations wishing to work the Orkneys: G3MCN at his busiest worked 105 stations in 21 minutes! Each participant used his own call sign with a 'GM' prefix, except when a Class-B licensee operated HF under supervision who then used the Chester club call sign GM3GIZ; below, David G61FA operating as GM3GIZ. VHF operation, although limited to a few hours on SSB, did well in flat conditions with considerable use being made of the Orkney 2m. repeater. The group reckoned the trip a great success, with some members planning to retire to the Orkneys!

photos: G61FA



Maltby has its Hq at the Church Buildings, Church Lane, every Friday evening. On November 1 they have an open forum on amateur radio matters, and on 8th G4BVV will talk about smoke detectors. November 15 is down for three different mini-lectures, and on 22nd they have a video. Finally November 29 on, which evening they will have a talk on meteor scatter by G6OYL.

November 20 is the date for the next Maxwelltown meeting at the Tam o'Shanter Inn, Queensbury Street, Dumfries, the start being set for 2000.

Moved!

This applies to **Midland** who have lost their old place in Broad Street, Birmingham. This means they have now moved to Unit 5, Henstead House, Henstead Street; this lies between Bromsgrove Street and Wrentham Street near their Bristol Street end. For more details we must refer you to the Hon. Sec. — or listen out for G8GAZ on S17, or the local repeating-box, and he will give you the details.

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- AMRAC: T. J. Tugwell, 50 Mayridge, Fareham, Hants. (04895 81032)
- BIGGIN HILL: R. Senft, G0AMP, Mill Hay, Standard Road, Downe, Kent BR6 7HL. (0689 57848).
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- BOREHAMWOOD: Hon. Sec. Borehamwood ARS, 140 Aycliffe Road, Borehamwood, Herts. HA8 8JG.
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- YORK: K. R. Cass, G3WVO, 4 Heworth Village, York. 308: D. Davis, G6YQD, 13 Maple Road, Surbiton, Surrey.

Another New One

This one is at **Morecambe Bay** and they foregather in the canteen of the Lunside Engineering Company, Mill Lane, Halton, near Lancaster, every Monday evening. On November 4 and 18 they have the G3PER Morse class, and November 11 is down for a chat on the RTTY Mailbox by G1GRP. November 25 is set for a talk on RTTY proper, though at the time of writing their screed to us this was still to be confirmed.

Every Thursday evening the Carleton Community Centre plays host to the **Pontefract Club**; November 7 is computer evening, and on 14th they have a 144 MHz aerial project. November 22 is a caelidh-and-supper event at Hq and on November 28 there is a committee meeting. The Hq is on the top floor of the building.

For details of the **Poole** club we must refer you to the Hon. Sec. — this time he has confined himself to forwarding details of an award they are running, which we have passed on to "CDXN" to mention.

QTI-TNA, as most readers will be aware, is the name of the Talking Newspaper Association, dedicated to reading amateur radio magazines on tape for the benefit of blind amateurs. Details from the Hon. Sec. at the address in the Panel.

RAIBC is, of course, the first name in the area of clubs involving the disabled and blind radio amateur—details from the Hon. Sec., see Panel.

If you have been in amateur radio for a long time and can prove a connection of 25 years, then you are entitled to apply for

membership of **RAOTA** — the old-timers club. Get the details from the Hon. Sec. (G6JP) at the address in the Panel.

November 19 is the date for **Reigate** to listen to a talk by G3NFV, on the duties of an RSGB Rep, plus something about contest operation and certificate hunting. Venue is the Constitutional and Conservative Centre, Warwick Road, Redhill.

Now the **Royal Navy** for past and present members of that service, or MN. Get the details from the Hon. Sec. at the address in the Panel.

Rugby amateurs are mighty close to the Big One, but it doesn't seem to be too much of a problem; they are to be found in the Cricket Pavilion, BTI Radio Station, 'B' Building entrance, on the A5 at Hillmorton, Rugby, every Tuesday evening from 7.30 p.m.

Next **Skelmersdale** where the venue is the Beacon Park Centre, Skelmersdale on Thursdays. November 7 is a homebrew evening, and on 21st they have a talk on 'cheapo' microwaves by G6HXL. November 14 and 21 are both activity nights, the first on HF and the second on RTTY.

The weekly gatherings of the **South Bristol** crowd are at Whitchurch Folk House, East Dundry Road, Whitchurch, Bristol, in either Room 3 or 4. November 6 is an evening of Morse tests, by the BTI in Room 1. November 6 also sees a talk by G3YCP on the Morse testing at Highbridge. November 13 is VHF activity night, and on 20th they have a progress report on the club project. November 27 is final revision for the RAE to help members taking the exam.

Although they now have a place at Hailsham, the **Southdown** club still holds regular meetings at the Chaseley Home for Disabled Ex-Servicemen, Southcliff, Eastbourne, on the first Monday of the month; this gives November 4 for a talk on weather satellites, and on December 2 for a talk on a proposed ATV repeater. The Hailsham Leisure Centre, Wealden Council Offices, Vicarage Field, Hailsham, is the venue on Tuesdays and Fridays.

Turning now to **South Manchester** we hear they get together every Friday evening at Sale Moor Community Centre, Norris Road, Sale. For more details we must refer you to the Hon. Sec. — see Panel.

It was a real last-minute scramble to get the newsletter of the **Surrey** club out — but it managed to contain the essentials! November 4 is down for Part 2 of the series of talks on planetaria by G4WPB, at *TS Terra Nova*, 34 The Waldrons, South Croydon, where they are on the first floor mess-deck.

Sutton & Cheam are based on Downs Lawn Tennis Club, Holland Avenue, Cheam; November 4 is a natter night in the Downs Bar, and on November 15 they have the main meeting at which G6MKC will be showing films.

Every Wednesday evening the **Telford** group is to be found at Dawley Bank Community Centre, Bank Road, Dawley, Telford. Special meetings in November include November 6 when G8MWR talks about microwaves, and November 13 when the talk is by member G6PZZ on MW DX-ing. November 20 sees a talk by G3IMP on Sweden, plus a project to be introduced by G6XUF.

Thames Ditton Library, Watts Road, Thames Ditton, is the home of the **Thames Valley** group, and they are to be found there on the first Tuesday of each month — no details to hand of the programme.

Now we head for **Thornton Cleveleys**, which means the 1st Norbreck Scout Hq, Carr Road, Bispham, Blackpool, on Monday evenings. No details of the programme to hand but the last few months have seen alternate informals and meetings-with-a-programme.

Next, **Todmorden** where they have Mondays November 4 and 18 booked at the Queen Hotel in Todmorden. More details from the Hon. Sec. — see Panel.

The EEC Social Club, Ringslade Road, Highweek, Newton Abbot is home to the **Torbay** crowd these days; Saturday, November 23 is the main meeting with G4DGU talking about

moonbounce. The Friday evening do's have become Thursday/Friday ones, depending on the availability of the hall — details from the Hon. Sec., see Panel.

Verulam has a booking on November 26 at the R.A.F. Association Headquarters, New Kent Road, St. Albans, for a talk on digital filters, to be given by G8FUL; the second Tuesday of the month is the informal at the same venue.

November 12 and 26 are the dates for **Wakefield**, at Ossett Community Centre, Prospect Road, Ossett, starting at 8 p.m. The first date is a homebrew equipment display, and the latter a natter night with the club rig on the air.

The **Welland Valley** meetings are in Market Harborough's Welland Park Community College every Monday; in general they try to have something special laid on for at least one of the meetings in the month.

Yet Another New One

The writer must admit to having wondered for a long time how long it would be before a new club arose in the Welwyn Garden City area after the old group died years ago. Well it has happened, and they are at Knightsfield Scout Hq in the Garden City on the first and third Monday at 8 p.m., with two-metre nets on the intervening evenings. November 4 is workshop night and an informal, and on 18th they have a projects evening.

Every Friday evening the **West of Scotland** troops gather at their new Hq, at 154 Ingram Street, in the centre of Glasgow.

It's a while now since we last heard from **White Rose**. They live at Moortown RUFC, Moss Valley, Kings Lane, Leeds LS17 7NT, where they are to be found every Wednesday evening. November 6 and 20 are natter dates; November 13 is G3TDZ on 'Technical Topics for Beginners', and on 27th they have a video of the W5LFL Shuttle mission.

Irby Cricket Club is the home of one of the **Wirral** clubs; they gather on Wednesdays, alternating between the Hq mentioned and informals at various hostels around the Wirral. More details from the Hon. Sec. — see Panel.

November 5 is down for **Wolverhampton** as a natter night for the older members(!) and on 12th they have a discussion. November 19 has them watching G6CJ's "Aerial Circus" video, along with the BBC "Secret Listeners". November 26 is a night on the air; and all are at the Wolverhampton Electricity Sports and Social Club, St. Marks Road, Chapel Ash, Wolverhampton.

The **Worthing** Hq is at Lancing Parish Hall, South Street, Lancing; November 6 has G3SXE yarning about his first visit to the West Indies with radio, November 30 is another ragchew, and on 20th G4XRU talks about the converting of CB rigs to 28 MHz.

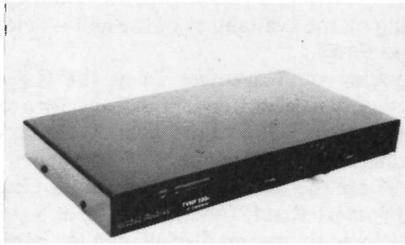
The 'every Thursday' routine of the **Yeovil** crowd goes on; November 14 is down for a talk on crime prevention, by the local Crime Prevention Officer. November 21 is a video "The Secret Listeners", 28th is a natter, and on December 5 they have a video of a "Visit to China". Find them at the Recreation Centre, Chilton Grove, Yeovil.

The **York** group seems to have found the sun for their GB2TS efforts, and they have the Annual Dinner on November 1. Otherwise it is the usual routine of the Wednesday evening gatherings at the United Services Club, 61 Micklegate, York, which seem to be very pleasant to judge by the success of the club over the years.

Our last entrant this time is **308** — they have their base at the Coach House, Church Hill Road, Surbiton, Surrey, on Tuesdays. Details from the Hon Sec. — see Panel.

Finished!

We've found the bottom of the pile again, and the time has come to mention deadlines — they are in the 'box' in the body of the piece and are the dates for arrival of your letters, addressed to your "Club Secretary", *SHORT WAVE MAGAZINE*, 34 High Street, Welwyn, Herts. AL6 9EQ. Bye now!



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Chris Bartram G4DGU

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READERS

Wanted: Dead or sick FT-707 for spares. — Ian, G3ROO, "Rosemount", Church Whitfield, Dover, Kent. (Tel. 0304-821588).

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