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The **SHORT WAVE** Magazine

January 1986

Volume 43 Number 11

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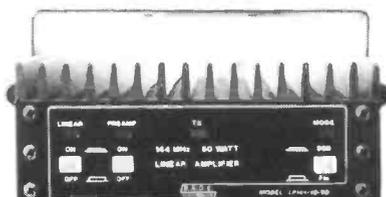
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SHORT WAVE MAGAZINE

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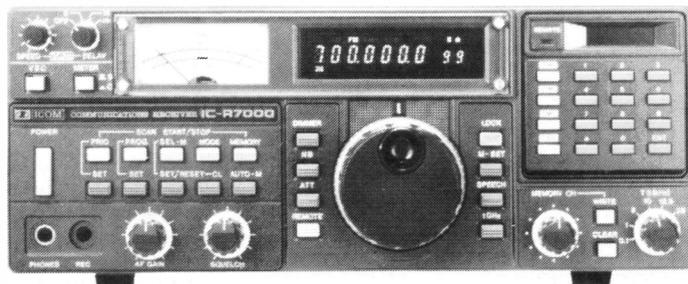
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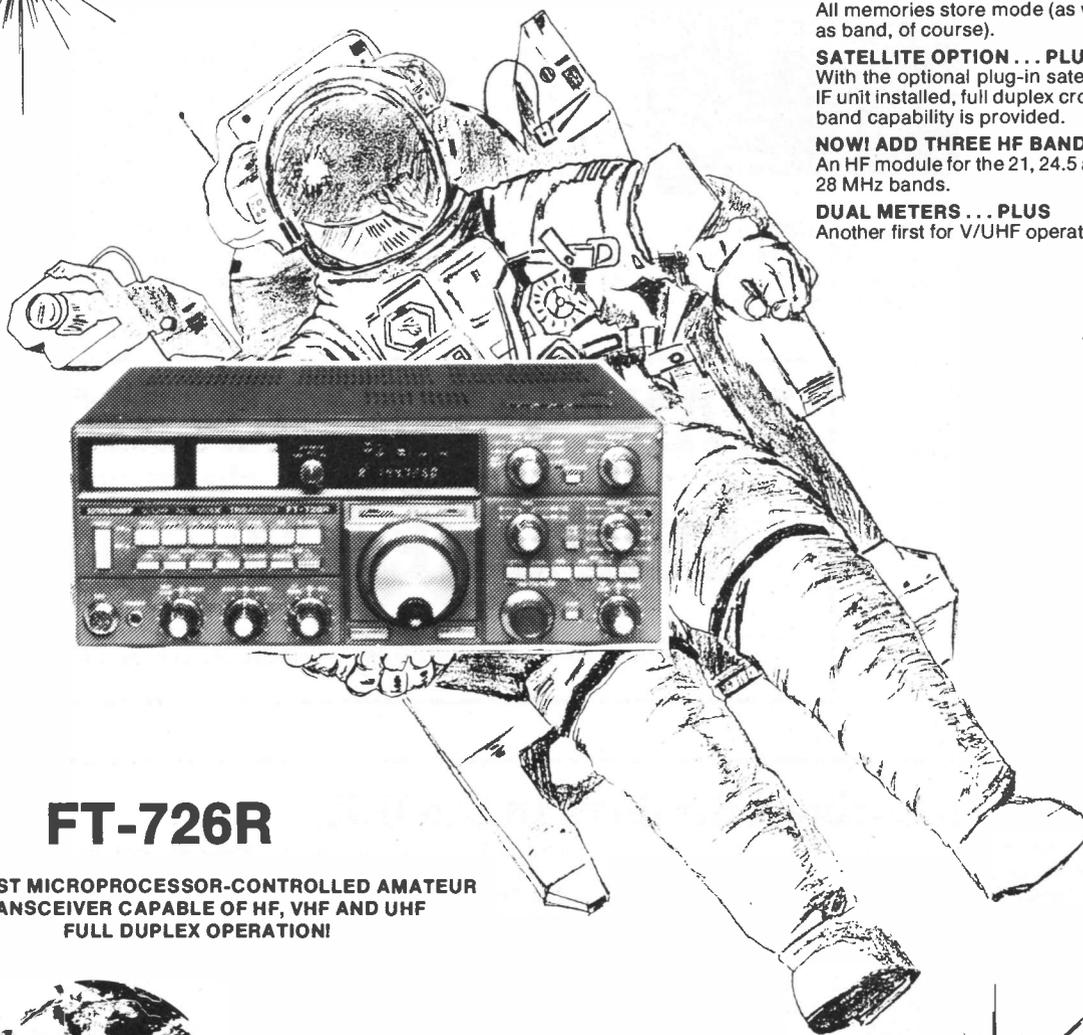
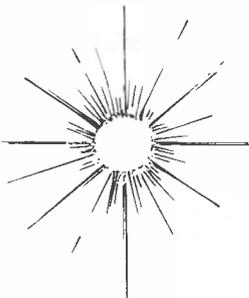
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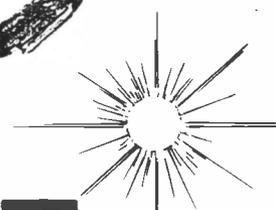
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EDITORIAL

Discussion

The recent Region 3 IARU Conference received some important papers for consideration. The first one was that from Papua-New Guinea. This one was headed "QSL — the curse of the contact" and points out the facts of life as far as QSLs in Papua-New Guinea are concerned: 5000 cards cost some 180 U.S. dollars, and their Bureau charges 3 cents per outgoing card. Thus, by QSL-ing, the P29 amateur pays around 6.6 cents for his half of every QSO he has . . . and an average amateur may have between 1000 and 10000 contacts a year. Thus they call for an 'honour' system for all awards, and for global acceptance of the principle. It is worth noting that Fiji put up an almost similar proposition.

Secondly, New Zealand offers the proposal that the DX-pedition, coupled with the open-ended nature of the DXCC award, encourages expeditions to operate from ever more ridiculous and even dangerous 'countries', all for the ego of a small minority chasing after 'Honour Roll' status. This, they consider, has led to activity which brings amateur radio into disrepute and encourages too high power levels. Their solution is to make DXCC a once-for all award — 100 countries and *no* endorsements for greater numbers. Their resolution ends by calling for discussion of ways and means.

Thirdly, the other side of the coin, from G3XQU (*ex-3V8DX*) for presentation to NZART arising from the resolution just mentioned. He thinks DX-peditions are in fact good for the image of amateur radio, and would like the Region 3 IARU Conference to endorse his opinion.

Our reaction is that it is right and proper that each of these three viewpoints be considered with care — maybe a debate at a club meeting even — as they all have an important bearing on amateur radio in the wider sense. One doesn't have to be particularly perceptive to know that a good deal of Africa is already unworkable for lack of legal licensed amateur activity; one doesn't have to be very caring to feel sorry for the poor chap in some DX location who just *can't* have a peaceful natter on the band without losing his QSO in a wall of QRM from ill-mannered and ill-tempered callers; and one doesn't have to be on the dole to realise how the chore of QSL-ing and the cost must put a severe strain on any active DX station's pocket and time.

Something needs to be sorted out, but at this stage we wouldn't presume that any solution is of necessity correct.

RSGB to take over Morse tests

The Department of Trade in Industry announced on December 2 that it had appointed the RSGB to take over the running of the amateur radio Morse tests on its behalf from April 1. The Society's proposal was chosen, rather than those of either British Telecom International or The City and Guilds of London Institute, as representing, ". . . a significant improvement in the service offered to radio amateurs who wish to take the Morse test." The RSGB intends setting up a network of 70 testing centres, one in each county, region or designated island, with tests every two months at a fee of £7. We can only applaud this move, since it offers a more efficient and cheaper service. The next logical move would be for the RSGB to take over the R.A.E., setting the syllabus, examination questions and marking papers; after all, examinations for the professions are not set or conducted by third parties so why should the C.G.L.I. be involved at all?

STOP PRESS: The six-metre band will be released for all Class-A licencees on a 24-hour basis from February 1st, as announced in the "London Gazette" on December 20th.

*John
G3KFE.*

VHF BANDS

NORMAN FITCH, G3FPK

FIRST, a very happy New Year to all readers. Thank you for your support in 1985 and here's hoping that 1986 will be a good year for the VHF and microwave enthusiasts. The six metre band will soon be available and it will be interesting to review achievements in a year's time.

After the memorable October tropo. lift, we were brought down to earth in November which saw very mediocre conditions. Even in the busy London area, there were times when the SSB section of 2m. was completely empty, so much so that one wondered if one of the local squirrels had chewed through the coaxial feeder. (Yes, the little beasts do actually walk up the brick walls at G3FPK and have had a go at the feeder for the HF antenna).

Beacon News

Since last month's mention of the new 13cm. beacon GB3NWK on 2,320.850 MHz, further details have been received from the newly formed *North West Kent Beacon Group*. G8BJG is the beacon keeper, G4GLN is the technical manager and G8CIU the treasurer. The site details are NGR TQ 498644 (JO01BI), *a.s.l.* being 160m. The ERP is 5w omnidirectional from an Alford slot antenna 25ft. *a.g.l.* The keying is FSK sending "GB3NWK JO01BI" and reception reports should go to G4GLN who is *QTHR*. So far, development and running costs have been financed by group members and it is estimated that the electricity bill will be £50 this year, so contributions, however modest, would be most welcome and should be sent to the treasurer, G8CIU.

Repeater Note

On Nov. 19, the Huntingdonshire UHF repeater came into service using channel RB5. Reception reports would be appreciated and can be sent to G4UXV (Tel. no. 0480 52009) or G4NVS (0480 413289). Its callsign is GB3OV.

Awards News

Two more readers have joined the 144 MHz QTH Squares Century Club. The first is Bob Ainge, G4XEK, from Cheadle in Staffordshire (ZM01h). His 100 confirmations were for 85 tropo. QSOs, 10

via Es and five *via Ar*. 85 were on SSB, 13 on CW and a couple on FM. Bob's amateur radio career began in November 1945 when he became BSWL 2120 and his previous calls were VE7ACN, K2GMO, DL4OZ, F0BLB, K2GMO/5, G5BEX, G5CIQ and G4/W5MJQ. Before he was 21 years old, he had operated in 48 of 50 states of the U.S.A. His station comprises an *Icom* IC-251, a 130w amplifier and four 14-ele. *Parabeams*, the QTH being 500ft. *a.s.l.* However, over an arc of 350° Bob is surrounded by higher ground between 100 yards and one-and-a-half miles away. At the time of application, he had 141 squares worked. G4XEK's membership no. is 59 and his certificate was issued in Nov. 14 1985.

Member no. 60 is another Italian reader, Alessandro Della Casa, I4YNO, from Modena in northern Italy (FE25e). He submitted 125 cards but one was a duplicate so his total is 124. These comprise 63 tropo. QSOs, 37 on MS and 24 *via Es*. 14 contacts were CW, the rest on SSB. The certificate was issued on Nov. 23, 1985. At the time of application, 176 squares had been worked but many confirmations are outstanding from G4IJE, G3WOH, SK7JD, F6DRO and SV1DH to whom he has sent three QSLs.

Alessandro, was first licensed in May, 1978 at the age of 16½ years. His station consists of a *Trio* TS-830S with transverter, a BF981 preamp., a 4CX250B PA and a 16-ele. *Tonna Yagi* antenna. He is also a keen DX-er on the HF bands and has many excellent awards.

Erik Cechota, OE3CEW, from Scheiblingstein in Austria, member no. 22, has been awarded his "225" sticker on Dec. 3, his previous total being 202 confirmed. His list was for 12 SSB and 11 CW QSOs, nine each on MS and *Es*, and five on tropo. mode. The *Es* opening to Russia on May 21, 1984 provided QSLs from UA8BAC (SE), RB5QGL (SG), UA6YB (TE), UA6AEH (TF), and UA6AEC (UE).

Another reader has joined the 144 MHz VHF Century Club, Roger Betts, G1EHJ from Tamworth in Staffordshire. His certificate no. 379, was sent on Nov. 15. He became interested in the hobby in 1983, took the *R.A.E.* that December and passed it, operating commencing in February, 1984 on FM mode only. His present station comprises a *Trio* TS-770 running 8w to a 7-ele. home made *ZL-special* antenna. On 70cm. he uses a 19-ele. *Tonna Yagi*. The QTH is 400ft. *a.s.l.* Roger is collecting various U.K. VHF awards but is finding it difficult to get information on many of these club-type awards. However, details of *Short Wave Magazine* awards are easy enough to acquire; just send an *s.a.e.* to the Welwyn QTH. If you are nearing 100 squares confirmed on 144 or 432 MHz, in addition to the rules sheet, there is an application form. Overseas readers should send an IRC.

Contest Notes

The results of the September 144 MHz Trophy Contest were broadcast over *GB2RS* on Dec. 1 and revealed that the Single-op. section was handsomely won by Geoff Brown, GJ4ICD, who amassed 16,230 points. GJ6TMM was second with 2,808 and G4AGQ came third with 2,600 points. The All-other stations section was won by the *Parallel Lines Contest Group*, G4LIP/P, with 13,097 pts. closely challenged by GW4NXO/P with 13,071, while third place went to G8LNC/P with 12,043 pts.

The results of the October UHF/SHF Contest were also broadcast and in the following summary, MO means Multi-operator, SO signifies Single-op. and the 1 and 2 refer to first and second place; the rest is obvious. 432 MHz SO, 1 G3XDY 22,225 pts; 2 G6IAT 11,728. 432 MHz MO, 1 G8TFI/P 93,378; 2 G4RNL/P 89,682. 1,296 MHz SO, 1 G3XDY 13,032; 2 G3JXN 5,832. 1,296 MHz MO, 1 G4NXO/P 15,999; 2 G3CRK/P 15,233. 2.3 GHz SO, 1 G3XDY 2,222; 2 G3JXN 2,001. 2.3 GHz MO, 1 G4FRE/P 5,034; 2 G3ZIG/P 2,710. 3.4 GHz SO, 1 G3FYX/P 53. 3.4 GHz MO, 1 G4FRE/P 760; 2 G4PZZ/P 482. 5.7 GHz MO, 1 G3JOC/P 29. 10 GHz SO, G3FYX/P 53. 10 GHz MO, 1 G4FRE/P 76; G3OXL/P 17. 24 GHz SO, 1 G3FYX/P 53. Congratulations to all participants.

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

February issue — January 8th
March issue — February 5th
April issue — March 5th

Please be sure to note these dates

The first VHF contests this year are the 70 MHz *Cumulatives* and there are five sessions:— Jan. 26, Feb. 9 and 23 and March 9 and 23. As to the times, enquiries to *RSGB* Headquarters drew a blank so it is assumed they will be 1000–1200 as last year and that it will be for single operator stations only. The 144 MHz CW event is on Feb. 2 and again, it has to be assumed the time will be as last year, from 0900–1500 with only one class. No doubt, for those who see *RadCom*, the January issue will clarify both events.

Space News

There is no news at all from any readers this month. It would be very interesting to find out just how many amateurs regularly use *Oscar-10* and any Soviet transponding satellites that may still be functioning. Probably no other branch of the hobby has had such large sums invested by amateurs individually, their national societies, industry and government bodies.

Perhaps some of our keen *s.w.l.* friends might care to listen on as many 0-10 orbits in a month as possible and jot down all the calls heard. Your scribe would not be surprised if it turned out to be very few.

The latest *UoSAT Bulletin* to hand at the time of editing was no. 152 dated Nov. 15. Under the heading of "Manned Missions," we learn that Dr. Ron Parise, WA4SIR, an *AMSAT* member, will be a crew member of the *ASTRO 1* space shuttle mission 61E, whose possible launch date is March 6. There is a possibility that a packet radio terminal node controller (TNC) may be taken. If so, it will be a special version of *Tucson Area Packet Radio* (TAPR) TNC-2.

News from France

Mention was made in the Nov. 1985 VHF of Pierre Redon's plans to operate as FIADT/P from AC and AD squares. On a QSL card, he gave some more information. Saturday mornings in July from BG74c, a site 800m. *a.s.l.* In July, all days except Saturdays, from BF34c, 1,350m. *a.s.l.* Operation from BE18d is possible in September. In the first weekend in August, from BD25d at 1,250m. *a.s.l.*, this taking in the contest. And from the home QTH ZE40a in April, May, June and October.

On 2m., Pierre will run 400w to a 17-ele. or 24-ele. long *Yagi*; on 70cm. 350w to either two or four 21-ele. long *Yagis* and on 23cm., 200w to four 23-ele. *Tonna Yagis*. During operation from the south of France in 1985, FIADT contacted 575 U.K. stations. In the big lift of Oct. 12-14 to the north, Pierre had 152 G QSOs on 2m. and 225 on 70cm. up to ZP square.

Six Metres

By the time this appears an official announcement should have been made about the general release of the 6m. band in the U.K. One reader has been corresponding with his Member of Parliament and through him, received a letter from the *D.T.I.* in early December advising that negotiations with the *RSGB* had been completed and that an announcement would be made before Christmas. Similar details were on the *RSGB's Databox* service on Dec. 6 and mentioned by the President at the Annual General Meeting the next day. The expectation is for a February announcement in the *Gazette* which will state precisely who can use the band and when and with what power and modes.

6m. is already available to some Norwegian amateurs and it is likely that EI stations will again have the band. The *RSGB* received a letter from the Portuguese national society, the *R.E.P.*, which seemed to be trying to tell that CT amateurs would be getting a 6m. allocation, too. If this proves to be so, it would make it all the more interesting since *Es* openings at 50 MHz are quite common to

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	17	39	11	265
G6DER	—	—	70	26	67	22	47	17	249
G4TIF	49	5	80	20	61	17	—	—	232
G4SEU	63	7	70	15	45	14	—	—	214
G1KDF	—	—	93	21	79	16	—	—	209
G4NBS	28	2	65	12	51	16	36	9	189
G4MUT	41	4	60	20	36	11	17	4	172
G6MGL	—	—	50	17	43	16	28	14	168
G6HKM	—	—	65	20	55	19	—	—	159
G0CUZ	—	—	81	21	48	8	—	—	158
G4YCD	—	—	77	22	43	8	—	—	150
G6WZO	—	—	50	8	50	14	21	5	148
G6AJE	—	—	61	13	50	10	—	—	134
G1EHJ	—	—	58	14	43	12	—	—	127
G1EZF	—	—	64	19	38	6	—	—	127
GW3CBY	34	5	46	8	24	8	9	5	125
G4VXE	—	—	65	15	38	5	—	—	123
G3BW	34	5	36	22	—	—	13	5	115
G6XVV	—	—	64	12	31	4	—	—	111
G4WXX	—	—	90	21	—	—	—	—	111
G4HGT	2	1	63	20	18	2	—	—	106
G6ECM	—	—	77	23	—	—	—	—	100
G3FPK	—	—	80	20	—	—	—	—	100
G6XLL	—	—	61	13	21	4	—	—	99
G1IZO	—	—	79	19	—	—	—	—	98
G6XSU	—	—	43	12	31	9	—	—	95
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	—	—	64	19	—	—	—	—	83
G8PNN	—	—	—	—	26	12	32	10	80
G1DWQ	—	—	58	20	—	—	—	—	78
G8XTJ	—	—	59	17	—	—	—	—	76
G4YIR	—	—	57	17	—	—	—	—	74
G4VKE	—	—	64	10	—	—	—	—	74
G6OKU	—	—	40	8	21	3	—	—	72
G4ARI	16	1	47	7	—	—	—	—	71
GW1JCB	—	—	56	15	—	—	—	—	71
G6XRK	—	—	53	17	—	—	—	—	70
G2DHV	10	1	47	7	1	1	—	—	67
G0CAS	—	—	54	13	—	—	—	—	67
GW6VZW	—	—	51	13	—	—	—	—	64
G1HGD	—	—	51	10	—	—	—	—	61
G1JOU	—	—	50	10	—	—	—	—	60
GM4CXP	5	2	34	10	6	2	—	—	59
GM0BPY	—	—	31	10	9	9	—	—	59
G1LAS	—	—	49	10	—	—	—	—	59
GW4VVX	—	—	46	12	—	—	—	—	58
G4CMZ	26	3	23	4	—	—	—	—	56
GW4HBK	46	5	—	—	—	—	—	—	51
G4WHZ	—	—	38	7	4	1	—	—	50
G4WJR	—	—	39	7	—	—	—	—	46
G4WND	25	2	—	—	14	4	—	—	45
G4EZA	—	—	39	6	—	—	—	—	45
G0BPS	—	—	30	7	—	—	—	—	37
G6CSY	—	—	11	5	5	1	13	1	36
GM4WLL	9	2	13	5	—	—	—	—	29
G6SIS	—	—	19	5	1	1	—	—	26
GW1ODV	—	—	12	14	—	—	—	—	26

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

Iberia in the summer. Also, the Azores Islands and Madeira, CT2 and CT3 respectively, would be included.

As for actual operating, Dave Lewis, GW4HBK, (GWT) wrote, "Conditions can only be described as rock bottom. Zero report; even beacons GB3BUX and GB3CTC have been completely absent at times." Tony Collett, G4NBS, (CBE) cannot hear anything on the band at times due to very strong data-type noises which make reception impossible.

Mike Johnson, G6AJE, (LEC) has been listening on the band since Nov. 10. At first, his converter took off like a rocket due to a faulty PL-259 antenna plug which resulted in Radio Prague being radiated on his 2m. rig. He has heard twelve of the permit holders up to Nov. 17. His equipment consists of an *LMW Electronics*

50/144 MHz converter into a *Trio* TR-9130, the antenna being a single *Quad* loop 20ft. *a.g.l.* A two element *Quad* is on the drawing board. Mike hears the GB3NHQ beacon from Potters Bar and has copied GB3SIX on Anglesey *via* MS at S2 with bursts up to ten seconds.

Four Metres

Jerry Russell, G4SEU, (WKS) has sent a press release on the GB4MTR project for which an awards programme is mentioned. The following four weeks periods have been booked;- Jan. 1-28, operated from G4VOZ (LEC); Jan. 29 to Feb. 25 from G4ENA (GLR); Feb. 26 to Mar. 25 from GW4HBK (GWT) and from Mar. 26 to Apr. 22 from G4ENB (BFD). This is all a voluntary effort and the idea is

to operate GB4MTR from 13 different counties in 1986 in four weeks periods. Volunteers from the north of England and from GD, GI, GJ and GU are particularly sought who have 4m. stations. Offers to either G4SEU or G4WND, both *QTHR*.

Two Metres

Derek Hilleard, G4CQM, (SRY) wrote to update his squares totals and managed several new ones during the October lift to Scandinavia. His best DX was to GT and HT squares. Tim Charles, G4EZA, (LDN) says he has not, "... had much time to do anything adventurous." He did operate in the November CW contest but did not find the conditions very good. He had intended entering the *RSGB* six hour part but his keyer failed a few days before and he did not have time to fix it. He writes; - "I was quite shocked to discover that I had forgotten how to send CW at any speed on a straight key and I'm determined not to fall into the trap of relying solely on too much 'machinery' in future!"

Flemming Jul-Christensen, G4MJC, (SXE) had not written for a long time and his report went back about a year. Going back to the October lift, on the 12th, he worked six Y stations in FK and FL and Y24XN/P in GK, a new one, plus LX2GB. On the 13th some D, HB9 and OZ stations were contacted and OE2KMM and Y22ME. Beacon SK4MPI (HU) was heard for the first time. On the 17th, in the evening, he got OK1AUN/P and OK1KPU/P both in GK, OK2BKY (HK), OK1MAC/P and SP6HEI (IL). On the 18th, SK4MPI was S9 all day but only OK1KRA was worked.

On the 20th, Flemming worked SM7JUQ (GP), SM6OUH (GR), OZ1GTE (GP), SM7NJH (GQ), OZ1HXD (FP), OZ2FF (GQ), SM1LPU (JR), SM5CBN (HS) and OZ1KQG (FP). The next bout of DX was on the 24th at 0636 when OZ1EYE (FQ) was contacted. That evening brought QSOs with LA1ZE (CS), LA6VBA (ES), SM6MSG/M (GS), OZ2EDR (FQ), OZ7RD and nearer home, GW1LLP (XN). An early morning stint the next day brought OZ1IIT (ER) and at 1920, GM0APN.

On the 27th in the late evening, more OZ. SM6 and SM7 stations were worked plus LA6HL (CS). At 2340, he worked SM7FMX, who is also Danish by birth, and, while they were complaining about the lack of activity from Bornholm Island, OZ1BJF (HP) broke in to say that was his location. Later, OZ1FYW joined them. On the morning of the 28th, he worked Y23RD again, Y22LD (GM), OK1KFQ/P and OK1AXH/P. Flemming is now up to 160 squares worked on the band.

G4NBS's only activity was in the CW contest. Tony operated for about eleven hours and had 93 QSOs in very poor conditions. On the Sunday morning, conditions were slightly better and his best DX was DK0BN/P (DM) at 595 kms.

Station	ANNUAL CW LADDER				Points
	4m.	2m.	70cm	μ Wave	
G4TWD	—	640	—	—	640
G3GHY	—	576	11	—	587
G4WHZ	—	502	31	—	533
G4UKM	6	295	24	—	325
GW4TTU	—	—	262	56	318
G4WGY	—	275	15	—	290
G4YIR	—	273	—	—	273
G4SFY	—	244	—	—	244
G4NZU	7	162	2	—	171
G4ZTR	—	139	—	23	162
G4ZVS	—	152	—	—	152
GW4VVX	—	143	—	—	143
G4VXE	—	127	7	—	134
G4CMZ	39	92	—	—	131
G0CUZ	—	117	12	—	129
G4ARI	7	118	—	—	125
G4EZA	—	105	—	—	105
G4OUT	—	74	—	—	74
G2DHF	21	45	1	3	70
G6VMQ	—	66	—	—	66
GW4HBK	59	—	—	—	59
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.

Although the north is his best direction, only one GM was worked. Dick Phipps, G4TWD, (KNT) sums it all up, "Not a good month!" his best DX being CM square in the CW contest on Nov. 2/3. He added another ten new CW stations for the ladder making it 640 for the year.

Dave Cater, G4WHZ, (ESX) is another CW devotee with 502 different stations worked this year. He operated in the Fixed Contest on Dec. 1 and worked 34 stations including GM0BQM/P and OT6NH. June Charles, G4YIR, (ESX) reflecting the mediocre conditions in November, wrote; - "I don't need a very large piece of paper to report my activities..." However, she did find another 16 stations for her CW Ladder score, making it 273 for the year up to Nov. 28.

G6AJE advises that fewer reports will be sent as he now works in London. From the home QTH in Ratby (LEC), he worked SM7MKT (GP) on Oct. 20 for a new 1985 country making it 13 so far. Keith Hewitt, G6DER, (YSS) put his 2m. beam back up on Oct. 25 to catch the last part of the lift and managed SM1NVW/1 (JQ) for a new square. On the following day, he worked his best tropo. DX so far, UP1BWR (MO) at 1,730 kms. for a new country and square. On the 27th, he worked 17 Y stations in GL, GM, HL and HM, many Ds in the E, F and G rows, a couple of OK portables and 12SPs in HL, HM, HN, IK, IM, JL and JN. For the record, Keith states that of 123 stations worked, 34 (28%) gave their Maidenhead locator.

Roy Gibbons, G6XSU, (HFD) has not been too active lately but wrote to update his Annual Table and Squares totals. He suggested; - "How about some indications of working conditions of stations, to be published with the final tables for 1985? e.g. PEP, antenna system, a.s.l." He reckons it might provide some interesting comparisons. A welcome to GW1ODV who has entered the annual table. Her

score was sent in by her OM, Ceri Jones, GW1JCB (GNS).

There was an *Aurora* during the evening of November 28, lasting well into the early hours of the next morning. The only reader to write about it was John Eden, GM6LXN, who is the most northerly amateur radio station in the mainland in Brough, Caithness. Since the majority of readers will never have seen an *Aurora*, here is John's description of this event.

"First, at about 1815 GM1BAN was in the village of Greenland, operating mobile and letting passengers on to his bus, when the fog cleared for about a minute. The sky to the east was full of colours, green being the most predominant. Denny is a native of the north coast but he says that it was the most spectacular show he has ever seen, but the fog came down around him and that was that.

"At 2130, I checked outside for a 'visual' and it was right overhead. Its shape changed and joined up with far eastern and far western sections from time to time. This was not a colour display at any time, but it lasted until 0200. It was fantastic to watch. At one stage, lines ran from north to south overhead and at the east and west ends of this, they turned to point and flow over the horizon. As one looked straight up, the roughly north/south lines had waves sweeping across them at near right angles starting from the north end and sweeping over the other lines to move south, sometimes very bright, other times faint.

"At one stage, as the east and west sections joined up overhead, it looked like a flame from a Bunsen burner; the lines came from the west and then they opened up and travelled around an 'eye' section that was overhead — the hot part of the flame — to reform around the other side to go off over the eastern horizon. All the time, pulses seemed to be sweeping from this area and moving south, always larger and slow moving."

John did find time to tear himself away from this stunning display to work a few stations which were; - SM1LPU (JR), SM4POB, G4XDZ (AL), G14OWA (WP), OH3AZB (LU) and SM4CFL who was contacted on CW. All these were between S6 and S9 with similar reports received. G0DLR was also worked, but Len was only RS43A. Heard were GMS 3J1J, 6TKS, 6WQC and 4COK, LA81J, LA6VBA and a GI. It is very interesting to learn that John worked stations when the *Aurora* was overhead. Unfortunately, he did not mention any beam headings or whether he had to elevate his antenna.

As to the history of this event, the A index was only hovering around 6 units till Nov. 26 as SSC — sudden storm commencement — occurred at 0451 on the 27th, with the A index reaching 40 by the 30th. This unpredicted *Ar* was the result of a series of disintegrating filaments and the A index reached the highest value since April, 1985.

Seventy Centimetres

G4MJC acquired a *Yaesu FT-790R* in June last year. In the October lift, on the 14th, Flemming worked DB2VY (DJ) and DL0UD (DL) with just one watt. On the 24th, he contacted on CW LA6VBA (ES) at 1825. At 1945 the next day, he tried to work GM4NHI. From 2030 he struggled to work GW1LLP who copied everything except the fifth character of G4MJC's Maidenhead locator. Just as the lift was ending, a QSY from 2m. brought QSOs with OK1KHI/P and OK1AXH/P, both in HK and on CW. He now has 18 squares and seven countries on the band.

G4NBS now has his masthead preamp. going again. Tony lists his only contacts of note on Oct. 24 as:- SM6CWM (GR), SM0DJW (IS), OZ1PD (EQ), LA6VBA and SM6GWA (FS) to bring the 1985 tally to 51 counties and 16 countries and the all-time squares to 63. G6AJE was on the band for the final weekend of the October lift. On the 27th, Mike worked DC9ZP (EO), DL5LF and DC8CF in FO, DC9XO (EM) and ON6OO (CL) for one new 1985 country and three new squares. He was also on for a while in the Nov. 9 leg of the *Cumulatives*.

The Microwaves

Some items of news from John Tye, G4BYV, (NOR) who met Carl Blom, SM6HYG, on Nov. 18. In the October lift, Carl worked PA0EZ on 3cm. for a PA/SM "first" on the band, also PA0EHG and PA0CMO, all in CM square. SM6HYG also contacted DC9XO (EM) on 3cm. He is QRP on this band until he rebuilds his PSU for his TWT amplifier. On 6cm., 13cm. and 23cm., Carl has worked DK0NA (FK). On 13cm., G4BYV has worked FM, YK and ZK to bring his total to 46 and John is up to 74 on 23cm., the latest additions being HQ, WO and XO. He says that nobody asked for the Maidenhead locator.

The station at G4NBS is working well on 23cm. and on Oct. 24, Tony got his first continentals. OZ1HRA (EQ), SM6GWA, SM4DHN/P (GU) at 1,209 kms., DK1VC and DC0DA, both in DL, OZ1ABE (GP), SM6ESG (GR), PA0HVA (CM), PE1HZR (DN) and LA8AE (FT). He was on in the *Cumulatives* making 24 QSOs on Nov. 1, 18 on the 17th and 17 on Dec. 3. The following were contacted on all sessions:— G1HGJ (ZP), G4NVA/P (ZN), GW8ACE/P (YN), G4CBW (YN), GW8TF1/P (YL), G60YL/P (ZN) and G6DER (ZN). On Dec. 4, G4PEC (ZP) and G8DTF (YN) were two more new stations and Tony reckons he can just about detect the Emley Moor beacon in flat conditions.

VHF Convention

With the imminent release of the 6m. band, Ken Ellis, G5KW, has advised that Ray Cracknell, G2AHU, will be giving a lecture entitled, 50 MHz, History, Results

QTH LOCATOR SQUARES TABLE

Station	QTH LOCATOR SQUARES TABLE		Total
	23cm.	70cm.	
G3POI	—	—	446
G3IMV	—	103	380
G4IJE	—	—	338
GRGXP	5	71	289
G4KUX	—	36	287
G4ERG	—	16	278
G3BW	15	38	269
G4DHF	—	—	265
G8VR	2	24	251
G4DCV	24	71	247
GM4IPK	—	—	245
G4DEZ	—	—	242
GJ4CD	59	117	239
GW4LXO	45	91	230
GW4TTU	37	87	227
9HICG	—	—	225
G8KBQ	34	99	214
G3UVR	61	106	213
G4NQC	61	90	211
G3FPK	—	—	209
G4MCU	25	82	201
G8XVJ	—	73	201
G3PBV	41	106	200
G4S5Y	—	—	198
G4RGK	27	85	194
G6ECM	—	—	194
G8LFB	—	—	189
G4IGO	—	—	181
G8TGM	—	—	181
G6HKS	—	55	179
GM4CX	—	27	175
G4TFI	—	104	173
G3JXN	77	119	172
G3COJ	42	97	170
G3XDY	70	123	169
G4YUZ	—	—	167
G6DER	53	95	164
G4MEJ	—	—	163
G4BWJ	—	68	160
G4MJC	—	18	160
G4DOL	—	—	148
G6CMV	18	53	144
G4XEK	—	—	141
G8HHI	23	96	135
G1EZF	9	50	135
G6MGL	45	83	133
G6HKM	—	86	133
G4NRG	5	47	132
G4MUT	16	85	130
G6DZH	—	78	128
G8ULU	36	91	127
G8TFI	51	109	126
G8PNN	53	91	126
GJ6TMM	—	22	122
GW8UCQ	1	70	120
G4HFO	—	70	120
G6JNS	5	53	119
G0CAS	—	—	115
G8MKD	—	45	112
GM0BPY	—	50	110
G6HCV	—	—	109
GW3CBY	18	46	107
G1EGC	—	—	107
G8WPL	16	70	105
G1KDF	—	61	104
G8RWG	—	12	103
GM8MJV	3	26	101
G4TJX	—	60	100
G6XRR	—	—	97
G6XLL	—	33	95
GW8VHI	—	48	94
G4FRX	—	66	93
G4RSN	2	34	90
G8XTJ	—	—	89
G8ROU	1	43	88
G4CQM	—	52	87
G6AJE	—	36	85
G4ZTR	35	57	82
G1IZO	—	—	82
G6YIN	—	20	77
G1DWQ	—	—	72
G1LSB	1	72	70
G4FRE	42	112	68
G6YLO	20	59	67
GW6OFI	1	—	67
G4ROA	25	61	65
G4NBS	24	63	53
G4MAW	45	106	52
G6XVV	1	30	52
G0BPS	—	—	50
G4WHZ	—	8	49
G1JOU	—	—	44
G6XSU	—	52	43
G1INK	—	42	42
G8UDV	—	2	42
GW6VZW	—	—	42
GM8BDX	13	31	41
GM4WLL	—	—	39
G4WJR	—	—	37
G6CSY	16	25	34
G6SIS	—	1	31
G1HGD	—	—	31
G2DHW	—	3	20
G4JZF/P	—	63	—

Starting date January 1, 1975. No satellite or repeater QSOs. "Band of the Month." 2m.

G8VR, will present his History of VHF talk. The Convention is on Sunday, March 16 at Sandown Park.

AMSAT—UK

Ron Broadbent, G3AAJ, has advised of the formation on Dec. 14 of the *AMSAT-UK Technical Group*. Its initial remit is to build objects for flight in two planned satellites. The group is actively engaged in manned and unmanned balloon transponding. A new booklet is now available, *Satellites in Education Resources*. It is a first primer in satellite matters and costs £3.75 including postage and packing. Details and orders to:— AMSAT-UK, London E12 5EQ.

Intruders

Somewhere in north London, possibly in the Hampstead area, a security firm has been using the 2m. band illegally. They appear to be using FM hand-held transceivers and have been heard on 144.13 and 144.40 MHz at least. At G3FPK on Nov. 15 at 1643, Kevin and Don were chatting on 144.13 MHz. The following day at 1600 on 144.40 MHz, "callsigns" 01 and 02 were being banded about in connexion with "radio checks." One London station asked them for their callsigns only to be answered by, "Oh shut up!" During conversations, it would seem that they are operating in Arab-owned property since certain names mentioned were of Arabic origin. Also architects and builders were mentioned and squash courts. Perhaps any mobiles in the "posher" parts of Hampstead might care to look out for any likely property. After all, there is enough QRM on 2m. from computers, telephones and the like without having to suffer from pirates as well.

Maidenhead again

During a recent QSO with your scribe, Dave Dibley, G4RGK, made a very pertinent comment concerning the rapid identification of squares in hectic conditions such as an *Es* opening, or when tropo. signals are very weak. On 'phone, we use phonetics such as "Yankee Lima" for YL. Now in Maidenhead, YL is I081, the important part being the '81," but how do you get that over phonetically? How many English operators contacting a CT station who spoke no English at all would know how to say "eighty-one" in Portuguese?

Sign off

One of the poorest months for a long time, hence only four pages. Next month sees the final placings in the Annual Tables so please make certain that you send your claims in by the all-important deadline in the box. All correspondence should go to:— "VHF Bands," SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts., AL6 9EQ. 73 es A *Happy New Year de G3FPK*.

and Expectations for the Future. This will be in Stream B starting at 1615 and will be a 90 minute session to give more time for a discussion. At a different time, Ken Willis,

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

Part 2

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

Retuning the Set

It will now be necessary to retune L2 and T2 which form a band pass tuned circuit to provide signal injection into the receiver first mixer and also feeds the input to the transmit mixer. This is best carried out on transmit with a power meter in series with a 50-ohm dummy load connected to the aerial socket of the set.

Adjust L2 and T2 for maximum output on channel 19. (Remember that the American channel/frequency association is not in sequential steps of 10 kHz from one channel to the next; channel 19 happens to produce a frequency in mid band.) Next adjust T3, the output tuned circuit from the transmit oscillator, for maximum output power; follow this by adjusting the tuning of T4, L6, L7 and L8 for maximum output power. It may be necessary to change some of the values of the tuning capacitors for the next lowest preferred value to obtain correct tuning. The capacitors associated with the tuned circuits of L2, T2, T3 and T4 are housed internally within the screen cans of the Toko coil formers. Care must be taken to unsolder and remove the coil formers from the printed circuit board; the capacitors can be found to reside in the underside base of the coil former. It is best to remove the screen can from the coil former and carefully cut the leads to the internal tuning capacitors before removing the capacitor from the base of the coil former. All the tuning capacitors removed were measured and found to be 50 pF. After the tuning capacitors have been removed the screen cans can be replaced and the coil former resoldered back onto the printed circuit board. Tuning capacitors of a lower preferred value, namely 33pF were soldered onto the back of the printed circuit board which made it easy to change the values if necessary. Prior going to the effort of removing the tuning capacitors, it is worth while attempting to try and adjust the various tuned circuits by varying the tuning cores; you may be lucky and get away with it!

Receiver Tuning

After tuning the transmitter for maximum power output, approximately 4 watts, the receiver RF amplifier will require to be adjusted. Remove the 50-ohm dummy load from the aerial socket and connect a signal generator operating at 29.49 MHz, which corresponds to the receive frequency for channel 19. Reduce the output of the signal generator until the signal is just audible from the receiver speaker; adjust T6 and T7 for maximum signal. Again reduce the output of the signal generator until the signal is just audible to ensure that the receiver AGC system is not working, and again adjust T6 and T7 for maximum audio output from the receiver speaker.

If you do not have a signal generator to hand, don't worry. The set can be connected to an aerial and receiver tuning achieved by either tuning against the received signals from another amateur, or by using another converted CB set as the signal source.

Channel Change Switch

The channel change switch consists of a number of segments constructed out of double-sided printed circuit board which has been etched such that when rotated will provide the required logic code for the PLL chip by switching the V_{dd} supply onto the programming inputs. The channel switch by the same technique provides the correct code to drive the common anode twin seven-segment displays giving a visual indication of the channel number selected by switching *via* a resistor array the cathode of each individual segment to earth. The 80-channel set has been equipped with an additional switch wafer, and selecting this common switch terminal to earth will provide a visual display of either 1 to 40 or 41 to 80. The code produced from the program lines remains unchanged.

The two resistor arrays comprise each of 7 individual resistors,

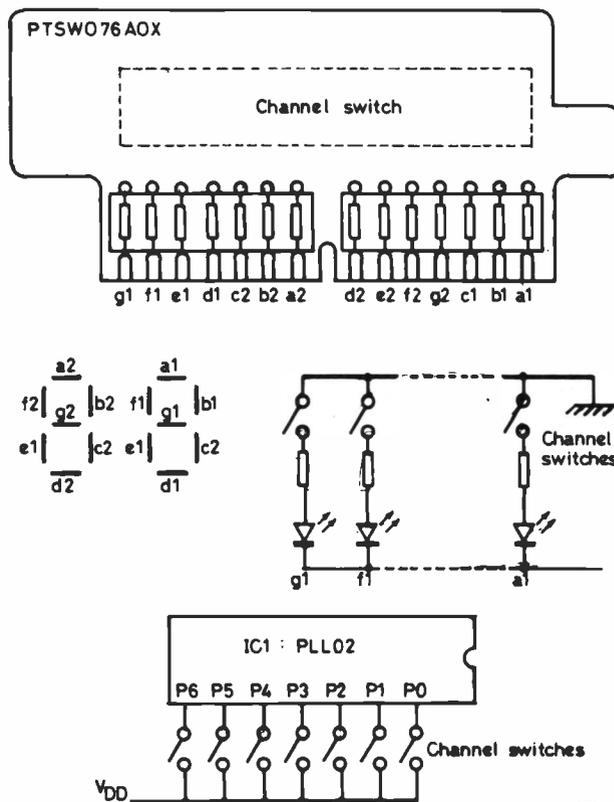


Fig.6 CHANNEL SWITCH CONFIGURATIONS

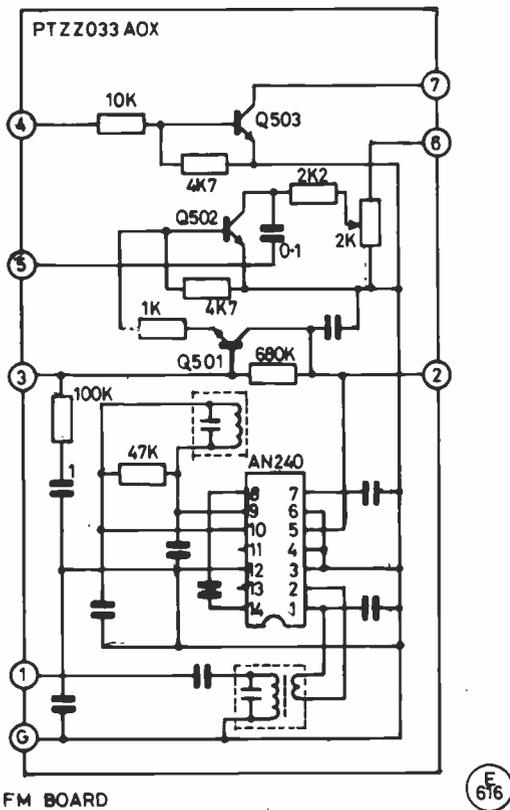


Fig. 7 FM BOARD

E 616

and the terminals of the channel switch associated with the display are soldered to a small printed circuit board numbered PTZW076A0X and the various functions are illustrated in Fig. 6. The twin seven-segment display is attached to another small PCB numbered PTLD022A0X which is attached to the rear of the front panel and electrically connected to the two resistor arrays by flexible printed circuit strip.

Channel Switch Code

The channel switch produces code to meet the frequency requirements of the F.C.C. specification. That is, certain frequencies are missed and some frequencies are not sequential with the channel number selected, as shown in Table 1. The author has attempted, by using diode switching and using the logic code produced to drive the seven-segment displays, to produce a program code to drive the PLL chip which causes the frequency jumps to remain in step with the changes in channel number selected. After spending several hours investigating the possibilities, the author came to the conclusion that it would be very complicated to produce the correct program code using diode switching and decided to leave well alone.

Frequency Modulation (1)

The set design started off life as an American AM set designed to meet the F.C.C. specification. However, as previously described, additional sub-mounted printed circuit boards have been added to extend the operational frequency range of the set. On some models an additional PCB has been added to provide the set with the additional facility of frequency modulation. the PCB has been designed by Ham International and can be distinguished by the board number PTZZ033A0X, Fig. 7. A two-pole, two-way switch has been added to the front panel to select AM or FM. One pole of the switch connects either the AM detector or the FM demodulator to the input of the audio amplifier on receive; the other pole of the switch connects the RF power amplifier direct to the positive supply on FM, or *via* the audio amplifier output impedance matching transformer on AM.

Frequency Modulation (2)

On transmit, the microphone is connected to the input of the audio amplifier, Fig. 8. The output of the audio amplifier is fed to an impedance matching transformer T11, which in turn is fed to terminal 6 on the FM board, Fig. 7. The deviation is pre-set by RV501 and the audio output is fed to terminal 5; terminal 5 is connected to terminal 26 on the main set PCB. The audio is fed to the capacitance diode *via* an RF choke, and the resulting audio causes the frequency of the transmit 10.695 MHz crystal oscillator to deviate in sympathy with the audio applied. Amplitude modulation is prevented by connecting the supply of the RF power amplifier direct to the supply *via* switch S2a.

Frequency Demodulation

On receive the FM discriminator input is taken from the second IF amplifier and fed to terminal 1 on the FM board which is connected to the input of the discriminator circuit. The output of the discriminator appears on terminal 3 (Fig. 9) and is fed *via* switch S2b to the volume control and audio amplifier. Also on receive, terminal 4 on the FM board is at a potential of 6.2 volts which causes Q503 to conduct and grounds terminal 7 of the FM board. Terminal 7 is connected to the base of transistor Q14 which provides automatic level control required only under transmit conditions; therefore any automatic level control is inhibited under receive conditions. A sample of the audio output from the discriminator IC circuit, an AN240, is fed to the base of Q501 which in turn causes Q502 to conduct under receive conditions, preventing any audio from reaching the capacitance diode. This circuitry is not required with the present system of providing FM, because the transmit mixer crystal oscillator only oscillates during transmit.

Frequency Modulation Problems

On-the-air reports were received suggesting that the quality of the modulated signal left a great deal to be desired. Numerous tests were carried out to try and improve the situation, but to no avail. The author eventually decided to completely re-build the FM modulator. The existing system deviated the 10.695 MHz crystal oscillator. The author examined the methods of providing FM deviation in U.K. specified CB sets, decided to follow their example, and frequency deviate the VCO.

Modified Modulation Circuit

The circuit eventually used is shown in Fig. 10, and can be built if you are unlucky enough to have found a set which does not contain the FM board previously discussed and shown in Fig. 7.

The transistor Q502 can be substituted by a BC107. It was decided that audio from the audio amplifier would be taken from terminal 23 because it does not contain a DC component. As it is

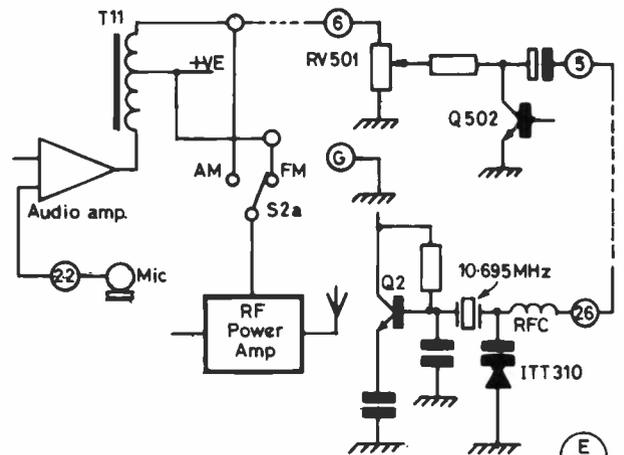


Fig.8 EXISTING FM MODULATION CIRCUIT

E 617

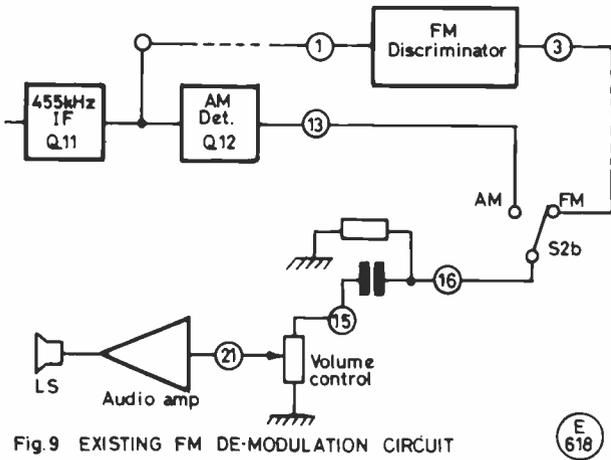


Fig.9 EXISTING FM DE-MODULATION CIRCUIT

E 618

the intention to deviate the VCO, it is important that under receive conditions the VCO should not be deviated by preventing audio from reaching the capacitance diode. It was therefore decided to use a transistor switch Q502, which was already available on the FM board. However, it was decided that the logic signal appearing on terminal 4 of the FM board provided a more reliable method of switching, rather than relying on the audio output from the FM discriminator in the original circuit. This required a few modifications to the FM board shown in Fig. 10, and transistor Q501 can be removed completely as it is no longer required.

It was found that the new circuit provided a greater deviation for the audio provided, than the original circuit. It was found necessary to reduce the audio level by placing a 22K-ohm resistor in series with the 2K-ohm preset resistor used to adjust the

deviation level. The resulting audio leaves the FM board via terminal 5, and is directly wired to the low pass filter comprising a 100K-ohm resistor and 100pF capacitor. The capacitance diode used was an ITT310, which was previously part of the transmit mixer crystal oscillator in the original circuit. The author has also tried a BA102 which was also found to work satisfactorily. The capacitance diode is coupled to the VCO tuned circuit by a 27pF capacitor; it was not found necessary to re-adjust the tuning core of L1. The new components to provide deviation were connected together on the component side of the PCB. The transmit mixer crystal oscillator was modified by removing the capacitance diode and substituting a 30pF trimmer in parallel with a 10pF capacitor.

Conclusions

The transmitter has now been tested on the air over a period of several months and the reports received indicate that the audio quality is now good. The receiver performance on FM has always been good.

During the period that the set was being modified, it was discovered that there are a large number of sets around containing the printed circuit boards described in this article, but housed in different size and shape cases, and known by different names. This seems to be a common practice amongst set manufacturers to sell the same product in a different case containing varying amounts of 'plastic chrome'! Whether this sells more sets remains to be seen.

One example encountered was the Colt 295 PCB being found in a set called a Formac 88, which was on sale at the local Welsh rally at Barry, with a price tag of £3.00. Converting these types of sets must represent one of the cheapest ways of obtaining equipment to work the amateur ten-metre band. I wish you luck with your set conversion, and look forward to hearing you on ten metres!

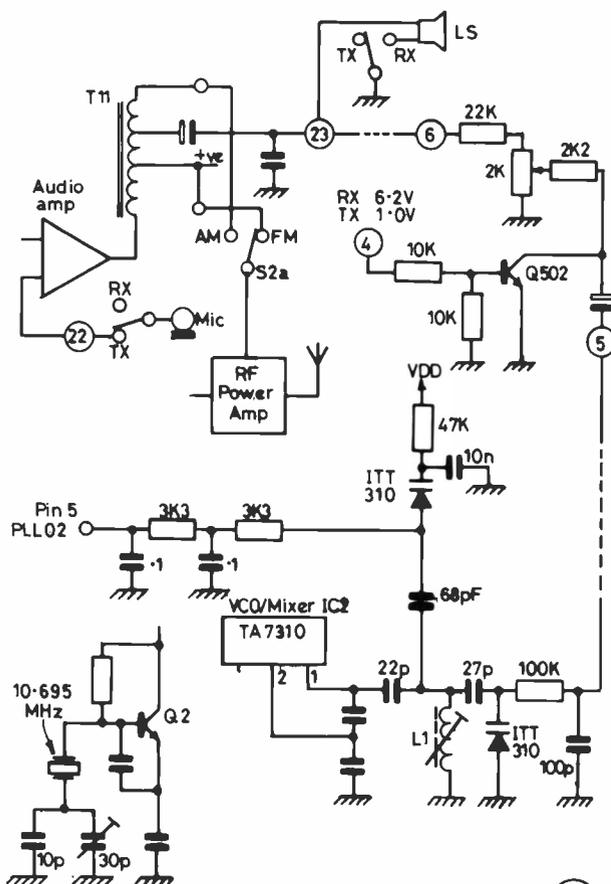
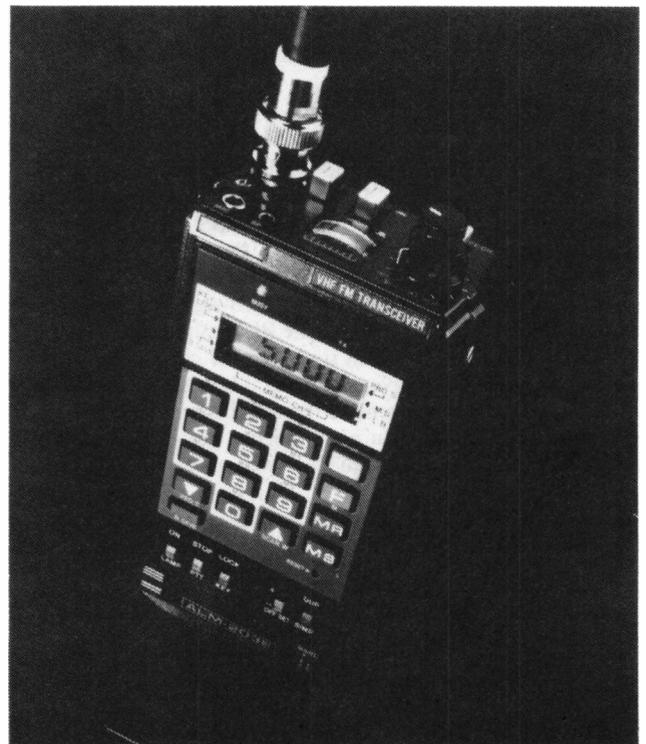


Fig.10 MODIFIED FM MODULATION CIRCUIT

E 619



The first Alnico International product to be introduced by I.C.S. Electronics Ltd. following their recent appointment as exclusive U.K. distributor, is the new Alnico ALM-203E two-metre handheld transmitter which is priced at £209.00 inc. VAT. Full details of the ALM-203E are available from I.C.S. Electronics Ltd., P.O. Box 2, Arundel, West Sussex BN18 0NX (tel: 024365-590), and the firm supplies the equipment direct.

"Beyond the Call"

G8MWR

For many years this magazine ran a feature titled "The Other Man's Station" which was very popular. In these days of using commercial equipment it would be far less relevant but we feel that something more in the nature of a profile of the person 'beyond the call' would be of interest.

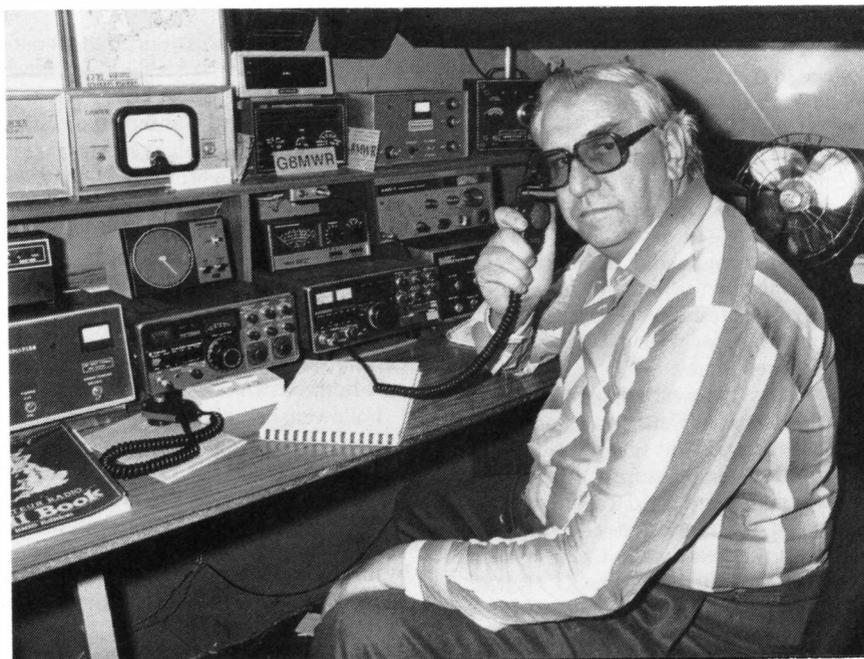
G8MWR, Glen Ross, is now known mainly as the man who started the Microwave Society and also as a freelance journalist but how did he get involved in amateur radio in the first place?

"I first got involved towards the end of the war, by making my own radios" he told us. Later and due to an error in coil winding he discovered the local lads on Top Band and it was not long before he was investigating twenty metres on the domestic broadcast receiver. He then got involved in modifying ex-services equipment and around this time made his first super-regenerative

development team of a very large American company specialising in state-of-the-art microwave design.

On returning to England in 1977 the present call was obtained and activity since then has been mainly on the higher VHF and microwave bands. In excess of 100 watts is generated on 144, 432 and 1296 MHz, the aerials being an eight-element Swiss Quad on Two, a 48-ele on 70cm. and 180-ele (12 times 15-ele Yagis) on 23cm., all with low noise preamps at the aerial. The power drops to one watt on 13cm. with stacked 15-ele Yagis being built. On 10 GHz there is 15 milliwatts of WBFM and 5 milliwatts of sideband to a two-foot dish, and to finish it off there is 7 milliwatts of WBFM to a twelve-inch dish on 24 GHz.

The thing he is happiest about is the setting up of the Microwave Society three years ago. The fact that there was a real need for this is shown by the fact that the current membership stands at over 700. "Not bad for a one-man band operation", he says.



receiver which not only found the local police but also the two-metre band. The VHF bug had struck!

1949 came and with it National Service as a radio mechanic in the Royal Signals, the obligatory spell in Hell (Catterick Camp) was followed by service mainly in Kenya and Uganda from where many Sunday morning forty-metre contacts were made into the U.K. using 10kW from a Marconi SWB-11 with stacked, terminated, rhombics at 60 and 90 feet. "We got excellent reports".

After demob he returned to his native Bristol and became heavily involved with the local clubs. To earn an honest crust he worked in the domestic radio repair game while continuing studies. He then joined the well known firm of Labgear at Cambridge and was involved in the design of most of their amateur radio gear. The next stop was the development labs at the G.E.C. works at Coventry which was followed by joining the

His time is now filled running the Society, representing the RSGB, writing articles and running a microwave consultancy business. He is also well known as a person who travels the country giving talks to the clubs, mainly on microwave matters, but also on other subjects. "I really could not fit it all in if it were not for the help of my wife Val, G8XAF." Asked for advice to newcomers he said "Get the soldering iron out and build something for yourself."

If you would like to appear in this feature, please send relevant details and a good, sharp photo of yourself (not necessarily B/W) to the Editor, marking the envelope "BTC". Anyone and everyone is welcome to contribute.

An American Experience Part 5

Three Weeks to Remember

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

Tower Erection at N4TO, and a Visit to Ten-Tec Inc.

ON the way to N4TO's QTH in Georgia we had spent a few days staying with veteran QRP-er Rich Arland, K7YHA/4, and his family. Rich, well known to many QRP operators in the United Kingdom as G5CSU when he had lived in Newmarket, Cambs. during his five years service at R.A.F. Mildenhall with the United States Air Force. As the stay with Rich at Langley Air Force Base in Virginia came to an end, a study was made of the map to see how far it was to our next destination at Roswell, near Atlanta in Georgia. The mileage that had to be driven was around 650 miles and we had planned to do it in one day, leaving Rich's in the morning and arriving at Vic's in the evening.

After bidding a sad farewell to Rich and Pat, we wondered how long it would be before we saw them again. Both Rich and Pat have remained vaguely English in their ways, and promised to return to the United Kingdom as soon as possible. As N4AR once said, "We are very lucky to have amateur radio. When we make friends we can never really leave them behind, as we can always contact them on 20 metres. Remember, behind the green dials of our equipment are the faces of our friends." That was a funny statement at the time, but one which we were often reminded of during our trip through the United States.

Leaving Langley we drove across the southern part of the State of Virginia and south down Interstate 85 into North and South Carolina. The further south we drove it was very noticeable how the humidity became wetter and the temperature warmer, and we certainly appreciated the air conditioning fitted to our car. Chris, who tans quicker than one of the black-and-white minstrels putting on make-up basked in the heat, while Colin, a colder mortal who often holidays in the damper climes of Holland, vainly struggled to put the air conditioning on to full power!

Taking turns at driving we covered the distance in the allotted time and arrived at a garage on the outskirts of Roswell, which we had arranged with Vic as a rendezvous. After Chris telephoned Vic to tell him we had arrived, we stood on the forecourt of the garage waiting and trying to adjust our bodies to the 88 degrees and high humidity. At one point a stranger asked us the way to the nearest interstate highway which we were proudly able to tell him, having just come off of it. The stranger rushed back to his wife, who sat in a rather battered van, to tell her of the "two Australians who had just gotten into town and knew all the routes!" (Time and time again we were mistaken for Australians, which caused some considerable mirth to our many hosts.)

N4TO is Vic Dubois, who previously operated as N4TO/KP4, and had only recently moved to Georgia. We had both known Vic for sometime on the air, and had met him in London in 1984 at the First Class CW Operators' Club Dinner.

Vic lives in Roswell, which is a suburb of Atlanta, and is famous as having the only wooden house not burnt down by General Sherman at the end of the American Civil War. In 1865 General Sherman, at the head of the victorious Union forces, cut the

Confederacy in two by a bold thrust towards the sea, burning Atlanta in the process.

Luckily Vic's new house, although of wooden construction, stands in more enlightened times, and is set in some beautiful grounds surrounded by trees. As can be seen from the photograph the antenna system was of a low order in more ways than one, and with some glee we learnt that Vic was in the process of putting up a tower and a few temporary wire dipoles. Despite protests from Vic it was decided that the newly arrived guests would help in the process of assembling and erecting the tower and putting up the wire dipoles, so enabling Vic to get back on the air from his new home.

First, though, it was decided to eat out and Vic had arranged for us all to have a meal at a restaurant known as Jilly's. His remark of "You will like this place, boys" was an understatement when we found that the meal was served by girls clad in short mini skirts!

After an evening's sight seeing trip around Atlanta, which is a beautiful city by night, we went home for a night's sleep, looking forward to the day's antenna construction ahead. Before going to bed Chris was idly playing with the 24-channel piped TV system and with a yell of delight found a 24-hours-a-day country and western station. (American TV, whilst it is sometimes of variable quality due to phase delays in the chroma system, is capable of a very large and varied output; programmes containing news, cartoons, sport, country and western, religion, are all available on a 24-hour basis.)

Following breakfast the next day we mutually decided to spend the morning sightseeing at the base of Stone Mountain, which is a granite outcrop some 15 miles from Atlanta. The base of the mountain has a Wild West railway running around it which proved to be an interesting tourist attraction.

After arriving back at N4TO's home we began work and started by investigating the antenna Vic had already put up. He had been active on both 7 and 14 MHz with a simple 7 MHz wire dipole 18



Vic Dubois, N4TO



The extent of tower erection at N4TO's new QTH when G4BUE and G3VTT arrived.

feet high, and had merely unplugged the outer braid of the coax feed and used the system as an end fed Hertz on the other bands.

We had decided to keep skeds where possible with amateurs back home, and a lucky QSO with Al, G3FXB, enabled us to determine the level of signal that was being put into the United Kingdom with the simple dipole. After the QSO a new dipole was cut for 14 MHz and hung as a sloper in the direction of Europe. Any dipole can be made to exhibit a little directivity by sloping it in the required direction. Incidentally it was thought that greater directivity could have been achieved if the dipole has been hung from a metal mast, but unfortunately until the tower was erected Vic had to rely on the trees available in his garden. A further QSO with G3FXB showed an improvement in signal strength to such an extent that he thought we had put up Vic's new Yagi. (Al had been with us at the F.O.C. Dinner at Danbury, Connecticut, earlier on our trip, and was aware that we would be helping Vic put up his tower and new antennas.) This adds some weight to the theory that a sloping dipole gives improved performance in the favoured direction.

Attention was now turned to erecting some form of 1.8 MHz antenna which would allow operation on this low band — something we wanted to experience from as many locations as possible in the United States. A dipole for 1.8 MHz is approximately 264 feet long, but Vic had purchased a pair of loading coils, not seen before in the United Kingdom, manufactured by the Gotham Company. These loading coils reduce the length of the dipole to approximately 130 feet, which is a useful space saving despite the largest size of many gardens in the United States. Although Gotham no longer manufacture antennas or traps, there was found to be considerable interest in loading coils of this kind in the United States. Here in the United Kingdom loading coils would reduce the size of a 1.8 MHz half-wave antenna so that it would easily fit into our smaller gardens. By chance we found some equipment loading coils available from the Radiokit Company of Box 411, Greenville, New Hampshire 03048, U.S.A.

The loading coils available from this company are of a similar design to that supplied by Gotham and are manufactured by a firm called Barker Williamson. Anybody considering a shortened dipole for 1.8MHz would be well advised to contact Radiokit for the current price of their model LC1 loading coil. Coils of this type would prove a useful product over here and could also provide a useful experimental homebrew project for the ardent 1.8 MHz operator.

The short 1.8 MHz dipole was duly made up and put up between two trees, with a third tree providing support for the heavy 50-ohm coax feed. Chris showed his expertise at antenna construction by throwing the halyard over two high branches with the aid of a suitable weight. Colin was heard to mutter something about Chris changing his profession to that of "pitcher for the local baseball team", and with that a car pulled up with two of our other friends from F.O.C., N4VZ Bob and K4OAH Gary.

With a larger crew the prospect of raising the tower at N4TO seemed a lot easier. After greeting each other we looked at the tower sections stored in Vic's garage and around his property, and decided on the best method of erecting the sections. The golden rules of tower construction learnt from N4AR were remembered, and are best repeated once again:-

1. Never climb without a safety belt.
2. Never climb when you have been drinking or are tired.
3. Never climb when darkness is approaching.
4. Never climb when bad weather or a storm is approaching.
5. Always climb knowing exactly what you intend to do and with all the right tools for the job.

Remember what Bill said, the first 30 feet are the most dangerous, heights above 30 feet will kill you anyway! Never take chances. To the rules given above we would add, always climb with the correct clothing and a stout pair of shoes ("clothing" in Atlanta is generally a pair of shorts only as you can see in the photograph).

The lower section of the tower had already been erected by Vic and was firmly set in a block of concrete. The first of the upper ten feet sections was already in position, and further upper sections were to be lifted into position with the aid of a gin-pole. A gin-pole is a pole securely fastened to the top most section already in position, and is used with the aid of a halyard to pull further sections high enough in the air so they can be bolted together, see Fig. 1. During the day the tower was made up section by section, ten feet at a time, with two men manhandling the individual sections on top of the completed tower sections, and three men hauling on the halyard lifting further sections into position.

A break was made in the latter part of the afternoon so that a quick QSO could be made with G3ZWH, who was acting as contact man in the United Kingdom and who then telephoned Colin's wife to say that all was well. Colin found it eerie to work a station only a stone's throw from his home in Maidstone, Kent. It was a sobering thought when it was considered that RF, after leaving Vic's low dipole antenna, flashed some 4000 miles out across the Atlantic to one's home location, Amateur radio is indeed a wonderful hobby.

It would be of interest to mention Vic's station. Like many operators we encountered in the United States we found him to possess a brand new TS-930, although this version had the built-in automatic antenna tuner. This rig is an all-band, general coverage

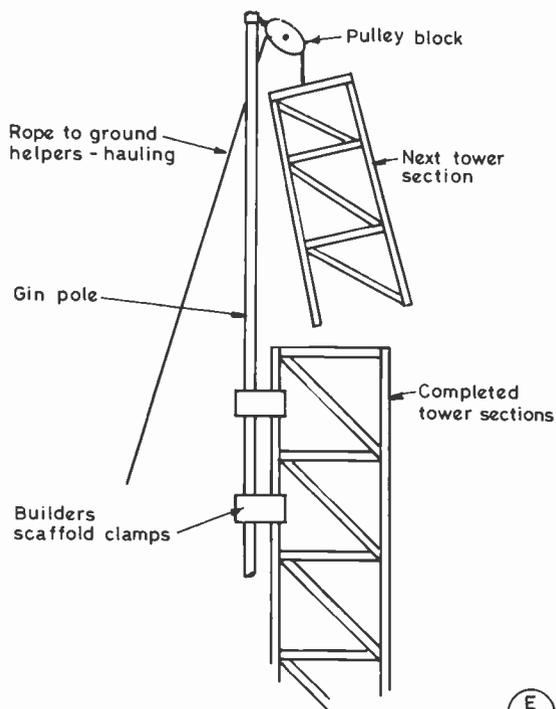


Fig.1 THE GIN POLE



N4TO and G4BUE adding another section of tower.

receiver and amateur bands transmitter with excellent filtering and full break-in (QSK) features. Despite some teething troubles it was well recommended and in Vic's case it was used to drive an Alpha 75 amplifier to give 1000 watts of output power. Along with an MFJ Grandmaster 482 memory keyer, a Bencher paddle is used and Vic also has a Heathkit automatic antenna switch system; this will switch the coax between the antennas at the top of the tower when it is completed. At a later stage Vic intends incorporating this switching system into a switched sloper system for the LF bands, as described by Chris in *Short Wave Magazine* recently. (November-December 1984 issues, and January 1985 issue—Ed.)

As the light faded we decided that enough work had been done for the day. We had completed enough of the tower for Vic to fit the next section, which contained the luffing arrangement, to enable the top section of the tower to be swung downwards for antenna maintenance.

When completed the tower will support a TH7, a two-element Yagi for 7 MHz and a sloper system for the LF bands. Vic cheered us all with the prospect of a barbecue, and as dusk fell we moved the chairs onto the veranda and there spent the rest of the evening eating enormous (by British standards) beef steaks and drinking beer. Over coffee we discussed F.O.C. CW and antennas, and between the five of us naturally finished up by putting the world of amateur radio to rights!

Once again we realised we had learnt the same lesson as experienced during the visit to N4AR and the many other United States amateurs we had stayed with. No matter what antenna system is going to be used, it must be constructed safely, made to work efficiently, and made from the best materials available to withstand the rigours of the environment. Our discussions that evening with N4TO, N4VZ and K4OAH confirmed that they either had, or had plans for, antenna systems which would make full use of the size of their gardens, no matter how big or small,

Once again we were reminded of the less than efficient antenna system often encountered here in the United Kingdom. Despite our lower RF output power, every use must be made of our antenna system if regular and consistent communication is to be made with stations worldwide.

As already mentioned in part 2, a design for a noise bridge, called "The Greyhound", has been decided upon as one step along the path of antenna improvement for both of us. An antenna noise bridge, particularly one that allows measurements of the reactive components, if present on an antenna, is a very useful tool. ("The Greyhound" is to be described in a forthcoming issue of *S.W.M.*—Ed.)

The trip across the United States had been trailed with reluctant goodbyes. Once again we had enjoyed the company of a good friend and sadly had to say 73's until the next QSO. We said goodbye to Vic and headed in a north-westerly direction to cross the Smokey Mountains and into Tennessee to find Ten-Tec, our final stop before the homeward journey back to New York.

Before us lay about 250 miles of some of the most beautiful country of the whole trip. The journey took us right through the Smokey Mountains along with its Cherokee Indian reservation, a rainstorm so severe the car had to be stopped, and breathtaking scenery. The Smokies are so called because of the smoking effect seen to rise from the tops of the trees caused by ascending water vapour; the mountains themselves rise to over 6500 feet and the road to over 5000 feet.

We had arranged to stay with Al Kahn, K4FW, the chairman of Ten-Tec, at his home on the edge of the mountains in Gatlinburg, about 12 miles from Sevierville, where Ten-Tec is located. Before meeting Al we decided to travel into the centre of Sevierville to see the Old Court House and to meet another of our F.O.C. friends, Dick Frey, K4XU. Dick is chief engineer at Ten-Tec and, as will be mentioned later, had a lot to do with the development of the "Omni" range of transceivers. After meeting Dick he took us on to Al's house. Al, besides being chairman of Ten-Tec, is another F.O.C. friend and that evening, over dinner with him and his wife Anne, he outlined how and why Ten-Tec had first begun.

We discovered that Al had always been a dedicated CW operator and had retired from the Electro Voice Company in 1968. After some six months or so he became bored with retirement and decided to start a business of his own in Tennessee, which he would call Tennessee Technology. He had a plant built in Sevierville with no specific future planned for it, although he had a vague idea that it should produce some sort of amateur radio equipment. A discussion with Jack Birchfield, K4JU, then followed, and they both decided that a new lease of life was needed in amateur radio and as a result Ten-Tec was born. They felt that "Tennessee Technology" was too much of a mouthful, and hence abbreviated it to "Ten-Tec".

Jack, who is now the president of Ten-Tec, suggested that QRP modules may be one way of interesting the newly licensed novices to the hobby, and at the same time provide a cheap way of getting them started. Jack had come to Ten-Tec to join Al on the new adventure, and it can be stated quite categorically that for QRP in amateur radio, this partnership was the start of the cornerstone of all low power transmitters, the famous 'Argonaut'.

Another amateur, Dan Tomsik, K4OU, who used to work with Al at the Electro Voice Company, also moved to Tennessee to join him; Dan is now vice-president of Ten-Tec.

The new plant started making PCB modules, and many of the older QRP-ers will no doubt remember the range of modules produced. The TX1 transmitter board, which gave two watts RF output on either 80 or 15 metres crystal controlled, and the MX1 companion direct conversion receiver board. The AA1 audio board, and the VO1 VFO module board, which gave the extra flexibility operation needed in QRP, completed the range.

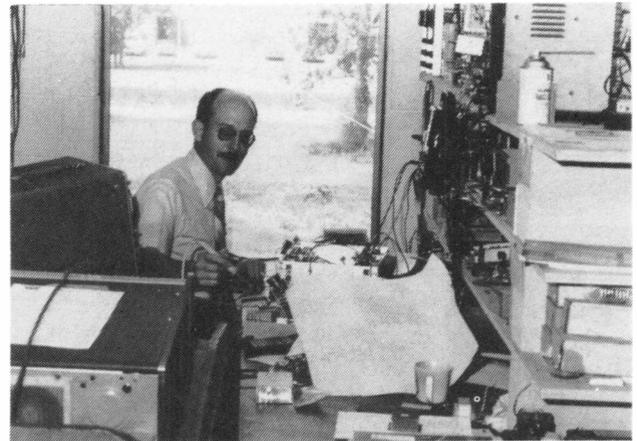
The boards proved to be a considerable success, but the strange thing was that they were not being bought so much by the newcomers to amateur radio, but by the old timers. Many of them

telephoned Al to say that they had not switched on the QRO rig for weeks and were having more fun with low power QSOs using transmitters and transceivers utilising the modules produced by Ten-Tec. This was useful news and feedback for the Ten-Tec group. It showed a healthy interest in QRP, an interest that has helped fuel the world-wide enthusiasm existing today. Soon radio amateur operators all over the world were clamouring for a transceiver using these modules.

This resulted in the PM2 and PM3 range of CW transceivers being produced. These transceivers were of simple direct-conversion techniques which, although well known, caused quite a stir when they were introduced. They were available for operation on the 80 and 40 metre bands, or on the 40 and 20 metre bands, with an RF output power of two watts. A conversion board was available giving 15 metre operation, and the range also included an antenna tuner and simple power supply.

Looking at the specification for the PM2, it can be seen that this simple direct-conversion transceiver offered so much. For example, apart from the two watts RF output, the VFO drift was less than 100 Hz on either band, the receiver had better than 1 microvolt sensitivity, and the selectivity was in the order of 2 kHz, so allowing reception of SSB signals. Some versions had a built-in sidetone circuit, and the overall current consumption was 20mA on receive and 250mA on transmit, so allowing the use of lantern cells or a small accumulator when out portable.

Colin remembers working with a PM2 on holiday in Cornwall some twelve years ago. He used a piece of wire and a selection of cells to give twelve volts — and a large number of QSOs. The PM range was responsible for many of the present QRP operators first becoming interested in QRP. Ten-Tec have, of course, long since stopped making the PM range, but they are still to be seen at rallies, and appear in various radio magazines associated with QRP. They are without a doubt, a very good buy and can be recommended.



Dick Frey, K4XU, Ten-Tec chief engineer.

Many operators, after buying the PM range, wanted a more elaborate transceiver. Requests came into Ten-Tec for both SSB operation on transmit, more bands, and better selectivity. It should be remembered that the simple direct-conversion receiver approach will not give single signal reception, and there is no sideband filtering possible. The direct-conversion receivers QRM level is then 3dB worse than a simple superhet approach.

The next step, of course, was the famous Argonaut range, which was largely designed by Jack Birchfield, K4JU. The original Argonaut was the 505 series, which gave SSB and CW operation on 80 through 10 metres. VFO calibration was to within 1 kHz, but its greatest feature, at least to a CW operator, was that of full break-in, commonly known as QSK.

Full break-in refers to the action of keying the antenna relay during the sending of individual characters so that one can listen on the transmitted frequency while sending. This feature allows the operator to monitor the frequency being used and time is not wasted in sending whilst the other station is calling you, to give one example. It also allows for interference to be heard when it occurs on your operating frequency and for your own operating speed and timing to be operated accordingly. These features are of the highest priority to a CW operator, particularly when operating with low power, and have helped to make the Argonaut range a very big success.

Although the Argonaut 505 was a success, it was decided to modify it to take advantage of some circuit improvements, particularly in the area of the keying relay in the QSK break-in circuit. A reed relay had been used with great success, but PIN diodes had become available at reasonable prices, and the Ten-Tec designers decided to try them in the next Argonaut, the 509.

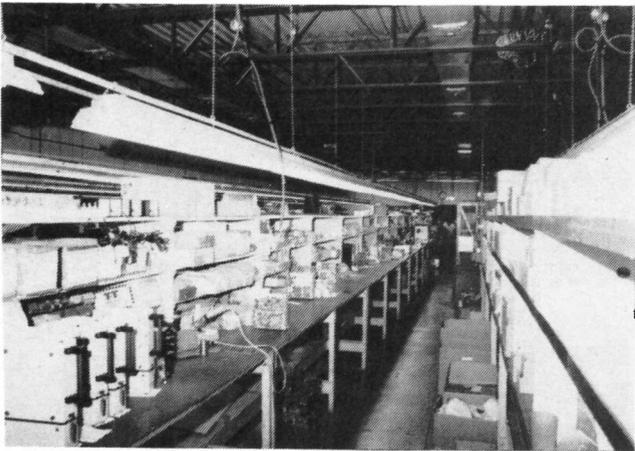
The 509 also had the feature of an accessory socket, which allowed a CW filter to be plugged in, so giving improved selectivity. This filter utilised a multi-section active audio filter circuit and greatly improved the Argonaut's reception of weaker signals on crowded bands, particularly the weak signals found with QRP operation. Power for this filter was also taken from the rear socket, from the 12V supply rail. The final evolution of the Argonaut has been the 515, which is similar to the 509 but with a cabinet facelift and a change of VFO operation.

Previously, both the Argonaut 505 and 509 versions had used a VFO with a doubler/quadrupler circuit to give full 80 to 10-metre operation. Unfortunately this system, although being a workable one, gave a rather rapid tuning rate on 10 metres, and a level of VFO stability that Ten-Tec thought they could improve upon. The new 515 had a mixer VFO system, similar to that used on the Triton transceiver, which gave a tuning rate that was the same on all bands and far improved stability.

Despite these features, as often happens these days in modern electronics, a design becomes progressively more difficult to manufacture, and Ten-Tec recently decided to halt the production of the Argonaut. It seems that certain components and construction techniques were proving too expensive to



Al Kahn, K4FW, chairman of Ten-Tec Inc.



Final assembly line.

continue with. The howls of anguish at this statement from Ten-Tec were heard all the way from Rochdale to Chelmsley Wood, and from Upper Beeding to Sevierville, but business and production cost rises have had to come before QRP operators' preferences.

As the Ten-Tec company built on its experience from year to year it was able to offer newer and more exciting concepts to amateur radio. Building on the concept of the Argonaut, came the Triton range, sometimes called the model 540, or 544 in its digital form. This transceiver was in effect an Argonaut with the much higher power input of 200 watts, improved stability and receiver performance, and the same QSK circuit, all derived from a 12 volt supply.

Although now out of production, Colin purchased one of these transceivers in the United States, and is as enthusiastic about it as the original Argonaut. It must be remembered that full break-in at an RF output power of 100 watts is no mean technical achievement; this is certainly true of seven years ago, when the circuit was first introduced. Indeed, Far East manufacturers have only offered full break-in to the amateur radio market as a standard feature comparatively recently, and sometimes not particularly successfully. Without a doubt Ten-Tec has been market technology leaders. From the Triton, Ten-Tec went on to manufacture the Century 21, a transceiver manufactured mainly for the novice running 50 watts of CW only. Recently this has been upgraded to the Century 22, of which a review will soon appear in *Short Wave Magazine*.

Enter now Dick Frey, K4XU, to the story. Dick had been employed by the United States Air Force, and for many years had been licensed as W1FCC. He had purchased a Triton, and after trying it out, decided he could make some improvements to its performance. Apparently, Dick had completely rebuilt the RF front end of his Triton, *i.e.* RF stage and mixer, and had mentioned this to other amateur operators during QSOs. Al Kahn got to hear about this, and decided that any man who bought a brand new Triton and then rebuilt the front end had to be someone special. Al told his staff, "Find him, and if he knows what he is talking about, employ him".

Obviously Dick did know what he was talking about, because from this beginning with the company he now occupies the position of Chief Engineer, and had a major role in the design of the next range of transceivers, the 'Omni' range. The Omni has been available in many versions, notably the B and C models, all of which have shown excellent CW performance, a testimony to the two F.O.C. operators associated with Ten-Tec, K4FW and K4XU. As Dick Frey said to us, "The Omni range is really a CW transceiver. We threw in SSB as an afterthought." Alas the Omni range, too, has now ceased production — only to be replaced by yet another famous transceiver, the Corsair.

The Corsair has been the subject of a very selective review and has passed with flying colours. A further operator's appraisal

appeared in the Sept. 1985 issue of *Short Wave Magazine*. Naturally it has full power, 200 watts, and full break-in QSK on all bands from 1.8 MHz to 28 MHz, including the W.A.R.C. bands. Many modern amateur transceivers have a synthesiser local oscillator with the attendant noise problems, but Ten-Tec has paid particular attention to local oscillator noise and has produced a transceiver with the best noise performance and best dynamic range possible. During our trip we heard of the latest addition to the range, that of the Corsair II. A few details of this new transceiver may be of interest here.

The Corsair II, apart from the all-band operation of the Corsair, now has a 16-pole ladder filter fitted as standard giving over 100dB of skirt selectivity; weak signals adjacent to those of high intensity are easily read. A front panel control switches in further narrow bank IF filters, and a variable active audio filter gives selectivity to 150 Hz. There is a virtual absence of phase noise, and the low noise floor allows those weak signals that are often masked on transceivers using noisy PLL oscillators to be copied. In addition to this improved receiver performance, the Corsair II has a built-in keyer with a memory bank for up to 40 characters, a unique bandwidth pass band tuning system, dual mode noise blanker and both wide and narrow offset tuning. The Corsair II also has an optional second VFO, which is designed to allow the operator to listen on both the frequency on which he is transmitting and on a second frequency, so providing reception of signals on two different frequencies at the same time. Particular attention has been paid to operating efficiency, and the controls have been very carefully placed to allow effortless operating without a great deal of adjustment.

An article about Ten-Tec would not be complete without a few words about the factory, its production techniques, and the design and service facilities. The factory itself is a relatively modern building built on the outskirts of Sevierville in the late 1960s. The staff of 120 produce not only amateur radio equipment, but transceivers for government agencies throughout the world. Further areas of the factory produce machine dies for other industries and machine tools, whilst another part produces enclosures or cabinets in a knock-down form for other manufacturers, such as MFJ of filter fame.

Production techniques use a large flow line, involving the use of local female labour, which is usually set up to produce a particular "run" of printed circuit board over a day's period. For example, during our visit the production run for that day was for local oscillator boards for a hand-held transceiver being produced on behalf of a United States Government agency for operation on the air band.

Each girl operator on the line inserts a few components and passes the PCB along the line to the next operator, where a similar operation is carried out with the next batch of components. The girls are quite happy to work in this way, and with the relatively small production levels of this company such a labour intensified method of production certainly works. Robots, although more



The service department at Ten-Tec Inc.

efficient, would be more expensive, and would not justify the initial outlay. Ten-Tec can produce equipment competitively by using these production techniques. (Incidentally, we had heard rumours that Dolly Parton's sister had once been employed on the production line at Ten-Tec, and these rumours were found to be true; it seems that the Parton family were "very big" in these parts!)

Final soldering, using flow bath techniques, and final testing are carried out at the end of the main production line. Two other lines are utilised to assemble the PCBs into their respective cabinets, and to undertake final test procedures. It was very interesting to note the way the Ten-Tec engineers had employed their ingenuity to manufacture test equipment "in house", making the most use of Ten-Tec cabinets and circuitry. As many production engineers will know, test equipment purchased externally to the manufacturing concern can prove very expensive; by using components and circuitry available from stock, test costs can be kept to a minimum.

There is one area of Ten-Tec that does need a special word. We have found, as many others have found, that Ten-Tec also means good service. From the company's conception, Al Kahn had said that the after-sales service had to be second to none. The American market, as indeed the world market, is flooded with transceivers from Japan, and to combat this commercial threat, it was considered that good service was the best means of securing future orders. Certainly in the United States the back-up service is both rapid by telephone and letter.

Two men must be singled out for the service they provide to amateur radio from the Ten-Tec company. One is Joe Redwine, N4AVF, who we have both dealt with before. Joe is now in the capacity of sales manager, but he ensures that sales are bolstered by continuing good service. Larry Worth, is the service manager, and with a handful of service engineers, keeps the Service Department running.

Colin, who is employed on the service side of radio and television manufacturing, was fascinated to find engineers talking

with ease about difficult faults found on transceivers, fault finding tips, and modifications in much the same way as Colin and his colleagues discuss colour televisions and video recorders in the United Kingdom. Quite a few tips were given about modifying the Argonaut and Triton range of transceivers. As can be seen from the photograph the range of test equipment is both expensive and extensive, and reflected Ten-Tec's efforts to keep up to date with service technology.

The final part of our tour was a trip to the development laboratory, where we saw four development engineers working on new products.

The most exciting of these was a completely new transceiver that Dick Frey was working on himself. This transceiver is intended to compete with the FT-1 and TS-930 and 940 receivers.

After saying goodbye to the gang at Ten-Tec, we had to make our way by car back to John F. Kennedy Airport in New York, an exhausting trip over 600 miles, with temperatures in the low nineties.

And then it was over, and we were left with the flight back to the United Kingdom to reflect on all that had happened during the previous three weeks. The existing friendships that had been strengthened, and the many new ones that had been made, will hopefully continue for years, as a result of visits to each other's countries and regular CW contact on either 25 or 60 kHz up from the bottom band edges, (the F.O.C. and QRP frequencies).

Back in England, when we sit down at our rigs, we remember the words of Bill, N4AR, and picture the faces of our friends behind the green dials of our transceivers, as their RF is reflected off the ionosphere on its way from their QTH to ours across the Atlantic Ocean. Yes — what a truly great hobby amateur radio is.

Ten-Tec products are available in Britain through *KW Ten-Tec Ltd.*, Vanguard Works, Jenkins Dale, Chatham, Kent ME4 5RT (0634 – 815173).

• • • **SWL** • • •

SHORT WAVE LISTENER
FEATURE

By Justin Cooper

THIS time around we seem to have a somewhat smaller pile of mail than usual; but, as always, there are the interesting points raised in your letters. First, though, one of J. C.'s own questions — why is it that certain months always yield a heavy mail, and some months always are a bit thin? It's been like that for the past two decades or more.

However, at this time of the sunspot cycle, there are lots of things to command our attention. When we think about our stations we should try to be *system-minded* — in other words to think carefully whether a change would improve one particular aspect of the set-up at the expense of another, and if so, is there a benefit overall? If there isn't, then can we alter things (or our own methods, because we are ourselves part of the system) which can neutralise the negative aspects of the problem. As an example, let's consider a decision to go at the HPX Ladder. We have a nice shack in the corner of the main living room shared with XYL, family dog, and large-screen TV. Would we do better to move into the shed at the bottom of the garden? It is at the moment, let us say, high summer and we find it is quite delightful there, the TV time-base noises being much less evident. What will be the

situation in January? Will the receiver be able to cope with the winter conditions in the shed? Can we get things warm enough to be pleasant before we enter the shack? Will the aerial orientations serve our needs if we feed them in different ways? How will the neighbours react? All of these questions are relevant, but some can have simple solutions.

For example, some 25 years ago a good friend was banished into the garden shed by the arrival of a new offspring. Most of the problems could be solved, but the one of *condensation* was a real pain, and threatened to stop all operation. Bert was seriously considering the option of carting the rig in and out each time he had an operating session. One evening at the club informal over a pint of beer, he was complaining to the members at large about this snag. The newest young SWL member, too young to have any idea in technical terms, suggested "Why don't you put a heater under the operating table — it would keep your knees warm, too!" And there it was. Not a heater as such, but an electric light bulb, under some strategically sited holes in the bench, and left running when the shack was not in use. A few experiments soon found what size of bulb was the minimum to achieve the dry rig

situation. It was moved away and turned off when the main shack heater was turned on. The extra on the electricity bill was low enough to be lived with.

Another of the station problems could concern the business of prefix logging. Should we have a card-index, or a spreadsheet type of record, or should we go to a computer? If the latter, can we generate — or buy, but heaven forbid that! — a program which will do what we want. Can the receiver live with the noise of the digital circuitry in the computer? Can we input calls heard while operating? What about logging? Again, there are ways out and round all of these. My own case might indicate one way. The computer noise was unacceptable, and an inspection showed it might be more of a pain to cure the noise by screening than it was worth. The solution is simple: keep the existing log, and at the end of each operating session (or the beginning of the next) enter into the program all the calls gleaned during the session. A simple addition sum gives a running score on the log page, and the computer never runs while the receiver is being used seriously. The problem has gone away of itself!

The Mail

First on the pile is *W. J. Prior (Lochcarron)* who, it will be recalled is located in a rather difficult spot (July "SWL" refers) for which we suggested the idea of a VK2ABQ beam. Bill did indeed build one, and finds it works very well; so much so that he is now getting to hear stations to east and west of him which in the past were just not audible. It would be interesting to know just how Bill made the beam rotate — we would guess that as it was an experimental exercise, the rotation is done either by turning the whole mast, or, more simply, the beam is left free to rotate and pointed by a couple of bits of string dangling from the elements! But, if the improvement is maintained, there will doubtless be some more engineering work done on the aerial. The point here is that Bill has managed to get a good beam built for no more than a few bits of raw material and a few hours of constructional work. There is a moral somewhere!

Mrs. R. Smith (Nuneaton) has her usual good list of HPX offerings, and predicts that the Christmas chores will result in a Nil return for next time around . . . Another moral — give up Christmas turkey, plum pud and mince pies 'cos you know it's labour saving! (Typical Justin!—*Ed.*)

Next comes a letter from *M. Ribton (Gillingham)* who notes that he still has the card-index from his late 1970s operations, when he had worked up to a score of around 1500; he also has the QSLs, including such as 9N1MM, 6OIFG and JY1; they were being collected for a shot on the IOTA Award.

Perhaps this is a good a moment to give a mention to IOTA (Islands on the Air) which originally was a brainchild of that same Geoff Watts who does the *Prefix List*, and who also ran the *DX News Sheet*. (*DXNS* was taken over some time back by RSGB and is currently edited by G4DYO.) IOTA remained in Geoff's hands also until quite recently, but is now being handled by G3KMA. The idea is that you get the special Directory, and then try to hear all the islands listed; new ones are entered into the Directory as and when activity from them occurs or becomes possible.

Next *I. Thomson (Rye)* who comments that, since he got his G1OZR call he has been practising Morse and doing a bit of construction. Ian has various old magazine articles stowed away and bits put to one side to build them, but notes the difficulties of laying hands on such parts as are needed. One answer to this is to go to the rallies and look at the component stalls. Then there is of course *Birkett* of Lincoln, who advertises in our pages, plus *Maplin, Bi-Pak* and other such firms. It is perhaps worth while to get hold of a current catalogue from one of the broad-line firms such as *Maplin*, and if in doubt to ring them up. But, above all, the junk sales and rallies, plus a certain squirrel-like approach to life! And, of course, with any construction project, it is well to ensure just one thing at a time: look to see which parts can be checked in isolation, which bits can be tested with other bits, and so on, so that when you come to the final assembly you already know that 90% is already tested out and working. It is also a good idea to

look at circuits published with a similar sort of eye, too, as practice for the fault-finding activity. To find a fault in the most complex circuits, what one must do is to listen to the symptoms (or lack of, in a dead 'un'!) and carefully think through which bits can be accepted as still working; then you can work logically, bit by bit, through the circuit, adding more sections to your list of known good ones, until at the end you are left with just one small section. A very great help to future fault-finding is to generate, immediately the project is operational, a table of voltages using your test meter. Record these various voltages and attach to the circuit. When you find you have a fault, a quick buzz through the voltages will very likely show you the failure area.

That eternal bugbear of decorating is cutting into the time of *N. Henbrey (Northiam)*; but in any case, the receiver is back in the shack it is still not 100%. The 'slot' is still not operational, even though it has been cleaned, and now the standby switch has gone sick.

Novel Idea

This one comes from *N. E. Jennings (Rye)*; what Norman proposes is that we run, at intervals, a "Directory of HPX-ers", giving names and addresses or, maybe, telephone numbers of those who would not mind a contact with another SWL. As Norman says, those who appear on such a list would, by definition, not mind a call; and those who stay off it could be regarded as not wanting a call. It seems a Good Idea to this old columnist — now it's up to you folk out there!

On to *M. Hudson (Canterbury)* who found things quite good when he listened-in to the CQ WW Contest. On Eighty, says Mick, VP2VCW was 59 plus, among whole rafts of Americans . . . we suspect that the move of home to Canterbury has set him on to a good spot! On a different tack, thanks to the move, Mick put in three lists plus one shorter(!) collection of doubtfuls. These were all signing /J for Jamboree-on-the-Air (some quite incorrectly, as it happens), plus VE7QI/4X who counts as 4X7 in accordance with the Rules.

The lists from *A. Vest (Durham)* are always a model of rectitude, but Arthur slipped up with one this time; G5ES, heard on August 18, at 2336z on Eighty. So far as your scribe is aware, there was only one call issued in the pre-war listings which contained an 'E' in the first letter of the suffix, and that was Eric Cole, G2EC, who is still around although for various reasons not active.

Next in the list is *L. Marquardt (Hereford)* who has untangled his paperwork problem, and now has a score in the Ladder at 336. Nice to know that Luciano got it all sorted out at last.

Now we come to a rather heart-rending letter from *D. Pye (London W2)* who says he is suffering from terminal mind damage through RAE study . . . but at least Don will be a self-confessed challenge to the class tutor! It sounds as though it is the maths involved in the course that are the problem, but there are two things to be remembered here. Once you have been shown the correct way, then there are usually short ways to be put in store in the mind. Secondly, and this is important, is the fact that there is plenty of opportunity to pass the RAE even if you get every calculation wrong; this is simply because the mathematical questions are so few and the pass-mark required is below 100%. The thing to do is to have the formulae themselves learnt, so you can recognise them on sight. Anyway, he'd better pass — J. C. has

ANNUAL HPX LADDER

Starting date, January 1, 1985

SWL	PREFIXES		
D. Pye (London W2)	430	T. Ross (Edinburgh)	232
L. Marquardt (Hereford)	331	W. J. Prior (Lochcarron)	213
M. Probert (Basingstoke)	288		

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

“Kitchen Table Technology”

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

REV. G. C. DOBBS, G3RJV

No. 10 (Part 2):

The ‘Kowloon’ TRF Receiver

ARMED with Keith Granger’s little circuit sketches I made several simple TRF receivers and once again amazed myself with what a TRF receiver can do, even on the amateur bands in their current crowded state. I finally evolved the three-band version which is shown in Fig. 2. TR1 acts as a regenerative detector, TR2 as an audio preamplifier and IC1 as the audio amplifier.

The Circuit

The regenerative detector is shown around TR1. The method of feedback is quite simple. VC1 and L2 form the only tuned circuit for the incoming frequency; a portion of the signal is fed back *via* VR1 and L1. L1 is arranged to be out of phase with L2 to provide inductive coupled positive feedback; the amount of feedback is controlled by VR1, a front panel control. In my final version of the circuit I used three coils to tune the three bands 3.5 MHz, 7 MHz and 14 MHz. This could have been done with two coils or perhaps just one with interpolation; however in offering this circuit to *Short Wave Magazine* I have attempted to make it foolproof. Tuned circuits in TRF receivers are notorious for being affected by just about everything. The values for L2 given in the table will place the bands over about the middle quarter of the range of VC1. Better bandspread might have been desirable but with these values at least the reader will hit the band from homewound coils to the specifications given. The overlap is not too bad and might even provide for interesting extra short wave listening.

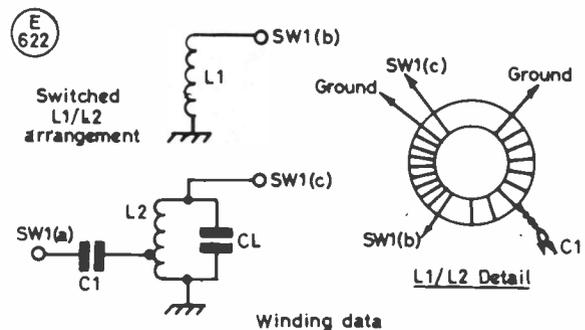
The audio signal is coupled *via* C5 into a single audio preamplifier stage, thence into an integrated circuit amplifier. The IC chosen is the ULN2283 sold by *Circuit Holdings* for a mere £1; this IC is a simple device with very few external components. The output drives a pair of 8-ohm headphones or will drive a speaker for stronger signals. Audio gain control is provided by VR2, another front panel control. The whole circuit runs from a nine volt battery; I used a single PP3.

The most complex area of the circuit is that around the input tuning and feedback. A single band version would be much simpler to build as this does not require the switching around SW1. The coils L1 and L2 are wound onto iron dust toroid cores. This may seem a luxury but again this choice was to help the constructor. Inductive pick-up by the tuned circuit in such a receiver can be a problem. The old open-case constructed TRF receivers with large plug-in coils worked very well but were easily detuned by the proximity of a hand . . . or for that matter anything. The cores used here have very compact inductive fields and can be used in a switched circuit without the attendant problems of open-wound coils.

The value of C1 is also quite critical and will depend upon the antenna in use and the band in question. I leave the reader to sort this out for himself. What is required is the minimum of coupling into the tuned circuit to receive the signals. Not enough will make

the receiver a little deaf; too much will swamp the detector stage. I had good results with a few feet of wire — in fact a large antenna can even be a disadvantage in that a very low value of C1 is required so as not to swamp the input. Even with a small antenna, my values of C1 for 80m, 40m and 20m, were 22pF, 15pF and 10pF respectively. The old TRF experts will say that a variable capacitor for C1 will sort it all out. However that is just one more set of leads floating about at RF, and fixed capacitors chosen for the band and the antenna are a much safer, and easier, method.

The other minor problem is that L1 ought to be wound out of phase with L2. The usual way to do this is to wind it in the opposite direction. On a “Polo mint” type core that is not easy! Instead I overwound L1 onto L2 in the same direction but reversed the leads as shown in the drawing. It is not ideal to have the top end of L2 along the end of L1 going to ground, but it seems to work quite well in practice. The technique for winding the coils is to wind L2 first, then wind L1 over L2, placing the windings into gaps in the L2 winding. In these cores, each time the wire goes through the hole counts as one turn. Begin at the ground end of L2 and when the tapping turn is reached, pull out a loop of wire, twist it tightly and complete the winding. In the switching arrangements L1, L2 and C1 form a little unit for each band which is switched into circuit by SW1. Mounting the tuned circuit around SW1 is simple, if not crude. I merely soldered the switched ends of L1 and L2 on to appropriate tags on the switch and they became self-supporting. A thick ground wire runs around the switch to provide points for the grounded ends of the coils. It looks crude . . . is crude, but it works. The photograph shows the arrangement.



Winding data

Band	80m	40m	20m
L1	15t 28'swg	8t 28'swg	7t 28'swg
L2	45t 28'swg tap at 75t	22t 22'swg tap at 8t	15t 22'swg tap at 5t
CL	100p	220p	100p
C1	See text Former T68-2	See text Former T50-6	See text Former T50-6

Fig. 3 INPUT TUNED CIRCUIT DETAILS

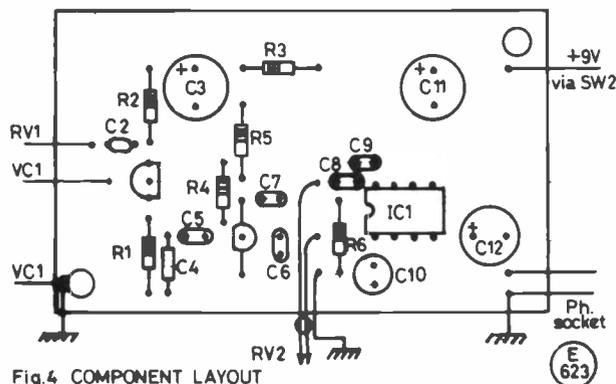


Fig. 4 COMPONENT LAYOUT

Construction

It would be possible to etch a printed circuit board for the receiver; there is not much of it. In my case I wanted to build up a quick prototype and used Perfboard. This is the board with 0.1" spaced holes, like Veroboard but without the copper strips. It is expensive and is sold by the *Tandy* stores, but only a small piece is required. I half intended to etch a board later, but if it worked, why bother, I thought . . . The layout for the board is shown in Fig. 4; this could be adapted for printed circuit board use. In the case of Perfboard the components are pushed into the holes and the interconnections made with spare lead lengths on the components. Any extra interconnections required are made with thin tinned copper wire: the inside of stripped PVC-covered thin wire is ideal. I used an IC holder for IC1. This is not essential but I am mean; I might want to use it again . . . and again.

likelihood of hand capacitive effects on the tuning. VR2/SW2 is mounted directly on the front panel. The antenna input is via a phono socket (or whatever socket is the station standard) and the audio output goes to a jack socket. VC1 has a slow motion drive. The one used on the prototype is a 6:1 epicyclic drive complete with a scale. These are fairly common, Japanese made, items. If such a drive is not available, the 6:1 reduction drive sold by *Cirkit Holdings* would be usable but a scale would have to be added to the front flange.

Once the circuit board has been built and the controls added to the case, the final part of the construction is to wire up the switching circuitry around SW1. It is advisable to try out the coils L1/L2 in turn, without switching, before adding them to SW1. This will enable tests to be made for the values of C1 on each band. I used silvered mica capacitors for C1 but ceramic types would do the job. On the initial testing of L1/L2, check that there is a smooth feedback action on VR1. The detector should slide into oscillation (a rushing sound) in the middle area of the travel of VR1. The coverage of the bandswitched coils might also be checked at this stage. If a signal generator is available, the process is easy. Without a calibrated signal source, another receiver may be used to check the frequency coverage of the three coils. When the TR1 stage is oscillating it should be possible to pick up the signal on an adjacent receiver. After all these tests wire up the three combinations of L1/L2/C1 onto SW1.

Using the Receiver

Beware of the TRF if you are an 'all mod. cons.' operator because the TRF has to be operated. The tuning control and the feedback control are interdependent. For reception of CW and SSB signals the receiver should be used just at the point where oscillation occurs. It will be evident in use how this works. The audio gain control is the last one to adjust; it should be set at a

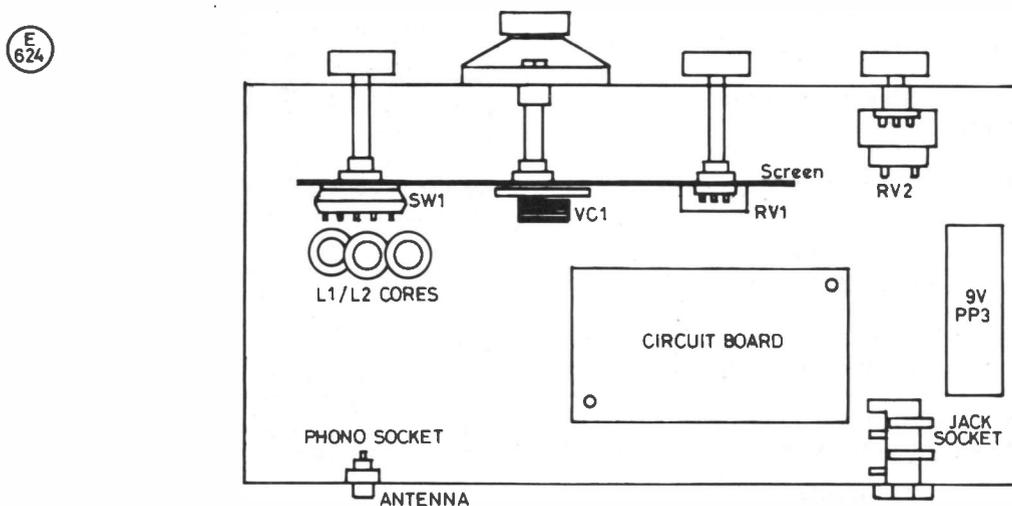


Fig. 5 'KOWLOON' TRF - LAYOUT IN CASE (Top view)

The choice of component types is not too critical. Small capacitors were used for the coupling and decoupling parts of the circuit. The large values are all electrolytic, although tantalum bead types could have been used. The feedback capacitor, C2 is a miniature ceramic plate type. The main tuning capacitor must be a good quality airspaced variable: these are expensive items, the Jackson Type C804 are available from *Cirkit Holdings*, but I endeavour to buy these capacitors whenever I see them at bargain prices.

The mounting of the circuit board into the case is important. A screen is placed behind the front panel, as shown in Fig. 5. This serves to provide a mounting panel for SW1, VC1 and VR1. In addition it provides extra screen for VC1 hence reducing any

comfortable listening level and then adjusted to individual stations after VC1 and VR1 are correctly set. Whenever a new station is tuned in with VC1, then VR1 should be readjusted to the correct level. It all sounds complex but like most operations a little practice makes it very simple. Before I built up this receiver I had forgotten how good TRF receivers can be. The sensitivity is amazing for so few components. With careful use of the feedback, this can be a very effective receiver for amateur band listening.

Got a young lad who is interested in amateur radio? Well a little receiver like this is ideal for monitoring the bands. What is more, he could probably build it himself. That is THE WAY to begin the hobby.

EQUIPMENT REVIEW

B.N.O.S. Electronics LPM70-10-100 Linear Amplifier

P. N. LEWIS, G4APL

Introduction

THE reviewer was loaned a B.N.O.S. LPM70 4-metre 100-watt amplifier to try out under normal and contest conditions.

The amplifier was supplied protected in the usual polystyrene clad container, the contents of which consisted of: LPM70-10-100 Linear Amplifier; Mobile mounting bracket with two thumb screws; 3.5mm jack plug for use with the PTT line; spare 15 amp fuse; Linear Amplifier User Manual (one page).

Hardware Specifications

The **Linear Amplifier** is designed for the frequency range 70.0 MHz to 72.0 MHz.

<i>Class of Operation</i>	AB1
<i>Input Impedance</i>	50 ohms unbalanced
<i>Minimum input power</i>	500 mW
<i>Maximum input power</i>	15 watts
<i>Recommended input power</i>	10 watts
<i>Output impedance</i>	50 ohms unbalanced
<i>Output power maximum</i>	100 watts +/ - 5%
<i>Insertion loss straight through</i>	1.0 dB +/ - 0.5 dB
<i>Power requirements</i>	13.8 volts DC at 13.8 amps +/ - 15%

Preamplifier:

<i>Receive gain</i>	12 dB typical
<i>Noise factor</i>	better than 1.5 dB
<i>Input impedance</i>	50 ohms
<i>Output impedance</i>	50 ohms
<i>Power requirements</i>	13.8 volts DC at 100 mA +/ - 15%

Construction: The amplifier is built into an aluminium heat sink, height 68 mm, length 230 mm, width 146 mm, total weight 2.5 kg.

Controls

The front panel controls consist of:

Linear On/Off switch: With the switch in the 'off' position, the linear is in the straight-through mode, with the switch in the 'on' position the linear is enabled.

Preamp On/Off switch: The preamplifier operates independently of the linear amplifier and has a separate change-over relay allowing it to be used when the linear is switched off.

Mode SSB/FM switch: The 'hang-up' time of the change-over relays can be selected using this switch. A long time constant for when the linear is used in the SSB mode.

All the above switch states are indicated by LEDs on the front panel.

Power meter: The power meter consists of a seven LED bargraph showing the relative power output. Each of these yellow LEDs represent 14 watts of output power when used into a correctly matched load.

Overpower: When the linear is over-driven the change-over relays will switch to straight-through operation, this is indicated on the front panel by the red LED at the end of the bargraph.

Hard-wired switching: The linear operates either on the RF VOX change-over or can be driven via the PTT line.

Rear connectors: RF out via SO239 sockets; RF in via SO239 sockets; 13.8 Volts DC in via lead with in-line fuse holder with 15 amp fuse; PTT 3.5mm socket for hard-wired change-over.

Operation

The amplifier was to be used with the station equipment, which consists of an FT-101ZD and the FTV-901R transverter with the 4m. module.

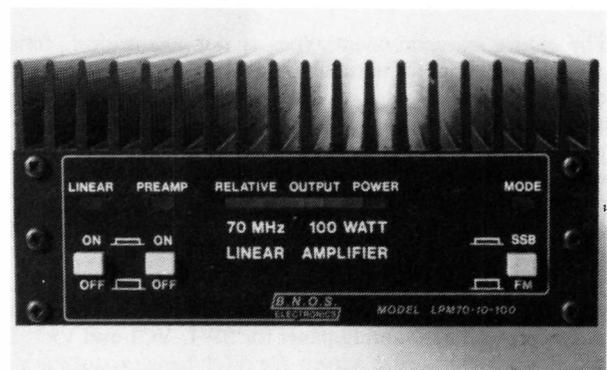
The amplifier was supplied with a 68 inch length of power lead, which the reviewer found to be long enough so that the amplifier could be conveniently sited away from the main station DC PSU; the power supply should be capable of producing 13.8 volts at 14 amp RMS.

A lead was connected from the HF transceiver replay (earth on transmit) to the centre of the 3.5mm plug that was supplied, which when plugged into the PTT socket on the rear of the amplifier enabled the hardwired change-over. The transverter was connected to transmitter linear input socket, and the aerial connected to the aerial socket.

In the section "Care of your Linear" in the User Manual it states recommended lead lengths to be used to connect the transmitter to the linear; in the reviewer's case the first lead that contained the right plugs was utilised.

On power up, the amplifier produced 100 watts on the station Welz SP300 power meter, The User Manual specification states the input power should be in the range 500mW RMS to 15W RMS, and 10 watts recommended.

It was found that the amplifier could be driven to full power (100 watts) with 8 watts input, before the overpower circuit came in and switched the linear to the straight-through mode, until the input power is reduced.



On air reports:

The reports on the transmitted signal were all very encouraging, with many reports of a clean signal; during the period of test no bad reports were received, even with local stations.

The preamplifier gave a useful receive gain on what the reviewer believes to be deaf receiver in the transverter module, with a slight increase in receive noise.

The RF switching was used at first during the initial tests, and the relay delay in SSB mode was found to be sufficient; the reviewer then changed over to using the hardwire switching, as he finds with all RF switching the tripping of relays annoying.

The reviewer, not having had the use of a 100-watt four-metre amplifier before, used it during the October Fixed-station Four-metre contest, and found the extra power gain very useful in working the longer distances.

After five hours of continuous SSB use the case of the amplifier was hand hot, and still producing 100 watts output when driven with a continuous carrier.

Circuit Description

No circuit diagram or description were supplied but a diagram was later sent after a request to the manufacturer. Even then, they could not provide one for this product, only a diagram for the

144 MHz version which is similar. No component values were indicated, nor were transistor types identified. All that can be written is that the transmitter amplifier is a single stage with an op-amp. controlled bias supply network. The receiver preamplifier is a dual gate Mosfet device with back-to-back diodes to protect the input. Input matching is by a capacitive divider across the coil and there is a pi-network attenuator on the output side.

Conclusion

The amplifier performed very well when in use, the overpower protection circuit was a nice feature of the unit, and the reviewer would like to see this in other amplifiers in the hope of hearing cleaner signals on the amateur bands.

Another feature which had not been seen before on an amplifier is the mobile bracket with thumb screws, this of course could be used to fit the amplifier under a shelf in the shack or in a car for those that are mobile on four metres.

With the hardware well presented, it was a disappointment to find when reading the Linear Amplifier User Manual that there were several spelling errors.

Thanks are extended to all those radio amateurs who gave reports, and **B.N.O.S. Electronics** for the loan of the LPM70-10-100 Linear Amplifier.

EQUIPMENT REVIEW**The KW Ten-Tec Models 227 and 228
Aerial Tuning Units****E. H. TROWELL, G2HKU**

THESE two units, manufactured in U.S.A. by the Ten-Tec Corporation in Sevierville, Tennessee, are retailed here by KW Ten-Tec of Chatham, Kent. Both units contain similar circuitry except that Model 228 includes an SWR bridge and illuminated meter, and both are improved versions of the earlier Transmatch units 247 and 277.

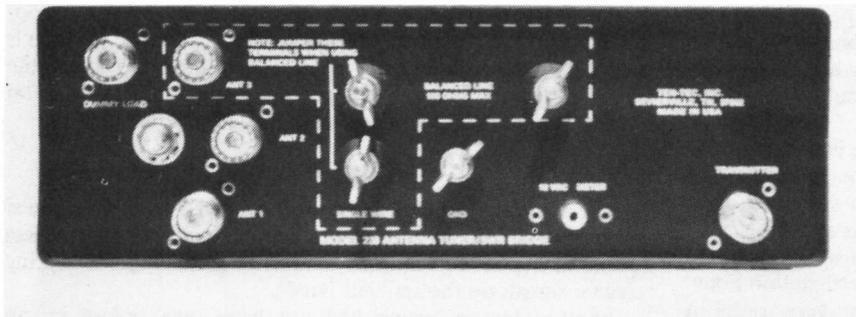
The T-network circuit is based on the popular Transmatch originated many years ago by Lew McCoy, WIICP, of the ARRL. Rated at 200 watts intermittent and 100 watts continuous,

they are intended to match the unbalanced 50-75 ohms output impedance of transmitters to a variety of balanced or unbalanced loads between 1.8 and 30 MHz. From 1.8 to 4 MHz the maximum *balanced* load is 500 ohms.

Construction is to the normal Ten-Tec standard, the case in two parts is easily removed and finished in black and bronze, to match the current Corsair and the last Argonaut, the Model 515. The front panel layout is clear, with well spaced controls which have a positive feel about them and are fitted with the usual Ten-Tec

Front view of the KW Ten-Tec Model 228 ATU.





 Model 228 ATU rear view.

knobs. The variable capacitors are wide spaced with double bearings and ceramic end plates and are rated at 1kV. Silver plated 18 s.w.g. wire on a 2-inch core with 47 taps and a rotary slider form the inductance and in use was positive and easy to adjust. A ceramic five-position aerial selection switch, again with a nice positive feel about it, is mounted on the rear panel operated *via* an insulated shaft by the front panel control, in a manner similar to the rotary inductor. As a matter of personal preference the writer would have been happier with a switch of larger construction here in order to avoid possible arcing. However the unit fitted showed no inclination to do so in use but it would be unfair to either this switch or the transmitter itself to operate it while actually passing RF through it. No one would deliberately do so of course, but accidents do happen!

Model 228 has the SWR meter, which is in circuit at all times, mounted on the left side of the panel and below it is the rotary Sensitivity control and Reverse-Forward slide switch. The SWR bridge itself is mounted on its own panel, fixed to the case bottom, and adjustment is quite straightforward. The meter is illuminated by a 12V bulb which requires the appropriate input to a phono socket on the rear panel.

The connections on the rear panel are five PL-259 sockets for transmitter input, dummy load and aerials one, two and three respectively for co-ax feeders. Four terminals are provided being earth, single wire feed and the remaining two for balanced line feed systems. When using the latter it is necessary to fit a jumper wire from the single wire terminal to one of the balance line terminals.

Controlling the above connections is the five-position aerial selection switch on the right-hand side of the front panel. This

switch was not fitted on the earlier models referred to and is a welcome addition providing the following functions:

Position 1. DL BYPASS. A direct connection from the transmitter input to the Dummy Load output socket which, if not used to connect to a dummy load, may be used as a by-pass position for an aerial which does not require matching. (Note that a dummy load is not supplied, but can be obtained. The part no. being Model 209).

Position 2. BYPASS 1. As the wording indicates, the transmitter input is not through the tuner, but goes directly to the ANT 1 output socket.

Position 3. TUNER 1. For a co-ax fed aerial passing through the tuner.

Position 4. TUNER 2. As above for a second aerial.

Position 5. TUNER 3. For single wire or, when jumper wire installed, a balanced line feed.

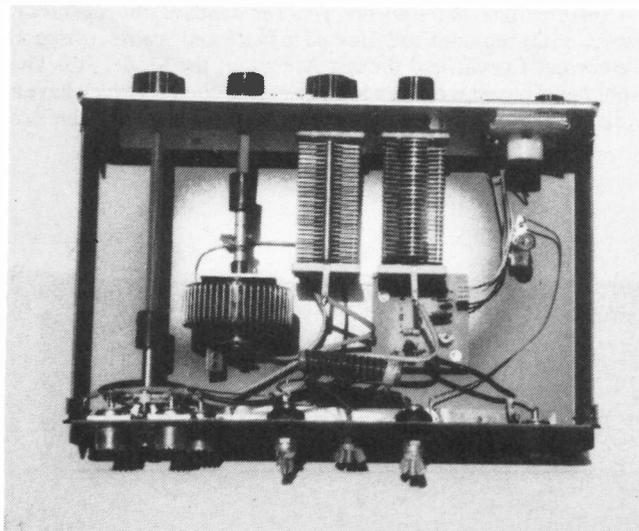
In the last position a balun is switched in when using balanced line. Ten-Tec warn that if the impedance of the line is greater than 500 ohms the balun may get warm after prolonged use. An indication of this will be an increasing reading on the SWR meter and may be rectified by an alteration in aerial or feeder length, or both.

A point to bear in mind when using an aerial tuning unit of this type is that the greatest bandwidth for a given SWR will be at the lowest L/C ratio of the tuning. In other words, although it is possible to obtain a match at a number of different tuning positions there will be one which will provide the maximum bandwidth, for a given SWR. Recording the control positions for each band and aerial on a piece of card placed near the unit enables a quick final tune up point to be reached when changing bands.

Connecting the terminal marked GND to the station earth or ground system with really heavy gauge wire or, preferably, braid or strip, is recommended. This helps in the reduction or elimination of stray RF fields sometimes encountered when using wire fed aerials — and is in any case good, sound practice. (An often overlooked source of suitable earthing strip can be found in the older TV receivers where it is used to join the tuner unit to the receiver chassis or frame. It is easily soldered and short pieces may be joined to make up suitable lengths as required.)

The unit was used on various aerials including a G5RV, single wire and a Cushcraft ATV5 vertical, no problems being encountered on any band from 1.8 to 30 MHz. A point worth noting is that this type of aerial tuning unit with its two capacitors in series with the transmission line is basically a form of high pass filter. However it does offer some harmonic suppression, the degree of which will depend upon the impedance that the unit is looking into. The writer had a standard production colour television receiver without any extra filters fitted, in use within two feet of the transmitter without any TVI being noticeable.

The external dimensions are 10¼" wide x 3½" high x 7" deep, and the units are confidently recommended.



Interior view showing band change switch to the left with rotary inductor between the switch and load capacitor. The balun is positioned just below the SWR bridge board.

KW Ten-Tec Ltd., Vanguard Works, Jenkins Dale, Chatham, Kent ME4 5RT. (tel: 0634-815173).

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

BY the time you come to this piece, you will (we hope) all be recovering from the eating and drinking and celebrating of the holiday period, and the children or grandchildren's demands for instant repairs of toys will have, for the moment, reduced. However, if Santa brought you a beam and a sixty-foot tower — we bet the youngsters' toys still need mending!

And, talking of towers, we have a letter from Richard Diamond of *S.M.C.* in Southampton which has, to put it mildly, worrying features for all radio amateur and commercial users of aerial masts or towers. Richard had 'permanent' planning permission for his tower; but now Southampton Planning Committee has issued a dis-continuation order with a view to the tower's removal. The action purports to be on the grounds of TVI; but the cause of the problem is known to have nothing to do with this, and the TVI is minimal. Consider the future implications of this proposal . . . If Southampton Council were to get away with this action, then no planning permission granted for anything would be worth the paper it is written on. You could spend a thousand pounds on an aerial system, with full planning permission, and be asked to remove it on specious grounds of TVI, even before it had actually been. You might even build an extension to your house, with full planning permission, and then be required to pull it down before you had even used it. In fact, Southampton Council Planning Committee appears to be trying to act the part of God.

This is an important matter of principle, and we feel that every radio amateur and every club should formally write to Southampton Council Planning Committee to express their concern at this proposed breaking of a commitment and for bringing the whole idea of Town and Country Planning into disrepute. Richard will continue the fight on the legal grounds; meanwhile, write to Southampton Council Planning Committee at the Civic Centre, Southampton, *now!*

Famine Relief

From the Hon. Sec. of the Frensham Heights School Amateur Radio Club, Richard Jones, G1JCD, comes a long letter which describes the school's exercise in sponsored radio contacts for famine relief, and how the accident of a contact with ST5ALR, Alastair, who is working for CARE in Central Sudan, brought to mind the possibility of the amateur radio movement worldwide putting together

ways of raising money to help. We know there are many who agree with G1JCD, and we suggest that they get in touch with him direct (QTHR); if they can between them get something going that is practicable, then *Short Wave Magazine* will not be backward in publicising their proposals.

The Bands

As well as can be expected, sums it up. It rather seems as though the Top Band types have been having a field day, but of course the 28 MHz addicts have not done too well. On the other hand, the latter band has, by virtue of the increased activity, shown clearly that it still has something to offer even at sunspot minimum. We recall in previous cycles periods of literally years when nobody mentioned the band at all, save maybe to comment "listened but heard nothing!" Thus it is needful not just to listen, but if the band *seems* dead to put out a CQ or two and only if the latter ploy fails to QSY.

Top Band

With contests and other activities this band has been distinctly lively. It was interesting to note some YO stations on in the contests, and it is understood this was by way of a try-out — the YOs hope that ere long they will get permission to use the band on a regular basis.

G4OBK (Chorley) is now up to 105 countries worked, with 14 new ones snapped up in the last couple of months. During the summer refit the vertical grew a few feet, and this seems to have worked wonders. SSB yielded HH7PV, W1-2-3-4-5-8-9, VE1-3, CY0SAB, EA9EU, OH0BA, HB0AON, VP9AD, VP2VCW, LZ2CJ, EA6NB, 4U1ITU, K7NJ/4X, EA8YV, P44B, YV2IF, ZL2BT, ZL3GQ, IS0PLQ, GU0/PA2FAS; and CW rescued from the QRM UF6DR, W1-2-3-4-5-7-8-9-0, VE1-2-3, ZL3GQ, OH2BEN/C56, UD6DKW, TG9NX, UL7CAD, JW0A, FM5WD, DL1RK/CT3, CY0SAB, CN8ES, UA9s, LZ2CJ, YO8KAE, YO4KCA, V2A, AS7B, K7NJ/4X, YV5TK, 9Y4VT, D44BC, UG6GAW, YO4KRX, HB0VCQ, 4U1VIC, RF3V, YO3KWX, ZB2EO, YV3AGT, OG2TI, V3A, 4V2C, K3OUC/YV4, and UO5OJM. Phil reckons that in the CW event conditions were superb; he worked 177 different W stations, and in one 2½-hour spell on the Sunday morning worked 82 of them on the trot!

G3BDQ (Hastings) notes that he is in a minority of one over the split-frequency working argument, but he remains quite unrepentantly in favour of simplex operation. On a different tack, John mentions his QSO with a station he believes to have been OE7RK1/YK. John got his report and an 'R' for his own over, but even though he stayed on the frequency for twenty minutes afterwards he still is unsure of the call — none of the EUs sent his call, and on the few occasions the /YK station sent his call it was swamped in the QRM . . . the non-use of call signs in contest and DX pile-ups is now getting to be a minor form of madness. True enough, but if its 'fashionable' everyone will do it! Third point, John has built the shielded loop to the ARRL "Antenna Book" design, in the loft, and it is very useful indeed on receive — a couple of S-points down, but the DX is clean and clear. Really worth the time and effort of building it. CW contacts G3BDQ made included assorted Ws, PY1RO, YV3AGT, CN8ES, YK6HD, OH2BEN/C56, C53AA, OY7ML, 4X4KT, K7NJ/4X, EA8QO, EA8AAU, EA9CE, EA9IE, JY9MG, JA4NGB, IS0PLQ, T77C on SSB, YOs, UD6DKW, UG6GAW, UH8EAP, UL7EDR, UM8MLE, UO5GQ, UO5OJM, several UA9s, and UA0AKH and UA0BCV.

"CDXN" deadlines for the next three months:

February issue—January 9th

March issue—February 6th

April issue—March 6th

please be sure to note these dates

Now we head for G2HKU (Sheppey) who says he has been laid low by a 'bug' — and that ZL3FV tells him it has swept ZL too; seems they call it "Chinese 'flu.'" Ted's list includes SSB with PA0PN, now nicely on the mend, plus CW contacts with OZ1W, EA7DMF, E19J, RR2RX, UA3QBD, OH0BA, OH7VR, OK2PLA, LA5X, LX9BV and EA9IE.

Eighty

Like beating your head against a brick wall — it's nice when you stop! For example, *DXNS* mentions the YUs heard working T32 one night at 2205z — that

would have been about noon in E. Kiribati, which is a new slant on LF propagation!

G2HKU was using QRP CW on this band; it netted LX/DL1VJ, HA2EOU, YU3GO.

Although G4OBK has been on Eighty he says the operating is in stark contrast to his experience on Top Band; between being jammed by some station mouthing obscenities and the heavy QRM on SSB, it's not pleasant. SSB contacts included W3LPL, VK2AVA, CY0SAB, and JY50CI, and on the key LX/DK3VH, UA0WBJ, RW9HZZ, TG9NX, DF4ZL/CT3, CN8ES, and TK0KP/CER (Cerbicales Is for IOTA) under a badly-behaved pile-up.

G2NJ (Peterborough) starts with a mention of the GB2TAC call in use through December until January 3, driven by G3LCG as the nominated op. on behalf of TOPS. Still with TOPS, they have a Straight Key Party on February 3 — 1600 to 1800z, 3530 — 3580 kHz, and call "CQ HTP". More details from G2NJ, GW8WJ, or G4GBG. On the operating front, once again the OH stations have been heard calling CQ DX on CW as early as 1400z at the beginning of November. OH7XI, Vesa, was heard to work JA2EJI at 1435z and by 1525 his total bag was eleven JAs and a brace of Russians. Vesa was 589 to G2NJ and, as before, only the odd slight hint of the JA signals themselves were audible to G2NJ.

One who can't keep away from it is G3ZPF (Kingswinford) who has the inverted-vee folded back so he can add the bits on the end if he wants to go from CW to Phone, albeit at the cost of a trip down the garden. Although the apex is only 30 feet up, it has given results: SSB to CN2AQ, JY50YJ, TG9NX, 3A2EE, K2IAB plus small fry; on the key he collected up J37AE, K8GL, N2MM, UA1OT (Franz Josef), W1NH, KV9S, and the EUs.

G6QQ (Hoveton) returns to the lists; he has a trap dipole with centre at 25 feet and ends down to twelve, which isn't too promising. In the event it came up with W1FV, W1KM, N2AA, N2PP, N3ED, K3TUP, K8GL, WB9POH.

Forty

Not a lot of reports on this band, although it is probably the best DX band we have at the moment, if some of the claimed contest scores have any significance.

G6QQ wasn't all that active for one reason or another, but he did have a short stint on the band during the Contest weekend, to make CW contacts with K1AR, K1OX, N2AA, K2TR, N3RS and W3LPL. Incidentally, that K1AR was the chap who has a claimed score in the CQ WW CW contest of around 3.4 million for a single-op multi-band entry, which if it survives the scrutineers will be a world

record score — at this time in the sunspot cycle it seems unbelievable!

G4OBK wasn't too active on the bands, but he does mention contacts on CW with 5L2EQ (QSL via I2CRG), EA6NB, SP9AG, HK3JKI, 9Y4VT, EA9CE, GJ0AAA, JA2YKA, TK5EP and LG5LG.

At G2HKU the CW was used for CY0SAB, W3LPL, UA0TO, V2A, and N2AA, all with the main rig, while QRP CW was plenty enough to enable a contact with UD6DKW.

A surprising entrant on Forty is G4HZW (Knutsford) who has been at work on a *Howes* forty-metre transmitter kit; over Christmas the VFO kit will be built up and then Tony will see what he can do with three watts of CW.

GW4BLE (Newport, Gwent) spent much spare time analysing his contest logs, but he did find time to get on 7 MHz and work YS1RRD and UA0TO; plus listening in quite a lot but not actually working the smaller fry.

4 MHz

As always this is where the majority of the world's DX traffic is transacted in practice. G3NOF (Yeovil) says he has changed his Mustang beam to a TET HB33SP on a Kenpro KR6OORC rotator, and is finding it works very well — certainly it must be nice to have the beam rotating again after having it jammed for some weeks in just one direction. Don notes the VK/ZL long-path opening around 0800 — 1000z and the short-path around 1200z to the same area; North Americans have been strong between 1130 and 1300, but in the last few days before reporting the band was dying almost as soon as darkness fell. SSB contacts were made with D68AM, K6SH, K7NGN (Utah), KD7HH (Wyoming), N6EQ, N9AG/V2A, VK2AGA, VK3AGW, VQ9MG, WA7ECU, XE1OE, ZB2HX/MM in the Med., 3D6BU, 3B8FP, and 5R8AL.

G4VFG (Ivybridge) comes in at this point, to tell us that despite the earlier closing of the band, he has made it to 9Y4NW, IS0LMN, 9H3CY, 9H1GX, 5L2EN (QSL to Box 2668, Monrovia), XT2BR (QSL to Box 116 Ouagadougou), PY5ZBU, and EA8BM, on Phone.

G4OBK obviously used the band but reports, "Not much of note on Twenty!"

G6QQ has an FT-102 to a Cushcraft R3 vertical on the HF bands; on Twenty CW yielded KP4BZ, VE1-2-3, all W call areas, and 9Y4VT in the contest weekend, while SSB went over to WA2KWN, KR10, and K7NGN one afternoon, and VE3KIE and W1JQC on another.

G2HKU notes that conditions picked up enough for him to resume the ZL contacts, with ZL3FV; this is the only SSB contact he reports but CW went out to K9RN/6 and K4FU.

Most mornings, says GW4BLE, the

Pacific path was showing at least signs of life; 0730 — 1030z is quite a long opening for this stage in the sunspot cycle. All-Time country number 310 appeared in the shape of ZM8OY, and for the rest the pick of the crop included KB6DAW/KH9, KB6DAW/KH2 ZD7AL, VK9ND, ZL7AA (Chatham Is.), 4D9RG (special DU prefix), 3D2DM, FK8CP, DX1N, various of the JY50 stations, V2A, an interesting one with Liberia in 5L2CY, KC6JC (East Carolines, Republic of Belau, originally thought to be in West Carolines).

Bits

VK6HD made his 1000th EU contact on Top Band during October — he is to be found on 1835, 1832 or 1824 kHz at his sunrise time — around 2118z at the time of writing.

We hear that *CQ Magazine* is thinking about a 50th Anniversary celebration for the WAZ Award.

That 'loudenboomer' signal of OH8OS in the contest was the result, on Twenty, of his using forty-eight elements, made up of eight six-element Yagis stacked on a 180-foot pole . . . and it seems to work both ways too, report the Ws who were working him when nothing else from Europe was audible. And, note, the pole itself was rotated — some beam, that!

If you come across HG4SEA/MM, the yacht *St. Jupat*, this is a circumnavigation by two HA amateurs; they had the idea back in 1979, studied both for the equivalent of RAE and the equivalent of Yachtmaster Ocean, and then got hold of a Balaton 31 hull moulding which they fitted out themselves. The shakedown cruise was in the Mediterranean during the summer of 1985, and was itself some 6000 kilometres. They sailed on the world trip on September 25, and the route is to be ZB2, EA9, EA8, ZD8, ZD7, ZD9, around the Cape of Good Hope, FB8W, FB8Z, to VK-land. They will stay there for a few months to get clear of the hurricane season, and then head for ZL, Polynesia for the collection of some ethnographic data, around the Horn, LU, PY, some parts of the Caribbean, across the Atlantic to EA8 and *via* Gibraltar back to the Adriatic. The frequencies to watch are 14.262 and 21.255, plus possibles 3.675, 7.075, and 28.505 MHz; the skeds are all at 1200z and dependent on conditions. The net stations to look out for are HG1S, HG1W, HA4KYN, HG5A, HG6V, HG7B, and HG9R. QSLs to HA5NP. Any information on progress can be reported to HA4XH, Charlie, at PO Box 13, Szekesfeharvar 8007, Hungary, and will be much appreciated.

As is now well-known the recent Mexican disaster caused some considerable Raynet activity. Naturally, there *had* to be some idiot QRM-ing them. This time, however, the Radio Regulatory Division of the DTI was fully aware of the

situation and they shut the offender down smartly. Disregarding that isolated lout — and we hope he will not get his call back at all — an enormous amount of good work was done, at the instigation of the user services and indeed the Foreign Office, which without doubt involved a certain amount of 'creative interpretation' of the rules by both the authorities and the amateurs in order to meet the needs. RSGB, Raynet, and all the individuals who were involved for 17 days of 24-hours-daily operation, and the authorities who helped it all happen, all deserve congratulations. G3USF was the focal point from which it all started, but it would be invidious to mention any others, as we don't know all the names and calls — suffice it that they were all magnificent.

RSGB members will recall that back in 1979 John Bazley, G3HCT, was President; brother Mick is well known also to DX-ers as VK6HD. G3HCT, not to be outdone did a fine job recently as A25/G3HCT for 26 hours of operation, mainly on 21 MHz CW — *DXNS* records him as having made 17000 QSO's which would have been a spectacular record of 653 QSOs to the hour. Even at 1700 QSOs it would have been over one a minute, which is good going on 21 MHz and CW.

BARTG sent us the details of their Spring RTTY contest, over the weekend March 22/24th. The rules are a little too long for repetition here, but details are obtainable in full from Peter Adams, G6LZB, 464 Whippendell Road, Watford, Herts., England WD1 7PT. There is, we are pleased to note, an SWL section to this one.

The business of the price of IRCs is one that is worth taking up; back in 1982 they were 20p, then they were jacked up to 25p, then 35p and now, from January 1, a scandalous 55p. This is one that justifies a few strong rhubarbs to one's MP, or the PO Users' Association. It has got to the stage where it is cheaper to go and buy some U.S. dollar bills for return postage.

Fifteen

We have already mentioned John Bazley's fine effort as A25/G3HCT. Now we come to the other reporters, and GW4BLE in particular. November 17 saw a surprising LP opening to VK and S.E. Asia, with lots of Novices worked, plus KA2DDR/DV2 in the Philippines between 0900 and 1030z. In addition an SM3 called Steve to say he was inaudible on the direct path but readable Q5 on the 'long path'. In addition contacts on SSB were noted with W6QL/ZS3, C53AA, A25/G3HCT, 4V2C, PYs and CX5AO.

G6QQ says he worked CW to CX7CO, D44TC, FY7YE, HP1XKR, PT7AA, V2A, YV5JUX, W1-5, W8-0 in the contest, N4KY/6, VK3AGW heard along with VU2GT and VK3JI for a nice trio of

gotaways, while W9IT and W3MJF were also worked on the key.

G4VFG noted a few glimmers of life; on SSB it was KP4BZ, EC9IR, EC6MR, N4DR, W2HGV, W4SVB and WA9GXL.

For G3NOF, the band was open most mornings 1000 – 1200z, short path to VK, with a few from S.E. Asia as well. North Americans were often to be heard 1230 – 1600z, and the odd African around 1600, but things fell away towards the time of writing his letter. SSB QSOs were made with J28EL, JY50CH, JY50YJ, K5OVC, KP2AH, TR8CR, VE3s, V12HD, VE3FXT/3D6, VK3AQN, VK3DMA, VK3GK, VK3KKD, VK3NCK, VK3NDY, VK3NZL, VK5NFD, VK6NQE, VK6QG/P, VK6VB, VK7NBE, VK7NNN, W1-2-3-4-5-8-9, VU2ZAP, YB3CN, ZS3/W6QL, and 4S7EF.

Good on some days, says G4OBK. Phil used his Morse to work CW to GJ0AAA, A25/G3HCT, HK0BKX, 9Y4VT, CN8ES, RF6FR, PJ2FR, while the microphone came in handy for JY50YJ, A22KZ (QSL via G4EKZ), ZS3TSB/P, A71BJ, TA1C, and NC8Q/V2A.

Ten

Firstly, G4HZW (Knutsford) who operated mainly CW, using a TS-820 and two-element Quad. His list of contacts added up to GM3YOR (Fife), G4BLX (E. Sussex) in the contest, plus ZS6TUK in the CQ WW shindig, DL5GCJ, I1TRE, and VK9XJ on Christmas Island. The latter was on 28.595 and said he was on the band every day. His signal was as high as RS53, but he soon went QRT when the Italian stations wouldn't behave.

G4EZA (London, SW16) notes what a wonderful thing a contest can be for 'conditions'! This thought was provoked by hearing some 55 countries on SSB in the month, of which some 49 were in the SSB CQ WW contest. Tim reckons his best DX contact was the one with 3B8DB with ten watts to a helical just one foot long, which had been built to try on the car. G4EZA hastily knocked up another one, and managed 18 Ws and a VE with the thing standing two feet above the shack floor and fed from the FT-7.

For G2ADZ (Chessington) it was mainly activity on the new bands. However, on Ten, the VK2RSY beacon was audible on the morning of October 29, but a CQ did no good at all!

On a different tack, Bill noticed that GB3SX has been replaced by a new one on the same frequency, using the call GB3RAL. The old one, operational for 16 years at Crowborough, has been replaced by GB3RAL, located at the Rutherford-Appleton Laboratory near Slough; reports would be welcomed by the beacon-keeper, who is G4CEB.

G4OBK seems to have found very little,

for he reports a SSB contact with HG11WB and a CW one with DL7AEA/EA6.

There wasn't a lot of joy in it for G6QQ either; he did manage a CW contact with Mal, Z23JO.

So far this year, says G4VFG, he has managed 33 countries on Ten, the total being bulked up by the recent opening when Peter stumbled over LU5EJS and CX8DR, both on CW, and CT3DK, EA8AMT, LU1DXO and LU1HOO, all on SSB. On a different line, G4VFG put on a station at the local primary school to demonstrate the hobby to the young pupils as part of a project on 'Communication'. G4VFG showed them the sound of various modes on a receiver first, and then went on to make a few contacts on Twenty, both U.K. and foreign, and overall seems to have made an impression.

G3NOF didn't find much to shout about at all, save for a few Africans at the beginning of November.

New Bands

Only a few reports this time. G2ADZ found a couple of VKs on 10 MHz, LA1EG (Tromso), G5JL, and DJ2TI, plus ZL1AOM on November 17 which he reckons is a first G-ZL contact on the band, LU6EF, ZM3RK regularly, ZM2AGY, and VK4BG. As for 24 MHz, the Wonder Wire yielded W8HXT who is coming to U.K. next summer, KP2J, NJ2T, WIHMD/4, CT2FN, 5N25BRJ, WAIQCQ, NK4A and ZS6BMS; the latter is claiming the first ZS-U.S.A. contact ever, on October 21, with K6STI — a long haul indeed, of around 10,000 miles.

Only 10 MHz gets a mention from G2HKU, who keyed with K2OZ and EA8AGF.

Likewise G6QQ; David found the band lively on some mornings, and worked SM0EUB and I3BLF.

G4FLK had a punt around the three new bands between 0900 and noon on December 1, and heard quite a lot without being able to raise much. 24 MHz was dead on all the aerials, both amateur signals and commercials; on 18 MHz DJ2FR was worked, and some fourteen other stations logged, of which the best was J28EI. As for 10 MHz, there was a similar story; one station raised, around 15 others heard, with nothing outside the European area.

Finis

That's about it for another month. For next time around, the deadline for your letters will be to arrive by *January 9th, 1986* addressed as ever to your scribe, "CDXN", SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts. AL6 9EQ. Mind how you go!

“Practically Yours”

with GLEN ROSS, G8MWR

Updates

ONE of the nice things about doing this feature is the amount of feedback from readers on the projects which have been described. Sometimes this is just a matter of the user's experiences in using the gear or perhaps a rather unusual application. I also get some ideas for improving the original design. Two of these relate to the wide range **audio generator** and are well worth passing on.

The first one is from Jim Ellis of Worthing and gives some values for the capacitors to be used for range switching over the total bandwidth of the 8038 IC, from near DC to around 1 MHz. This is shown in Fig. 1 and is connected in place of C2 in the original circuit (July 1985 “PY”). An overall extension of the frequency range is possible by feeding the centre tap of RV2 via a 1N914 diode as shown in Fig. 2. Jim also comments on the fact that at very low output levels some samples of the 741 can add a significant amount of noise to the output. Whilst this may not normally be very important he puts forward the use of a LF351 IC in place of the 741 as a cure for this problem.

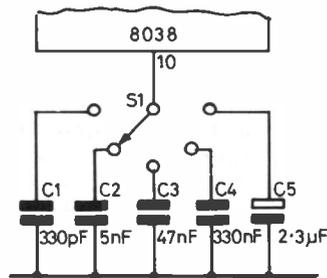


Fig.1 Range switching for audio oscillator

Another improvement to the circuit comes from John, GW3TZN. He found that whilst the square wave output from the 8083 was excellent the output from the buffer started to show some degradation of the leading edge rise time. This also showed as a slight flattening of the top of the sine wave output. John has replaced the buffers with a two-stage transistor circuit which is shown in Fig. 3. The transistors used in the original were 2N753 but any small audio transistor should be suitable. The resulting output is excellent on all functions up to 15 kHz with only a slight amount of distortion on the sine wave output as the frequency is further increased. It may be worth putting small capacitors, say 100nF, in parallel with C1 and C2 in Fig. 3 to further improve the bandwidth of the buffer.

UHF Generator

An idea for improving the usefulness of the UHF generator, which was described in the August 1985 issue, comes from Paul Thompson of Warwick. As it stands the unit produces only a carrier, but with addition of the small audio oscillator shown in Fig. 4 will provide a combination AM/FM modulation and so make the carrier easier to find if it is ‘in the noise’. This is particularly useful when the unit is being used with an FM receiver.

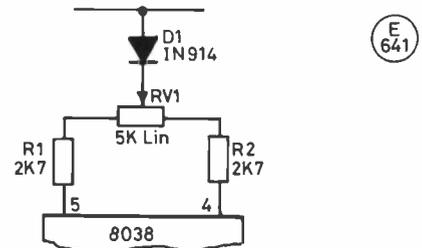


Fig.2 Modification for increased frequency range

Deviation: The preset control, should be adjusted to give the modulation level required, bearing in mind the fact that every time you multiply the fundamental the deviation will increase by the same factor. If the deviation is set for 5 kHz on 144 MHz then it will be 15 kHz on 432 and 45 kHz on 1296 MHz. It should therefore be set for use on the band that is most often used. An alternative approach for those who have the wide band audio oscillator mentioned earlier would be to mount a socket on the case of the UHF generator to which the AF oscillator could be connected. This would then provide a very versatile modulation system.

Either of these two ideas could also be applied to the microwave generator, which was described in “PY” for November 1985, by taking the audio input signal connection to the junction of R1/L1 in Fig. 3 of that article.

Six Metres

Several people have commented on the fact that a lot of the top receivers made in the 1950-1965 era tuned up to 54 MHz and so cover the new allocation at 50 MHz. The results on that band can vary between abysmal and excellent, my own Hammarlund HQ-170A being able to hold SSB with only an occasional tweak on the vernier tuning — and that with a free-running valve first oscillator at above signal frequency. A common problem, however, is with hum modulation of the local oscillator causing a nasty FM warble on the recovered audio; you may also notice this effect on 28 MHz.

Hum modulation: This is usually caused by the cathode of the oscillator valve acting as an anode with respect to cathode, and so

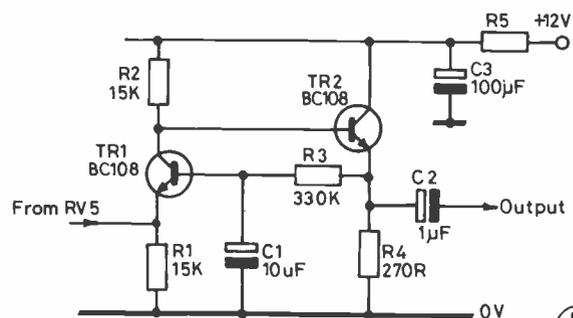


Fig.3 Improved output buffer circuit

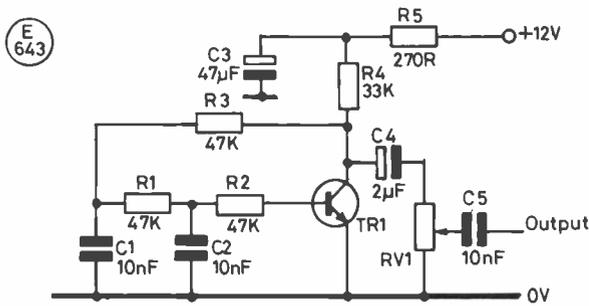


Fig. 4 Audio modulation oscillator

having a 50 Hz modulating voltage present which then modulates the incoming signal. The cure is to feed the oscillator, and possibly also the mixer stage, filament from a DC line. This is easily achieved by disconnecting the supply from the valve base and

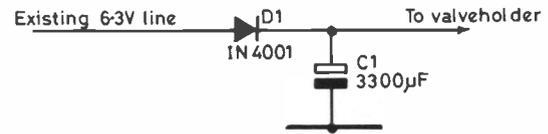


Fig. 5 D.C. heater supply

inserting a half-wave rectifier as in Fig. 5. The value of the capacitor needs to be found by trial and error to produce the required 6.3 volts on load, but is usually in the region of 3300 μF . The supply should be wired to give a positive supply to the valve, the cathode is usually near earth potential and so is negative with respect to the filament and the rectifying effect is eliminated. This very simple modification can give a dramatic improvement in results and is well worth the few minutes work and minimal cost that is involved.

A 4:1 Balun Transformer

An Easily Made Item for HF Band Use

P. C. COLE, G3JFS/DA1PE

IN the August 1985 issue of *S.W.M.* G3RJV described the construction of an HF balun transformer wound on ferrite rod removed from an old transistor radio. As George so rightly says, this little device, although one of the easiest things in the world to make, is surrounded by mystery and regarded with suspicion by many amongst us. I must admit that I had serious doubts when first I heard of the idea but practical experience over the last two years or so has shown that it does work, and so as my contribution towards helping to 'enlighten the unenlightened' here are details of a design which I have used on the HF DX bands to match 75-ohm coaxial cable to 300-ohm twin balanced feeder operating under matched conditions.

Fig. 1 gives the diagrams for the balun which consists of 8 bifilar turns of 18 s.w.g. enamel covered wire close-wound on a short length of long/medium waveband grade ferrite aerial rod from a pocket radio. (*N.B.* Jumble sales are a good hunting ground for the latter and 10p will often be sufficient to acquire title to a suitable scrap 'tranny' which will probably yield a few other useful bits for the junk box as well.) It doesn't seem to matter much whether the bifilar wires are twisted together, as is usually recommended, or simply laid side by side. Personally I prefer the latter method for the thicker gauges of wire when making small diameter coils because it looks neater, but really it is more a matter for personal choice. Also, wire size is not unduly critical so don't

be afraid to use something different — even plastic covered flex if necessary — but do take great care to make the windings as tight and as even as possible in order to maintain circuit balance, and then secure them so that they don't move about. This can be done by binding the end turns to the rod with strong thread and then treating the coil with a very light coating of coil varnish. Or another good method is to use heat-shrinkable plastic tubing over the ends of the windings, if you have the right size available.

From Fig. 1 it can be seen that the wiring of the balun is simple and straightforward. Take the start of one winding and join it to the finish of the other winding to form the common line which becomes the earth point for the unbalanced 75-ohm connection. The other ends of the windings then connect to the 300-ohm balanced feeder line whilst the unbalanced 75-ohm feed goes to one side or the other (which side doesn't matter) of the balanced feed line. Here, of course, is where some of the doubts start to arise. How can a 75-ohm feeder connected across half of a balanced winding possibly become 300-ohm across the whole? Really it is quite simple! The two windings in series form a centre-tapped coil which acts as a 2:1 autotransformer, so that a voltage of V volts across the 75-ohm connections is transformed to $2V$ volts across the two windings in series. Assuming the circuit power is the same this means that the current flowing in the 300-ohm line is halved — double the voltage with half the current means that

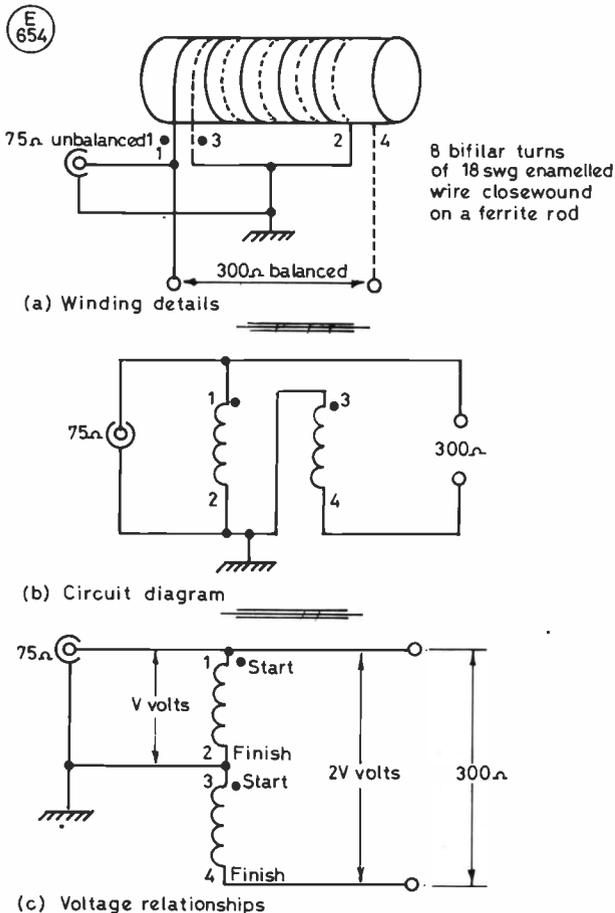


Fig.1 WINDING DETAILS AND CIRCUITS OF THE H.F. BAND 4:1 FERRITE ROD BALUN.

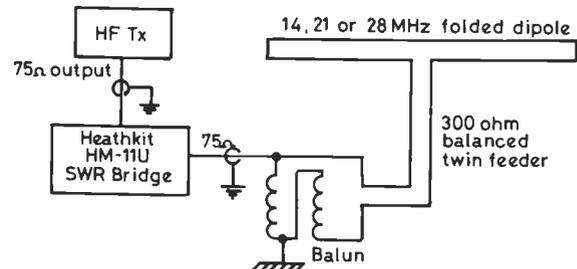


Fig.2 A practical HF band installation using the ferrite balun of Fig.1. Results obtained with a 21MHz folded dipole are given in the text.

the impedance is increased by 4 times. Hence the 75-ohm is transformed to 300-ohm.

In the absence of more elaborate test equipment the arrangement given in Fig. 2 was used to make a practical evaluation of the balun and the following results were obtained on 21 MHz with a folded dipole cut from the bottom end of the band:-

Frequency	SWR
21.00 MHz	1:1.20
21.10	1:1.20
21.20	1:1.30
21.30	1:1.40
21.40	1:1.60
21.45	1:1.70

Taken alone these readings are, of course, no guarantee that the device is working efficiently. However after running 100 watts of 21 MHz RF through it for 5 minutes there was no sign of heating of either the core or the windings, so the transformer action would appear to be quite efficient, and in addition there was no difference in radiated signal strength when the balun was replaced by a conventional aerial tuning unit.

Muting Communications Transceivers

Simple Elimination of White Noise

ANTHONY GREEN, VS6EZ

SEVERAL years ago I was an avid user of Six Metres whenever I found it open. At the time, I was disappointed that the Icom IC-211, which I was using in conjunction with a Microwave Modules 2-metre to 6-metre transverter, had no muting circuitry when used on SSB.

I used to switch on the equipment, and with the RM3 scanning unit attached to the Icom 211, scan 50 and 52 MHz bands for activity. But having to listen to white noise for lengthy periods of time proved very irritating, and very conducive to switching off and thereby missing an opening.

I decided that there must be a way to scan in silence, and be alerted when the RM3 unit scanned through a signal. It was whilst searching through my collection of integrated circuits that I found an RCA CA3046; this is a 14-pin integrated circuit containing five npn transistors. This IC with a few extra components, silenced the white noise problem for good, and now the only noise coming from the Icom 211 in scan mode is a series of tones coming from

the speaker as the RM3 unit tunes through a signal. This is sufficient to draw one's attention to the presence of a signal on any band being used at the time, either with or without a transverter in front of the main set.

In the circuit diagram, the transistors have been numbered for ease of functional identification. TR1 and TR2 are emitter followers with R3 as the resistor from which the audio is taken via C4 to the input connection of the volume control. TR2 is biased for linear operation by the R1 and R2 network and is the audio input transistor which is connected via C2 to the wire which was originally connected to the input of the volume control before this new board was fitted.

A small amount of the audio signal is coupled via the miniature trimpot and C1 to the base of TR4 where it is amplified. The output of this stage is rectified in the voltage doubler circuit and a DC voltage proportional to the audio input signal is produced and is fed back to the base of TR3.

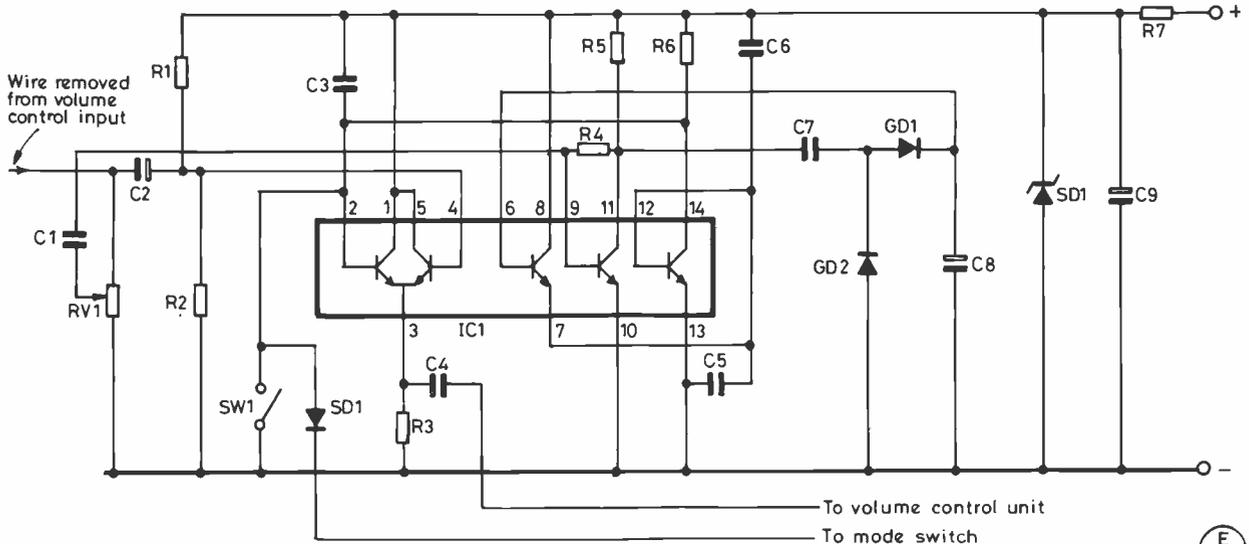


Fig. 1 SCHEMATIC DIAGRAM FOR THE AUXILIARY MUTING BOARD FOR THE ICOM 211 AND OTHER SETS

E
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**Table of Values
Fig. 1**

R1 = 220K	C4 = 22 μ F
R2 = 390K	C5, C6 = 0.01 μ F
R3, R5 = 4K7	C7 = 10 μ F
R4 = 560K	C9 = 50 μ F
R6 = 10K	GD1 = germanium diode
R7 = 2K2	GD2 = germanium diode, OA91 or similar
RV1 = 470K sub-min. preset	SD1 = silicon diode, 1N4148, 1N4149, 1N914 or similar
C1, C3 = 0.1 μ F	ZD1 = 8.2V zener diode
C2, C8 = 5 μ F	SW1 = mute-defeat switch
	IC1 = RCA CA3046

Note: capacitor values above 1 μ F are electrolytic 10-volt working or more, or tantalum types may be used; resistors are 1/4-watt or 1/8-watt rating.

In use, RV1 is adjusted until the mute just closes; this produces about 1 volt across C8. About 1.2 volt is needed on the base of TR3 before it switches on and in so doing, also switches on TR5 and unmutes the set. In the muted condition, both transistors will, at this stage, be turned hard off. Full line potential will appear on the collector of TR5, and by the interconnection, on to the base of TR1 which is the biased hard on. This action stops TR2 operating and no audio noise is fed out of C4 to the following audio amplifier stages.

If a real signal of sufficient strength is being received by the muting board, then a larger voltage will appear across C8 and this switches on TR3 and TR5. This reduces the voltage on the base of TR1 which then turns off. Audio signals are now able to pass through TR2 and then on to the following audio stages via the volume control.

Sometimes it is necessary to immobilise the action of the muting circuit whilst listening to very weak signals right on the threshold of the muting board's operation. This mute defeat is achieved by SW1 which I fitted on the bottom of the set with flying leads back to the muting board.

Since the muting board is unnecessary during FM operation of the Icom 211, the unit is automatically defeated by the connection from the base of the transistor TR1 via SD1 to the mode switch.

When FM is selected, the cathode of SD1 is earthed. In my set, I connected it to a pink wire soldered to two connectors almost directly underneath the "S" meter on the switch contact plate closest to the front of the set. On other sets by different manufacturers a little bit of "poke and hope" in conjunction with a circuit diagram is called for, but little damage should be caused if SD1 is correctly fitted.

C5 and C6 are not strictly necessary to have in circuit, but I found that whilst adjusting RV1, the muting circuit was demodulating Radio Television Hong Kong's medium wave English language service, so it is possible that sources of RF radiation will get into the circuitry at other locations. These two components can be left out unless found to be necessary.

C8 can be varied from 2 μ F to 10 μ F, or higher, depending on how long you wish the muting to stay open. A higher value holds it open longer, I found a 5 μ F value satisfactory and the mute stays open during short pauses in speech.

R7 and ZD1 are used to bring the Icom 211 voltage rail down to around 8 volts to power the muting board which consumes only a few millamps.

The circuit was built on a small piece of Veroboard and mounted inside the set, secured to a side wall of the chassis by a single screw on a point close to the volume control.

This small addition to my IC-211 has proved remarkably useful over the years, and can easily be used in other communications transceivers where muting would be an improvement. It has other applications such as super-regenerative sets and public address amplifiers.



Very handy indeed for the home-constructor (as well as many other applications) are the two models of the new 'Spirig' self-illuminated pocket microscope. The 30-power magnification Spirig-30 costs £18.90, and the 100-power Spirig-100 costs £27.90. Full information is available from Cobonic Ltd., 32 Ludlow Road, Guildford, Surrey GU2 5NW (tel: 0483-505260).

CLUBS ROUNDUP

By "Club Secretary"

WE have another great big pile of letters this month — the club activity scene is really booming of late — and so we must not waste too much space with chat. However, here is a thought for the New Year.

The new blood the club needs if it is to expand and flourish is virtually always by way of newcomers to the hobby, and these are most likely to be found through a note in the *local paper*. Here, you need to consider how the local paper operates; if it has a column for local activities, write out a brief note in the same style, and about the same length, and send it to the editor. If they like a picture to go with it, send them one. If they don't use club stuff as such, how about a write-up on the next event you do; or even how about thinking up an event you can write about? A sponsored QSO session for the local hospital, or something similar, would grab the fancy of the editor for certain. Of course, you make *quite* sure that the address quoted is one that can reach an active member . . . and away you go!

The Mail

Sometimes we wonder where it all comes from! Let's make a start with **Abergavenny & Nevill Hall** and their activities at Pen-y-Fal Hospital, Abergavenny, in the room above Male Ward 2 every Thursday. Lots of happenings, and also a deal of effort in the way of RAE and Morse for the newcomers. More details from the Hon. Sec. — see Panel.

At **Acton, Brentford & Chiswick** we see they are to be found in the Chiswick Town Hall on January 21st, 1986, for the AGM. The Hq. is in Chiswick High Road, London.

Basingstoke has its base at Forest Ring Community Centre, Sycamore Way, Winklebury, on the first Monday in each month; January 6 is a talk on 23cm. operation by G3NNG, and on February 3 they have a talk from *Wood and Douglas* on their kits.

For all the latest details on the **Biggin Hill** goings-on we must refer you to the Hon. Sec., albeit we do know that they foregather at St. Mark's Church Hall, Biggin Hill, and we think it is the third Tuesday each month. However, check with him — see Panel for his details.

Now to **Bishops Stortford**; the third Monday in January is AGM-time, at the British Legion Club in Windhill. In addition, some of the gang can be found informally in the saloon bar of the "Nags Head" on the Dunmow Road every Thursday evening — usually decorating the bay window! Incidentally, this club has a nice idea: they have a A4 Planning Calendar and each year they mark up the various dates for the year, Xerox enough copies, and give one to each member.

A change of Hon. Sec. is noted at **Borders**; and doubtless she will be pleased to pass on the details of the group's activities and Hq. — see Panel for the address.

The **Borehamwood** club gathers at the Organ Hall Community Centre, Bairstow Close, Borehamwood, Herts. There are various activities going on among the membership, and they are often to be heard on Wednesday evenings on 144.270 MHz when they have a club net. More details from the Hon. Sec. — see Panel for the details.

We were amused to note that **Braintree** has added Leek to the top left of the map of their catchment area, which is the front cover design of the newsletter. The reason is that they have a member in Leek, up in Staffs, and they don't want to lose him! The group is to be found on the first and third Monday each month at the Community Association, Victoria Street, which lies next to the bus park in the centre of Braintree.

Every Thursday **Bredhurst** group goes to the Parkwood Community Centre, Parkwood, Rainham, Kent; on January 23 they have a junk sale, and they seem to have a formal session with a talk once or twice every month.

Bristol now, and first we have **Bristol City RSGB**, which lives at the Small Lecture Theatre, University Walk, University of Bristol, Clifton; on January 27 they have their Annual General Meeting.

The other group from Bristol who report this time is called **Bristol (Shirehampton)** and this one is based at Twyford House, Lower High Street, Shirehampton, where they say they have a varied and interesting programme every Friday evening. More details from the Hon. Sec. — see Panel.

For the record there is another Bristol club, known as South Bristol, and they will be found further down the piece.

British Telecom (Reading) is a closed group for BT employees, which meets at various BT premises on the third Wednesday of each month; more details from the Hon. Sec. — see Panel.

Turning now to **Bury** we were sorry to see that G3VNG was writing his last editorial in the newsletter before he emigrates to W9-land — but at least he had a mug-shot of himself in his shack so we could see the chap whose call we have been hearing for so many years! Meet the group on any Tuesday evening at their base at the Mosses Youth and Community Centre, Cecil Street, Bury; the 'main' meeting is on the second Tuesday each month; January 14 is on RTTY and given by G3VC.

Deadlines for "Clubs" for the next three months—

February issue—December 19th

March issue—January 31st

April issue—February 28th

May issue—March 28th

Please be sure to note these dates!

Cambridge Repeater Group has its meetings on Friday lunchtimes at the "Pike and Eel", Chesterton, Cambridge. In addition they have the 'Junk Sale Rally Extravaganza' on February 23, at Pye Telecommunications, St. Andrews Road, Cambridge — all the details from the Hon. Sec. at the address in the Panel.

Hq. for the **Cheltenham** group is at Stanton Room, Charlton Kings Library, Cheltenham; January 3 is a talk on AMTOR by G3WHO, and on 17th they have a quiz with the Worcester club, at home.

For all the details of the January meetings at **Cheshunt** we have to refer you to the Hon. Sec. — see Panel for his address and number; but we can say that they are to be found on Wednesdays at the Church Rooms, Church Lane, Wormley, near Cheshunt.

January 7 is AGM-time for **Chester**, and on 14th the construction contest winners will be doing the talking. January 21 will deal with the question of "What to do with Failed Projects"(!) and on 28th they have a couple of videotapes to watch.

The **Chichester** members have their Hq. at Fernleigh Centre, 40 North Street, where they foregather on the first Tuesday and the third Thursday of each month. Usually they are in the Green Room. For programme details we have to refer you to the Hon. Sec. — see Panel.

On to **Colchester** where the Hq. is at Colchester Institute, Sheepen Road, on alternative Thursdays. More details from the Hon. Sec. — see Panel.

Cornish are nowadays based at the Church Hall, Treleigh, on the old Redruth bypass, where they meet on January 2 for another instalment of the G3WKP talk on his trips in Africa; and February 6 is 'Impedance Matching' by G1AJB.

At **Crawley** many of the meetings are at member's homes; this means a contact first with the Hon. Sec. as a courtesy. The 'main' meetings are at Trinity Church Hall, Ifield; for dates we must refer you to the Hon. Sec — see Panel.

On Saturday, January 18 the **Crystal Palace** group will be hearing all about FAX — talking will be done by G8BMQ. Venue is All Saints Parish Rooms, Beulah Hill, Upper Norwood, London.

January 7 and February 4 are the two next gatherings of the **Dartford Heath D/F Club** at their base at the "Horse and Groom" pub at Leyton Cross, near Dartford Heath. The D/F Hunts go from various places, and details are given out at the meetings.

Next we go to **Denby Dale**, where the Hq. address is in the Pie Hall. Try room 3 (or the bar!) on any Thursday evening. January 1 is a noggin-and-natter session, and on 8th they have their AGM. January 15 is again a noggin-and-natter and on 29th they will be hearing about Fire Service communications.

January 1 at **Derby** is a junk sale, and on 8th they have the Mayoral Reception at the Council House, Derby. January 15 is down for a "Year in Retrospect" presentation. Hq. is at 119 Green Lane, Derby, where the gang has the whole top floor.

Now to **Dorking**, and here they have the informal on January 14, followed on 28th by the Annual General Meeting. The latter is at Ashcombe School, and the informals are at the Star and Garter Hotel, both near to Dorking BR station.

Another AGM is the one at **Edgware** on January 9; there is also the informal on 23rd; and both these are at Watling Community Centre, 145 Orange Hill Road, Burnt Oak, Edgware.

As for many years, the **Fareham** club is still based at Portchester Community Association, Westlands Grove, Portchester, Hants; on January 8th they will be looking into the RX80, January 15 is the AGM, and on 22nd they have a night-on-the-air. That leaves January 29 for a talk on the bands 1296 MHz up to 10 GHz.

The **Falkirk** group has its base at the Grange Centre, Brightons, near Falkirk; RAE and Morse are on Tuesday evenings, and in addition the club meetings are on the first and third Wednesdays at Hq. For programme details for January, we must refer you to the Hon. Sec. — see Panel.

The winner of the construction contest, G8ATK, will be holding forth at **Farnborough** on January 22; but on the informal night, January 8, G4MBZ has an "Off-the-Cuff Night!" The venue is the Railway Enthusiasts Club, Access Road, off Hawley Lane, Farnborough.

January 7 and 21 are the dates for **Fylde** members at their meeting place at the Kite Club, Blackpool Airport. Their sub includes membership of the Kite Club so they can go and watch aeroplanes whenever the fancy takes them for a break from radio! January 7 is the AGM, and on 21st they have the informal and Morse class.

The **Glenrothes** RAE and Morse classes are, respectively, on Mondays and Tuesdays at Balwearie High School in Kirkcaldy, while the club Hq. is at Provosts Land, Leslie. For the rest we have to refer you to the Hon. Sec. — see Panel.

We come next to the **G-QRP Club**; this is the one for those who enjoy operating with QRP, and also, very much for the people who enjoy home-brewing their station equipment. All the details from the Hon. Sec. — see Panel.

It looks as though the **Grimsby** dates have been 'adjusted' to accommodate the New Year festivities; they are meeting on January 9 for a talk on coaxial traps and dipoles and on 16th they have the computer night. That leaves January 23 for a talk on sunspots. All these are at Cromwell Social Club in Cromwell Road, and start at 8 p.m.

The **Harrow** crowd meets on Fridays at Harrow Arts Centre, High Road, Harrow Weald, in the Roxeth Room; January 3 they are still 'at home' and on 10th they have an activity night. January 17 is a film show, and on 24th they have an activity night again. Finally, on January 31, G4JNZ talks about 'Contests for All.'

The third Wednesday of each month is the main meeting date

for **Hastings**; 7.45 p.m. at West Hill Community Centre, Croft Road, Hastings. Every Friday they are to be found also at the club room at Ashdown Farm Community Centre, Downey Close, off Harrow Lane. January 15 is a talk on aerals.

Our next stop is at **Havering** which means Fairkytes Arts Centre, Billet Lane, Hornchurch, on Wednesday evenings. There are no meetings for January 1 or 8; but things restart on 15th with the Annual General Meeting and on January 22 G8DPB will talk about SHF DX. January 29 is an informal.

At **Hereford** the locals have a place at County Control, Civil Defence Hq, Gaol Street, Hereford. On January 3 they have an audio-visual session (tape-and-slide lecture!) and on January 17 the informal club evening at Hq.

The **Ipswich** club magazine has details of the goings-on of umpteen different clubs. However it doesn't forget their own meetings; these are at the "Rose and Crown", on the corner of Bramford Road and Norwich Road, and they note the club room is entered separately from the bars.

Over the water now to **I.R.T.S.** This is the national society for Eire, and of course they know about all the club activities that goes on in EI-land. Details from the Hon. Sec. — see Panel.

We were sorry to hear from **Kidderminster** that member Bob Conway, G3INE, died in August after a short illness; he was a superb CW operator and a very keen club member who will be greatly missed. Turning to the club, they now have their base at the Vice-Presidents Club, Harriers Football Ground, Hoo Road, Kidderminster, where they meet on January 7th for an on-air meeting and on January 22 for a talk on AMTOR by G3WHO, Peter Harris.

The **Maxwelltown** group has its base at the Tam' o' Shanter Inn, Queensbury Street, Dumfries; January 8 is a committee meeting, and on January 22 they have a talk on first aid and safety in the shack. More details from the Hon. Sec. — see Panel.

We thought that it wouldn't be long before we heard again from **Midland's** G8GAZ after he 'retired' from the PRO job - and sure enough he is back, as deputy PRO! He tells us that they have successfully completed the move from Broad Street, to the new venue at Unit 5, Henstead House, Henstead Street, Birmingham, where they are on the second floor up 36 steps — they are thinking of putting a chair on the landing for the OTs who need a rest on the way up! We believe they are there on Tuesdays, Wednesdays and Thursdays, but if in doubt call G8GAZ on S17 for the latest details.

At **Morecambe Bay** the locals head for the canteen of the Luneseid Engineering Company, Mill Lane, Halton, near Lancaster, every Monday evening. January 6 is a talk on 'Audiology' by G1PMZ, and on 13th they have a Morse class. January 20 is the AGM and on 27th there is another Morse evening.

Meetings of the **North Wakefield** group are at the "White Horse" public house, East Ardsley, every Thursday evening. January 2 is the Chairman's Welcome talk, and on 9th they have a visit to the Blood Transfusion Service Hq. January 16 sees them heading for the Pontefract junk sale, and on 23rd they have a talk on the weather by the Leeds Weather Centre staff. Finally, January 30 for the monthly business meetings.

Now we turn to **Nottingham** where they have a room at Sherwood Community Centre, Woodthorpe House, Mansfield Road, Nottingham. On January 2 they are on the air, and on 9th they have a talk about 'Amateur Radio's Newest Frontier — Video'. January 16 is down for a talk by G4MHB about his trip to China, and on 23rd members talk about projects that *nearly* worked. Finally, on January 30 they have their forum for the month.

New One

To us, at least! **Oldham** get together every Thursday evening at Moorside Conservative Club, Rippenden Road, Moorside, Oldham. Additionally, we note they have a Mobile Rally, on January 26, at Birch Hall Hotel, Rhodes Hill, Lees, Oldham;

Names and Addresses of Club Secretaries reporting in this issue:

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- BOREHAMWOOD: Hon. Sec. Borehamwood ARS, 140 Aycliffe Road, Borehamwood, Herts. HA8 8JG.
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- HAVERING: D. St. J. Gray, GIHTQ, 6 Devonshire Road, Hornchurch, Essex.
- HEREFORD: F. E. G. Cox, G3WRQ, 35 Thompson Place, Hereford. (Hereford 54064)
- IPSWICH: J. Tootill, G4IFF, 76 Fircroft Road, Ipswich, Suffolk IP1 6PX. (Ipswich 0473) 44047).
- I.R.T.S.: G. Gervin, E18CC, 185 Elton Court, Leixlip, Co. Kildare, Eire.
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- YORK: K. R. Cass, G3WVO, 4 Heworth Village, York.
- 308: D. Davis, G6YQD, 13 Maple Road, Surbiton, Surrey KT6 4AA.

admission is 30p, and doors open at 1030 (1000 for the disabled). All the details from the Hon. Sec. — see Panel.

Now to **Plymouth** which means Plymouth Albion RFC, at Beacon Park, Peverell, Plymouth, on the first and third Monday in the month. On January 6 muTek's Chris Bartram, G4DGU, will be talking about 'Six Metres', and on January 20 they have a talk by Mr. D. McDonald on ocean racing.

Plymouth Polytechnic also has a club nowadays, and we understand they have a Foxhunt on January 12; the start is at 1000 outside the Students Union, where the details will be given out to competitors and visitors. More details from the Hon. Sec. — see Panel.

Pontefract means Carlton Community Centre, Carlton, which lies between Pontefract and the A1. They are having a

Components Fair there on March 16 — details from the Hon. Sec., see Panel. January 6 at the same place is the annual junk sale, and on 23rd they have a project evening. January 30 is a talk on making transparencies by G4ISU.

For the details of the **Poole Amateur Radio Society** we must refer you to the Hon. Sec. — all we have is the handout covering their Poole Award, for working stations in Poole and members of the club.

At **Reading** the Hon. Sec. writes to say he will be giving up his post from January 1. Doubtless there will be a new appointee, but for the meantime we have no one to refer you to but him. We believe the locals get together in a pub in Emmer Green — and that's about all we have for the moment!

Reigate members will have a treat on January 21, when G3VLH talks about his homebrew HF bands transceiver. This one is at the Constitutional and Conservative Centre, Warwick Road, Redhill, in the upstairs Meeting Room.

The **Royal Navy** club members are serving or retired RN types, or from the Merchant Navy or foreign navies. Details from the Hon. Sec. — see Panel for his details.

Find the Cricket Pavilion at the BTI Radio Station, by way of 'B' Building Entrance on the A5 at Hillmorton, Rugby, and you are in the Hq. of **Rugby** club; January 7 is down for Region 3 RR, G8MWR, to talk about RSGB and to answer questions. January 29 is down for a visit to the Rugby Radio Station — note this one is a Wednesday.

Next **Skelmersdale**, and here the locals have a place at Beacon Park Centre, Dalton Lane. January 9 is an activity night, and on 16th there is a talk about computers in the radio spectrum; January 23 is project night, and on 30th G4ZAF will talk about QSL cards.

Either room 3 or 4 at Whitchurch Folk House, East Dundry Road, Whitchurch, Bristol, is the home of **South Bristol**; January 1st they have *both* rooms for a 'Hair of the Dog that Bit You' night, and on 8th they have a CW activity night. January 15 is a computer activity night.

We have to find the Victoria Club, Gatefield Street, Crewe, to locate the **South Cheshire** group. They are in session on January 13, when the local crime prevention officer will be giving the talk.

A note at the back of the **Southdown** newsletter tells us of the sad death of their member Tom Foord, G3HCK; Tom was always one of those involved in the Southdown club goings-on, and even when he could no longer attend NFD, for instance, he was always ready to lend his gear. He will be sorely missed in this contest-minded club. The locals, though, will continue to foregather on the first Monday of the month at Chaseley Home for Disabled Ex-Servicemen, Southcliff, Eastbourne; and also on Tuesdays and Fridays of each week at the Club Rooms, Wealden District Council Office, Vicarage Fields, Hailsham.

SE Kent YMCA is another name for the *Dover* area club. Natter nights are January 1 and 15; January 8 is a quiz and on 22nd they have a talk on ATV. January 29 is a film show and all are at Dover YMCA Leyburne Road, Dover.

Now **South Manchester**, which gets together every Friday evening at Norris Road Community Centre, Norris Road, Sale. More details from the Hon. Sec. — see Panel.

Nice to hear again from **Stevenage** which seems to have moved to new Hq. at Sitec Ltd, Ridgmond Park, Telford Avenue Stevenage. On January 7 they have a discussion on the AFS activities, and on January 21 G3OVT and G4DDX join forces to show you how to get on RTTY.

Now on to **Surrey** which means *TS Terra Nova*, 34 The Waldrons, South Croydon, where they have the first-floor mess-deck. We hear they have a 'B' meeting on January 20, and a 'C' meeting on January 6, but no reference to the 'A' meeting . . . contact the Hon. Sec. to put you right!

Turning now to **Sutton & Cheam** we note they are at Downs Tennis Club, Holland Avenue, Cheam. January 6 is a natter night in the bar, and January 7 a talk by G6YAF of *Fry's* on the subject of solders and fluxes.

On the first Tuesday of each month the **Thames Valley** members converge on Thames Ditton Library, Watts Road,

Thames Ditton; more details from the Hon. Sec. — see Panel.

The **Railway Hotel**, Liphook, Hants., is the home of the **Three Counties** club; January 8 is a talk on computer Basic, and on 22nd they go right off radio when G0BUZ talks to them about bee-keeping. (What an apt callsign!)

January 20 is an informal chat night at **Todmorden**; that leaves room for judging the construction contest on January 6. Both are at the Queens Hotel, Todmorden.

A new slate of officers at **Torbay** but the familiar details for the Hon. Sec. We must refer you to him for details of the meeting dates, as they sometimes have to shift from Thursday to Friday, or *vice versa*, at the ECC Social Club, Ringslade Road, Highweek, Newton Abbot. See the Panel for the needful.

Some time since we heard from the **Vale of White Horse** who are now in the clubroom of "The Waterwitch" in Cockcroft Road, Didcot, on the first and third Tuesday of each month. More details from the Hon. Sec. at the address in the Panel.

The **RAF Association Hq.** in New Kent Road, St. Albans, is the home of the **Verulam** crowd; find them there on the second and fourth Tuesday of each month. January 28 is a talk on weather satellites.

WACRAL is the club for committed Christian radio amateurs and SWLs world-wide. All the details from the Hon. Sec. — see Panel for his details.

At **Wakefield** the club lives at Ossett Community Centre, Prospect Road, Ossett. January 8 is a natter night, and on January 22 they have the RSGB tape-and-slide talk on semiconductors.

The **Welwyn-Hatfield** club Hon. Sec. gives no details of the venue, but says they are in session on January 6 for an RTTY demonstration, and on 20th when they will be active on Eighty. More details from the Hon. Sec. — see Panel.

Every Wednesday evening the **White Rose** club meeting takes place at Moortown RUFC, Moss Valley, King Lane, Leeds. The shack is open on January 1 and on 8th there is a test gear night. January 15 is a natter, and on 22nd G4ATZ talks about amateur radio in Jordan as JY9WR, January 29 is another natter.

It's a long time since last we heard of **Wimbledon**; they are still at the St. John Ambulance Hq. Kingston Road, Wimbledon, where on January 31 they have a talk on cellular radio by G4ULM.

The first and last Tuesdays of January are both on-the-air sessions for **Wolverhampton**. That leaves a discussion night on 14th, and for January 21 they have G4PZA to talk about the Radio Regulatory Department.

At **Worcester** the Oddfellows Hall, New Street, seems to have become the only Hq. January 6 is on Police communications, and on 15th there is an informal. January 7 is a quiz against Cheltenham, at Cheltenham.

Now **Worthing**, which now has its base at Lancing Parish Hall, South Street, Lancing. It looks to be every Wednesday evening there, though we are a little out-of-date.

Meteor scatter will be discussed by G4GZA at **Worksop** on January 14, and on 28th G4KMA talks about simple test gear. The venue is the Sub-Aqua Club, The Maltins, Gateford Road, Worksop.

At **Yeovil** the locals gather every Thursday evening at the Recreation Centre, Chilton Grove, Yeovil.

York has its Hq. at the United Services Club, 61 Micklegate, York, every Friday — all visitors are welcome. More details from the Hon. Sec., see Panel.

Finally, we have **308** which has its base at the Coach House, Church Hill Road, Surbiton, Surrey. For the other details we must refer you to the Hon. Sec. — see Panel for his details.

Finis

That's it for another month, 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.

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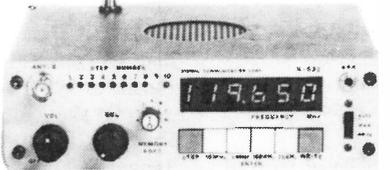
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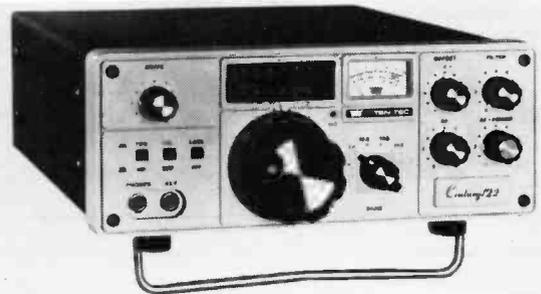
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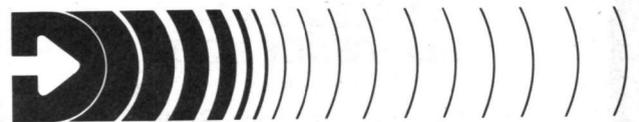
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