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ADVERTISERS' INDEX

Aspen Electronics Ltd................................................. 232
J. Birkett .......................................................... 268
Black Star Ltd. ...................................................... 231
British National Radio and Electronics School ............. 268
Colomor Electronics Ltd. .......................................... 270
Datong Electronics Ltd............................................ 231
deweby Electronics ............................................. 232
E.M.A .............................................................. 267
G2DYM Aerials ..................................................... 270
G4TNY Amateur Radio ............................................ 267
Hatley Antenna Technology ....................................... 271
D. P. Hobbs Ltd. ................................................... 267
KW Ten-Tec Ltd .................................................... 232
MuTek Ltd. .......................................................... 267
P. M. Electronic Services ......................................... 269
Quartslab Marketing Ltd.......................................... 267
R.M.B. Electronics ................................................ 267
F. G. Rylands ....................................................... 270
Small Advertisements ............................................ 269, 270, 271
Stephen-James Ltd. ................................................. inside front cover
S.W.M. Publications ................................................ back cover, inside back cover, 268, 269, 270, 271, 272

Uppington Tele/Radio (Bristol) Ltd................................ 267
Waters & Stanton Electronics ..................................... 230
Geoff Watts ......................................................... 267
Wood & Douglas .................................................... 230

CONTENTS

Page
Editorial ................................................................... 233
Communication and DX News, by E. P. Essery, G3KFE........... 234
G3RJV’s Workshop Notebook .................................... 237
“Digest of Horizontal Wire Antennas” — book review .......... 239
160-Metres for the Yaesu FT-707 Transceiver, Part 2
by Ian Keyser, G3ROO ........................................ 240
HF Antennas for Restricted Sites, Part 3,
by A. P. Ashton, G3XAP ......................................... 242
Amateur Radio Computing, by Paul Newman, G4INP........ 246
Oblast Corner, by Nigel Cawthorne, G3TXF ................. 247
“Practically Yours”, with Glen Ross, G8MWR ............... 248
Moonbounce on A Budget, by Dick Pascoe, G1DGO ....... 250
VHF Bands, by N. A. S. Fitch, G3FPK ......................... 252
Echoes From The Past, by N. G. Hyde, C.Eng., MRAeS, MIERE, G2AIH . 257
A Light-Weight Aerial System for Two-Metres, by Peter Welch, G3OAA . 260
Power Supply Unit for Two-Metre Transceivers, by Ian Poole, G3YWX . 261
Clubs Roundup, by ‘Club Secretary’ ........................ 263

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Editorial

Log Keeping

This is often not a popular subject; it has become evident among some amateurs of the newer generation, that the keeping of a log is seen as nothing more than an unnecessary chore. Having a licence implies wanting a licence, and the acceptance of its terms and conditions; and the conditions of that licence are clear and unequivocal about log-keeping — albeit in a relaxed form when operating /M.

An important consideration from the point of view of the amateur is that nowadays we are seeing an ever-increasing amount of TVI-generating electronic and electrical equipment: if you have an accurate log fully kept up, you can be sure that if you get a TVI complaint then you have all the evidence which could exonerate you from blame. If all your CQ and test calls are logged, and frequency accurately recorded (not just band) then in the case of a TVI complaint, the data will be of clear use. The inadequately 'logged' amateur, or logless CB-er, will be the one to lose out, if he is nearby.

In any case, the writer finds it quite fascinating on occasion to go back through the old logs from years ago, recall his old gear, and above all to bring back to mind old friendships and 'characters' now long gone. Those who are reluctant to log will find it the same in years to come!
COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

I

start to write this piece after the first few days of warm weather this summer — so it goes without saying that immediately the piece is 'put to bed' I must go out and take the mower for a walk. Eternal QRM!

Conditions have fallen into the summer mould. In some ways the doldrums, but in others the best time. For example, for the top DX merchants, definitely the doldrums, with no DX on the HF bands, and noise on the LF ones. From the point of view of the amateur with a small garden, it's quite marvellous — after all, 14 MHz will be open for some while after he gets home from work — certainly not the case in mid-winter — and so he can do some operating, denied to him in winter by the lack of space for aerials. It's an ill wind that blows no-one good!

Obituary

We must record, with great sorrow, the death of one of the world's 'greats' in the DX field. Don Wallace, W6AM, died on May 25th at the age of 86, after a stroke. On May 29, the funeral was followed by a gathering at his famous Rhombic Farm on Palos Verdes Peninsula. Don had been an amateur for 75 years and was at the top of everything he did; for the past twenty-five years at least he had been at the top of the DXCC Honour Roll. He was President Wilson's personal radioman on the trip to the Versailles Conference, and during W.W.II he had served as a radio operator aboard a submarine.

The W6AM station was a forty-mile journey from home; but at the 'farm' he had rhombics which, by reversing direction with a switch, covered the entire compass in ten-degree steps. We recall a letter in which Don told how he had just found some beefy carbon resistors, man enough to stand up to use as terminators on the aerials when his kilowatt was on the other end, and how they were making a significant improvement to the station; and another in which he mentioned the contents of his 'pole store' — 75 foot and 130-foot monsters, selected and ready for any aerial improvements, changes or maintenance that may have been necessary. On the mobile side, he operated, mainly CW, at the kilowatt level using Swan gear for many years. The writer has lost a good friend, and the hobby a colossus. A great man, in whatever activity he touched.

HF Convention

In a letter from G3XTT, Don Field mentions this event; after some years at the NEC, it has reverted to the old venue of the Belfry Hotel, on the M40, near Oxford, on September 29. The two lecture streams have already some nine items firm up, and there are unspent ancillary activities. There will be no trade stands, but we understand some clubs will have their own corners—notably BYLARA and G-QRP Club. For anyone who is interested in the HF bands, this event is a must, and we hope everyone who can will be there.

R.S.G.B.

July saw the Diamond Jubilee of the RSGB's publication; initially the T & R Bulletin, then just plain RSGB Bulletin, and finally in its present title of Radio Communication, affectionately known to us all as Radcom. This is a fine record, and we congratulate them. For a potted history, we commend a read of G3VA's article in the July issue of Radcom — it will show just how much things have moved along in sixty years.

On the other hand, it won't do much to show why the average age of the radio amateur is increasing ... why aren't the youngsters coming in to our hobby as they used to? Or if they come, look and go away, as the writer suspects to be the case. What is there that puts them off us?

The Bands

On the low bands plenty of static; on the higher bands not much DX. But there has withal been something for everyone who could be troubled to get on and operate. So — let's see what everyone has been up to.

Ten Metres

G4ZZG (Warrington), it may be recalled, mentioned his hearing of a 'funny signal'; we had a perfect avalanche of letters pointing out the relationship with DL0IGI — read, as it were, in the 'space' rather than the 'mark' mode, or implying that it was a heterodyne beat with that signal. Your conductor also hangs his head — he should himself have tumbled to it. This month Charles has an interesting letter in which he says his only blank day was June 6, when nothing, CW, SSB or beacons, could be heard. On the other hand there wasn't anything very sparkling either, with LU6DMZ as pick of the crop, plus FH4AA on Mayotte and PU2L0K. On June 17, DK3SA was using a Windom aerial at 3 metres high — one doesn't hear many of those about these days. Charles notes how there has been much more ten-metre activity in this country than at the bottom of earlier cycles; this is great in terms of 'use or lose' but we must make some allowance for the CB factor — intruders to be zapped on the one hand, and ten-metre FM with CB conversions on the other. It's a pity we couldn't reproduce G4ZZG's tabulated list of beacons, QSOs, on CW and SSB — it is too long by far but would do a SSB to convince people of the value of the band.

Mainly CW it is for G4RWP (London, N.) who seems to have picked up a nice little crop since the beginning of the year, even though there was a UG who managed to make 'Armenia' sound like 'Albania'!

Lack of activity by G4VFG (Ivybridge) is explained by repairs to the VHF linear, repairs to an old RA-1 receiver, and repairs to the car ... excuses, excuses! On a different tack, Peter has a novel variant on the remarks anent G4ZZG's funny one last time — "DLOIGI throwing a wobbly!" Apart from gardening and going out with a YL, G4VFG found time to pick up some at least of the openings, with an interesting one to DF4XW/P, worked on SSB on 28.005 MHz; Peter suggested a move upwards, but the DF said "No — I stay here till the intruders this end give up!"

Even G2HKU (Sheppey) used the CW end of the band — not usual for Ted at this time in the cycle — to work SM5LL, OH3IR, and SM0CCCE. However, the recent wet weather has limited Ted's time on the air a little, while he has been bailing the water out of the greenhouse!

Now G4RHW (Deeside, Clwyd) who starts by noting that he has a copy of the CE0AA QSL, unlike a lot of others, and he sent a copy to prove it. We were amused by the tortured English on the back — like a translated Japanese instruction book. Barry has been using a G-Whip and FT-757 as a mobile rig, and with a 'lift' from G4WXO to create the path managed some 14 countries, including LU4DJP and C3XC.

Regular user of the band G4HZW (Knutsford) found the band quite interesting, and indeed broke off his letter to work WB1FSW, K2KBF and K1NJQ, with W5 and W8 heard too. Tony noted six metres was open as well on the evening of July 2, to the States — one wonders what pushed the MUF that high? June was full of interesting European openings, and short skip openings to GM4WJA, GM4XLN and GU4WRP. In the line of DX, 4Z1AA, 5T5RG, OE3HGB/YK, RL8PYL, UA9AKO, UM8MIG, KP4CZ, KP2J, VE3KFE/4U, and CEOFQ on Easter Island. This last, DX in any language, was worked at 2300z on June 15.
The antenna is a six-element Quagi, with bent on becoming a Big Gun on our bands. and UB4WZA as the pick of the crop. but with RA6LPY, RA9FCB, RB5WAM, to net some 23 QSOs, mainly in Europe the worst month for DX since he came CQ); a "CQ South America" which VE3KFE/4U, LU4DJP, CX3CX, UA6LDX, ZB2IB, FD6IFF, 4Z1AA, we noted 7Q7LW, OE3HBG/YK, brewing. On Ten, apart from the Europeans, Eighty will be dealt with to the tune of a MHz. On 7 MHz there is a full size ground-plane, plus Beverages for directors, on a lm. boom, the whole lot being some 17m. up in the air for 14/21/28 being some 17m. up in the air for 14/21/28, and 7X. Finally, G4EZA reinforces the columnal plea for the CQ call whenever the band sounds to be dead — there is usually someone listening and within earshot, and activity mushrooms. G3NOF (Yevoli) says that he has found short-skip to be predominant between 0800-2300z. June 15 found an opening to W1 and then VE around lunchtime, and on June 22 at 0017, KA1KE was heard working an ON on an otherwise dead band. SSB contacts were made with CT2QQ, CT2EJ, EA80T, EA91B, and RL8PYL.

Fifteen

Hasn't been any too lively of course. G2HKU used his four watts of QRP to key with SM0CCE and G3ROO/MM — the latter being somewhat of a surprise. Short-skip has been a feature of this band too, says G3NOF, who heard little of the North Americans except on June 15 when they were coming in from W4 between 1330 and 2102z when they were joined by W1-2-3. One VK was heard, namely VK4VAN, short path at 1040z, and Africans haven't been in evidence much either. SSB QSOs were made with a blast of CQ with some fifty watts on 14 10 MHz as the star of the month, but a fifties? 

Crystal Ball

From BY, it was reported on 7 MHz that 3H8C was on, giving his QSL address as POB 148 Chengdu; the operator Ryo indicated that there were special stations on, signing XS2MC, XS2PC, 3HOP and BY2LP. No reason given and after a few EU contacts the station turned to the Ws. No later word as yet, either; but we have a gut reaction that they may be genuine and may indicate a further expansion of amateur radio in China.

Pitcairn Is. seems to be being given the once-over by VR6JR, who can be heard on Twenty most mornings working through the pile ups from 0600z — unless of course he is doing the same thing around the 7075 kHz region about the same time. On the vexed question of operation from the Andamans, DXNS indicates that VU2HMD is in fact resident there, but his licence is only valid on the mainland and he has therefore been told to QRT. Progress on the Andamans blockage with the Government seems to be very slow indeed. Another silent key to record now; Father Dave Reddy, CE0AE, who died after a heart attack on June 6. He will most certainly be missed, and not just in the amateur radio scene at that.

Amid all the hoo-ha about ZC4 and SB4 QSLs, we wonder what about the MDs who were in residence from the resumption after W.W.II until the early fifties?

Twenty

Not very inspiring but at least the band is trying to do its best! GW4RHW reckoned 10 MHz as the star of the month, but a blast of CQ with some fifty watts on 14 MHz brought in N6HL, AI7B and JA4HBP for his total activity. Now we turn to G3BDQ (Hastings) who had a holiday from amateur radio in London, and came back to spend time on the chicken-wire earth mat — John reckons that after a few days the grass grows through it and it disappears from sight! On Twenty, the following were worked on CW when not otherwise occupied: OD5PL, OD5LX, A92EN,
ON5OS/VS6, T77C, T77V, TAIE, T12CC, TG9VT, TR8DR, TR8AL, TV6JUN, UAA1OT (Franz Josef Land), UA0FF (Sakhalin Is.) for Zone 19, UD6A1, UL7RWE, UZ29CW, UZ202WB/UZ0 (again Zone 19), VE3KFE/4U, VE8RCS, VE6MCX/MM, VP2MDG, XT2BR, YB3CEV, YB0BZ, YB0TK, UII1TU, 5B4JE, 5B4SC, 5H3QM, 5NWBG, 5TSM, 6W1C, 9Y4NP, and GB05WR/MM ("Project Raleigh") in the "Pacific Off Peru".

G6QQ offers SSB to WB2QQW, KL7LF, W2NCH, plus in the All-Asia SSB Contest UV9FM, UL8A WA, JE5YRD, UZ1XWW, 4Z1AA, JA2YKA, UI1JC, 6W1PGB, JIF1SEK, and JA3YBF. On CW the takings included KU7N, W8OQY, W0UBT, JA7BE, and KA8OUT.

The list from G4XWO on this band is very long, so we will have to be a bit selective. John managed OD5AS, KE6HU, FW8AF, VE6AHR, VE7FEK, VE5AFY, UZ0A WB, VE7EY1, VK3BWD, VR6JR, KL7HP, VE8RCS, 9K2YA, C53EK, OAs, HZ1AB, AP2SQ, JY5CI, T32AB, ZB21B, A4XRS, W6TRN, VP2MDG, 8P6AW, C6AASt, C6ABP, 9T4LM, F08BI, JA5, and PS8ACI, ZL1AV, F08BI, W's, VE's including 6 and 7, SH3HM, ZS6GB, and plenty more.

**Top Band**

Twenty years ago this section would have been full of GDX reports, from the county chasers. This year, this month, all we have is a few reports and a copy of the Canadian Top Band News, thanks to Ivan Payne, VE3INQ, its editor. In truth, it shouldn't be called 'Canadian' because like the W1BB Bulletins of earlier years it is world-wide in its input and coverage. CBTN has a long piece on the subject of the 'DX Window' and the increasing tendency for people to ignore it; it concludes that we should all try and spread the word that the Window matters in terms of world-wide DX, if we believe in it — but it also makes clear that many people think that the advent of transceivers rendered the Window out-of-date. Personally the writer feels that the U.S. and Canadian types don't realise the problem — the Window allows EUs to transmit in a noisy bit of band (which is a quiet bit Stateside) and to listen for the W's on a quiet bit of band which is noisy to the W's. The implication is quite clear — to make simple operation the rule would almost certainly reduce the number of QSOs to DX for the W/VE brigade, and indeed for us too, without a material gain. What do you think? One has to say that the articles in the Canadian Top Band News are well written and well worth a sub to any keen Top Band operator. The address is: Ivan Payne, VE3INQ, Box 276, Station 'A' Weston, Ontario, Canada M9N 3M7.

For G3BDQ there has been some small activity on Top Band, by way of CW contacts with OZ1BYB, SM3DFD, SM3CWE, CT1NK, I2BVS/IB0, VE1ZZ, K1ZM, AA1K, K1ST, W3BGN, WA3EUL, and PY2DP.

Turning to G2HKK, we see Ted has kept up his SSB skeds with PAOPN, and on the CW side has kept things going with OL9CPG, RA3DVK, UA2FPO, and EI9J. Gotaways were Z21EV and ZS4PB, who were in and out of the noise at 2230z on June 28, on 1833 kHz; they worked a couple of them but were only barely audible to Ted, and he felt that he really only confirmed the call by listening to the Italian end.

**Eighty & Forty**

First customer here is G2NJ (Peterborough) and TOPS Hon. Sec. GW8WJ. They note that G3OLJ has returned to U.K. for the time being but returns to Seattle in October — so you should be able to work him in the TOPS nets. G2NJ missed out on ELOB5/MM to add to his /MM collection; this one was first heard when he was within sight of Liverpool, but was QRL, so Nick had to wait another chance. He was heard again while G2NJ and G5NX were out /M on the Hunts/Northants border, but when they stopped to change whips it was a very poor spot, so all G2NJ got for his pains was "SRI, QRM, Try agn'" — but a second try did no better either.

GW4RWH had a little paddle round in the 7 MHz band and, found the band in pretty good shape; the contacts included SSB to TG9NX, PJ3MV, ZP5CY, and CW to PY, HK, CP5EN, U9AFW, UA9QA, ZL4FYT, VE3ASA, ZP5VC, CO6ER, CO5P, OA4ASY, OA4JR, P13HBB, ZL3OE, VK3AE, and many Europeans.

There was just one 7 MHz contact in the G4XWO log, in the shape of UV9FM.

G3BDQ only operated Forty in the evenings, and his CW hooked PS7OS, LU4DQD, LU1ZAD (very far South), UA0AKQ, UA0ABL, UV9WV, RL7GDR, EA8QQ, VK2KM, and UH8AAC.

**New Bands**

Firstly, let's look at the G4UZN (Leeds) report; Tony found on 10 MHz, CT2FN, LU9CY, T12IP, V2AU, W5PGW, and 6Y5DZ. On 18 MHz, there were contacts with J28EI, LU1DOW, LU7ER, OA4ZV and 4X4WF, and on 24 MHz J28EI, LU1DOW, K5HK/MM near Gibraltar, W3GM and W2GDY. In his summary G4UZN notes that there was much European short skip about on 18 and 24 MHz, the more DX'y stuff reported being found during about three or four openings. For 10 MHz, the feeling was that the band was much down on the same period last year.

G4WVA (Cleobury Mortimer) notes that the advent of the W's on 24 MHz has already jacked up the activity. On July 2, he and GS5M in Newent, Glos., were on the band and in a one-hour period from 2300z worked W1XK, W5GEL, N4SU, W2GDY, and N4NO, all being pleased to work into the U.K. on this band. GS5M was using his TS-830S into a doublet, while G4WVA had an FT-101ZD into a G5RV. These two hunt the DX bands as a pair, with a two-metre link between them.

GW4RWH reckons 10 MHz was the star turn of the month; Barry worked fifteen U.S. States, and new ones in the way of countries included ZB2HS, OA4IU, and KP4EIH.

Our final reporter is G2HKU, who used his key to work W1JTD and J28EI.

**Conclusions**

Once again we have come to the bottom of the pile; please keep up the good work, especially on Ten and the new bands, and observe the 'activity weekend' on the latter — the first weekend of each month. Your reports for next time should reach us by the date shown in the 'box' in the body of the piece. The address, as ever, is "CDXN", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. See you all next month!
I am thrifty .... YOU are mean .... HE is an exorbitant miser ....

So goes one possible conjugation of the verb "To Save". Over many years in Short Wave Magazine I have suggested that it is possible to enjoy amateur radio without spending a lot of money. Well, it looks as if I have asked to put my pen where my mouth is .... Every other month, this feature will deal with some of the more practical ideas of our hobby. Over the years I have received a lot of feedback from S.W.M. readers and had ideas myself which hardly warrant a full blown constructional article. In future months I hope to be able to fill some Mag space with little circuits, tips, ideas and the odd complete constructional project. Little of it will be high technology but all of it will be appropriate to our hobby. I would like to hear from readers. Praise, moans, modifications, ideas, (gifts ... cheques ...), they are all welcome.

More Open-Wire Feeder Ideas

In the March 1985 issue of Short Wave Magazine I wrote about the advantages of using open-wire feeders for aerials. Perhaps that was unwise. I am not expert at much, and aerials are amongst that much, but the item was well received and I had quite a lot of letters on the subject. Among them were some describing various ways of making up suitable feeder line. I have used homemade open feeder line for some years and tried various techniques for making it. These days I live the easy life because I use commercial open feeder line which G4BUE and I smuggled out of Texas a couple of years ago. The classical way to make such feeder is to use 16 or 18 gauge hard drawn copper wire on beautifully worked wooden spacers that have been well soaked in paraffin wax; perhaps that is why more people do not use open-wire feeders. There are many much easier ways to make good feeder lines.

Fig. 1 shows a method of making feeder spacers suggested to me by Don Harris, G4LSB. Don uses lengths of the plastic slide binders sold by stationery suppliers. He cuts these into pieces about 2 3/4" long and then makes holes about 2" apart to accept the feed wires. The general appearance of the complete feed line is shown in Fig. 1A. A common problem in making spacers for feeder line is securing them to the lines, and Don has devised a very neat way of holding the wires securely. He uses the copper connection block from the centre of a strip connector block. The best type to use is that strip connector covered with a soft clear plastic. They are usually the cheapest types of connecting strip and available from DIY shops and chain stores.

• The flat edge of the section of slide binder, which becomes the top of the spacer, is drilled at either end so that the copper block will just slide into the hole. The pointed, open end is cut, in line with the hole, to a size to accept the feed wire; this is shown in Fig. 1(a). A small round file is ideal for this job. The copper connector can now be inserted into the larger hole and the two connector screws inserted, one inside the binder, one outside. The feed wire is easily threaded through the connector block and the small filed hole. Screwing up the connector screws holds the wire in place. Cheap PVC covered wire can be used for the feed line. In fact the screws bite into the plastic and give a very firm hold for the spacers. The purists might use thick copper wire as most of the connector blocks will accept 14 or 16 swg wire.

The slide binders should be easy to obtain from office suppliers and are quite inexpensive if bought in boxes of 10 or 100. Don quotes £6.50 for a box of 100 and 83p for a box of 10. A supplier is quoted at the end of this article. I think this is a very neat idea for making substantial feed line that ought to give years of service.

Shave and Save

Another good and cheap method of making open feeder spacers comes from Fred Simmons, G2FWJ. Fred must be rather less hirsute than me because he suggests collecting the plastic protectors used on BIC disposable razors. Well, for them as shaves a lot, it should be a good idea. Fred describes the protectors as orange in colour and slotted at the ends. They are strong but very light — about 15 of them weigh half an ounce. They can be

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**Fig. 1** G4LSB Spacers
G4LSB open feeder spacer, with connecting block used for securing the wire.

Dreadful ideas sometimes have a habit of working out well. I recalled reading somewhere that open feeder spaces could be made from sections of plastic drinking straws — and that did sound like a pretty dreadful idea to me! However one winter some years ago my aerial came down and a whole section of feeder was damaged. I was faced with making some new feeder quickly in foul weather. Open wire feeder making is usually a fair weather outdoor pursuit and I had neither the time nor the weather to make a new feed line in comfort. So I raided a box of plastic drinking straws and risked incurring the wrath of my two sons to get the feeder back in place.

The idea is as simple as it is dreadful and is illustrated in Fig. 2. The straws are cut into lengths of about $\frac{1}{2}$" and a slot about $\frac{1}{2}$" long is cut into both ends of the straw. The wires are pushed into these slots and secured with a staple at each end. The staple does not cut into the straw but rather crimps the ends closed. I used one of those little staplers which children seem to carry around in their school bags. It is important that the staple is well closed and is a tight fit against the wire. Sounds awful, doesn’t it? But with a reel of cheap PVC covered wire, a few straws and a little stapler I made up about 70 feet of feed wire. I expected it to fall apart at any time but in fact it survived four of the worst months that I can recall. The line was replaced when the weather improved but it was still as strong as when it was erected. I make no great claims for this method except that it is easy and cheap. It is surprising how strong and rigid these straws are in short lengths.

Commercial Spacers

In the article in March 1985 issue of Short Wave Magazine, I mentioned the very useful clip-on spacers available from G4OGP. These spacers are sold in a complete open-wire feeder kit and are made from ultra-violet stablised co-polymer polypropylene. The spaces are designed to snap onto the feed wires for a non-slip fit. Using cheap PVC covered wire, two spacings are available which give feed lines of 600 or 300 ohms. These spacers were available from TAU Systems but are now only available from ATU’s of UK Ltd., 63 Hallcroft, Birch Green, Skelmersdale, Lancs. WN8 6QB, (0695-27948). The aerial kit now comprises twenty clip-on spacers and a “tee” piece for £4.00 plus VAT and postage. The company will supply information for a large s.a.e.

What about My ATU?

Some people seem to object to changing over to open feeders on the grounds that their existing ATU will not match the transmitter to the feed line. They have visions of building a large ATU with open spaced plug-in coils for each band that requires lots of space and almost mystical knowledge to use. Although an ATU designed to match open feeders is preferable, I use a homemade Z-match and conventional ATUs (such as the common T-match or more recent SPC circuit) with open feeders. The ATU can be matched to the feeder by using a balun. Again some people assume that these are mysterious items or they need to spend money on buying one. In fact the balun is the easiest thing that a radio amateur can make. The textbooks are full of designs but here is the one I have used successfully between an ATU and open feeders.

The circuit is shown in Fig. 3(a). It is simply a trifilar wound coil on a piece of ferrite rod. The whole thing is very uncritical. It is just a case of taking three pieces of wire, twisting them together and winding them around the rod. I use 22 swg enamelled wire but...
BOOK REVIEW

"DIGEST OF HORIZONTAL WIRE AERIALS"

by Dennis Hoult, G400

reviewed by Rev. G. C. Dobbs, G3RJV

I HAVE said before that radio amateurs come in two types, some who have small gardens and moan about them and those who have small gardens and make the best use of what space they happen to have. The former tend to use short loaded verticals and spray RF weakly in all directions, or miniature beams and spray RF weakly, more or less, in one direction. The latter have a lot of fun playing with bits of wire and work some useful stuff on the bands without spending a lot of, if any, money.

The players with bits of wire also have to do some reading or looking up of aerial ideas to suit their needs and situation. The ideas are legion and the claims made by devotees of particular configurations of wire can often be little short of mystical. As G400 says, "Wire aerials are fascinating (and frustrating)!" Very few ideas are really new and this is one subject that can be profitably studied in the handbooks of yesteryear. Aerials seem to come and go with fashion irrespective of merit. Some of the half forgotten ideas are still as useful as they ever were and many just simply reappear in thin disguise. So where does the keen radio amateur with a back garden and reel of cheap wire turn?

Over the years many books have been published on wire aerials, although some of them seem to assume that the readers are landed gentry or take one theme, say the dipole, and exploit it to death with seemingly pointless variations. Other books assume a high order of technical knowledge and that the reader is "good at sums". What most of us really want are clear drawings, clear measurements and some brief idea of what can be done. Most of the time we have to plough through handbooks and old copies of radio magazines gleaning the useful information on what can fit our backyard.

One of the most thumbed books on my radio bookshelves is the first edition of Digest of Horizontal Wire Aerials by G400. The book was published (and almost bound!) by the Spalding Amateur Radio Society. I was bound to have a bias towards this book. I know them in Spalding, a grand lot of radio amateurs — almost family. Apart from that, Lincolnshire is my home county: a land flowing with milk and honey, Birds Eye peas and Smiths crisps. And Denny Hoult has been around for a long time, a fortunate man; living in God’s own county and practising amateur radio: the means of grace.

Even looking at it seriously, this is a good little book. Lots of ideas, simply drawn with measurements and very brief notes with source references for further reading if required. The book is full of aerials old and new from favourites like the G5RV to the under-rated T2FD and the seemingly forgotten G8ON All-Bander rub shoulders with a Chireix-Mesny "farmer’s delight". The book also contains a range of balun and ATU ideas. Perhaps these few ideas will further encourage the use of open feeders in HF band operation. Before I finish, one more ‘dreadful idea!’ Do you buy beer in the packs of six? No — then perhaps you buy soft drinks in ‘six’ packs. These packs usually come with a plastic holder to keep the cans together. These holders are made from oddly strong plastic and can be cut into three pieces, each of two holes, and used as aerial insulators. I told you it was a dreadful idea! But it does work . . . and it costs nothing.

Slide binders can be obtained from Copystat (Cardiff) Ltd., Norbury Road, Fairwater, Cardiff, CF5 3XQ. Tel: 0222 – 566133. Plastic slide binder, 7mm A4 size (297mm long), box of 10 (Cat. No. 09387), box of 100 (Cat. No. 09425).
The Oscillator

To make the set cover 160m, we have to add another crystal oscillator for the premix circuitry. This can either be built on a piece of Veroboard or PCB, or if the attenuator circuit is included and the marker removed it can be built in that part of the PCB. See Fig. 10.

To accomplish this remove Q3037, X3015, R3149, R3147, and C3134. Replace C3135 with a 0.01µF capacitor and move C3132 to holes 2 and 14 of Q3037. Snip off pin 2 of L1 (113KN2K241), taking care not to cut the wires attached to the base of this pin. With careful use of the miniature drill it is possible to fit this coil on to the PCB, utilising the holes of C3132 and C3134, and in so doing connect the track from pin 7 of J3003 to one side of the primary and secondary windings of L1. The other end of the primary connects to the collector of Q3036 and the unused output of the secondary is connected via a 1S1555 diode to the junction of R3142 and R3143. By drilling two holes in the PCB alongside Q3036 in the position of the old marker crystal it will be possible to fit the new crystal between the base and collector of Q3036.

Now drill two holes in the track from pin 7 J3003, cut the track between them and add a 100-ohm resistor. This has two functions, to limit the current in the case of a short in the oscillator and to provide filtering in conjunction with C3136 and C3132. Add a 220pF capacitor across pins 1 and 3 of L1 to enable it to resonate on 16 MHz.

Pin 7 of J3003 was the original marker supply pin, but is now used as the supply input for the new premix oscillator. The clear wire from the spare pin on the front wafer of the wavechange switch is shortened to the correct length and then connected to the insert.

When the rig was put back together the set burst into life (unexpectedly!). If however the oscillator does not start, rotate the core of L1 while watching the digital dial; as the oscillator starts the dial will read a frequency within the range 1.5 to 2.0 MHz depending on the setting of the tuning knob. With an aerial connected signals should be heard when the set is tuned over the band.

Tuning Up

This can be done without the aid of a signal generator but a good 50-ohm dummy load and a good SWR meter is a 'must'. Plug the dummy load into the aerial socket and apply power. Switch to 160m. and if the oscillator is running the display should read between 1.5 and 2.0 MHz depending upon the setting of the main tuning dial. Tune the set to 1.9 MHz, switch to CW, and push in the MOX button so putting the set on to transmit. With luck the SWR forward meter should indicate something as the carrier level is increased; if not investigate for faults. Now tune the oscillator filter, T1044 (T1051) and T1045 (T1052) for maximum output, reducing the drive to keep the output level to a few watts, so saving heat generation in the PA. If you now tune the main dial across the band rapid fluctuations in output power will be noticed, but do not touch the oscillator filter again — the passband is more than sufficient to cover 160 metres.

The next job is to tune the RF tuned circuits. First tune T1010 (not used on new PCB) with the main dial set to 1.9 MHz, and leave well alone. Now tune to 1.975 MHz and peak T1025 (T1016)
Some parts of the circuit are still energised, and (T1033) retune to 1825 and tune T1026 (T1032) and (T1017) for maximum output. If all is well as you tune across the band the output should peak at these two frequencies at a full 100 watts, dropping to a few watts on 1.9 MHz. It could be bypassed, but it does no harm so I left it in circuit. For those who have not yet delved into the inner sanctum of the LPF box but have ideas of including the new filter in there, forget it — it’s full!

There is only one other suitable place to position the LPF and that is directly behind the aerial socket where there is a one-inch square by two-inch long ‘hole’. Firstly build up the LPF (Fig. 12) and check for faults; now take a twelve-inch length of fine insulating wire and carefully solder it to pin 8 of J1003 having first removed the insert. Route this wire through the cableforms until it comes out in the loudspeaker well. To remove the PA box, undo the countersunk on the rear edge of the perforated screening box, place the set upside down on the table with the front of the set to the left and ease the PA heatsink from the set. Have no fear, the set is designed to come apart like this and there is plenty of freedom in the wires for it to do so. Look inside and note the positions of the various plugs and sockets in case these become unplugged while working on the set. Remove the coax from the SO259 and the wire from the 8V phono socket. Release the two fixing nuts and turn the two earthing lugs so they are positioned on the PA side of the sockets; these will be used to support the new LPF PCB. Reconnect the wire to the 8V phono socket.

Solder the groundplane of the LPF board to these lugs to hold it firmly in position, the angle it sits at is unimportant providing it goes back in the box! One side of the relay coil is connected to the wire from pin 7 of J3003 and the other side is connected, via a 22-ohm resistor, to ground. The other two connections on the PCB are filter ‘in’ and ‘out’, and these are interchangeable. One is connected to the centre pin of the SO259 and the other to the inner of the coax which was removed from the SO259; the braid is connected to the groundplane of the LPF board.

If the power is connected and the wavechange switch rotated, the relay will operate in the 160m position so connecting the LPF in circuit; in other switch positions the filter is bypassed.

**Retuning the 10m. and 12m. Bands**

Switch to the 12m. band and tune to 24.7 MHz; switch to CW and turn the drive to zero. Connect a dummy load to the aerial socket, push the MOX button and advance the drive until the SWR bridge shows about five watts; two LEDs are illuminated. Tune T1041 (T1047) for maximum; now peak T1021 (T1013 and T1029), reducing the drive as you go to keep the power below 10 watts (only two or three LEDs alight). Now tune the set to 28 MHz and tune T1008 for maximum output; if the set is now tuned over the bands 12, 10A, 10B, 10C, and 10D, the drive should be reasonably constant. If it isn’t it is permissible to try different combinations, or different frequencies to get it within reasonable limits.

It may be that the digital dial reads incorrectly, this is due to the coupling being insufficient between T1040 (T1047) and T1041 (T1048); this can be remedied by reducing C1107 (C1149) to 27 or 33pF.

To all intents and purposes the set is now functioning on 160 metres but is is fairly antisocial to use it in this condition. There is no filtering on the output and harmonics would be radiated which would be especially annoying to locals on 80 metres.

The original low pass filtering is still energised by the original wiring, but it offers no assistance as it has a cut-off frequency in excess of 30 MHz. It could be bypassed, but it does no harm so I decided to leave it in circuit. For those who have not yet delved...
SO far we have considered resonant antennas of the vertical and dipole type and have discussed how to shorten them by use of inductive loading and looked at ways of 'bending' them in order to fit them into the available space. Because the types discussed so far rely on a feeder to conduct RF from the transmitter to the antenna, it has been necessary to resonate the device in order to have an acceptable VSWR on the feeder, and in terms of multiband operation this can sometimes pose problems, since it is not always easy to erect and lower an antenna several times in order to make adjustments. Also, there are few multiband antennas which will fit into a confined space and give a low VSWR on several bands. It is often convenient, therefore, to have the antenna feedpoint in the shack itself, since we are then in a position to resonate the device on any frequency by the use of inductance or capacitance, or both. An end-fed wire antenna is obviously one which has its feedpoint in the shack, and is also able to be erected in any one of an infinite number of configurations in order to accommodate it in a restricted site.

End-Fed Wire Antennas

In many ways end-fed wires are the simplest of all antennas and most of us have used one at some time or another, even if only for reception — indeed many listeners never use any other device. However, there are pitfalls, and many a short wave listener, on obtaining his transmitting licence and attempting to use his "old faithful" wire with which he had heard 200-plus countries, has found that the use of such antennas for transmitting purposes tends to show up several weaknesses that were not evident whilst receiving only.

The first point to be considered is that the current antinode(s) on a wire antenna will be in different positions depending on frequency of operation, and, since these are the areas from which maximum radiation takes place (and maximum signal pick up during reception), it is important that they are in a portion of the wire that is not badly screened by surrounding structures on a restricted site. For a given length of wire operating at a given frequency, these antinodes cannot be moved and will always be a quarter-wave from the ‘non-fed’ end of the wire and at odd multiples of quarter waves for wires that are sufficiently long to have more than one current antinode.

In order to visualise the situation, Fig. 1 shows the current distribution on a wire 66ft. in length when used on 3.5, 7, 14, 21 and 28 MHz, and it will be seen that although there are many areas of the wire when a current antinode will appear on more than one band, there is no point at which the current is at a maximum on all five bands. When the new bands at 10, 18 and 25 MHz are considered, the situation becomes even more complex. From Fig. 1 we can see, for example, that if we have a 66ft. wire with its centre at the highest point and in the least screened position, it will be ideally situated for the 7 and 21 MHz bands since current antinodes occur in the centre of the wire at these frequencies; but on 14 and 28 MHz, this point is at a voltage antinode which is a point of minimum radiation. On 3.5 MHz the current will be at about 70% of its maximum value, which is not an ideal situation. (However, it must be remembered that with any quarter-wave end-fed wire, the current antinode is at the feed point.)

It is apparent from these observations that there is no siting for such a wire that is ideal for all five bands and, since we are talking of restricted sites, it is likely that the operator will need to decide on his favourite band(s) and arrange the layout of the wire with the position of the current antinodes in mind. This however is the crux of the matter — how do we reposition the current antinode for a favourite band on a restricted site, where only one physical placement of the wire is possible? The following methods are put forward as being viable even on restricted sites:

(a) The use of inductive loading at the non-fed end of the wire.
(b) The use of the 'bending' technique coupled with a lengthening of the wire.
(c) The use of a relay to switch extra lengths of wire or coils (or both) in and out of circuit at the non-fed end of the wire.
(d) The use of traps.

Considering inductive loading first, let us look at the layout shown in Fig. 2 and assume that we are contemplating 7 MHz operation. The gap between the only two support points is such that the current antinode occurs in the section of wire running vertically down the building in which the shack is housed — i.e. 33ft. from the far end of the wire — whereas we need the antinode to appear in the clear area between the two support points. The current antinode on a single wire antenna always occurs a quarter-wave from its end, so what we are attempting to do is to arrange things so that the coil plus half of the wire between the supports (i.e. 12.5ft.) becomes electrically a quarter-wave in length.

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**Fig. 1.** Current distribution on a 66ft end fed wire when operated on different frequencies.

NB: Antenna is fed from left hand side
Because, as we said in Part 1 of this series, there are problems with end loading a wire, we would not position the coil at the extreme end of the wire but bring it back a little way from the end. In order to use the table of inductances given in Part 1, we can consider just the 12.5ft. of wire at the extreme end, and place the loading coil in the centre of this — i.e. about 6 to 6.5ft. from the end. Loading 12.5ft. of wire to a quarter-wave on 7 MHz means that the wire is about 38% of full size, so, from the table in Part 1, we can see that we will need an inductance of about 30 µH.

The antenna will now take the form shown in Fig. 3, and on 7 MHz the current antinode will appear in the centre of the 25ft. of wire between the two support points, and performance of the antenna on 7 MHz will be vastly superior to that of the ‘unmodified’ wire shown in Fig. 2. Note, however, that we have repositioned the current antinodes on every other band as well, and this may well lead to a deterioration of performance on one or more of these bands — or an improvement!

By referring back to Fig. 1 and considering the current that exists on an ‘unmodified’ wire at a distance 12.5ft. from its far end (right hand end in the diagram), we can see the effect that the coil has had. For example, on 3.5 MHz we will have increased the current slightly and made a marginal improvement, although the difference is unlikely to be discernible whilst operating. On 14 MHz we had a current antinode on the unscreened portion of the wire prior to adding the coil, and the effect of adding the 30 µH inductance will be to move the antinode towards the outer end, and it will probably be within the coil itself — not a healthy situation. Similarly, on 21 MHz we will degrade the situation since we had a current antinode in the clear on the unmodified wire. On 28 MHz the situation is not so easy to compute, but we will put one current antinode into the coil itself and probably move the second antinode out into the clear — 28 MHz performance will probably not change much and may well go unnoticed in operation.

It is difficult to accurately assess where the current antinodes will appear on all of the bands since the effect of the inductance varies with frequency and with the position in the RF cycle that it occupies.

By using the technique of extending the length of the wire (some authors have referred to the technique as ‘linear loading’) the situation becomes far more predictable, and Fig. 4(a) shows the antenna discussed before to which an extra length of wire has been attached. Looking at 7 MHz again, in order to get a current antinode into the centre of the unscreened section of the wire, we need to have a quarter-wave (33ft.) between this point and the far end of the antenna — the wire therefore needs to be extended by about 20.5ft. (33ft. minus 12.5ft.). Should the support point be less than 20ft. from the ground, it may be necessary to bend the wire in order to accommodate it and Fig. 4(b) shows a convenient method. Note that high RF voltages will appear at the end of the wire and, since it is being brought down to an accessible position, it must be well insulated in the interests of safety. By using this linear loading technique it is possible to get a much clearer idea of the current distribution on the antenna, and since the mid point of the unscreened, horizontal section of the wire is now 33ft. from the far end, Fig. 1 can be used to assess the situation at this point on all five bands. It will be noted that on 14 and 28 MHz the situation is now poor in that we have minimum current at this point, but on 21 MHz an antinode occurs. On 3.5 MHz the situation will have been improved slightly but, as with inductive loading, it is doubtful whether a large improvement will be noted whilst operating.

It will have been gathered that, with both inductive and linear loading in the examples given, we have improved the antenna’s performance on some bands, but worsened the situation on others and it is clear that if we are to arrive at an ideal situation where we have a current antinode in the centre of the unscreened section of wire on all five bands, the degree of loading (whether inductive or linear) needs to be different for different bands. Looking at the example above for linear loading, we can see that the 20ft. or so of wire added to the antenna improved the situation on both 7 and 21 MHz, but degraded it on 14 and 28 MHz. By adding different lengths of wire we could improve performance on all of these bands, but in practice it will be found that if we use a single-pole changeover relay it will be a simple procedure to switch between the extra 20ft discussed in the example quoted above, and another length also connected to the relay. There is no way of putting a current antinode into the exact centre for both 14 and 28 MHz with a single wire, but a good compromise will result if we use a length of about 10ft. — making the centre of the horizontal section about 20ft. from the antenna’s end. From Fig. 1 it will be seen that a 28 MHz current antinode will occur at a distance of about 2ft. from the centre of this section, whilst on 14 MHz the antinode will be 6ft. from the centre. This would be a good compromise and Fig. 5 shows the positioning of the relay and the antenna’s wires. Again, it should be arranged that the relay’s coil...
is not energised when the most frequently used loading wire is in
 circuit in order to place as light a duty as possible on the relay coil.

It is obvious that a relay could also be used to switch different
values of inductance into the outer portion of the wire but, since
the principles are similar to those just considered, a detailed
discussion of this technique is unnecessary.

A disadvantage of the use of a relay is the fact that a wire has to
be provided to carry the DC necessary to energise its coil and this
could be a problem on some restricted sites. There is also the
requirement to switch on the DC supply and check that the relay is
in the correct position for the band in use, although this is hardly a
major problem. However, by using traps we have a system in
which additional portions of an antenna are automatically
'switched' into circuit and this approach to multiband antenna
design has much to commend it, provided that we accept the
inherent losses that a trap can introduce. Let us assume that we are
contemplating the use of 14, 21 and 28 MHz bands, and that we
are still using the layout shown in Fig. 2. By using a 28 MHz trap
and a 21 MHz trap, we can arrange that we will have a current
antinode at the centre point of the horizontal section of the wire
on all three bands, the essential details being depicted in Fig. 6. It
will be noted from the diagram that the end 12 ft. or so of the wire
will be identical to one half of a 14/21/28 MHz trapped dipole,
and since such an antenna has a current antinode at its feedpoint
on all three bands, the reasoning behind the trapped wire in Fig. 6
should be clear.

It is not suggested that the examples given above will suit all
locations; however, it is hoped that the reader will have learned
sufficient to enable him to erect an antenna at his particular
location and, more important, be able to ensure that the
antenna's area of maximum current is in a clear, unscreened part
of the site.

Feeding the End-Fed Wire

A common reason for poor operation of an end-fed wire
antenna is the failure of the operator to couple it to the transmitter
in an efficient manner, and it is felt that information on the
subject of feeding is an essential part of a discussion on antennas
of this type.

The 66ft. of wire depicted in Fig. 1 is near resonance on all five
bands 3.5, 7, 14, 21 and 28 MHz, and although the impedance at
its feedpoint will vary considerably, it will present a substantially
resistive load to the transmitter — levels of reactance present
being small. (Due to 'end effects' it is not possible to have a single
wire that is exactly resonant on all five bands, so a small amount of
reactance must be present on some bands). Such a device is
relatively easy to feed, and the method of matching is shown in
Fig. 7. Fig. 7(a) is a matching unit for high impedance wires, i.e.
those whose lengths are multiples of half waves, whilst Fig. 7(b)
is for low impedance wires, being those which are odd multiples of
quarter waves in length. For a 66ft. end-fed wire therefore, the
unit in 7(a) is suitable for 7, 14, 21 and 28 MHz, whilst the layout
of 7(b) will be required for 3.5 MHz. As a general rule-of-thumb,
the value of capacitance should be around 1 or 2 pF per metre of
wavelength — for example between 15 and 30 pF on the 21 MHz
band — and in practice it will be found convenient to have two
separate tuners; one for the low frequency bands 1.8, 3.5 and
7 MHz, and one for 14, 21 and 28 MHz. The reason for this is that
if we have a single tuner to cover from 1.8 to 28 MHz, the coil and
capacitor will need to be large to cope with the lowest frequency
and it may be found that tuning becomes very 'sharp' and critical
on 28 MHz and possible also on 21 MHz. In addition, some large
value variable capacitors (we require about 250 pF for 1.8 MHz)
have a high minimum value due to the stray capacitance that is
always present, and it may well be found that this minimum value
is too high to enable us to obtain a suitable L:C ratio when using
the tuner on 28 MHz. It is easy to switch a tuner unit in order to
rapidly convert it from series to parallel operation (to suit low or
high impedance wires), although with a 66ft. wire a tuner for the
three highest bands will not need to be switchable as the wire will
have a high feed impedance on 14, 21 and 28 MHz.

If the 66ft. wire is used on the new 10, 18 and 25 MHz bands, or
if a non-resonant wire is used (and this includes the examples
quoted above where a 66ft. wire is made non-resonant by the
addition of coils or traps), we now have the additional
requirement of tuning out large amounts of reactance in addition
to matching the impedance to our transmitter, and the simple
tuning units described above may not prove suitable. We have,
therefore, to provide a more complex tuning unit, but since many
examples have been published it is not intended to go into great
detail in this discussion; however the device shown in Fig. 8(a)
has been used extensively at G3XAP and has been found to cope
effectively with a large number of different lengths of wire. The
two capacitors should be about 100 pF if an HF band unit is used,
and up to about 250 or 300 pF for the lower bands, whilst the coil
could consist of up to 50 turns of tinned copper wire on a grooved
1½ to 2 inch former. The coil taps can consist of small lengths of
wire soldered onto the coil itself, and this is shown in detail in Fig.
8(b). If an SWR bridge is inserted between the matching unit and
the transmitter, the system is simply adjusted for minimum, preferably nil, reflected power, but much trial and error may be necessary to find the appropriate coil tappings and capacitor settings. Once a suitable combination of settings has been found for each band, they should be noted, thus enabling the system to be quickly set up when changing bands.

We must now consider the manner in which power is fed to the antenna — the input from the transmitter is an AC supply, and there is an important condition to be met if we are to achieve an efficient system, namely an earth return. When we feed a dipole, for example, the currents in the two conductors of the feeder are travelling in opposite directions, i.e. one half of the dipole is 'working against' the other. In order to visualise this situation, it is convenient to consider the current as flowing from the end of one half of the dipole to the centre, down one conductor of the feeder, through the transmitter’s output circuits, up the other conductor of the feeder and then out to the end of the second half of the antenna. This continues for one half of the AC cycle; during the other half cycle the same thing happens, but the flow is in the opposite direction. An end-fed wire is a ‘single ended’ device, and in order for current to flow into it (and out of it for half of the time) we must provide another path for the flow of current — i.e. an earth.

There is a tendency to think of a high impedance end-fed antenna (i.e. multiples of a half-wave in length) as not requiring an efficient ground system, the argument usually taking the form that since the current at the feed point is extremely low, there is not the requirement for an earth return circuit. This would be true if we were able to couple the RF directly into the end of the wire but in practice, since we have to transform the impedance down to a low value to suit the transmitter/receiver, we still have the need to provide an earth return. The author has found that one of the most effective methods of providing an earth for an end-fed wire is to install a quarter-wave of wire, this often being referred to as a 'counterpoise'. In practice this wire does not need to be run in a straight line, but can follow the contours of the site — even running round the skirting board of the shack if necessary. It must be borne in mind, however, that these devices do radiate and some thought must be given to their siting if we are to avoid getting RF into such areas as household wiring — the consequences of which are obvious! Clearly, if the AC supply to sockets, etc., is known to run round the walls of a room, it would be unwise to run a counterpoise around the skirting board in a manner that puts it close and parallel to the mains wiring. A separate wire should be run for each band that is to be used and it should be cut about 5% longer than the length of a quarter-wave antenna since their proximity to other objects detunes them by about that amount. A suitable formula for calculating their lengths is:

\[ L = \frac{246}{f} \]

where \( L \) = length (ft.) and \( f \) = frequency (MHz)

The purist may care to couple a grid dip meter to the end of each radial in turn and prune it until it resonates in the middle of the required band — the author has not found this to give noticeably superior results. Fig. 9 shows the layout of the end-fed wire with counterpoise earth system; note that a direct electrical connection is required between the Tx/Rx and the earth. This is normally provided by the screen of the coaxial feeder connecting the ATU/SWR bridge/Tx, but a stout wire run directly from the transmitter to the earth system is a sensible precaution.

Provided that one is able to couple into the wire and ensure that the section of wire carrying a current antinode is not in a badly screened area, end-fed wires provide one of the most versatile methods of getting an efficient antenna on to a restricted site and the author would urge those readers who have not had success with these devices to give it another go — using the suggestions discussed above.

The final article in this series will discuss ‘invisible’ antennas and may well appeal to those amateurs who live in areas where local regulations prohibit the erection of any antenna. Such a restriction is about the most severe to overcome, yet there are ‘ways and means’!
Amateur Radio Computing

A New Regular Bi-monthly Feature for All Those with a Radio Station and a Computer

PAUL NEWMAN, G4INP

I was delighted when Paul, G3KFE, asked me to write for Short Wave Magazine and I look forward to this page being a focus of lively and interesting activity in this important aspect of amateur radio. I was first approached after Paul had seen a Sinclair Amateur Radio User Group newsletter, which I edit and co-ordinate. SARUG members provide many stimulating ideas and comments and this column will sometimes reflect this so I take this opportunity of thanking them.

To balance the content of this column we have decided to invite Richard Butcher G4NWH, the co-ordinator of RAMTOP (the non-Sinclair amateur radio user group), to provide alternate articles in this series, to give a wider choice of material from which you can develop your own ideas.

And now to this months topic: what to do with that micro (apart from play games!).

The first thought that occurs to most is the ease with which micros handle data modes like RTTY, SSTV, FAX, Packet, Amtor, Helleschreiber, etc. These are undoubtedly important, but I don't want to concentrate on them yet because the micro brings us more power than just mode changing. Let's see how we can use it! I want to start by telling you about a program which recently came my way.

"WOTSON", written by John, GM4IHJ, predicts HF propagation using the MINIMUF algorithms¹ on the Spectrum. Using the daily Sunspot number² it predicts the probability of propagation into chosen countries at known times without further knowledge of HF propagation.

Depending on your activities, the advantages of this are obvious, but generally it means you can select a time and band for greatest chance of successful contacts with a chosen prefix. Serious students of HF propagation should consider Johns' CAPS (Computer Aided Propagation Study) program (Spectrum). WOTSON is only available on the Spectrum.

For LF users (160m. and 80m.) TWILIGHT-DX³ calculates the "twilight zone" (grey-line) across which the LF bands tend to propagate to advantage. Twilight positions over targets, over home, 'twixt target and home all influence the probability of contacts and may be studied using this program.

MINIMUF programs for various micros have been published in a variety of sources. Further programs in this least-understood aspect of amateur radio will help to increase our understanding of the subject.

My second example concerns circuit simulation and analysis, ranging from calculation of series/parallel resistance/capacitance circuits to transistor stage-gains and full circuit analysis. Think how useful it would be if you could input the details of a circuit and obtain indications of how it would work! This is possible and two Spectrum programs have passed through my hands.

"LINNET"¹⁴ uses graphics to draw your circuit on the screen with a moving cursor. Once completed, the circuit is activated and analysed. Error conditions are flagged. I did not find this program easy to use; nor does it give numerical output.

LINEAR NETWORK ANALYSIS² is a professional program costing over £25.00 which performs linear network analysis on many kinds of circuit. Despite its limitations this is a valuable tool since it does calculations which are terrifyingly complex longhand! With very little knowledge it is possible to design circuits to required characteristics and be sure of the outcome. I believe this program is available for Spectrum, BBC and Commodore 64.

Satellite orbit information is essential for more effective satellite use since you can get information which is not given by published orbit data. Knowing a satellite's DX "footprint" saves needless calling when seeking specific countries. The calculation of Oscar-10 'squint angle' will become vital for successful operation during 1985 and 1986.

Here, we are using the micro for calculations that would stop 99% of us if we had to do them longhand. The computer also puts a 'user-friendly' interface between an unskilled user and some very complex mathematical and simulation techniques, from which otherwise would require considerable knowledge to derive any information. A prime example of this is WOTSON. Programs like these will have an important effect on our hobby; used properly, they will enhance activity in many areas. If you have a Spectrum, information on WOTSON and satellite programs will be sent in reply to SARUG enquiries. Let's look briefly at a couple of less mathematical areas where the micro can help us.

Contest operation can be made more efficient in several ways. Not only can distances and consequent scores be calculated (here we go again — number crunching!) but duplicate or near-duplicate contacts can be spotted faster than a manual system. In the U.S.A., one contest station had dupe-checking and rotor-control running for 24 hours non-stop on a ZX81 run from a car-battery! There's faith for you! Dupe-checking programs have been written for BBC, Dragon, Commodore and Spectrum, and have been published in several sources.

And lastly, there have probably been more Morse tutor programs written than any other kind. They illustrate another interesting area — that of computer-aided learning. This aspect has not been explored very much so far, although I hope this will not remain so for long. I hope that we may be able to publish program ideas in this area at a later date.

That concludes our first brief look at some of the possibilities before us. Whatever your level of interest we hope you will find something in these columns to enhance your amateur radio activity.

Our lines of communication are via Short Wave Magazine at their usual address and we welcome comments, ideas and opinions. Please mark envelope clearly "Computing" to distinguish it from other mail. It will help if you add your computer type if your letter contains specific information — e.g. "Computers/Commodore 64". If you want details of the respective user-group please mark "SARUG" or "RAMTOP"; a stamped addressed envelope is essential. Please don't ask us to recommend equipment or design programs. The mention of a particular program on a particular micro does not necessarily mean it's available for other micros, although we will always try to indicate if this is so.

References:
¹ Radio Communication, March 1973
² WWV transmissions on 10, 15 and 20 MHz at 18 minutes after each hour (UTC). GB2RS transmissions, Sundays 3.650 MHz 145.525 MHz. Daily recorded announcements on 010 1 303 497 3235 (Denver, U.S.A.).
³ Qualtech, 2 Brickenhole Lane, Walkeringham, Doncaster, S. Yorks DN10 4HX
⁴ Spectre Software, 119 Richmond Road, Montpelier, Bristol BS6 5EP.
⁵ Number One Systems, 9A Crown Street, Huntingdon, Cambs.
RUOMOURS that USSR stations would be sending serial numbers rather than oblasts during this year’s CQ-M Contest in May turned out to be true. Thus there was no easy short-cut route to identifying new oblasts. Despite the poor conditions, several Oblast Table entrants found a few new ones during the contest. Dave, BRS 25429, reports hearing 52 oblasts during CQ-M.

**Two-Letter Calls**

To help identify some of those two letter calls, Geoff Watts has added a second page to his useful Oblast List. Geoff’s new list costs just 35p (or 2 IRCs from overseas) and can be obtained by writing directly to Geoff at 62, Belmore Road, Norwich, Norfolk, NR7 0PU. Having Geoff’s list at your elbow while searching the bands is a great help.

**USSR Stations: How Many are There?**

A report in the March ’85 edition of Radio on the USSR’s Federation of Radio Sport December 1984 meeting, mentions that there are over 100,000 HF and VHF amateurs in the USSR. The annual increase in recent years is given as around 4100 as that there are over 100,000 HF and VHF amateurs in the USSR. The report also makes mention of a total of some 1300 radiosport clubs in the USSR.

An article in the same magazine by UW3AX on QSL-ing reminds USSR stations that QSLs should always show the oblast number (good news for oblast chasers!) as well as the ITU and WAZ zone. Apparently “QSL cards for completed contacts” can be posted to the outgoing QSL bureau for free.

**FJL On-Air**

UW3HY/1 has been active from Franz Josef Land, and is reported to be returning to his home QTH in Moscow in July to start work on the large pile of QSLs awaiting him! On CW UW3HY/1’s fast operating style and keen ears make FJL an easy one to work when he’s around. Other active FJL stations are RZIOWA and RA1OT. But note that not all ‘10’ calls are FJL, one to work when he’s around. Other active FJL stations are UW3HY/1’s fast operating style and keen ears make FJL an easy start work on the large pile of QSLs awaiting him! On CW

**New Calls Explained**

In a recent article in CQ Magazine, UV3GM explained the new USSR callsign system. Although most of the details given in the CQ article have already appeared either in “Oblast Corner” or in the USSR oblast articles in the April and August 1984 issues of S.W.M., there were a couple of interesting snippets.

UV3GM notes that the main purpose of the callsign changes was not only to increase callsign capacity, but also to improve the identification of the administrative units. These administrative units are the autonomous regions, autonomous okrugs, krays and oblasts of the USSR. UV3GM points out that most of them have their local offices which issue amateur licences on behalf of the Ministry of Communications. Although in reality they bear many different names, for amateur radio purposes and the R-100-0 award, they are all referred to as ‘oblasts’.

The use of new figures in callsigns will be following a logical pattern. With the new callsign system it is only in the RSFSR that the figure plays a significant role as a geographical identifier (e.g. U-4P:Oblast 094 is not the same as U-3P:Oblast 160, but both are in the RSFSR). In republics other than the RSFSR it has been recommended that new callsigns be issued in a pattern based on the “habitual” call-area number. UV3GM says that for European republics (e.g. UP, UQ, UR, etc) the pattern is “down to 1 then up to 0”’. Whereas for Asian republics it is “up to 0 then down to 1”. This is illustrated by the figures used in some recently heard new club calls such as UZ1BW (UP2), R18PYL (UL7) and UM9MWA (UM8).

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**Table 1.** The ‘Oblast Worked/Heard’ table this month has been split into separate sections for SWLs and transmitting amateurs. Send your entries to G3TXF by 20th August for October issue.
Permanent Special Calls

UV3GM mentions that the old club prefix (UK) is not totally abolished under the new callsign structure. There are a handful of permanent special calls such as UK3A, UK3B and UK3F which are used by the Central Radio Club in Moscow.

The Russian magazine Radio has the call UK3R and a youth newspaper has UK3KP. The RS-Satellite Command Centre in Moscow uses RS3A and the Artek young pioneers in Crimea (Obl 067), which used to be U5ARTEK, are now U5A.

Awards: “Victory 40” etc

Several contributors report working the necessary number (40) of special E stations and ‘/R’ stations for the Victory 40 award and some claims have already been posted in. It will be interesting to see how long the awards take to come through!

On the subject of award turn-around times, Dick, G4URA, writes that his R-6-K award application took ‘eleven months from sending it to Box 88 to the Post Office asking me to sign for it!’ Bill, G8KP, has an impressive stack of USSR awards all of which have been received “without costing a single IRC”.

Oblasts on 160m

The opening up of 160 metres to USSR stations has given a new challenge to oblast chasing. Tony Hayton, G-14386, reports having heard 108 oblasts on 160m. since 1973 including six UAO oblasts and the now deleted Antarctic oblast 172. John, G3BDQ, also notes that a lot of his new ones are on 160m. Chasing oblasts on 160m. is the hard way of doing it!

HF Convention

The RSGB’s HF Convention is being held on Sunday 29th September at the Belfry Hotel, Milton Common, some 8 miles east of Oxford. The Convention programme is designed for all those interested in HF operating. Whether you are an SWL, a relatively newly licenced HF'er or an old-time DX hound, this is an event not to be missed!

Table Entries

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

Many thanks to K1KI (USSR Tidbits), IARU/ARRL, CQ Magazine, and W4KM (translations from Radio) for items extracted. Good hunting es DSW!

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**“Practically Yours”**

*with GLEN ROSS, G8MWR*

**ONE** of the problems that besets the average home constructor is the lack of suitable signal sources for the higher frequency bands. Good signal generators going up to, say, 2 GHz tend to be expensive even on the surplus market, and a cheaper alternative has to be found which can be relied upon to give predictable results.

![Signal Generator Circuit](image-url)
enhance the stability; the supply voltage to the oscillator is
above, so as to put a signal into the bottom end of the bands. To
place crystal controlled oscillator running at 48 MHz, or perhaps a little
cheaper. See Fig. 1. The basic stability is achieved by the use of a
several bands.

would also be useful if the signal could be made available on
enough not to need elaborate attenuators for the final tweaking. It
is way out of tune when connected directly to it, and yet low
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Moonbounce on a Budget

DICK PASCOE, G1DGO

I have wanted to have a go at moonbounce ever since I first heard about it, so when I suggested it to Paul, G4DCV, he grabbed at the chance to “have a go”. All the critics say that it takes very high power and a special station to work off the moon. Well, we managed 3½ contacts over the contest weekend last year, using just ‘modest equipment’.

The antennas used were 4 x 19-ele MET’s in a box array about 3m. agl, so low that at 50° elevation the reflectors touched the ground. But apart from convincing the neighbours that they were only up for the weekend we had little trouble, except for the el-az. The box was on a single scaffold pole with another on a swivel joint making a blackboard type joint to support it. The whole lot held up by bits of rope, string, tape and gum, all attached to trees and posts in the garden. Tracking the moon was to be the main problem, so into the computer went the program and out came the compass and protractor. But, lo and behold, the sun shone all day and we had clear blue skies and were able to track visually. At last everything was ready so we switched on and tested for our own echo. We couldn’t hear it but by scanning about we did hear a few other stations; most were very weak, the strongest just lifting the needle off the stop.

The Saturday was generally a day of hunt and seek, even a visit from G3ROO failed to raise a contact; so we spent the day listening and learning.

At last the moon sank behind the surrounding houses and whilst we felt that it was very disappointing we still had heard several stations. Roll on Sunday... As usual Paul overslept, but after a quick phone call he dashed over just in time for the sun to break free of the clouds and for me to aim the antennas again. But this time we could hear very clearly a ‘K’ again and again — was this really our own echo? A quick check and, yes, it was, so we tuned around and there was one of the stronger stations, only a YU but worth a try, and he was calling CQ. Much to our surprise he answered our call straight away and after only 8 minutes we had our first moonbounce contact completed. The stunned look and huge grin on Paul’s face said it all. Now—who’s next!

Over all we worked another two confirmed contacts and one we think confirmed, though we’re not certain. First was K1 WHS and he was the difficult one: we think he gave us RRRRRRR but we’re not absolutely certain. Next was WA1JXN with a nice signal and we managed to complete in only six minutes for an easy one. The last contact at 1240 was KB8RQ; this took a lot longer to complete but if his comments were anything to go by, he was a little bit more pleased than we were with lots of 73’s and “Fine Business”, etc. Perhaps it was his first try too!

The station itself deserves a brief description. The antennas I have already mentioned, but the power splitter was a new one, first off the production line from MET Antennas of St. Margaret’s and it worked well.

At the antennas we had both a pre-amp and a Tx/Rx splitting relay. We used Heliax as the Tx feeder and UR67 from the pre-amp as the Rx feeder; relay and pre-amp power was fed by RG58 coax as this was screened. So we had four cables into the shack.

My QTH is in Folkestone and I do have a clear takeoff southwards from east to west with 300ft. of chalk to the north. The Tx was the famous FT-221R with a muTek front-end driving a 4CX250-based amplifier. The Rx was both the FT-221R and also a Trio 515 with converter to 28 MHz; we also had a filter in line.

The GasFet pre-amp at the antennas worked very well and we heard in all a total of 15 stations, including of course ourselves.

"I expect you'll be getting some QSB on me..."
This all may sound like a massive station, but by moonbounce standards we were a small, very small — almost QRP-station. Miracles still happen!

As for problems, well when beaming east or west the antennas overhung the neighbour’s gardens and on a couple of occasions I thought the lot would all fall down in an expensive heap. Signals often dropped into the noise level and made it very difficult to hear.

Was it worth all the hassle, you may ask—all the problems, putting up (and taking down) the antennas, putting together the station, spending 10 hours on the rig for just 3½ contacts? Yes — it was worth all the aggro.

Would I do it again? Yes, but let me get my ‘A’ licence first, please!

Stations Heard; K1WHS, WA1JXN, DL2OM, SM4GVF, KB8RQ, W5UN, SM2GGF, K5GW, WA6MGZ, KB8WW, G4FUF, G3POI, PA2VST, YU3WV and, of course, G4DCV.

Stations Worked: YU3WV, WA1JXN, KB8RQ, maybe K1WHS.
VHF BANDS

THE main headlines this month concern the forthcoming release of the 6m. band, a record-breaking 23cm. QSO between G and EA8 and further E-layer DX openings.

Six Metres

June 28, 1985 was an historic day for U.K. VHF operators. In the House of Commons, Mr. Geoffrey Pattie, Minister of State for Industry and Information Technology, made a statement concerning the future planning of Bands 1 and 3. Part of this statement was:- "... I am conscious that the interim Merriman Report recommended that the radio amateur service should be given an allocation in the band — i.e. band one — and I am therefore proposing to fulfil that recommendation by allocating the band 50 to 50.5 MHz to radio amateurs."

Behind that simple statement lies years of hard work by the RSGB which has resulted in the U.K. becoming the first country in Europe to grant its radio amateurs a 50 MHz band. The RSGB has had an initial contact with the DTI and at subsequent meetings, the "nuts and bolts" of the forthcoming release of the band were featured. Sir George Frank, the then President of the RSGB, was a frequent visitor to the Construct queue and if anyone needs W. Yorks., he is QTHR. G4PS5 is now QRV from Tyne and Wear and Stephen gives his 'phone no. as 091-4822025 and Prestel Mailbox as 91999354.

G4VOZ reports on the intense Es from Eastern Europe in early June and the operation of ZB2VHF on several days, both morning and evening, just below 70.125 MHz. John enthused over the Lundy Island operation, GB2LIE, which had to cope with appalling weather and poor conditions at times, but which nevertheless gave many regulars a new opening to Canada and the U.S.A. on UHF/SHF.

The opening to Canada and the U.S.A. on UHF/SHF.

The opening to Canada and the U.S.A. on UHF/SHF.

Two Metres

First the Sporadic E events of which there were at least ten days in June when openings were reported, plus one on July 2. Some of these were covered last month but additional news has been received since. Peter Atkins, G4DOL, (DOR) worked IOEIO (GB) and I8KLW on June 2, and G4KUX, (DYS) John Wilkinson, G4HTG, (YSW), Jerry Russell, G4SEU, (WKS), John Jennings, G4VOZ, (LEC) and G4YUZ have all worked him. G4CMZ has replaced the loft mounted 3-ele. Yagi by an outside dipole which is proving to be better. A PA for the band is in the construction queue and if anyone needs W. Yorks., he is QTHR. G4PS5 is now QRV from Tyne and Wear and Stephen gives his 'phone no. as 091-4822025 and Prestel Mailbox as 91999354.

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July 2, he heard the GWs calling EA5FKW (2Y) at 0828 and worked him at 09 at 0835.

Mark Page, G1EOC, (BKS) thinks he completed with Y06CBN/6 (KN26GR) on June 11. G4HGT (YSW) caught the June 2 event starting at 1555 with EA6EF (BZ) and EA3DLV (BB). Suddenly at 1609, seven Is were heard till 1628 and John got 8LPR (BH). At 1648, he worked YU7MCG, then YU4AR, both in NF, another two YUs being heard at 1803. On the 11th, he lists IK2EAD (FF) at 1649 and HG8UG (JH) at 1732. On the 11th, G4HFO got OK3TEG and OK3EFS, plus HG0HO (KH) for a new country. On the 2nd, his son Julian, G4TJX, worked YU1UN and YU1AQN to bring his squares total to 100.

Ken Osborne, G4IGO, (SOM) worked seven stations between 1515 and 1620 on June 2 in GB, HA and ID, including HG1Y1/MM in HD. On June 11, he was on from 1500 to 1737 and worked and heard stations from YO5 and 6, HG1, 2, 7, 8 and 0, OE3, 5 and 6, YU4 and 7, and Sp 6 and 7. These were in squares FI, Gl, HG, HI, IE, IH, II, IF, JG, JH, KF, KG, KH, LE and MG. On the 16th at 0929, Ken heard a UB3A? and worked SP9HWW (JK56).

Roger Greengass, G4NRG, (ESX) was one of the lucky ones to work CN8EO at 1450 on June 6 in IM64PB. On June 3, Ron Wilson, G4NZU, (NOT) had a CW “QO” answered by UA3LCB (SP63c), a DX of 2,446 kms. Dave Bileby, G4RGG, (BKS) only worked YU2CBM (ID) on June 2. On the 5th, he heard IT9, 9H1F, SV and YU, but only completed with two Is and LZ1W (LC) who was on CW. On the 6th, nothing was copied from CN8EO, only EB7NK being heard. On the 11th, Russian TV pictures were good at 0400 and Scandinavian Band 1 TV was good all morning. At 1122, UR2RO was heard on CW and at 1155, SK7JD (IR) was worked on SSB. Things were quiet till 1452 when YO2IS was heard and Y06CBN worked ten minutes later for country no. 37, plus many YUs. Dave sent a tape of some of this and he was certainly in the right place for this event, by the sound of it. The last station heard was HG1S at 1827.

Martyn Jones, G4TIF, (WKS) caught the tail end of the HG opening on June 11 and later worked YU3FM and YU3HUL, both in HG. He could hear GWs working SPs, and GI1NK, 35 miles away, working a UB5, all inaudible in Leamington Spa. Jack Charnock, G4WWX, (MCH) worked OE, OK and YU on the 11th. G4XK (SFD) added five more squares on the 2nd with F1HMR (AD), two Is in GD, one in HB and IT1WN in JA, plus HG8ET (Kg). Bob had a CW QSO with UA3LBC on the 3rd and anxious awaits the QSL. Mike Johnson, G6AJE, (LEC) heard weak 10, YU1, 2 and 3 stations and SV2 on June 27 but who were S9 in Northants. Keith Killigrew, G6DZJH, (HWR) worked OE and YU on the 11th in new squares.

Ela Martyr, G6HKM, (ESX) monitored the events on June 2, 11 and 27 but did not work anyone. On the 11th, Pete Hizyey, G6YLO, (KNT) lists 9H1GB (HV) for a new country. On the 11th, Colin Morris, G6ZPN, (WMD) got I6MQS (GD) on the 2nd and three YUs on the 11th but missed out on OK3KG (JJ). From 1617 on the 11th, Dave Gregory, G8BJX, (DVN) worked YO5AXM, HG, OE3, OK, SP6 and 7. Graham Daubney, G8MBI, (HFD) mentioned YU4WU (IE) at 1659 and SP9CS (JJ) at 1739 on the 11th worked HG and Y05s heard, the event fizzling out at 1800.

Kevin Piper, G8TGM, (SXW) suggests that Band 2 has been open via ES more often this year compared with previous Junes. He worked YU2FM and HG1Y1/MM at 1610 on June 2 and heard YU, an Fin BD and an EA3. On the 5th, he lists ten QSOs, the best, already confirmed being SV1OE (KM17VX) at 2,392 kms. SV1DE (KM18UA) and SV2YL (LA35b) were other Greeks worked. Kevin listed another 23 stations in 15, 18, 10T9, YU1, 2, 5 and 7, SV, YO and LZ heard between 1158 and 1420 that day.

Mick Cuckoo’s, G6ECM, letter was mis-routed by the Post Office but just arrived in time. On June 2, between 1545 and 1625, he contacted EA2AX (ZB), I6VY and I6MQS (GD). On the 9th, the Es were more like long MS bursts with OH2TI (MU) worked at 1916 and OH5LK (NU) at 1927. Around 0855 on the 11th, Mick got 9H1GB and 9H11, and in a brief event later around 1700, in a ten minute period, he got Y05BPE/P (LG), YU7EW and YU7MCG (KF). On the 16th, at 1017, he contacted UB5DAA (LI).

From Betterfield on June 2, Philip Murphy, GI4OMK, heard YU7AR and YU7MBA at 1654 and 1805, but on the 11th he worked eight stations between 1608 and 1732; a YU in JE, Is and YUs in GF and HG8s in KG. For Geoff Brown, G4J4CD, the best Es so far on June 27 between 1337 and 1535 when he worked HG8, I7, Y07, YU7 and LZ1. From Edinburgh,
Andy Steven, G4MIPK, has only caught the June 11 affair this year and between 1606 and 1832, he worked YU3ES (GF), IW4ARD and I4ERN (GE), IW5AVM (FC) and YU7MA (KE).

Jonathan Eastment, GW4LXO, (GNS) worked IT9CHY/9 (HY), two Fs in BD, HG1TT/M and three YU2s in ID on June 2. On the 5th, six Italians in FC and GB; IT9EOY (HY), 18NKA (IY) were contacted, with S5IOE heard. On the 6th, EH91A (YY) was a new square, country and continent, and EA8YD (XY) was also worked in a five minute opening. Clive O’Hennessey, GW4VVX, (GWT) lives in “QRM Valley” but made his first ever £5 QSOs on the 11th in the shape of two YU’s and an SP on SSB. Paul Baker, GW62ZV, (GWT) worked three YUs and OQ6L (HG) the same day for a couple of new countries and four more squares. He heard lots more. Paul Whatton, G4DCV, (KNT) had SSB QSOs with OH2TI on June 9 and with YO5BPE/P and YU7MCG on the 11th.

Second the tropo scene starting with David Whitaker’s letter from Harrogate which mentioned the stations heard on June 4 in the Scandinavian activity night including LA1YCA (DS), LA6HL and LA12E in CS, OZ1JXO (EQ), SK6GX (FS), LA9H1 (FT) and LA8WF (ES). Congratulations to Neil Clarke, (YSW) who is now GOCS (ex-G8VFY) and puts his success in passing the morse test to the variation of licence concession.

Mike Newell, G1HGQ, (WKS) has read VHF bands for two years and wrote for the first time. He runs an FT-290R, 30w amplifier with Gasjet preamp. and a loft-mounted HB9CV antenna and best so far is OZ1IEK (EP) on June 3. Mike wishes to contact anyone who has used the Datong PC-1 converter with a ‘290. He is QTHR, phone no. Kenilworth (029) 55158. Bob Nixon, G1KDF, (LNH) got LA6HL on the 4th and GB4WQ (WQ) on the 25th. EIs worked were 9BG (Glare) on the 16th, 9FE (Tipperary), 4AQB (Galway), 5FK (Cork) and 3BKB (Limerick) on the 30th.

George Haylock, G2DHV, (KNT) opened 50W as GW2DHD/M recently, it being 38 years since he last operated in Wales. He used the Leicester repeater on the journey. He hopes to get the call GB8ARS for VJ-Day anniversary, denoting 8th Army Royal Signals. G3PBV worked DA1UM/LX (JC) at 1640 on June 20, and at 2145, EA1BLA (VD) which is a difficult direction for Dave, G4DOL also worked -/LX on the 20th and heard EA1s BLA and CYE on the 25th.

G4HTG worked several Scandinavians on June 3 and 4 including LA9H1 at 981 kms. Some TVI has been very effectively cured by a filter designed by G4GED published in RadCom for July, 1985 and which John recommends. On June 29, G4HFO was working EA1s TA and BLA in VD when EA8XX called in over them; see also the 70cm. section. G4SEU lists OZ1IEC and G4FUM (ATM) on June 3, plus GM4ZUK/P (GRN). Dick Phipps, G4TWD, (KNT) found June the poorest month this year for CW, the only DX of note being GD3AHY.

Mini Page, G4UKM, (BKS) has a CW QSO with PE2EVO, the special event call for the Evoluon exhibition in Eindhoven. The QSL gets free admission for the recipient. Ray Pearce, G4VKE, (CBA) entered the annual table last month. He runs a Trio TR-9130, a B.N.O.S. 100w amplifier and 9-e. Yagi Tonya at 30ft. His “B” call was G6LOO, by the way. Sue Frost, G4GWY, (LDN) added 34 CW stations from June 1 including three G1s. Dave Catier, G4WHZ, is another keen CW operator who may be moving QTH. He asks if he could carry on his ladder scores. As it is only a friendly, informal table, why not?

G4WXX seems well sited to work across the Irish Sea, hence Jack’s county total of 82 so far. He worked EI9FE on June 22, E12CLB (Waterford) on July 1 and EI3CAB (Wexford) on the 2nd. June 11 affair this year and between 1606 and 1832, he worked YU3ES (GF), KD8SI, WA6MGZ, YU3SW, UA1ZCL, WA1JXN, W7FU and FB6S1.

Finally, the Auroral scene, and G4SFY found one at 2226 on June 9, but with little activity. Ray heard GM3JIJ, GM3XOQ and LA0DT/MM (BT), all working DX in inhabitable soil. GM4IPL (LTH) sent some interesting details of the June 9/10 event briefly mentioned last month. He started by working LA, SM and GM stations in the normal way, with “A” tone reports. At 0027, SM3AKW was 55a, but when they turned their beams more or less towards each other over the 1,400 kms. path, signals were 539 via Auroral Es. This went on for two hours. LA1K (FX) was working the same area at 0530 with the watery sound. Andy comments that the stations enjoying this mode all run high power from northerly latitudes. Although GM3XOQ (SLD) worked UA1ZCL (RC)
via Ar Es, GM4IPK heard nothing from the Russian.

Finally, a quote of the month from G3PBV, heard on 2m. “There is a lot of QSB on this frequency. I checked the band during your last over and there’s no QSB anywhere else. It’s only on this frequency.” So now you know.

**Seventy Centimetres**

G1KDF found four new counties on June 9 and on the 16th, G6HV (YK) was a new square for Bob. In the WAB contest on the 23rd, conditions were very poor till late June, so nothing to report from on the 23rd, conditions were very poor anywhere else.

During your last over and there’s no QSB G3PBV, heard on 2m. “There is a lot of via Ar Es, GM4IPK heard nothing from the Russian.”

Microwave Modules transverter running QRV on the band with a Trio TS-130V and DC6ZZ (FM) on May 31, and SM6ESG (GR) on June 4.

Gordon Emmerson, G8PNN, (NLD) had a flashover in his 70cm. e.h.t. PSU (GR) on June 4.

Finally, a quote of the month from Gordon Emmerson, G8PNN, (NLD) who has only found 11 operators prepared to pound the brass — and two of those were G1S. Sue notes plenty of SSB activity on Monday nights but very little on the key. G6AJE operated in the June 9 contest which brought Mike GD6EXI and GM8MJV/P, each all-time new county and square.

**ANNUAL CW LADDER**

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No. of different stations worked since Jan. 1.

30 to June 3 period comprising PAs in BL, CL, CM, CN and DM squares, DC6ZZ (FM), DL2NO (EN), many Fs, OZ1HRA (EQ) and assorted U.K. stations. He is now up to 74 squares worked and is QTHR on Cardiff (0222) 620694 after 6 p.m.

**The Microwaves**

Now for that record-breaking QSO which was on June 29 on 23cm. between David Last, G6LEU, XK66j, and EA8XS in S073d. The time was between 1940 and 2012 with reception apparently in 10-15 seconds bursts. David has received Salvador’s QSL already and your scribe calculates the DX as 2,620 kms. which is a Region 1 record for tropo, ducting. The world record for this mode is held by KH6HME and N6CA on June 24, 1984. the DX being 3,977 kms., by the way, and almost exactly a year ago.

G6WZO mentions G4CBW (SFD) worked on June 8 from Merseyside for another table point. Now the summer holidays are here, Graham hopes to get out for a bit of portable operating from local hills on 3cm. G2DHH mentions he is on 3cm. on NBFM in the Cumulatives, presumably portable, George? G8PNN reports QSOs with LA1HL on May 20, followed by SM6HYG, PA0FRE on June 1 and DC9XO the next day. Gordon lists GM6MBP (GRN) on June 2, and G4HWA/P (YSN) and G4XNO (HWR) on the 8th on 23cm. On 13cm., before the PSU backfire hit his 13cm. gear, he worked PAO9US/P (CN), SM6ESG (GR) and DC9XO (EM) on June 1 and 2 on this band.

GW4LKO was QRV on 23cm. on May 31 and worked PE1JSE (CL), PA0RDY (CM), PA0EHR (DM), PA0WWM and PA0FRE. On June 8, Jonathan worked G4CBW (YN) for another new square. He is after QSOs with folk in AN, AK, YM and ZN. The 23cm. antenna array is now four 23-cm. Yagis. John Tye, G4BVY, (NOR) worked LA8AE on 13cm. on June 3 for a claimed “first” at a DX of 915 kms. to FT72h. LA6LCA (FT63g) was also contacted. John says that microwave operators in PA, DL and SP are going to continue using the E-QTHL system and not bother with the Maidenhead one. He points out that the poll in DUBUS Informationen revealed that 83% of readers preferred the old system.

**Locators Overdone**

There is little doubt that a majority of readers dislike the Maidenhead locator system, many refusing to use it except in contests where the rules require it. During all the recent ES openings, it was apparent that many seasoned European operators are using the E-QTHL. Therefore, it would seem timely to come off the fence and suggest everybody ignore the Maidenhead locator system as far as all European VHF/UHF activity is concerned.

Every operator of some years’ experience keeps their records in the E-QTHL method. As far as our QTHCC programme is concerned, your scribe has no intention of altering all the records just to suit the whims of a few IARU VHF Committee members who are unrepresentative of the views of the majority. Since Maidenhead is so unpopular, it now seems logical for all squares to be given in the familiar ZL form, instead of the IO91 format, when reporting to VHFB.

The exchange of QTH-type information has reached silly proportions now. Some operators are starting by offering to exchange QTHL with the Maidenhead locator, WAB square, book numbers, etc., even though many QSO partners do not want all this guff. Why not say, for example, “My QTH is near Norwich,” then give the exchange of QTH-type information has reached silly proportions now.

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beaming south . . . " or whatever, instead of "CQ?" from Italy Oscar nine two square?" After all these "squares" are some 15,000 sq. kms. in area. Your comments are sought on these topics and for a "yes" or "no" to Maidenhead.

Awards News

Congratulations to Pete Godfrey, G8ULU, from Whistable, Kent, who is member number 54 of the 144 MHz QTH Squares Century Club. His certificate was issued on July 1 for 100 confirmed, comprising 91 tropo., 6 Es and 3 Ar QSOs. His present station consists of an Icom IC-202S, MM amplifier running 90w to a 16-ele. Tonna Yagi. His QTH is 30m. a.s.l. with a good north easterly take-off. Pete was issued 144 MHz VHFCC certificate no. 375 on the same date and has a claim in for the 432 MHz version.

Contests

The Salisbury Radio and Electronics Society is running a 2m. contest on Aug. 18, 0900-2000, the latter being for 5.7 GHz. Microwave Cumulatives are on Aug. 11, 0900-2000, there is the 1,296/2,320 MHz period and will be off for some 62% of the year of twelve issues, post free. SHORT WAVE MAGAZINE LTD., 34 HIGH STREET, WELWYN, HERTS. AL6 9EQ

August, 1985

DX Notes

Dave Storris, G8GXP, will be on holiday in Ireland from July 26 to Aug. 12 with the call EI3VPH/P. Most operation will be in VL square, on 144.270 MHz particularly on July 28 and 31 and Aug. 7. On Aug. 4, he plans to operate in UL square from about 1400 with 100w and a 14-ele. Yagi for a few hours.

For MS addicts, the predicted peak of the Perseids shower is 0130 GMT, according to WJR in July Ham Radio Magazine. From DUBUS issue 2/85, that DG4FBG, DH3FAP, DL1ZBK and DL92AW should be QRV from HB0 from July 30 to Aug. 9 on all HF bands, 2m., 70cm. and possibly 23cm. Skeds for MS via the 20m. VHF net. The Derbyshire Hills Contest Group, GB4ZAP, where due to be QRV from YT square Aug. 3-15 on 4m., 2m., 70cm. and 23cm. with good gear. Tropo QRGs point-222 with 144.144 and 144.444 MHz for random MS. QRV on the VHF net 2200-2300.

The Satellites

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The Satellites

No one noted having anything about satellites this month. The following notes have been compiled from recent UoSAT Bulletins. Soviet satellite RS-8 is showing signs of reaching the end of its life by erratic response to ground control commands, anomalous telemetry, etc. This leaves RS-5 and RS-7 as the only two of the original six spacecraft launched on Dec. 17, 1981.

Oscar 10 is currently in a critical eclipse period and will off for some 62% of each orbit from Aug. 1 for four weeks. Some attitude maneuvering has been necessary to reduce the very real threat of freezing the batteries during a long eclipse. This is probably the most onerous period in the whole, active life of this highly successful satellite. Consequently, the operating schedule has been altered and is now:- Mean Anomaly 30-189, off; MA 207-29 Mode B.

There should be some choice DX to be worked on O-10. From July 30 to Aug. 3, ZK1XE on 145.900 MHz SSB; from Aug. 19-24, HC1BI plans to operate from the Galapagos Islands, HC8; VK0AQ will be on from Antarctica till November.

Nordic Meeting

The weekend June 14-16 was the time of the Nordic VHF/UHF/SHF Meeting in Frerslev, Denmark. Andy Steven, GM4IPK, and Nick Peckett, G4KUX, went to this event which attracted approximately two hundred of the better known, Scandinavian VHF/UHF operators. There were about 45 from Finland and the Swedish contingent included SM4GVF, SM41VE and SM41MV. Among the Finns were OH5LK and the OH2TI team, and from Norway, LA8AK and LA1K team. OY9JD travelled down from the Faroes.

Andy sent a copy of the programme which included lectures on all aspects of VHF/UHF operation, as well as social events and excursions for the family. In spite of a beer strike at the time, large amounts of the amber nectar were consumed and it seems the event was a great success, one which Andy and Nick will never forget. They would like to extend their thanks to Ivan Stauning, OZ7IS and to the four clubs - OZ9EDR, OZ7HAS, OZ7UHF and OZ5UKW - who organised the event. Next year, it is Norway's turn to run it so maybe more U.K. VHF-ers might attend.

Final Miscellany

A QSL has just arrived for G3FPK from Damian, LA0DT/MM confirming AP square. He will be on board the M. V. Seis Mariner till Aug. 10 in CM square and operates on 144.05 MHz CW, 144.3 SSB, 144.65 FM, 433.2 FM, as well as 80/40/20/10m. from 2230 GMT.

In the 9H1 Falcon Contest over June 1-15, G8TGM made the required one contact with Malta and scored 32,237 points, not as good as last year when Kevin was the sole British entrant. After all, this was the last contest to the four clubs - OZ9EDR, OZ7HAS, OZ7UHF and OZ5UKW - who organised the event. Next year, it is Norway's turn to run it so maybe more U.K. VHF-ers might attend.

Sign Off

Sorry there is no space for the Squares Table this month. All your news, claims and comments by the date in the box to:- "VHF Bands", SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts. AL6 9EQ. 73 de G3FPK.
Echoes from The Past

A Recollection, in Two Parts, of Amateur Radio Activities over the Last Half-Century

N. G. HYDE, C.Eng., MRAeS, MIERE, G2AIH

Early Days

My first introduction to the wonders of wireless was in the mid-1920's when as a very young schoolboy I was the proud possessor of two crystal sets. One of these I made at school and the other one was bought at Woolworth's. The first had a massive coil former about 5 in. (12½ cm.) diameter wound with enamelled copper wire and mounted horizontally. Tuning was effected by moving a slider along the top of the coil, from which the enamel had been carefully removed. The Woolworth's set was sold in kit form and consisted of four items namely, a case, a panel, a variometer and a crystal detector. Each item was priced at 6d (2½p) but was not sold separately; you had to buy the whole shooting-match for 2/- (10p). My earphones were bought at Gamage's and cost 6/6 (32½p). Nothing much was heard on either of these sets and I think the only station ever received was Gamage's and cost 6/6 (32½p). My earphones were bought at Gamage's and cost 6/6 (32½p). Nothing much was heard on either of these sets and I think the only station ever received was

After this initiation my interests changed to model railways and model boats for the next few years. In 1930 the wireless bug bit again and has been biting ever since. It was 'wireless' in those days of course. The word ‘radio’ was more or less introduced officially into the English language after it had been used by the Prince of Wales (later King Edward VIII) in 1930. The word ‘wireless’ was commonly used for a long time after this, being gradually replaced by ‘radio’ although it is still in use today to a limited extent.

A well-respected weekly magazine of this period was Popular Wireless, publication of which dated back to the early 1920's. In one of the December 1929 issues constructional details (including free blueprint) of a two-valve broadcast receiver called the "Magic Two" appeared. I decided to build this receiver which consisted of a detector and LF stage, known as an O-V-1. What was magic about this particular set I don’t really know. It did incorporate one new feature however which was the use of differential reaction; this effectively eliminated any detuning of the receiver which normally would occur as the reaction condenser was adjusted.

I started building this receiver early in 1930, but it was not until much later in that year, I think round about November that it was completed and working. The reason for this extraordinarily long timescale was the time it took me to purchase (or scrounge) the components. Remember that this was the period of the Great Depression (2.8 million unemployed in 1932) and everywhere money was in very short supply. I was still at school with very limited pocket money and could only buy parts as funds became available; eight brass terminals for 1/- (5p) one week, then save up for really expensive components such as the Ormond differential and tuning condensers which cost 4/- (20p) each. So it went on throughout the year. My birthday in October was of course a godsend. A number of components such as the Igranic plug-in coils ("What are the Wild Waves Saying?") the intervalve transformer and the valves were given to me second-hand. I used to walk miles to pick up any second-hand wireless equipment that people had for disposal, usually valves and home-constructed receivers dating back to the late 1920's.

The receiver worked quite well in spite of its second-hand valves with definitely less than 100 per cent emission. However in 1931 I built a superior version with several new components including valves. At this time interference from the large number of Continental transmitters that were coming on the air created a problem on the medium wave band. The new receiver therefore incorporated a Popular Wireless circuit idea known as "Flexicoupling", which consisted of a tapped coil in series with the aerial, connected to a two- or three-turn link wound round the lower end of the single-layer tuning coil which had replaced the plug-in coils. The circuit shown (Fig. 1) incorporates the feature, which was very effective.

It was on this receiver that I heard the first transmissions from the new BBC Regional Transmitter Testing — I think in August 1931. In the 'thirties components were readily available if you had the money. Every town had its radio shops, mainly cycle dealers who had entered the wireless business through running an accumulator charging service. The chain stores of Halford's and Curry's sold components in those days. Then there was Ma Raymond of course, who had a shop in Lisle Street and who advertised in Popular Wireless from the early 1920's. A few years ago one could still see the name painted on the roof of the Lisle Street premises and as far as I know it may still be there. There were several other wireless shops in Lisle Street, and Webb's Radio, a very much respected business concentrating on amateur radio requirements was just round the corner in Soho Street.

There was a fair amount of mail order business in the 1930's. Electradix Radios in Battersea sold a lot of surplus equipment, some of it dating from World War I. As a schoolboy I can remember poring over the catalogues of such firms as The
and eventually purchased a couple of booklets for 1/6, or was it Britain. Never heard of ‘em. I stopped to see what they were up to across a stand run by an outfit call the Radio Society of Great Britain, and issued annually a Short Wave Manual at a cost of 1/6 (7½p). The well-respected component manufacturer A. F. Bulgin would send you their large catalogue, which included interesting circuit data just for the asking; this Company is still in business and now has entered the amateur radio field.

The very high cost of valves was a problem in these early days. For a general purpose triode valve of Continental manufacture such as Tungsram and Dario cost 5/6 (32½p) each. Lissen valves of the same type were 6/6 (32½p), while ‘ring’ valves, that is those made by firms who were members of the BVA (British Radio Valve Manufacturers Association) cost the immense sum of 9/4 (45p). I still have a number of these valves including a Marconi Type DER, the dull-emitter version of the ‘R’ valve produced originally during World War I.

Before World War II I lived at my parents’ home in Bexhill, a small town of some 20,000 inhabitants on the Sussex coast. The town’s electricity was supplied by a generating station owned by the Bexhill Corporation, and the charges for electricity were remarkably low even by standards of the 1930’s. (The same applied to the water and gas undertakings, so I think there may possibly be a moral here!) The mains supply of 220V DC was obtained from 440V generators with the centre point earthed. Thus the distribution system could have either a positive or a negative pole earthed which made things very convenient. My 2V LT and 140V HT accumulators could be charged by merely connecting a lamp of suitable wattage in the positive supply lead. What was even more important was that a 200V smoothed DC supply for radio equipment was immediately available through the use of a low-frequency choke in the positive lead, with a 4 µF condenser across the output. As the house wiring was a two-wire system and fuses were unknown to me at that time, it was essential to get the power plug in the right way round, otherwise results could be spectacular.

It was in 1932 that I first became aware of the existence of the short wave bands. This came about through a visit to Radiolympia at the National Radio Exhibition was known, in that year. While staggering round the exhibition hall, loaded down with free catalogues in free carrier bags, up in the gallery I came across a stand run by an outfit call the Radio Society of Great Britain. Never heard of ‘em. I stopped to see what they were up to and eventually purchased a couple of booklets for 1/6, or was it 1/-? One of these was the T and R Bulletin, which was the title of that Society’s monthly journal at the time; the other one carried the title “What is Amateur Radio?” and was actually the fore-runner of the present RSGB Monthly Bulletin "Amateur Radio”.

Thus my first short-wave receiver saw the light of day. This again was an 0-V-1 with 2V valves and home-made 2-pin plug-in coils. It covered the 10- and 40-metre amateur bands although performance on the former band left a lot to be desired. Hand capacity was very much in evidence and after tuning in a signal I had to remain frozen in position because If I even blinked an eyelid the receiver would be detuned. However things could only be improved and in later receivers the variable condensers were fitted with long extension spindles, then very much in vogue, which overcame this effect.

After a period of listening on the amateur bands it was only natural that I should want to obtain a transmitting licence myself. A well-known local amateur G2AX (one of the few who had a 100W permit at that time) gave me a lot of help and was instrumental in my joining the RSGB. After sending off my first subscription of 15/- (75p) I duly received my membership certificate with my number BRS (British Receiving Station) 1450. The membership certificate in those days was truly magnificent and mine, dated 16 May 1934, hangs on the shack wall as I write these reminiscences (Fig. 2).

Shortly after joining RSGB I applied to the GPO for a transmitting licence. In those days you had to convince the authorities of the need to carry out experimental work that involved transmitting and it was unusual for a full radiating permit to be granted without having held an artificial aerial licence for some time. This licence gave permission to build and operate transmitters, but not to radiate any signals outside the building. The transmitter output had to be terminated in a dummy load, consisting of a certain amount of resistance, inductance and capacitance in series. I actually did make an artificial aerial but even with this device most of the transmissions that I made radiated over a considerable distance.

My artificial aerial licence, issued in August 1934, and which I

![Fig. 2. RSGB membership certificate, 1934.](image-url)
held up to September 1939, allocated the callsign 2AIH and allowed me to experiment on the 1.75, 7 and 14 MHz bands (Fig. 3). As I was a minor at the time the licence was issued in my father’s name and I was nominated as his agent.

The first transmitter I constructed was for 1.75 MHz. It consisted of a TPRC (tuned plate resonant grid) self-excited oscillator with a two-valve modulator and a carbon microphone. I forget the type of valve that was used as oscillator, but the modulator consisted of an H2 triode followed by a PT2 pentode; this modulator was used with all my transmitters that employed 2V filament valves.

The next transmitter was for 40 metres; the oscillator was a TPTG (tuned plate tuned grid) using an ex-Army AT40 triode bought on the surplus market. HT was derived from the mains, the 200V smoothed DC being increased to 340V by connecting the 140V HT accumulators in series with it.

There was quite a profusion of wireless periodicals in those days. *Wireless World* at 4d. a week had been around since time immemorial, it seemed. Its companion monthly magazine was *The Wireless Engineer* (2/6 or 12½p); this was very technical and was read only by the real high-brows. *Popular Wireless* (3d) already mentioned, deservedly lived up to its title; this magazine was read only by the real high-brows. *Wireless Constructor* (1/6 or 7½p) which was. Both disappeared in 1932, *Amateur Wireless* being amalgamated with a new publication called *Practical Wireless* which is very much in thought of by the local fraternity, and its associated monthly, *Augmented title*. However I transferred my allegiance to *Wireless Constructor*, with which I remained up to the outbreak of World War II. There was *Amateur Wireless* (3d) which was not very highly thought of by the local fraternity, and its associated monthly, *Wireless Constructor* (1/6 or 7½p) which was. Both disappeared in 1932, *Amateur Wireless* being amalgamated with a new publication called *Practical Wireless* which is very much in existence today. Early in 1937 Short Wave Magazine appeared, ceased publication on the outbreak of war in September 1939, re-appeared at the end of the war and is very much alive today, with a bias towards the home-constructional side of amateur radio.

During the pre-war years my shack was the room in the house known in those days as the box-room; it contained an airing cupboard in which was an enormous hot-water tank. This made the room very cosy in winter as the temperature could be regulated by opening or closing the cupboard door. It was thus the only room in the house to have central heating. What it was like in summer I can’t remember! In the mid-1930’s I became very interested in the very high frequencies above 30 Mc/s (or ultra-high frequencies as they were called in those days). In the U.K. we ‘had only one VHF band, namely 5 metres (56 to 60 Mc/s) although the Americans were more fortunate in that they also had an allocation around 112 Mc/s.

The standard receiver for the very-high frequencies in those days used the much-maligned super-regenerative detector of which there were several versions, having either a self-quenched or a separately quenched oscillator. One used to aim for a quench frequency between 20 and 50 kc/s. I built several models with both types of oscillator in the years up to 1939. My 5-metre transmitter was a Hartley SEO using a Mullard PM2 low-power triode, a very popular valve for this application, and to extract a better performance from it when working at frequencies much higher than was intended, the base was removed and the valve was wired directly into the circuit.

The device that really opened up the VHF’s in the 1930’s both in this country and the U.S.A. was undoubtedly the two-valve super-regenerative transceiver. This was switched from a self-quenched receiver to a self-excited oscillator, usually a Colpitts, and a single-valve modulator (the receiver LF stage) on transmit. The circuit of a typical transceiver is shown in Fig. 4 and I think that almost every 5m. operator must have built one of these sets in his time.

Early in 1935 I completed the construction of a 30-line disc television receiver. The vision receiver itself was a 4-valve set with an additional power stage to amplify the sync. pulses. Vision signals were fed to a beehive neon lamp behind a 16in. diameter home-made scanning disc. I received the pictures, or rather images, right up to the close-down of the low-definition system around the middle of the year. But that’s another story.

Later in 1935 the town’s electricity supply was changed from DC to 230V AC mains. Although the DC supply has been very convenient to me in the earlier days it was not so useful now that indirectly-heated valves were the vogue, and it was also possible to obtain American UX-based valves with 6.3V heaters. Consumers in the town were given an allowance to cover the cost of conversion of equipment from DC to AC operation; I managed to obtain the munificent sum of £5 with which I bought all the components to make two 250V HT supplies, and an LT battery charger. I still have all the components used in the charger, i.e. mains transformer, copper oxide rectifier, ammeter, plugs, sockets and terminals.

I made my first short-wave superhet in 1936. This was a 4-valve set and covered the 20 and 40m. amateur bands using plug-in coils wound on Eddystone 4-pin formers. The line-up of American UX-based valves was 6A7 frequency changer, 6F7 IF, type 75 second detector/AGC/audio and a type 41 pentode output stage.
Apart from a three-valve straight receiver that I made for domestic use about the same time, this was the only piece of equipment I constructed before the war on an aluminium chassis, all the other equipment even in 1939 being of breadboard construction.

Round about the mid-1930’s the economy of the country began to pick up and money began to flow more readily. It was a false economy of course, brought about by the need to re-arm in preparation for World War II which by now was inevitable. However it did mean that more jobs became available, and I joined the Post Office Engineering Department. In addition to providing congenial work there was another advantage; I was able to erect a magnificent long-wire aerial running from the shack window down to the garage outside the front gate of our house. This was a great improvement over the sloper running from the window down to the garage which I had used during the previous years.

In the following years up to 1939 my amateur radio activity was largely the construction of 5m. super-regenerative receivers both for fixed and portable operation. One of the later versions built in 1939 was a three-valve set with separate quench, and it survived the war years to be used on the truncated 5m. band in 1946.

The detector-oscillator of this receiver used a Hivac XD miniature triode, This was a 2V directly-heated valve, one of a series of four valves with miniature 4-pin bases manufactured by the High Vacuum Valve Co. Ltd. The series consisted of the XSG RF tetrode, XD high-impedance triode, XL low-impedance triode and the XP power output valve. This company also produced a range of 4V indirectly-heated valves one of the most notable of which was a ‘critical distance’ output tetrode; the characteristics of this valve were similar to those of a pentode, but instead of a suppressor grid secondary emission was eliminated by a calculated critical spacing between screen grid and anode.

The last project that I started in 1939 was a crystal-controlled transmitter for 20 and 40m. consisting of a Tritet oscillator, buffer-doubler and PA. This transmitter used American UX-based valves with a Taylor T20 in the final. I didn’t get much beyond construction of the crystal oscillator because towards the end of August, with war imminent, my transmitting equipment like that of all other U.K. amateurs was impounded “for the duration”.

I left home shortly after the outbreak of World War II. Little did I realise at the time that it would be six years before I saw my ham shack again and that, in fact, I would never again operate from that room in which I had spent so many youthful and happy hours.

to be concluded

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A Light-Weight Aerial System for Two Metres
Simple and Portable
PETER WELCH, G3OAA

MANY amateurs, having climbed the local summit with a small SSB transceiver, must have been disappointed on attempting to work more than semi-local distances. Not only is the whip an inefficient radiator but the system is easily screened and matching aerial polarization difficult to achieve.

The obvious solution is a compact beam of the HB9CV type but the operator is forced to contemplate a fairly bulky supporting mast and the whole point of portable working is on its way to being lost, unless he is a member of a nomadic desert tribe or a Welsh competition station.

Now it is possible to build a ZL Special out of twin feeder which is lighter and more easily folded for transport but it can be almost as difficult to mount, and both types of aerial tend to be detuned by nearby objects and thus their use is restricted in many of the locations which the portable, emergency or alternative station may encounter.

The aerial to be described is not so sensitive and much easier to mount, enabling it to be hung from the eaves of a house or the branch of a tree — or even over an inside door or curtain rail. It is portable in the sense that the entire system can be carried in a rucksack or family picnic basket and still leave room for sustenance; and it is much simpler to make.

Though it does have a lower theoretical gain than either of the phased beams mentioned, the discrepancy is not more than half an S-point and can be made up by raising it a few feet higher. Additionally the aerial has a cross-polarization component which can give increased gain at over-the-horizon distances.

It is constructed from a full-wave loop of flexible insulated wire fed through 50-ohm coax feeder by means of a 70-ohm quarter-wave transformer. When suspended from the point marked ‘X’ in the illustration (Fig. 1) the loop is kept open by a wooden spacer which can be so arranged that the aerial takes up a diamond shape or inverted-delta configuration.

The spacer, made out of ¼ inch dowel rod or thin cane, is about 27 inches long and, as indicated in the illustration, is held in position by two plastic tubes cut from the barrel of a felt tip pen, the tubes having holes bored through which the wire of the loop is threaded.

If necessary, the length of the spacer can be further reduced for transit by cutting it into two pieces and glueing or taping to the end of one piece another tube into which the other half of
the spacer can be inserted. Though this would appear to be a somewhat ramshackle construction the assembly becomes secure once it takes up the weight of the feeder.

The quarter-wave transformer is made out of a length of 70-ohm coax 14½ inches long which allows half-an-inch at each end for connecting up. One end of the transformer is attached to the loop aerial by means of a chocolate block connector and the other end is soldered to the 50-ohm feeder, conductor-to-conductor and screen-to-screen. No advantage was found in connecting the feeder to the transformer in such a way that the coax screen was reformed, and if the cables are laid parallel to each other and before taping together, a greater mechanical strength results.

The length given for the transformer assumes the coax used is the sort having a solid insulator and therefore a velocity factor of approximately 0.66. Should the junk box reveal only the type of cable with a 'foamed' semi-airspaced insulator then assume a velocity factor of 0.80 and try a length of 17½ inches which again allows for half-an-inch at each end to be used for joining up. Note however that old coax should always be checked for signs of insulator deterioration and ingress of moisture. Also be generous with the feeder. This not only makes the system more flexible in its applications but when working from a hilltop will enable you to put the radiator in the clear and yourself in some more sheltered position.

Having soldered the transformer to the feeder the correct length of loop wire is found by means of an SWR meter, a cheap CB unit being sufficient for the purpose. Start with a length of wire about 88 inches long and shorten it an inch at a time until a reasonable SWR is obtained. This method is not recommended for other, more frequency-conscious forms of aerial.

Different sorts of wire work out at different lengths. Twenty year-old TV feeder and rubber covered (!) multistrand needed 87 inches, while Woolworths single-strand bell wire came out at 84 inches and some fairly heavy gauge three-strand wire required only 82 inches.

All tests were made near to the SSB calling channel (at a quiet time of the day) though, as previously indicated, the loop has a broad frequency response. Should the system be required for listening only, then a loop length of 84 inches should be about right.

Once the correct length of wire has been determined the connector should be taped over for weather protection, laying some of the tape between the wires at this point as a precaution against the matching changing when in use: it was found that though the shape of the aerial could be roughly rectangular, circular or triangular, it was very important to ensure the corners of the loop were always greater than about 45 degrees. In use the other three corners are kept sufficiently apart by the spacer and the weight of the feeder.

Also in operation it is best to keep the loop at least half a wavelength above the ground, though it can just about work when lying on it; but don't forget that on VHF, efficiency increases dramatically with height. It is best not to lay the plane of the loop immediately next to a treestump or metal pipe. Should vertical polarization be required then the spacer and loop should be adjusted so that the feed point is at the side.

For the 'deluxe' version of the system you will need to add a length of string with a weight at one end just heavy enough to pull the string down through whatever foliage is offered but not heavy enough to cause serious injury, a paper clip or spring type clothes peg to fasten the loop to the string, and perhaps two or three lengths of dowel which can be fastened together with plastic tubes for use when the operating area is totally devoid of vegetation.

### Power Supply Unit for Two-Metre Transceivers

IAN POOLE, G3YWX

Power supplies can be comparatively expensive pieces of equipment when they are bought ready-made and working. However they can prove fairly straightforward to build and thereby providing a good constructional project. There are many instances when they are needed in amateur stations, including providing a power source for one of the many two-metre or seventy-centimetre SSB or multimode mobile transceivers which are available on the market. These pieces of equipment give excellent performance not only when mobile but also as a fixed station unit for which they need a power supply.

The design which is outlined here was initially required after a second-hand TR-7010 mobile SSB transceiver was bought. The power requirements for this were 3 amps peak on transmit and around 600mA on receive at 13.8 volts. In addition to the electrical requirements the power supply was needed fairly quickly and therefore had to be relatively simple and easy to build, but without sacrificing safety or reliability. In order to accommodate these requirements it was decided to use a regulator IC which would include its own short circuit protection. Furthermore, it was also thought wise to include some form of overvoltage protector as this safety feature is very important now.

Several years ago, in the days of valves, supplies were only smoothed and there was no possibility of a component breaking down and allowing an excessive voltage onto the circuit; and even if this did happen the valves would be capable of withstanding it in all but the most severe cases. However in today's circumstances, where voltage regulators are almost universally used, if the actual regulating transistor breaks down, the full smoothed voltage which will be several volts above the required output will be applied to the load circuit. This could then very seriously damage a transceiver costing several hundred pounds and be very expensive to repair. For this reason it is well worth spending a few extra pence in order to protect any equipment which may be connected to the power supply.

#### Circuit Description

The circuit itself is fairly orthodox but there are a few points which should be noted in order to avoid overrunning some of the components. If these are ignored there could be some rather spectacular results.

The transformer will of course be fairly reliable and there should be few worries with this. In the original design the
by the section of the circuit which incorporates R4, ZD1, C4 and incorporate overvoltage protection. This function is performed through the device.

which may occur on turn off when capacitors may discharge. D2 serve to protect the device against any large current spikes. The two diodes around the regulator D1 and output voltage can be easily adjusted to the exact value using the thermal overload protection, etc., it also has the advantage that its internal protection features including short circuit protection, designs, but it is ideal for this design. Apart from having many this design is not one which is commonly seen in the magazine it will become hot and may fail explosively. If a capacitor is used which cannot handle the current then the current rating is significant and in this case can be as high as 8 amps. However if the full three amps was only required continuously a more powerful transformer would be required.

The output from the transformer was rectified by two of the diodes in a bridge rectifier for convenience; however almost any rectifier diode capable of handling a current of 4 amps and peak inverse voltage of 100V would be quite adequate.

The smoothing capacitor is one item with which care should be taken to choose the correct type. Whilst the exact capacitance value is not critical (9000µF was the calculated value), the ripple current rating is significant and in this case can be as high as 8 amps. If a capacitor is used which cannot handle the current then it will become hot and may fail explosively.

The LM350 regulator integrated circuit which was chosen for this design is not one which is commonly seen in the magazine designs, but it is ideal for this design. Apart from having many internal protection features including short circuit protection, thermal overload protection, etc., it also has the advantage that its output voltage can be easily adjusted to the exact value using the resistors R2 and R3. The two diodes around the regulator D1 and D2 serve to protect the device against any large current spikes which may occur on turn off when capacitors may discharge through the device.

It has already been mentioned how important it is to incorporate overvoltage protection. This function is performed by the section of the circuit which incorporates R4, ZD1, C4 and SCR1, and the method of its operation is quite straightforward. Under normal operating conditions the output voltage remains below the reverse turn-on voltage of the zener diode and no current will flow into the gate of the SCR, which remains off. However if the output voltage does rise for any reason, and exceeds the turn-on voltage for the zener diode, current will flow through the diode and into the gate of the SCR which will fire — thereby shorting the output of FS2 to ground and blowing the fuse. This removes the input to the regulator and protects the output from rising too high. Although this method of overvoltage protection may seem crude it is a simple, cheap and reliable method and has been adopted almost universally.

### Table of Values

**Fig. 1**

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>10K</td>
</tr>
<tr>
<td>R2</td>
<td>120R</td>
</tr>
<tr>
<td>R3</td>
<td>1K5 approx, adjust on</td>
</tr>
<tr>
<td>R4</td>
<td>100R</td>
</tr>
<tr>
<td>R5, R6</td>
<td>560R</td>
</tr>
<tr>
<td>C1</td>
<td>10000µF, 63V</td>
</tr>
<tr>
<td>C2, C3</td>
<td>10µF, 63V</td>
</tr>
<tr>
<td>C4</td>
<td>0.01µF, 25V</td>
</tr>
<tr>
<td>C5</td>
<td>0.1µF, 25V</td>
</tr>
<tr>
<td>D1, D2</td>
<td>1N4002</td>
</tr>
<tr>
<td>ZD1</td>
<td>16V, 400mW</td>
</tr>
<tr>
<td>IC1</td>
<td>LM350</td>
</tr>
<tr>
<td>SCR1</td>
<td>TIC126D</td>
</tr>
<tr>
<td>T1</td>
<td>15-0-15V, 50VA</td>
</tr>
</tbody>
</table>

### Construction

As with most power supplies the layout of the wiring is not particularly critical, and provided that just a few precautions are taken there should be little difficulty in obtaining a very satisfactory piece of equipment with little or no trouble.

The small capacitor C2 has been included in the circuit to prevent any possibility of the regulator oscillating even if there is an appreciable length of wire between it and the smoothing capacitor. Therefore this small capacitor should be placed reasonably close to the regulator.

From the point of view of safety all the metal work should be well earthed to prevent any possibility of it becoming live. This should be done using a secure terminal and if the metalwork is painted this should be removed around the terminal to ensure that good contact is made. Whilst mentioning the safety aspects of the construction it is worth emphasising that all live terminals — on switches, transformers and so forth — should be covered using rubber sleeving which is obtainable from many electronics component suppliers.

As the unit is supplying a maximum of three amps, any of the wires which will carry an appreciable current should be made suitably thick in order to minimise any voltage drops within the supply.

Finally, sufficient provision should be made for a heatsink for the regulator. In the case of the prototype the back panel of the case was found to be sufficient because the full 3 amps was only drawn on peaks. However, if this current is likely to be drawn for any length of time a more efficient heatsink would be required because the regulator will dissipate about 21 watts under these conditions. One of the special heatsinks available from components stockists would be ideal.

### Conclusion

The supply has been in use for several months and has proved quite reliable. Although periods of operation are generally quite short, when it has been used for extended periods, or with the transceiver on CW it has remained acceptably cool, thereby keeping all the components within their safe operating conditions.
WE must start this month by remembering Harry Boutle, G2CLP, who died recently and who was one-time Hon. Sec. of RAIBC. Although we do not have many details, we understand he was active almost to the end; he will be missed sorely.

May we remind club scribes of the need for regular up-dating of the data for this feature. The reason for this is that experience tells us that if a club does not report, that usually means there has been a change of the important data which we keep on file — which means we could be feeding wrong information to a potential member!

Letters

Abergavenny & Nevill Hall have their weekly meetings on Thursdays in the room above Male Ward 2 at Pen-y-Fai Hospital, Abergavenny; GB2PYF will be their contribution to the hospital fête on August 3.

Acton, Brentford & Chiswick are still to be found at the Town Hall, Chiswick High Road, London W4, where they are booked for Tuesday, August 20; the subject for the evening is 'Hints and Kinks' and things get into action at 7.30 p.m.

Alyn and Deeside have their club nights at the Shotton Social Club, Shotton Lane, Shotton, Deeside, but for the month of August these are suspended. However, if you want to make contact, get in touch with the Hon. Sec. as they may have some informal pub evenings around Chester area. Battle will certainly reccomence in September, the dates being 2nd and 16th. Find the Hon. Sec's address in the Panel.

Perhaps the main news from Basingstoke is of their RAE class starting in September. Details from the Hon. Sec. - see Panel.

By 'Club Secretary'

Turning to Bishops Stortford, the monthly informal at the 'Nag’s Head' on the Dunmow Road has turned into a weekly one on Thursday evenings. The main meeting is on the third Monday of the month at the British Legion club in Windhill; for August this meeting, too, is an informal. Watch you don’t get the days mixed up here, or you might accidentally join the local CB-ers!

Avery strong and active club is the one at Bolton; the Wednesday evening sessions each week are split up, so the first and third of each month are formals with a talk or films, or whatever. Find them at Horwich Leisure Centre.

Now to Braintree where we have to refer you to the Hon. Sec. for details of the club programme and venue — his details are in the Panel.

One of the South Coast clubs is at Brighton where they get together at the Seven Furlong Bar, Brighton Racecourse, Brighton, on the first and third Wednesday of each month.

We must now head for Bristol, and City of Bristol RSGB Group; on August 19 they have G4KUQ to talk about RTTY and AMTOR, at the Queens Building, Bristol University.

At Bury the locals foregather every Tuesday evening at Mosses Community Centre, Coll Street. On August 13 they have their Annual Foxhunt, to commence at 7.30 p.m. in the Hq. car park.

Cambridge (Repeater Group) is quite a going-ahead club, responsible for various repeaters at Barkway and elsewhere; details of their meetings and activities from the Hon. Sec.

Stanton Room, Charlton Kings Library, is the home of the Cheltenham club; on August 2 they have G4ASR on moonbounce, and on August 16 a natter evening.

Turning to the Cheshunt club newsletter, we find they are still based on the Church Room, Church Lane, Wormley, Herts., and booked in every Wednesday evening. August 7 is a junk sale, and on 14th there is a natter. August 21 sees them out /P on Bass Hill Common, Broxbourne, and the month is completed with another natter evening.

The Chester group has its place at Chester Rugby Union Club, Hare Lane, Vicars Cross, Chester; only one meeting in August, on August 27, when they will be preparing for SSB Field Day.

August 6 and 15 are the dates for the Chichester club, the former being in the Long Room and the latter in the Green Room, at Fernleigh Centre, 40 North Street, Chichester.

At Cornwall the gang enclosed a copy of their Rally programme to make sure we didn’t forget; a pity that by the time this reaches you the reminder will be too late. The club meetings are at Treleigh Church Hall, Treleigh, on the old Redruth by-pass, on August 1 and September 5. More details from the Hon. Sec. — see Panel.

Every Friday the Coventry club foregatherers at the Baden-Powell House, 121 St. Nicholas Street, Radford, Coventry; August 2 is a D/F contest on VHF, and on 9th there is a treasure hunt. August 16 is a VHF portable expedition, 23rd a night-on-the-air, and the month is completed with a visit — details to be arranged.

As far as the Crawley gatherings go, our latest data stops at the end of July. Thus is would seem best to contact the Hon. Sec. — see Panel for the latest events.

August 17 at Crystal Palace will see a talk by G8JGO, Tony Heasman, on cellular radio. The meeting will be at All Saints Parish Rooms, Upper Norwood, which lies at the junction of Beulah Hill and Church Road, opposite the IBA mast.

If you are interested in the Dartford Heath D/F club, then you must be at the "Horse and Groom" pub, at Leyton Cross, near Dartford Heath, on August 6, which is the Tuesday before the Sunday D/F Hunt. Other weekends are devoted to attendance at various other D/F events around the country.

Up in Denby Dale the locals foregather in the famous Pie Hall; they have noggins-and-natter sessions on August 7 and 21. August 14 is Chairman’s Evening with G3YWI, and on 28th they have a Rally wind-down meeting.

Every Wednesday evening you can find the Derby gang at 119 Green Lane, at 7.30; the club has all the top floor. We don’t know what is arranged for August, for which you must contact the Hon. Sec. — see Panel.

Turning to Dudley, we see they have their base at the Allied Centre, Greenman Alley, off Tower Street, on August 12. More details from the Hon. Sec. — see Panel.

A visit is in prospect for East Lancs. on August 6, when they visit British Nuclear Fuels at Salwick. August 27 is an informal at the Conservative Club, Cliff Street, Rishton.

Edgware has decided to skip their August 8 date, but will be back in action on 22nd, for a pre-SSB Field Day preparation session. The venue is 145 Orange Hill Road, Burnt Oak, Edgware.

August 12 is down for the Exeter group to visit the Control Tower at Exeter Airport. For details on this and other meetings, contact the Hon. Sec. — see Panel.

Fareham is still based at Portchester Community Centre — one recalls being told by someone unconnected with the club that you could find them by tracing the aerial feeders back! That was a
long while ago, so now you must be satisfied to find room 12. All through August, though, take note that they propose to be ‘out and about’ so we suggest you contact the Hon. Sec. — see Panel for his address — for the details.

August 14 is the post Field Day enquiry for Farnborough, at the Railway Enthusiasts Club, Access Road, off Hawley Lane, Farnborough, Hants.

The Kite Club, Blackpool Airport is the home of the Fylde crowd; their subscription in fact covers both, so they can go and watch aeroplanes whenever they want. On August 6 they will be going to Lymh greenhouse to see the radar, and on August 20 they have a Top Band D/F Hunt. Details from the Hon. Sec. — see Panel.

G-ORP Club next; this must be one of the biggest clubs (outside national society status) in the world, and is devoted to low-power operation and home construction facets of our hobby. Details from the Hon. Sec. — see Panel for his details.

At Grafton they are booked at the ‘Five Bells’ pub, in East End Road, London; it lies between the Manor Cottage Berni Inn on the A406 North Circular Road, and East Finchley tube station.
The club room is at the back of the pub; go on August 9 and 23, the former date being G4CSB’s talk and the latter an informal.

At Greater Peterborough the locals get together at Southfields Junior School, Stanground. August 22 is down for an informal social event, not at Hq. but at a venue to be announced. Contact the Hon. Sec. for the details — see Panel.

The Harrow group meets at the Harrow Arts Centre, High Road, Harrow Weald, every Friday evening, in the Roxeth Room unless otherwise notified.

Friday evenings are the chat nights for Hastings, at Ashdown Farm Community Centre, while the main meeting is on the third Wednesday of each month at West Hill Community Centre. More details from the Hon. Sec. — see Panel.

On to Havering where Hq. is at Fairkytes Arts Centre, Billet Lane, Hornchurch. August 7 and 21 are informals; August 14 will see G8ZKZ talking about directional couplers and on August 28 there is a talk by GBIXC.

August 1 and 15 are the dates for Hereford, at the County Control, Civil Defence Hq., Gaol Street, Hereford.

At Hilderstone we are advised by the Hon. Sec. that they are running an RAE class, under G3JIX, at Hilderstone Centre, Hilderstone House, St. Peter’s, Broadstairs. For details contact the Centre, or the club Hon. Sec. — see Panel.

Holyhead has its base at the ‘Foresters’ Arms’, Kingsland Road, Holyhead, on alternate Sunday evenings. For more details of the dates and activities contact the Hon. Sec. — see Panel.

As the programme we have makes no reference to August activities, we can only suggest you try going along to The Mill in Atwick Road, Hornsea on a Wednesday evening.

If you are interested in knowing about amateur radio in Eire and how to get a ‘ticket’, or about the local clubs, then surely your first contact must be with IRTS — see Panel for details of the Hon. Sec.

On the way back from El we stop at the Isle of Man where the locals forgo the Howstrake Hotel, Harbour Road, Onchan, on Monday evenings. We understand that there are also some local sub-groups operating, too — for all the details, contact the Hon. Sec.

August 6 and 20 are the dates for Kidderminster, at Aggborough Community Centre, Hoo Road, Kidderminster; at the time of writing it is not known exactly what is on the programme.

Maltby now, and reading the newsletter copy to hand, we see weekly meetings at School Buildings, Church Lane, Maltby, every Friday evening. For details we suggest you check with the Hon. Sec.

As the Midland club is on the lookout for a new Hq., to replace the present one at 294A Broad Street, we suggest that before attending a meeting you contact the Hon. Sec. — see Panel. Another way would, we think, be to cock an ear out for G8GAZ, on S17 or the local repeater, and ask him for the latest position.

August 13 for the Newbury club is to be an informal gathering at the ‘Spotted Dog’. For more details, contact the Hon. Sec.

A new club to us is the one at Oswestry, where the locals are foregathering on the first Tuesday of each month. The venue is the Bell Hotel, which is opposite the Parish Church. We understand they have an interest in putting on special-event stations.

We go now to Preston where the meetings are held in the Lonsdale Club, Fulwood. August 1 is an informal because of the holiday season, and on August 15 they make final preparations for the Rally. August 29 sees the programme coming back to normal when they have G3JUEC to talk about his audio-visual evening.

Talking Newspapers

In the context of amateur radio activity, the group who do all the work are known as the QTTI-TNA; from the latest letter we notice a change of the Hq. address which is now: 2 Cartmel Walk, North Anston, Sheffield S31 7TU. Various magazines are put on to tape by the group, and they are always looking out, on the one hand, for such help as reading, cash donations, and other help; and of course, on the other, contact with the blind members who get a tape every fortnight carrying the current amateur radio magazines. Details from the club at the address above.

RAIBC is of course the club to which all disabled or blind amateurs or SWLs should belong; that means there are also members who are fit and active, to keep things ticking over. There are in addition all the fund-raising activities which keep the books in the black. Details from the Hon. Sec. — see Panel.

RAOTA is the one for old-timers; the qualification for membership is 25 years activity in the hobby. As the Hon. Sec. is still recovering from a serious illness, we have for the moment put in the Panel the address of G6JP who will ‘hold the fort’ until things are better for G3DVV.

At Reading the Hq. is at the ‘White Horse’, Emmer Green. August 6 is down for discussion on whether or not to take part in the SSB Field day and the September VHF contest. August 13 is down for a canal boat trip — details from the Hon. Sec. August 20 is down for a talk on Raynet by G4KWT.

At Regigate the Hq. is at the Constitutional and Conservative club, Warvic Road, Redhill, in the upstairs meeting-room. August 20 is down for a members’ evening, when the speakers and subjects will be drawn from those present.

The Royal Navy club caters for past and present members of the Royal and Merchant Navies, with associate membership open to those from foreign navies. Details from the Hon. Sec. — see Panel.

The Scarborough club seems to have its meetings weekly on Mondays at the Cricket Pavilion, North Marine Road; however, we don’t have the latest details and so we recommend a call to the Hon. Sec. for the latest information.

Next we come to SARUG, the group which uses Sinclair micros in amateur radio. In the current sixteen-page newsletter there are various programs and a help line column — this is issue 18 and the nineteenth is now well under way. All the details from the Hon. Sec. at the address in the Panel.

Whitchurch Folk House, East Dundry Road, Whitchurch, is the home of the South Bristol group. August 7 will be a talk on the Mendip Repeater Group, all being well, and on 14th G4SDR will talk about test and measurement in amateur radio. August 21 is down for a talk on satellite communications and on 28th the
programme was not finalised at the time of their letter. Rooms 3, 4 and 5 seem to be the place to look.

At Southdown the main meeting is held at Chaseley Home for Disabled Ex-Servicemen, Southcliff, Eastbourne, and in addition they have every Tuesday and Friday at the Wealden Council Offices, Vicarage Fields, Hailsham. The main meeting at Eastbourne is on the first Monday of every month. On a different tack, one was pleased to see a note that 'Twinketoes' G3MUM — he got the name as he has to tune and send Morse and all the rest with his toes — is back on the air after a long period of enforced QRT, thanks to a move to the Cheshire Home between Easingwold and York.

South Essex are at the Paddocks Community Centre, Canvey Island, every Wednesday evening; after a session of Morse practice for those in need, they go on to a talk or video, or whatever.

While it is normally the first and third Monday in each month for the Surrey crowd, we understand that the August 5 meeting will be at G4CCY/G4DDY for a barbecue. The normal Hq. address is TS Terra Nova, 34 The Waldrons, South Croydon.

The Sutton & Cheam Hq. is at the Downs Lawn Tennis Club, Holland Avenue, Cheam, on the third Friday of each month. More details from the Hon. Sec. — see Panel.

The Swale letter this time makes no mention of August activities but does mention September 9 at the Ivy Leaf Club Sittingbourne, for a talk on the Kent repeaters. Perhaps there is something in August — try the Hon. Sec. at the address in the Panel.

We now head for Telford where they foregather at Dawley Bank Community Centre, Bank Road, Dawley, Telford, every Wednesday evening. August 7 is a natter, and on 14th they have an RTTY activity evening. August 21 is a session of ATV on the air, with G6PZZ and G8UGL, and on August 28 they have a mini-D/F hunt and summer barbecue.

Thornton Cleveleys group seems to get together every Monday evening except August 26 which is "Bank Holiday — no meeting". What a sad thing that they forgot to tell us the venue! Details on that from the Hon. Sec. — see Panel.

August 7 and 21 are the dates for Three Counties, at the Railway Hotel, Liphook, Hants. August 7 is a film night, and on 21st G3VXM talks about two-metre DX.

Todmorden have a chat night on August 5 and on August 19 a visit from a leading aerial manufacturer is indicated. The Hq. is at the Queen Hotel, Todmorden.

For Torbay August is a matter of the nets on 3.755 MHz, at 1030 local time on Monday, Wednesday and Friday, plus 1000 on Saturdays; and of course there is the Rally at the STC Social Club, Old Brixham Road, Paignton, with talk-in on S22. More details from the Hon. Sec.

Tyne-Wear Repeater Group is looking for new members; their area is essentially Newcastle-on-Tyne and district, and all the details can be obtained from the Hon. Sec. — see Panel.

The Verulam crowd has the second and fourth Tuesday of each month at the R.A.F. Association Hq. in the New Kent Road, off Marlborough Road, St. Albans.

Hq. for the West Kent crowd is the Adult Education Centre Annex, Quarry Road, Tunbridge Wells, where they are normally to be found every Friday. However, between August 17 and 31 they will be attempting to make the first direct two-metre contact with the North Americans from a site in EI. More details from the Hon. Sec.

West Manchester mentions their Rally at Haydock Park Racecourse on August 18, and they also mention the regular meetings. For details contact the Hon. Sec. — see Panel.

The Westmorland Hon. Sec. writes in with a wry comment that they have not yet got elected for another year, and mentions their meeting on August 13 for a noggin-and-natter at the "Strickland Arms", Sizergh, near Kendal.

The Willenhall group has now changed its address to meet at the "Cross Keys" pub, Proudts Lane, Willenhall, every Wednesday evening, in the external amenities room.

There are two Wirral clubs, so we must take them in age order as best we know it. The first Wirral has its Hq. at Heswall Parish Church Rooms, on August 7 and 21. Details from the Hon. Sec. — see Panel.

The second Wirral group is based on Irby Cricket Club for the formals, and various pubs for the informals. August 7 is at "The Harp" in Ness, and on Sunday 11th they have a D/F Hunt from Heswall lay-by at 2.45. August 14 is a treasure hunt, and on August 21 they head for what we read as the ‘Shughall Massie Hotel'; August 28 sees them back at Hq. for a surplus sale. On September 4 the two Wirral clubs get together at Heswall for the first round of an inter-club Quiz.

Wolverhampton has a visit to the Policy Motorway Control Centre on August 6, and on 13th a discussion night. August 20 is down for a talk on fire prevention by members of West Midlands Fire Service. August 27 finishes the month off with a night-on-the-air and natter session.

Change

Worcester write to advise that they are transferring their informals to the Oddfellows Hall, and changing them to Wednesdays from Mondays. Thus now all meetings will be at the Oddfellows Club in New Street as follows: August 5 for a talk on contesting by G4ERP; August 21 for the informal. Looking ahead we see September 2, and then September 30 for the all-important AGM.

Workshop have August 6 for a fox hunt, and August 20 for a junk sale, not to mention putting on GB2BTF at Bassetlaw Show Ground on August 25/26 as well. Hidden away on the back of the letter was a note of their new Hq. — the British Sub-Aqua Club, The Maltkinds, Gateford Road, Worksop, and of the change of evening from Thursday to be Tuesday in future.

Lancing Parish Hall, South Street, Lancing, is the home of the Worthing crowd nowadays; they are there every Wednesday evening. We note, however, they may be out on a D/F Hunt on August 14.

At Yeovil the locals have August 8 for G3MYM to talk about inductance, and on 15th he talks about propagation at HF and sunspot minimum. August 22 is down for cosmic radio noise, and on August 29 they have a natter.

Finally, York; that means the United Services Club, 61 Micklegate, York, every Friday evening, and visitors are welcomed. That sentiment, we imagine goes for every club!

Finale

In which we say the deadlines are noted in the 'box'; they are for arrival of your letters, addressed to your "Club Secretary", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EJ.

Mobile Rally

September 8, Telford Mobile Rally, Telford Town Centre, Telford, Shropshire, doors open 11 a.m. (10.30 a.m. for disabled), arrive via M54 (J 10A off M6) or A442 from N. or S., over 90 stands plus specialist exhibitions, fully enclosed venue with restaurants and other services on site. Morse tests available (see item below — Ed.). Further information from G8UGL (Telford 584173) or G3UKV (Telford 554166), QTHR.

Morse Tests

Morse tests will be available at the following venues: Red Rose Rally, Haydock Park, August 18th; Telford Rally, Telford, September 8th; RSGB HF Convention, Belfry Hotel on M40 near Oxford, September 29th; Welsh Amateur Radio Convention, Blackwood, October 6th; ATRA Exhibition, Leicester, October 25/26th. Enquiries and applications to: Gavin Williams, BT1 Radio Station, Worston Lane, Highbridge, Somerset TA9 3JY.
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