

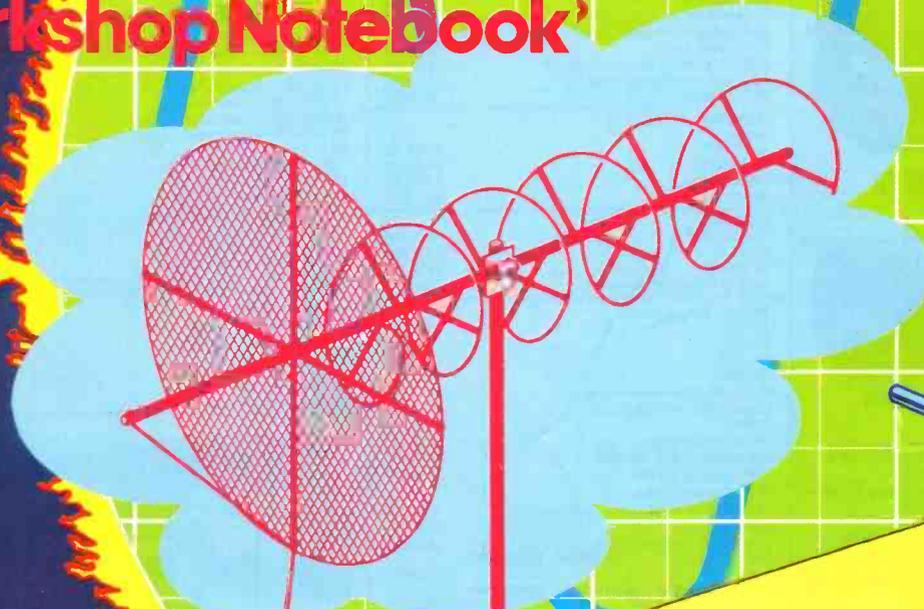
The SHORT WAVE Magazine

August 1985

Volume 43

Number 6

Two NEW regular features...
'Amateur Radio Computing'
'G3RJV's Workshop Notebook'



FOR THE RADIO AMATEUR AND AMATEUR RADIO

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AR2001 scanning receiver. A glance at the brief specification will tell you why the new AR2001 receiver is going to take the listener by storm.

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- ★ Digital display of frequency, mode and memory channel.
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The performance of the AR2001 sets new standards. Gone are the complaints of "deaf" receivers. The AR2001 has typical sensitivity of 0.2 microvolts for 12dB SINAD on FM (N) across the entire 25-550MHz range.

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NR750OF	£153.67
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SP15M	£41.00
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DL600 500ohm 600 watt D.Load.....	£39.50
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Diawa CN460M 140-150MHz SWR/PWR meter.....	£52.00
Diawa CN620A 1.8-150MHz SWR/PWR meter.....	£66.21
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Diawa CN419 1.8-30MHz ATU.....	£159.64
Diawa PS300 30 amp power supply.....	£176.80
Diawa PS120M 12 amp power supply.....	£87.25

YAESU

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TH3JNR 3El. Tribander Bea.....	299.00
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-----------------------------	---------

T.E.T.

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HB23M Triband Minibeam.....	£169.50
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HB33SP 3EL Tribander.....	£231.50
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MV4BH 4Band Vertical.....	£59.95
MV5BH 5Band Vertical.....	£99.00
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TONNA

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G-Whip New all band Base Station Antenna
 Welz Diamond DCP5 10-80 trapped vertical with radial kit. £85.50
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Hokasin

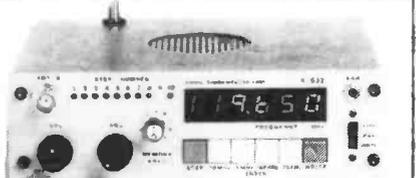
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TB3 3 Element Tribander.....	£212.75

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THE R532
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 £185.00 inc. VAT

SPECIFICATION.
 Frequency range: 110 to 136MHz, i.e. all NAV/COM channels.
 Number of channels: 1040 (25KHz steps).
 Sensitivity: Better than 0.75 microvolts 10dB /SN.
 Memory channels: 100 (10 banks of 10). Memories can be scanned automatically or selected manually.
 Power required: 12V dc negative earth 300mA typical. (Display can be switched off to reduce consumption when operating portable). Size: 160 x 45 x 130mm.
 Weight: approx. 1Kg. (including memory backup batteries).

SHORT WAVE MAGAZINE

(GB3SWM)

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Editor: PAUL ESSERY, G3KFE/G3SWM

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AUTHOR'S MSS

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

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WATERS & STANTON ELECTRONICS

TRIO — YAESU — ICOM — FDK — WELZ
JAYBEAM — TONNA — BNOS — ETC...

UK LISTENERS CONFIDENTIAL FREQUENCY LIST.

Just published this new frequency list is a must for the serious short wave listener. It provides a comprehensive list of stations throughout the HF spectrum including Aircraft, Shipping, Military, Embassy, etc. Details of modes ie SSB, CW, RTTY, etc are given together with call signs. In addition a complete list of the worlds major short wave broadcast stations are given together with frequencies and times. Much other information is also given and it really is a bargain. We are offering limited quantities at an offer price of £4.95 + 50p p&P. So don't miss out. Send today.

SECONDHAND SAVES MONEY!

Its getting pretty well known that we carry good stocks of secondhand equipment for the radio amateur. Very often equipment is no more than a year old and all items are thoroughly tested and realigned where necessary. We also give a 3 month warranty on these items so you really stand a chance of making a big saving without the risk of buying privately. We don't publish lists of secondhand items because our stock is forever changing. However if you want to check on our latest bargains then give Mark GINFU a call on the telephone on (0702) 204965 and he'll tell you all the latest goodies he has got.

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AM303 £39.95
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It really is amazing how many people invest large amounts of money in purchasing a sophisticated transceiver and then use a low grade microphone with it. Let's be honest, the microphones supplied with most rigs are O.K. but they are really not capable of doing full justice to the transceivers. Experienced operators know this and they will have probably invested money in a purpose-designed microphone. Today's all purpose microphone is the Adonis AM303 and 503. Superbly built the quality of these microphones will make you proud to be on the air. They will match any impedance (without any change in frequency response) and have adjustable output levels. They also have switched responses for SSB & FM. The smooth touch ptt and latching controls make operating a joy and there are up/down frequency control buttons for rigs fitted with this facility. The AM503 has the addition of a switchable audio compressor that gives that little bit of extra punch when required. Finally, if you have more than one rig you can purchase additional plug-in mic. leads that make for instant changeover from one rig to another.

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SP225(D) 1.8 - 160mth 5/15/150w	£99.00
SP425(D) 140 - 525mth 5/15/150w	£99.00

S = single meter D = dual meter

For a long time its been impossible for the amateur to measure his pep output without recourse to an oscilloscope which is not the cheapest of items these days. This means that most SSB operators can never be sure exactly what power their rigs are generating. In these days of high technology rigs, that seems somewhat ironical. Welz have changed all that. Their new range of meters will read either RMS or PEP and yet the prices are incredibly cheap. The pep circuitry requires an external 12v DC supply and this also powers LED's and the back lighted meters. A rather nice touch is the removable sensor at the rear so that the meter may be used several feet from the coaxial line. A VSWR is really a once only purchase so don't accept second best when for a very reasonable figure you can have the best.

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2M Pre-Amplifiers

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1250MHz Masthead Pre-amplifier	1250PA2/S		
Transmit Sound Modulated	SC1-2		T.B.C.
Receive Sound De-Modulator	SCR-2		

Details of these and other new products are included in our 1985 catalogue. This will be posted to you on receipt of an A5 stamped self addressed envelope. Kits are usually available by return of post but please allow 28 days for any unforeseen shortages. Place your order by post or by telephone using your credit card. Please include £1.00 to cover order handling and postage.

Our products are kits or assembled kits consisting of circuit board and all components to mount on the board. We do not include external hardware such as boxes, connectors etc.

If your purchase does not work when assembled then apart from being surprised we will offer to service the module for a small charge depending on the complexity of the project. So please remember...

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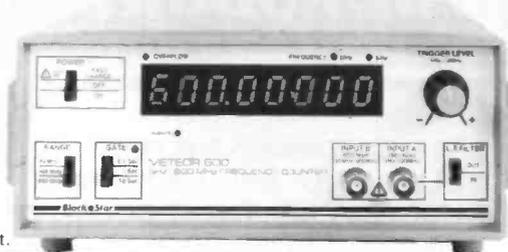
- ★ Measuring typically 2Hz – 1.2GHz
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- ★ High Accuracy
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inc. 15% VAT

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Transverters once had a reputation for being a second best approach to getting on to any band. With careful system design this need not be so. People have favourably compared the receive performance of the TVHF 230c when coupled to a modern vhf transceiver to that of prestige hf transceivers costing well into four figures! Even with a budget 2m rig, the performance will be better in most respects than the sort of hf transceiver available second-hand at the same price! On transmit, the signal generated is very clean, and the 10W pep output is enough to work the world with a decent antenna. Of course, if you want to be a really big signal, then this power is just right for driving a variety of power amplifiers! (If you have a valve vhf amplifier, then an hf linear becomes a very simple thing to build – a pair of 4CX350's will burn as big a hole in 20m as 144MHz!!)

Chris Bartram G4DGU



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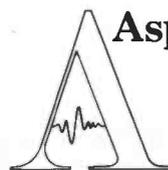
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FOR THE RADIO AMATEUR AND AMATEUR RADIO



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!

A handwritten signature in cursive script, followed by the call sign 'G3KFE.' written in a similar style.

WORLD-WIDE COMMUNICATION

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 in 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 firmed up, and there are umpteen 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 PU2LOK. 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 lot 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 — "DL0IGI 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 SM0CCE. 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 CX3CX.

Regular user of the band G4HZW (Knutsford) found the band quite interesting, and indeed broke off his letter to work WB1FSW, K2KBF and KNIQ, 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 CE0FQ on Easter Island. This last, DX in any language, was worked at 2300z on June 15.

G6QQ (Hoveton) reckons this has been the worst month for DX since he came back on the air in 1983. Ten SSB was used to net some 23 QSOs, mainly in Europe but with RA6LPY, RA9FCB, RB5WAM, and UB4WZA as the pick of the crop.

G4WXO (Capenhurst) is obviously bent on becoming a Big Gun on our bands. The antenna is a six-element Quagi, with three quad elements plus three Yagi-type directors, on an 11m. boom, the whole lot being some 17m. up in the air for 14/21/28 MHz. On 7 MHz there is a full size ground-plane with fifty radials and in due course Eighty will be dealt with to the tune of a full-size ground plane, plus Beverages for receiving, and the odd inverted-vee and s/oper as makeweight! This Quagi has so far netted some 224 countries worked in twelve months testing of this bit of homebrew. On Ten, apart from the Europeans, we noted 7Q7LW, OE3HBG/YK, UA6LDX, ZB2IB, FD6IFF, 4Z1AA, VE3KFE/4U, LU4DJP, CX3CX, PY2BDY (the last three in response to one CQ); a "CQ South America" which netted LU7HJM, LU7FAC, LU1BSN, LU6MBW, LU8DWN and LU1SBG, OH0RJ for Aaland, EA8TE, LU8FQO, CE4NV and EA7DQZ — these last four being worked while playing with different element spacings — not to mention loads of small fry.

It's quite a while since we last heard from G4EZA, who is now in a third-floor flat in Streatham where there is no room for outdoor antennas. Tim has put up two loops, about 35' x 15' rectangular, one at near-ceiling height and the other underneath the carpet. This is fed in phase at one corner on the HF bands, and as a longwire, upper fed against the lower one as counterpoise, on the LF bands with a surprising degree of success. Tim intends to write it up and we await the article with interest. On Ten, using an indifferent FT-200 to the two loops, G4EZA has recorded some 42 countries in the log, like: C31, DL, EA, EA6, EA8, EA9, EI, G, GI, GM, GW, HA, HB9, I, IS0, IT9, LA, LZ,

OE, OH, OK, OZ, PA, PY, SM, T77C, TR8JD, UA, UA2, UA9, UB5, UC2, UL7, UP2, UQ2, Y, YU, 4X, 5B4, 5Z4 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 (Yeovil) 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 CT2CQ, CT2EJ, EA6OT, EA9IB, 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 2130z 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 DL5KL/ST2, TA1A, V85GA, VU2GI, ZS6UN, 4U1UN at UN Hq. in New York, and 5H3M.

G4WXO has a longish list, and shows with ZS1GP, VU2GI, UA6LHB, C53EK, CE5CQD, PY1ZGK, YV5IVQ, 5X5GK for a new one, S92LB for number 224C, YC1DOA, 9H3CB — in a month where the main activity was on Twenty.

Finally G6QQ, who prepared a column for the band, but entered nothing at all in it . . . despite a while spent listening.

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, 3H0P 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 5B4 QSLs, we wonder what about the MD7s 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,

Following the success of their Slow-Scan TV Receiver, Davtrend has introduced two new related products: the DRAE Slow-Scan TV Transceiver and — for those who already have the Receiver — a Transmit Module which upgrades the DRAE Receiver to transceiver status. The system specification is the standard 8.5-second SSTV format of 16 grey shades with a 128-by-128 pixel picture. Retail prices, including VAT, are £310 for the Transceiver and £128 for the Transmit Module; the Receiver price is £189. Full details and specifications can be obtained from David Valentine, Davtrend Limited, Sanderson Centre, Lees Lane, Gosport, Hants. (Tel: Gosport 520141).



JY9WR, OY6FRA, PZ1AF, 6W3NU, UI8OQM, ZS6BYE, 9H3CB, OX3OA, 4X6MP, R2PV, FM5DJ, K7VAY/SV5, VK6CI, UL7EA, K0AX/KH2 (Guam), ZD8KM, YV7QP, and lots of W, VE, PY and JA stations for makeweight.

Twenty for G2HKU was SSB with 9X5SP, plus CW with OX3UD, CE0FFD (Easter Is.), HP1XKR, EA9PB, EL0AP/MM, UL7BX, OZ1KKR/MM, all at full power, plus a QRP CW QSO with EA9PB and OX3UD.

The band has been pretty poor, says G3NOF, with very little from VK/ZL in the mornings over the long path, with a few Pacific stations up to 0900z; the band wasn't much good during the day but seemed to pick up after 2200z, when there were strong East Coast Ws peaking in the small hours. In the evening around 1800z the path from the short path to Asiatic Russia was sometimes good. SSB contacts were completed with A4XJZ, A71BK, AH6FL, AL7FG, AP2MQ, DL5KL/ST2, EL2AK, H3RB/MM (H3 = HP), HH7PV, IJ7ET, J88AQ, JY5RA, JY9VQ, KA5BPE/C6A, KL7H, KL7LF, KP2AH, OA4AYY, OH0XX,

PS8ACI, ZL1AV, FO8BI, W's, VE's including 6 and 7, 5H3HM, 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. *CTBN* 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 simplex 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 the articles in the *Canadian Top Band News* are 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, SM5DFF, SM3CWE, CT1NK, I2BVS/IB0, VE1ZZ, K1ZM, AA1K, K1ST, W3BGN, WA3EUL and PY2DP.

Turning to G2HKU, we see Ted has kept up his SSB skeds with PA0PN, and on the CW side has kept things going with OL9CPG, RA3DVH, UA2FFQ, 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 I's but were only barely audible to Ted, to the extent 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 GI3OLJ 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 EL0BS/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.

GW4RHW 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, ZP5JCY, and CW to PY, HK, CP6EN, UA9WFG, UA9QA, ZL4FT, XE3AAF, ZP5VG, CO6ER, CO7PG, OA4ASY, OA4JR, PJ3HBZ, ZL3OE, VK3AE, and many Europeans.

There was just one 7 MHz contact in the G4WXO 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, UV9WW, RL7GDR, EA8QJ, VK2KM, and UH8AAC.

New Bands

Firstly, let's look at the G4UZN (Leeds) report; Tony found on 10 MHz, CT2FN, LU9CV, TI2PI, V2AU, W5PWG, 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. As for 10 MHz, the feeling was that the band was much down on the same period last year.

G4WWA (Cleobury Mortimer) notes that the advent of the W's on 24 MHz has already jacked up the activity. On July 2, he and G5BM in Newent, Glos., were on the band and in a one-hour period from 2300z worked W1XK, W5GEL, N4SU, W2GDV, and N4NO, all being pleased to work into the U.K. on this band. G5BM was using his TS-830S into a doublet, while G4WWA had an FT-101ZD into a G5RV. These two hunt the DX bands as a pair, with a two-metre link between them.

GW4RHW 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!

"CDXN" deadlines for the next three months:

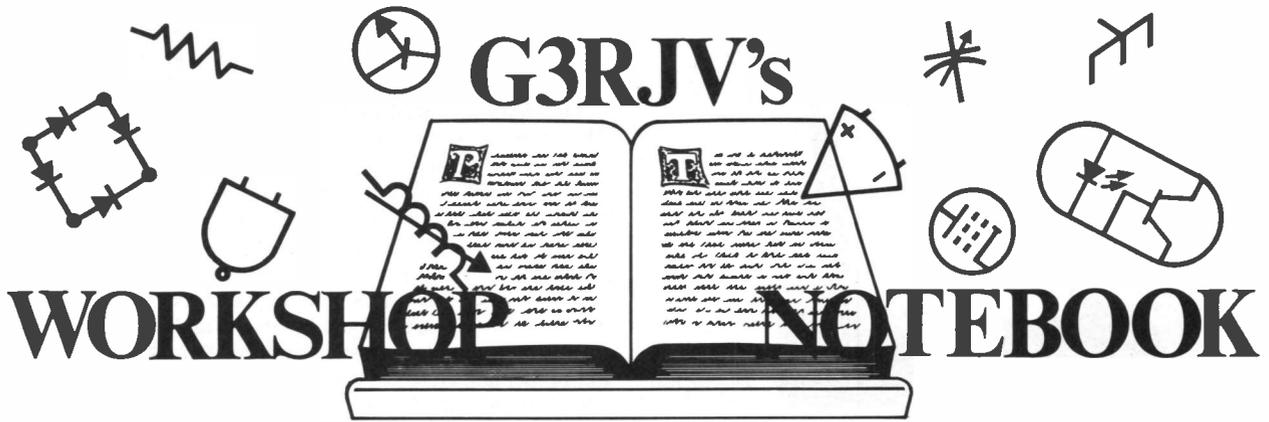
September issue — August 8th
October issue — September 5th
November issue — October 3rd

Be sure to note these dates

ON5OS/VS6, T77C, T77V, TA1E, TI2CC, TG9VT, TR8DR, TR8RAL, TV6JUN, UA1OT (Franz Josef Land), UA0FF (Sakhalin Is.) for Zone 19, UD6AI, UL7RWE, UZ9CWW, UZ0ZWB/UZ0 (again Zone 19), VE3KFE/4U, VE8RCS, VE0MCX/MM, VP2MDG, XT2BR, YB3CEV, YB0BZZ, YB0TK, 4U1ITU, 5B4JE, 5B4SC, 5H3QM, 5N5WGB, 5T5MS, 6W1CK, 9Y4NP, and GB0SWR/MM ("Project Raleigh" in the Pacific off Peru).

G6QQ offers SSB to WB2RQW, KL7LF, W2NCH, plus in the All-Asia SSB Contest UV9FM, UL8AWA, JE3YRD, UZ9XWW, 4Z1AA, JA2YKA, UJ8JC, JR6PGB, JF1SEK, and JA3YBF. On CW the takings included KU7N, W8OQV, W0UBT, JA7BE, and KA8OUT.

The list from G4WXO on this band is very long, so we will have to be a mite selective. John managed OD5AS, KE6HU, FW8AF, VE6ARH, VE7FEK, VE5AFY, UZ0AWB, VE7EYI, VK3BWD, VR6JR, KL7H/P, VE8RCS, 9K2YA, C53EK, OAs, HZ1AB, AP2SQ, JY5CI, T32AB, ZB2IB, A4XRS, W6RTN, VP2MDG, 8P6AW, C6AAA, C6ABP, 9Y4LM, FO8BI, JAs galore,



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 2¾" 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

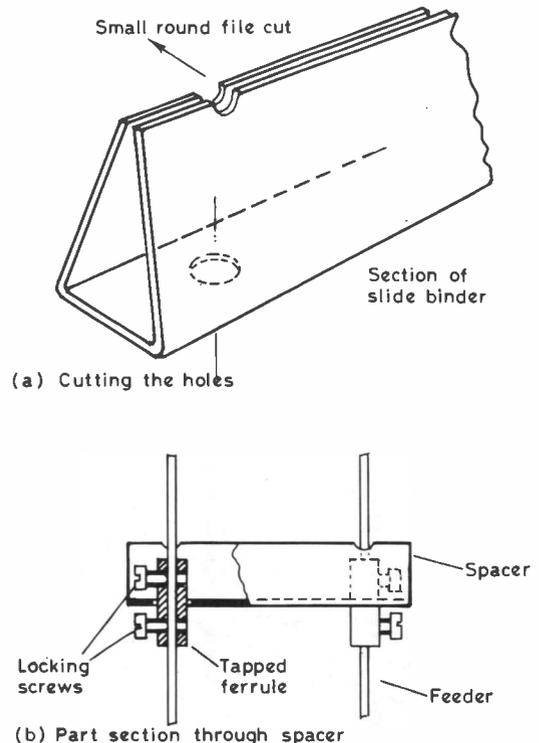
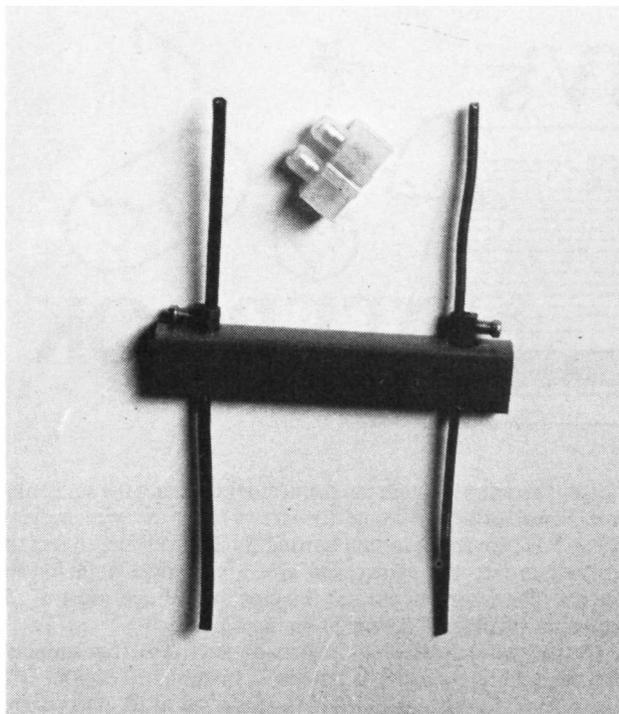


Fig. 1 G4LSB Spacers



G4LSB open feeder spacer, with connecting block used for securing the wire.

easily drilled for 2" spacing and the wires held by knots or adhesive.

This is not Fred's first attempt to save money in radio. He began amateur radio with an AA call in 1938 and his first transmitter cost him two shillings plus bits from a domestic radio rescued from a dust cart. He reckons it could still be done today for 50p.

A Dreadful Idea

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

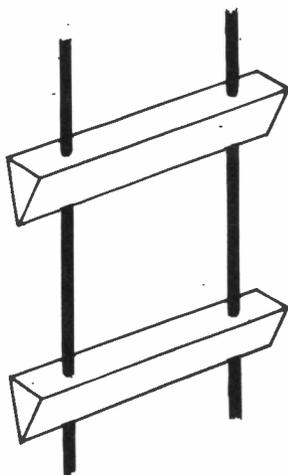


Fig. 1A Completed spacers

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 1 1/2" and a slot about 3/8" 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 stabilised co-polymer polypropylene. The spacers are designed to snap onto the feed wires for a non-slip fit. Using cheap PVC covered wire, two spacings are available which

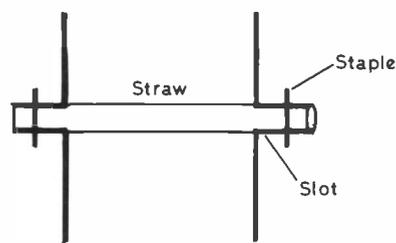


Fig. 2 Drinking Straw Spacer

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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

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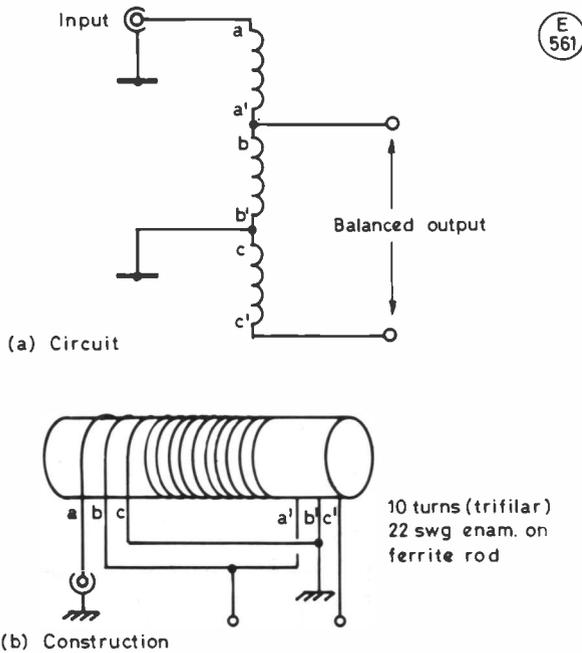


Fig. 3 Balun for open feeders

high powered transmissions may require a thicker gauge. Take three lengths (say about 10") of the wire onto the ferrite rod for 10 turns (I used a bit of ferrite rod culled from a scrap transistor radio). The next job is to use the ohms range on a multimeter to identify the beginning and end of the three windings. These are shown as $a-a'$, $b-b'$ and $c-c'$ respectively. They are then connected as shown in Fig. 3(b). The input goes to the beginning of a and a' is joined to b which becomes one side of the balanced output; b' and c are joined and taken to ground and c' provides the other side of the balanced output. All very simple but do take care to get the right wires to the right place. This little balun can be added to the end of a conventional ATU and match into open feeders.

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).

BOOK REVIEW

“DIGEST OF HORIZONTAL WIRE AERIALS”

by Dennis Hault, G400

reviewed by Rev. G. C. Dobbs, G3RJV

I HAVE said before that radio amateurs come in two types, those 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, “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 country; a land flowing with milk and honey, Birds Eye peas and Smiths crisps. And Denny Hault 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 Chireix-Mesny “farmer's delight”. The under-rated T2FD and the seemingly forgotten G8ON All-Bander rub shoulders with a lot of ideas I've never seen before. I am grateful to the first edition of the book because it introduced me to the W3EDP Antenna that has served me well for portable operation and makeshift main station use. There are a few wire beams for the bamboo and string merchants and some ‘biggies’ for the property speculators. The book also contains a range of balun and ATU ideas.

Some time ago I was unwise enough to mention this book in a magazine article and frustrated suppliers vainly tried to procure copies of the then out of print publication. I, for one, am pleased that G400 and the Spalding Amateur Radio Society have decided to reprint the book. The second edition has some additional material, corrects the minor errors of the first edition and is better presented and bound. A worthy private effort to be added to amateur radio literature. A book for the real amateur.

Digest of Horizontal Wire Aerials costs £3.00, post paid, from the author, Dennis Hault, G400, Chespool House, Gosberton Risegate, Spalding, Lincs. PE11 4EU. (It's worth ordering a copy just to write that lovely Lincolnshire village name on an envelope!) Cheques to “Spalding & District Amateur Radio Society”.

160-Metres for the Yaesu FT-707 Transceiver

Part 2

A Conversion Project for both Early and Later Models of this Popular Piece of Equipment

IAN KEYSER, G3ROO

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.

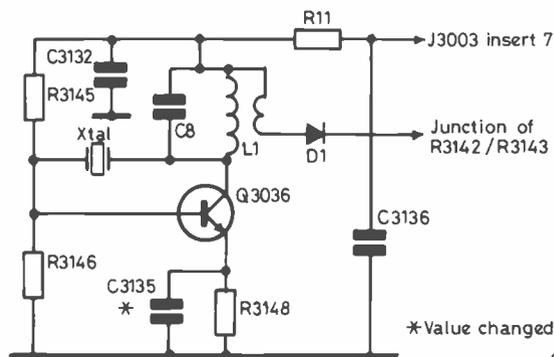


Fig. 10 Premix Osc. circuit utilising 'Marker' components

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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)

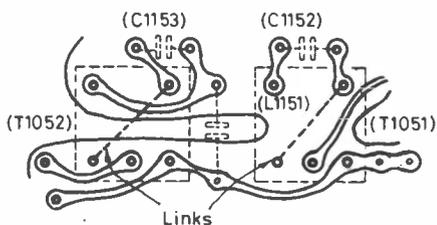


Fig.9 P.C layout and component layout (New style) (T1052) and (T1051) Premix Osc Filter showing links.

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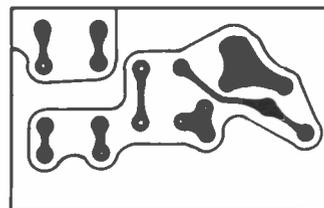


Fig.11 PCB foil for 160m L.P.F. (Full size)

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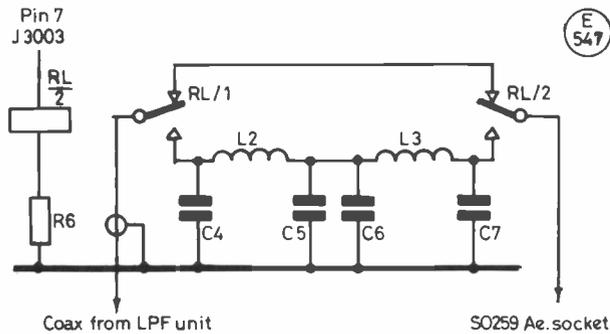


Fig.12 Circuit of 160m LP Filter.

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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. Now use resistors across the RF tuned circuits T1025 and T1026 (T1016, T1017, T1032, and T1033) to damp the 'Q' of these circuits enabling a response across the band flat to within 20%. In my case these resistors worked out to be 22K ¼-watt and this could be a good starting point; I can get an output across the band of 50 watts with no problem.

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 it would be 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

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.

Conclusion

The construction was easier to complete than first expected and should not cause too many problems, but there are many fine wires in these "rice boxes" that can be broken if treated too

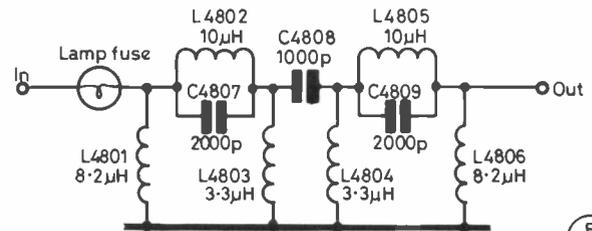


Fig.14 Circuit of HPF used in old style RF pcb.

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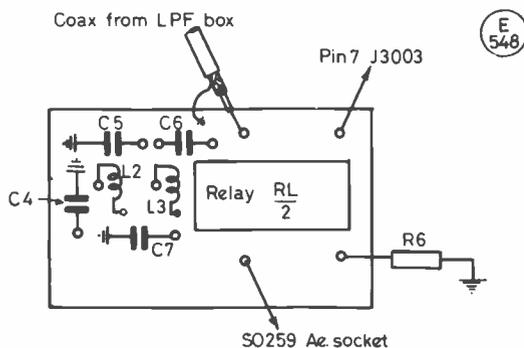


Fig. 13 Component layout 160m LPF.

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roughly. Take care, and if in doubt get a more experienced constructor to look over your shoulder while doing the modification; this way he will either be able to see you make a mistake or be in a far better situation to fix it later when it is discovered.

The set has been in use for many months now without problem. Much DX has been worked but of course this is attributable to the aerial, a dipole up 60ft, rather than the set. Output power can be set to any level on CW, but to keep within power limits on SSB the microphone gain must be set so that only two or three LEDs light up on transmit.

I am able to supply a kit of parts for this project for £20 plus postage and packing. For those of you who would like to have 160 metres but have very serious misgivings in doing the modification I will do a similar modification which replaces the 12 metre band with 160 metres for £35 plus postage and packing. This same modification is available for the FT-77 for the same price. G3ROO, QTHR (0304-821588).

HF Antennas for Restricted Sites, Part 3

A Practical Approach to an Everlasting Problem

A. P. ASHTON, G3XAP

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:—

- The use of inductive loading at the non-fed end of the wire.
- The use of the 'bending' technique coupled with a lengthening of the wire.
- 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.
- 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.

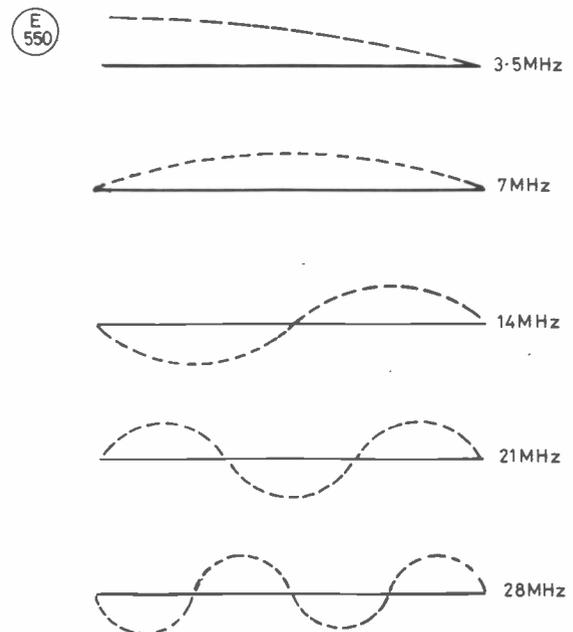


Fig.1. Current distribution on a 66ft end fed wire when operated on different frequencies.

N.B. Antenna is fed from left hand side

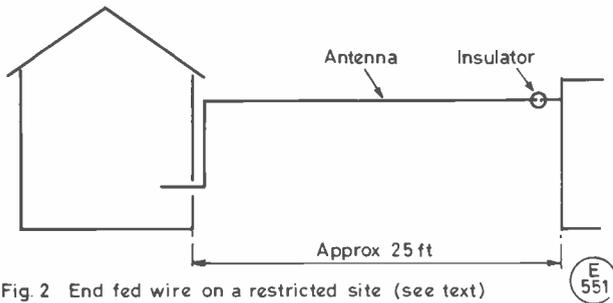


Fig. 2 End fed wire on a restricted site (see text)

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 μ H.

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 μ H 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

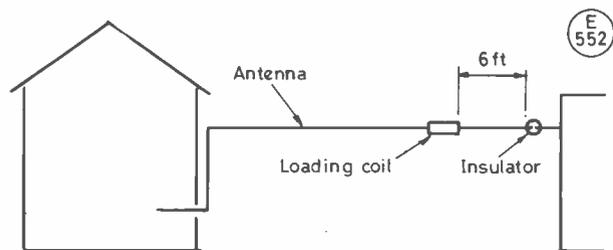


Fig.3 End fed wire loaded to put 7MHz current antinode into a "clear area"

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.

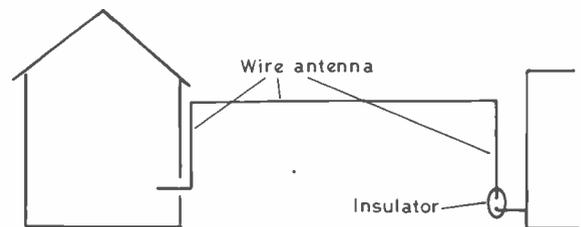


Fig. 4(a) End fed wire "extended" to put 7MHz current antinode into a 'clear area'

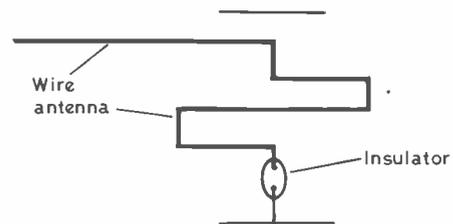


Fig. 4(b) An extension wire "folded" to fit into the available space

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

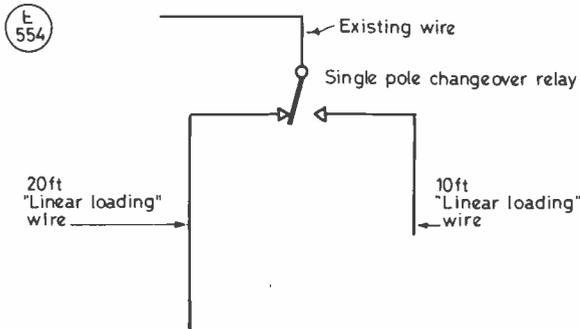


Fig. 5 End fed wire antenna with two end loading wires selected by a relay.

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 wire on all three bands, the essential details being depicted in Fig. 6. It will be noted from the diagram that the end 12ft. 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, unshielded 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.

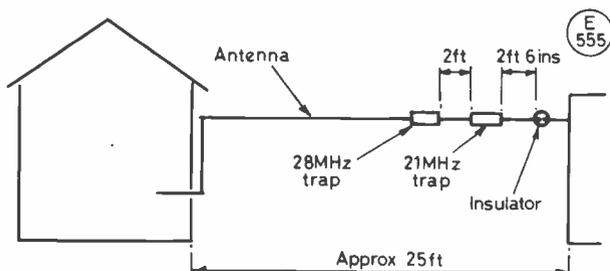


Fig. 6 Trapped end fed wire for the 14, 21 and 28MHz bands. (See text for details)

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 3.5MHz. As a general rule-of-thumb, the value of capacitance should be around 1 or 2pF per metre of wavelength — for example between 15 and 30pF 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 250pF for 1.8 MHz) have a high minimum value due to the stray capacitance that is

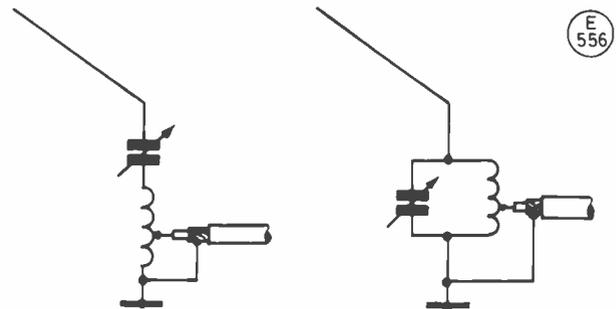


Fig. 7(b) Matching unit for an end fed antenna whose length is an odd multiple of $\lambda/4$

Fig. 7(a) Matching unit for an end fed antenna whose length is a multiple of $\lambda/2$

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 100pF if an HF band unit is used, and up to about 250 or 300pF for the lower bands, whilst the coil could consist of up to 50 turns of tinned copper wire on a grooved 1 1/2 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

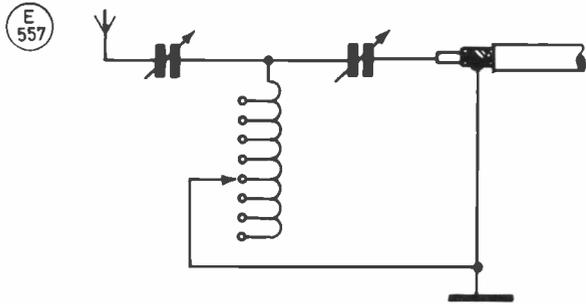


Fig. 8(a) Versatile antenna matching unit for use with end fed wire antennae

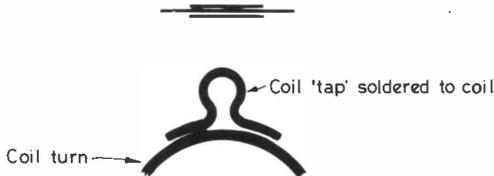


Fig. 8(b) Method of securing tapping points on an ATU coil

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

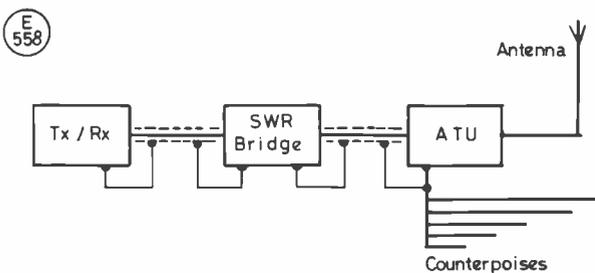


Fig. 9 End fed wire antenna with counterpoise earth system

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 they 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:—

$$L = \frac{246}{f}, \text{ where } L = \text{length (ft.)}$$

$$f = \text{frequency (MHz)}$$

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



"... just been sorting out a fault in the linear ..."

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 month's 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 target, 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"⁴ 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 ANALYSIS⁵ 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:

¹Radio Communication, March 1973

²WWV 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.).

³Qualtech, 2 Brickenhole Lane, Walkeringham, Doncaster, S. Yorks DN10 4HX

⁴Spectre Software, 119 Richmond Road, Montpelier, Bristol BS6 5EP.

⁵Number One Systems, 9A Crown Street, Huntingdon, Cambs.



OBLAST CORNER



NIGEL CAWTHORNE, G3TXF

RUMOURS 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 compared to 1500 to 1800 in previous years. 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 RZ10WA and RA1OT. But note that not all '10' calls are FJL, only some. The only way to find out is by asking!

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 UZ1BWW (UP2), RL8PYL (UL7) and UM9MWA (UM8).

OBLASTS 'WORKED' TABLE

Station	1985	All-Time
G3BDQ	112	—
G4OBK	103	126
G4PWA	100	165
G4MQC	99	125
G2DAN	95	103
G4WSX	93	104
G4ZSQ	92	95
G4OII	74	125
G4XRX	74	111
G8KP	70	167
G4MQC	70	116
G0AMH	65	—
G4UNH	62	104
G4TWX	58	108
G4XTM	57	79
G3RJB	55	159
GW4PXQ	46	87
G3URA	45	76
G4UNH	40	98
G4VDX	39	56
G4LZZ	35	80
G4GOF	25	115
G4VFG	23	46
G4VXU	20	144
G3DOP	19	—
G3ICG	18	95
G4EZA	17	112
G4YIR	15	26
G4YWG	14	30
G4ARI	2	61

OBLASTS 'HEARD' TABLE

Station	1985	All-Time
BRS1066	128	145
SWL Frank Dunn	119	170
BRS25429	100	140
BRS87156	93	93
SWL Mike Ribton	85	109
BRS87259	72	72
BRS28198	64	—
BRS25429	64	127
BRS32601	59	148
BRS86766	41	41
BRS87156	37	—
BRS44984	29	83
BRS86766	12	15
G14386	—	108

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 call sign 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 UA0 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



UA2EC, an active DX-er, can be relied upon for the UA2 multiplier in most contests. Kaliningrad, Oblast 125, counts as a separate DXCC country in all contests except CQ-M, where it is considered as part of the RSFSR.

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!

• • • "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.

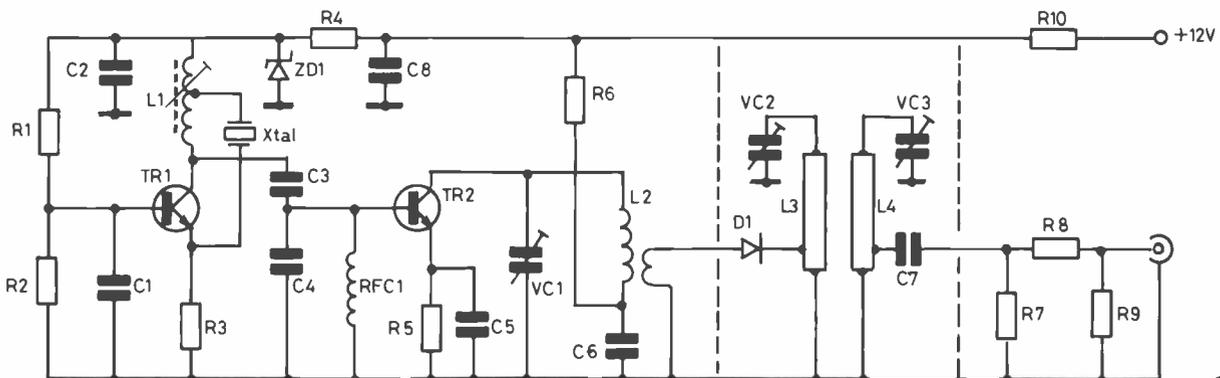


Fig. 1 Signal Generator Circuit

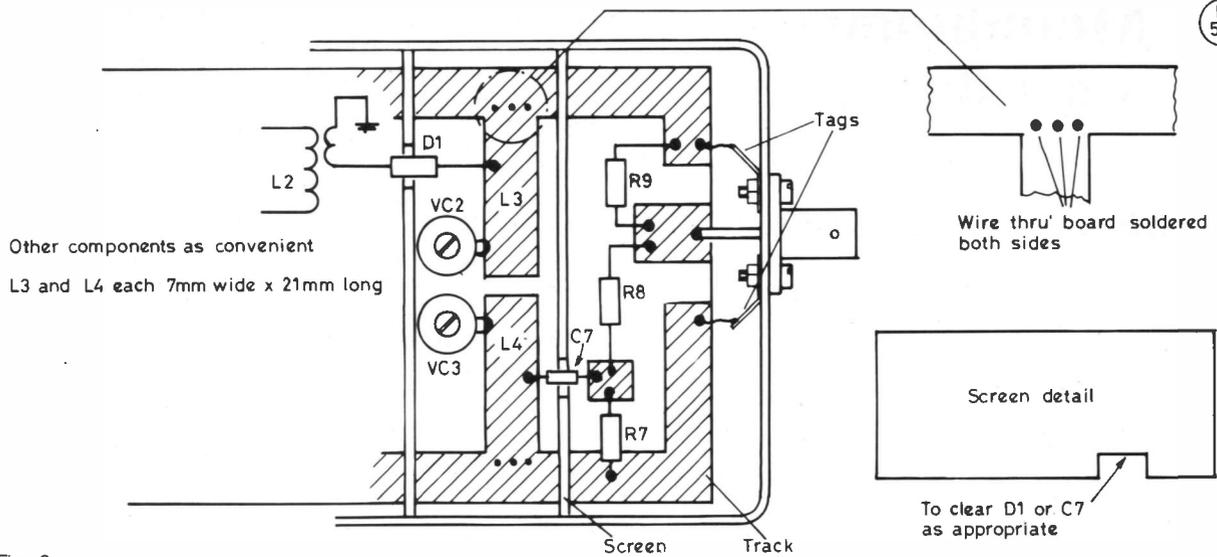


Fig. 2

**Table of Values
Fig. 1**

R1 = 6K8	TR1, TR2 = BF115
R2 = 2K2	Xtal = 48 MHz (see text)
R3 = 470R	L1 = 11 turns, 26 swg, on 0.3 inch former tapped one turn from supply end
R4 = 270R	L2 = 4t, 20 swg, 1/4" dia, 1/2" long, with 1t coupling loop at supply end
R5 = 82R	L3, L4 = see diagram
R6 = 680R	RFC1 = 20t, 26 swg, wound on 1W resistor
R7 = 150R	D1 = 1N914, GEX66
R8 = 33R	ZD1 = 9.1 volt
R9 = 150R	
R10 = 100R	
VC1 = 10pF	
VC2, VC3 = 5pF	
C1, C2, C5, C6, C7, C8 = 1nF disc	
C3, C4 = 15pF	

Requirements

The first requirement is that the frequencies produced should be known with a high degree of accuracy and that they will be repeatable. The output level should be either adjustable (which can cause problems at the higher frequencies), or should always be at a known level so that comparative tests can be made with some certainty of getting meaningful results. If the output level is fixed it should be at a level high enough to be heard on a receiver which is way out of tune when connected directly to it, and yet low enough not to need elaborate attenuators for the final tweaking. It would also be useful if the signal could be made available on several bands.

The Solution

The unit to be described meets these requirements simply and cheaply. See Fig. 1. The basic stability is achieved by the use of a crystal controlled oscillator running at 48 MHz, or perhaps a little above, so as to put a signal into the bottom end of the bands. To enhance the stability the supply voltage to the oscillator is stabilised by a zener diode. This is then followed by frequency multipliers. The first stage uses a transistor and is tuned to 144 MHz; this is followed by a simple diode circuit which multiplies by nine to give an output on the 23cm. band.

This output contains harmonics of the 48 MHz oscillator and so produces signals at 144, 432 and 1296 MHz, which is what we need — as well as at many other points, which can be looked upon as a bonus. The output from the final multiplier is broadly resonated at 1296 MHz and this, together with the general shielding, ensures that the output on the three bands is at a similar level. The final part of the circuit is a 6dB attenuator which not only reduces the output level but, more importantly, fixes the output impedance at close to 50 ohms and also isolates the unit from the effects of the external connections.

Power for the unit could conveniently be taken from the station twelve volt supply, or a small mains power supply could be built into the unit. This could be very small as the unit only takes a few milliamps of current, and it would not need to have any stabilisation built in to it as this is already taken care of in the generator circuit.

Construction

The whole unit, if built without an internal power supply, can be easily built into a small die-cast box, see Fig. 2. This form of construction, or something similar, is required so as to reduce direct radiation, or leakage, of the signal to very low levels. The unit must be built on double-sided PCB material, which may be made up as an etched board or use could be made of the 'island' technique to support the components up to, and including, the second multiplier stage.

A complete PCB layout is not given as it will depend to some extent on the components available. However the layout and dimensions of the final multiplier circuitry are given so that these may be readily duplicated. It is essential to include the two screens which are shown on the drawings, these can be made of PCB material and should be arranged so as to fit closely to the sides and top of the box. The attenuator components may be mounted between the board and the output socket using the shortest possible leads. Two solder tags should be mounted under the socket mounting screws and the free ends of these should then be soldered directly to the circuit board.

Options

The range of transistors which may be used in this circuit is fairly wide, many other types may be substituted provided that they have a suitably high Ft figure. You may also use other crystal frequencies (36 MHz for instance) and it is also possible to use 12 MHz crystals running as overtone oscillators. For a 36 MHz crystal L1 will need an additional three turns, whilst a 12 MHz overtone will need the extra turns and also a little experimentation with the tapping point to ensure reliable starting.

Setting Up

Connect a meter to measure the collector voltage of TR2 and then adjust L1 to obtain the lowest voltage at this point. Switch the unit on and off several times to check that the oscillator restarts reliably and, if required, adjust L1 to obtain the desired result. Now disconnect the multiplier from its connection to the 1296 MHz line and insert a meter to measure the current at this point; adjust the output tuning of TR2 to obtain maximum current and then reconnect the diode. This will have got the tuning close to optimum and final peaking can then be done whilst listening to the signal on a receiver.

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 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 K1WHS 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,

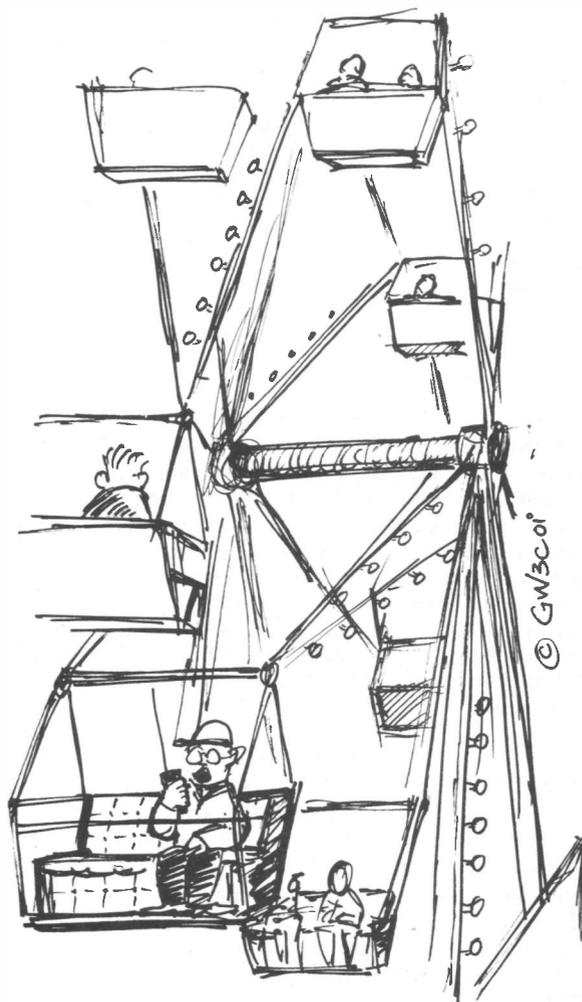
first off the production line from MET Antennas of St. Margaret's and it worked well.

At the antennas we had both a pre-amp and a Tx/Rx splitting relay. We used Heliac 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.

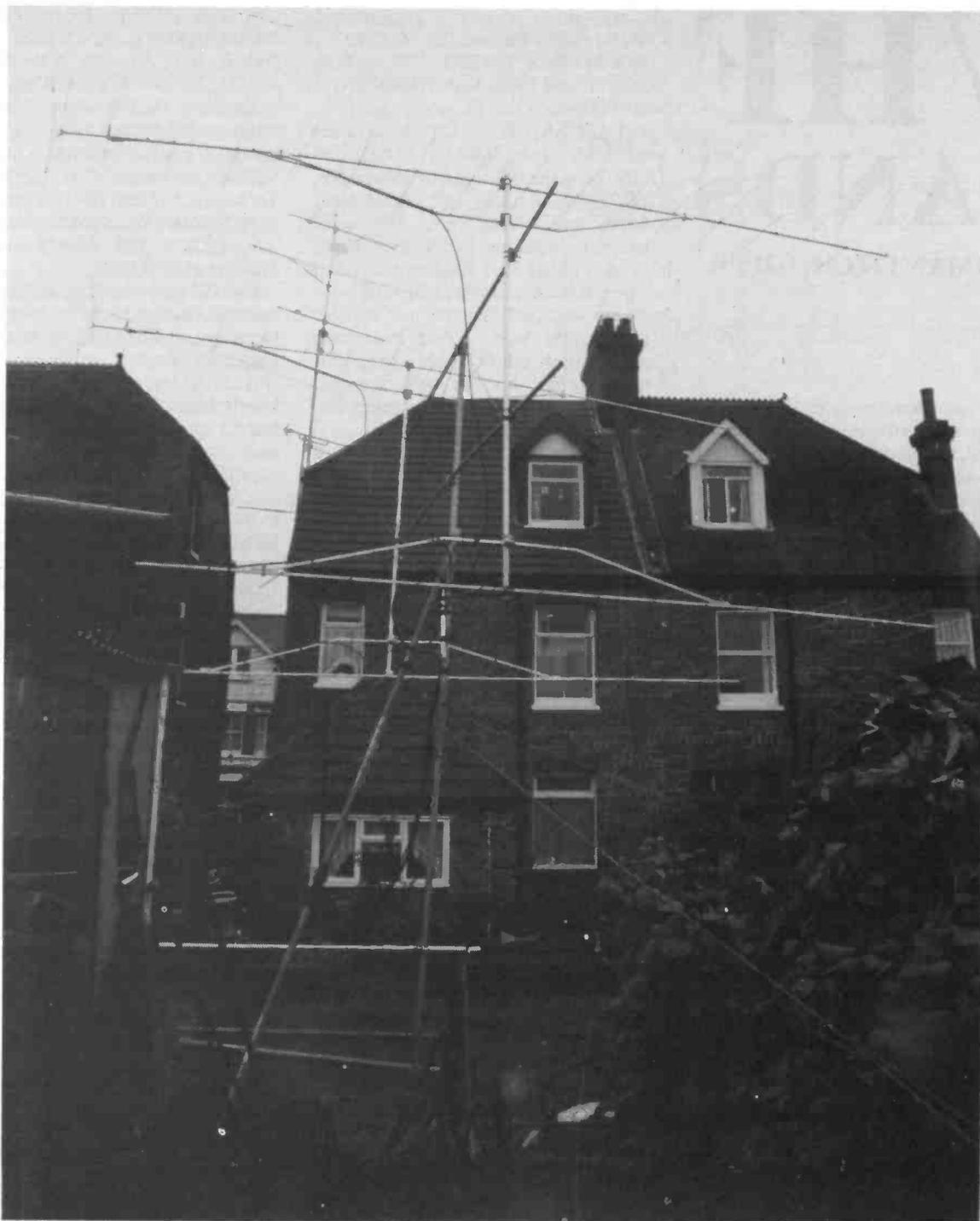
My QTH is in Folkestone and I do have a clear takeoff southwards from east to west with 300ft. of chalk to the north.

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

NORMAN FITCH, G3FPK

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 a 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" will be sorted out. It seems likely that a *Gazette* announcement could appear by the end of September. It is to be hoped that the Society will keep the band plan simple with these out-moded calling frequencies largely omitted. SSB and CW calling frequencies are unheard of on the HF bands, so why bother with them on 6m? Perhaps we should consider not using FM mode on this band since it is a spectrum-wasting system, better suited to UHF/SHF.

On the operational side, the big news is the opening to Canada and the U.S.A. on July 2 which was already going at 2230. Brian Bower, G3COJ, (BKS) worked K1TOL, WA1OUB, W2CAP/1 and W1JR between 2248 and 2316, with K1ZFE and W1AYS heard. The event was patchy and Brian reports G4BPY (SFD) filling in a page of his log while G4ASR (HWR) heard nothing. Dave Sellars, G3PBV, (DVN) heard K1TOL at RST419 at 0030 after two hours of listening. On the morning of June 30, he worked LA8AE and LA9DL (FT) who were very strong. In

the early hours of July 7, he contacted GM3JII (WIL) for Jon's first G QSO.

Martin Blythe, G4HFO, (CNL) lists *Es* QSOs on June 5 with GMs 3DOD, 3WOJ and 4FDT, and GI3ZTL, and on the 16th, with LA6QBA (FT05c). Crossband QSOs were made with SM6PU, YO2IS and DL0WW on the 16th and two days earlier, CT1WW (WB) was worked. On the 30th, LA8AE and LA9DL near Oslo were contacted. Welcome to Stephen Black, G4PSS, (TWR) who has heard seven of the permit holders of whom G2ADR is the most active copied. Stephen uses a *Yaesu* FT-680R and 5-ele. *Tonna Yagi* fixed pointing south and he would like to hear from anyone who has built the 6m. preamp. featured in a recent 6m. *Newsletter*.

Ian Parker, G4YUZ, (HFD) is putting a station together in anticipation and has a 5-ele. *Yagi* at 50ft. A home-made transverter is contemplated. Dennis Robinson, GJ3YHU, worked W2CAP/1 at 2232 on July 2 and heard VE1YX. He and Lawrence Woolf, GJ3RAX, worked GM3JII on July 7. Angus McKenzie, G3OSS, (LDN) worked WA1OUB and W2CAP/1 in the early hours of July 3 — S9 from the former and RST449 from the latter — and Chris Bartram, G4DGU, (DVN) also contacted the WA1.

Dave Lewis, GW4HBK, (GWT) lists crossband QSOs with CT, EA4, LA, OZ and SM stations in June and mentions YU50MHZ who has been operating even though there is no legal 6m. activity in Yugoslavia at present. On June 22, Dave worked GM3WOJ via MS for his first Scottish station on the band. On June 16, he copied the French Guiana beacon FY7THF between 1530 and 1605 amongst the Spanish *Es* QRM at RST529 at best.

G3COJ, during a 20m. QSO with K8EFS, learned that on June 23, GB3NHQ had been copied by K1TOL in Maine and GB3SIX also heard. But of greater significance was the reception at 0200 of GB3NHQ by K7KV in Auburn, Washington, on the west coast, a distance not far short of 8,000 kms. What kind of propagation was that at this low point in the sunspot cycle? Quite obviously there is much to be researched about 50 MHz propagation.

About Tx gear for 6m., some of the older valves such as the 807 and 6146 are rated up to 60 MHz, as is the 811A, so cheap PAs are quite possible. 4m. transverter designs can easily be modified for 6m. and there is no need for receivers with 1 dB noise figures. As for antennas, your scribe favours a home-built five or six element *log periodic* design to cover both 6m. and 4m., the awkward point being the mechanical one, of course, due to the nature of the beast.

Four Metres

Nick Peckett, G4KUX, is now active from Co. Durham and Kev Archer,

G4CMZ, (DYS), John Wilkinson, G4HGT, (YSW), Jerry Russell, G4SEU, (WKS), John Jennings, G4VOZ, (LEC) and G4YUZ have all worked him. G4HGT 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*. G4PSS is now QRV from Tyne and Wear and Stephen gives his 'phone no. as 091-4822025 and *Prestel Mailbox* as 919993534.

G4VOZ reports on the intense *Es* from Eastern Europe in early June and the reception 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 one. They seemed not to be hearing as well as they were getting out, though. G4VOZ and G4SEU, who are about eight miles apart, compared their reception of GB2LIE via 70cms. and noticed the well-known "see-saw" effect. When G3YJX (CNL) worked GB2LIE, he was RST555 instead of his usual best at RST529.

G4YUZ had an MS test with HB9QQ (DG) on June 6 but did not complete; presumably Pierre was on 2m. GW4HBK worked CT1WW, who was on 10m., on June 15, 16 and 26, and SM6PU 4/10m. on the 17th and 20th. G4SEU worked SM6PU the same way on the 20th, and Jerry heard OZ7GAV and CT1WW.

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 at 1515 and caught the June 11 affair in which, between 1540 and 1655, he worked OE, OK, HG and YU stations in II, IH, IJ, JH, KF and KG squares, all at S9. Also heard were SP7PGO, SP7CNL and SP6GZZ, the event fading out by 1734.

G3PBV mentions that G4NDG (DVN) worked UQ2GMB (MR) and UR2RM (MS) at 1149 on CW on June 11 but things really opened up at 1455. Dave says he had never heard so many different countries in one opening starting with HG5GL (JH), then YO5AXM (KH) and OK3CPY (JI). From 1640-1700 he got YU7MDZ (JF), three HGs in IH and OE5OLL (GI). Around 1735, the SPs began to come in. A short opening to SP and UB5 was missed on the 16th and the next day, John Moxham, G8KBQ, "... just about worked ..." YO5BPE/P at 1354 in LG square. On the 26th, Dave reports G4SBH in Torquay working IO5SVS (GC). On the 27th, Dave managed six YUs in JE, KE and KF between 1348 and 1400, with YO7CKV (LF) a "got-away" at 1423. On

July 2, he heard the GWs calling EA5FKW (ZY) at 0828 and worked him at S9 at 0835.

Mark Page, G1EGC, (BKS) thinks he completed with YO6CBN/6 (KN26GR) on June 11. G4HGT (YSW) caught the June 2 event starting at 1555 with EA6ET (BZ) and EA3DLV (BB). Suddenly at 1609, seven Is were heard till 1628 and John got I8LPR (HB). At 1648, he worked YU7MCG, then YU4AR, both in KF, 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 HG1YI/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, Ds and SP6 and 7. These were in squares FI, GI, HG, HI, IE, IH, II, IL, JF, JG, JH, KF, KG, KH, LE and MG. On the 16th at 0929, Ken heard a UB5AA? and worked SP9HWY (JK56f).

Roger Greengrass, 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 "CQ" answered by UA3LBC (SP63c), a DX of 2,446 kms. Dave Dibley, G4RGK, (BKS) only worked YU2CBM (ID) on June 2. On the 5th, he heard IT9, 9H1, SV and YU, but only completed with two Is and LZ1WL (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 Swedish 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 YO6CBN 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 G1INK, 35 miles away, working a UB5, all inaudible in Leamington Spa. Jack Charnock, G4WXX, (MCH) worked OE, OK and YU on the 11th. G4XEK (SFD) added five more squares on the 2nd with F1HMR (AD), two Is in GD, one in HB and I71WN in JA, plus HG8ET (KG). Bob had a CW QSO with UA3LBC on the 3rd and anxiously awaits the QSL. Mike Johnson, G6AJE, (LEC) heard weak I0, YU1, 2 and 3 stations and SV2 on June 27 but who were S9 in Northants. Keith Killigrew, G6DZH, (HWR) worked OE and YU on the 11th in new squares.

ANNUAL VHF/UHF TABLE

January to December 1985

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		23 CENTIMETRES		TOTAL Points
	Counties	Countries	Counties	Countries	Counties	Countries	Counties	Countries	
GW4TTU	—	—	83	19	55	8	23	5	193
G1KDF	—	—	83	15	47	7	—	—	152
G4SEU	42	2	56	10	32	8	—	—	150
G4TIF	17	2	60	12	41	12	—	—	144
G1EZF	—	—	64	19	38	6	—	—	127
G4YCD	—	—	75	15	32	4	—	—	126
G6ZPN	—	—	60	15	43	7	—	—	125
G6DER	—	—	57	11	30	5	15	4	122
G4MUT	24	2	47	14	27	6	12	2	120
G6HKM	—	—	50	13	41	13	—	—	117
G6MGL	—	—	43	10	35	7	17	4	116
G6XVV	—	—	64	12	31	4	—	—	111
G4HGT	2	1	63	20	18	2	—	—	106
G4WXX	—	—	82	18	—	—	—	—	100
G6XLL	—	—	61	13	21	4	—	—	99
G6ECM	—	—	75	22	—	—	—	—	97
G6YIN	—	—	54	9	25	5	—	—	93
G3FPK	—	—	72	17	—	—	—	—	89
GW3CBY	20	2	46	7	10	2	4	2	87
G1INK	—	—	32	9	37	8	—	—	86
G8RWG	—	—	50	10	23	3	—	—	86
G6AJE	—	—	41	7	32	4	—	—	84
G4VXE	—	—	47	5	28	3	—	—	83
G1EGC	—	—	60	15	—	—	—	—	75
G6XSU	—	—	35	9	21	7	—	—	72
G4ARI	16	1	47	7	—	—	—	—	71
GW6OFI	—	—	59	9	—	—	1	1	70
G6WZO	—	—	17	3	30	5	9	2	66
G8XTJ	—	—	54	11	—	—	—	—	65
G8PNN	—	—	—	—	31	9	16	6	62
G0CAS	—	—	51	9	—	—	—	—	60
GM4CXP	5	2	34	10	6	2	—	—	59
GM0BPY	—	—	31	10	9	9	—	—	59
G4YIR	—	—	47	11	—	—	—	—	58
GW1JCB	—	—	49	7	—	—	—	—	56
G4VKE	—	—	50	6	—	—	—	—	56
GW6VZW	—	—	45	9	—	—	—	—	54
G4VHZ	—	—	38	7	4	1	—	—	50
G4WJR	—	—	39	7	—	—	—	—	46
G4WND	25	2	—	—	14	4	—	—	45
GW4VVX	—	—	38	7	—	—	—	—	45
G1HGD	—	—	36	8	—	—	—	—	44
G2DHV	5	1	28	5	2	1	—	—	42
G4EZA	—	—	35	5	—	—	—	—	40
G6XRK	—	—	27	12	—	—	—	—	39
G4CMZ	19	2	10	1	—	—	—	—	32
G1LAS	—	—	27	3	—	—	—	—	30
GW4HBK	28	2	—	—	—	—	—	—	30
G1DGO	—	—	15	7	—	—	—	—	22
G6CSY	—	—	9	4	5	1	—	—	19
G6SIS	—	—	4	2	—	—	—	—	6

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

Ela Martyr, G6HKM, (ESX) monitored the events on June 2, 11 and 27 but did not work anyone. On the 11th, Pete Hizzey, G6YLO, (KNT) lists 9H1GB (HV) for a new square. Colin Morris, G6ZPN, (WMD) got I6MQS (GD) on the 2nd and three YUs on the 11th but missed out on OK3KGW (JI). From 1617 on the 11th, Dave Gregory, G8JDX, (DVN) worked YO5AXM, HG, OE3, OK, SP6 and 7. Graham Daubney, G8MBI, (HFD) mentioned YU4WU (IE) at 1659 and SP9CSO (JJ) at 1739 on the 11th worked with HG and YOs 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 HG1YI/MM at 1610 on June 2 and heard YU, an F in BD and an EA3. On the 5th, he lists ten QSOs, the best, already confirmed being SV1OE (KM17VX) at 2,392 kms. SV1DH (KM18UA) and SV2JL (LA35b) were other Greeks worked. Kevin listed

another 23 stations in I5, I8, I0, IT9, YU1, 2, 5, 6 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), I6VJY and I6MQS (GD). On the 9th, the *Es* was 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 9H1I, and in a brief event later around 1700, in a ten minute period, he got YO5BPE/P (LG), YU7EW and YU7MCG (KF). On the 16th, at 1017, he contacted UB5DAA (LI).

From Belfast on June 2, Philip Murphy, G14OMK, 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, GJ4ICD, the best *Es* day so far was June 27 between 1337 and 1535 when he worked HG8, I7, YO7, YU7 and LZ1. From Edinburgh,

Andy Steven, GM4IPK, 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 YU7MJA (KE).

Jonathan Eastment, GW4LXO, (GNS) worked IT9CYH/9 (HY), two Fs in BD, HG1TI/MM and three YU2s in ID on June 2. On the 5th, six Italians in FC and GB; IT9EOY (HY), I8NKA (IY) were contacted, with SV1OE heard. On the 6th, EH9IA (YV) was a new square, country and continent, and EA7AYD (YX) was also worked in a five minute opening. Clive O'Hennessey, GW4VVX, (GWT) lives in "QRM Valley" but made his first ever Es QSOs on the 11th in the shape of two YUs and an SP on SSB. Paul Baker, GW6VZW, (GWT) worked three YUs and OE6LOG (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 LA1ZE in CS, OZ1JXO (EQ), SK6GX (FS), LA9H (FT) and LA8WF (ES). Congratulations to Neil Clarke, (YSW) who is now G0CAS (ex-G8VFX) and puts his success in passing the Morse test to the variation of licence concession.

Mike Newell, G1HGD, (WKS) has read VHF B for two years and wrote for the first time. He runs an FT-290R, 30w amplifier with *Gasfet* preamp. and a loft-mounted HB9CV antenna and best DX so far is OZ1EKI (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 (0926) 55158. Bob Nixon, G1KDF, (LNH) got LA6HL on the 4th and GB4WQ (WQ) on the 25th. EIs worked were 9BG (Clare) on the 16th, 9FE (Tipperary), 4AQB (Galway), 5FK (Cork) and 3BKB (Limerick) on the 30th.

George Haylock, G2DHFV, (KNT) operated as GW2DHFV/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 GV8ARS for VJ-Day anniversary, denoting 8th Army Royal Signals. G3PBV worked DA1UM/LX (CJ) at 1640 on June 20, and at 2145, EA1BLA (VD) which is a difficult direction for Dave. G4DOL also worked the -/LX on the 20th and heard EA1s BLA and CYE on the 25th.

G4HGT worked several Scandinavians on June 3 and 4 including LA9H at 981 kms. Some TVI has been very effectively cured by a filter designed by G4GED published in *RadCom* for July, 1978 and which John recommends. On June 29, G4HFO was working EA1s TA and BLA in VD when EA8XS called in over them; see also the 70cm. section. G4SEU lists

OZ1ECF and GI4FUM (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 GD3AHV.

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-ele. *Yagi* by *Tonna* at 30ft. His "B" call was G6LOO, by the way. Sue Frost, G4WGY, (LDN) added 34 CW stations from June 1 including three G1s. Dave Cater, 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, EI2CLB (Waterford) on July 1 and EI3CAB (Wexford) on the 2nd. June Charles, G4YIR, (ESX) reckons that June was an enjoyable month, particularly since on the 3rd, she worked a couple of OZs for

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

September issue — August 7th

October issue — September 4th

November issue — October 6th

Please be sure to note these dates

an all-time new country. She has been active on CW again. Colin Ford, G4ZVS, (WMD) asks about the CW ladder. All we need is a note of the number of different stations worked since Jan. 1; no need to list them all. His set-up is a *Yaesu* FT-290R, 30w amplifier with preamp. and an HB9CV or *Slim Jim* antenna.

G6AJE is now back home for good and has replaced a 6-ele. *Quad* by a couple of 12-ele. *ZL-Special* antennas, so John should be increasing his table scores somewhat. Dave Ackrill, G6VMQ, (WMD) passed his Morse test at the Elvaston Castle Mobile Rally on June 9 and continues to call on CW on 144.155 MHz in the hope others will hear him. Graham Ratcliffe, G6WZO, (MSY) has been studying for exams so not much time for the hobby. However, he has added 13 counties and two countries to his score.

Alex McCreadie (BDS) has traded in his old call of GM8YPI for ". . . the embarrassingly brand-new GM0BPY." He has had a few CW QSOs and found them a bit daunting. GW4VVX's table scores are based on his CW contacts, one of which was with Stan Green, GU3EJL,

(ALD) who was persuaded to find an old Morse key, from a *Junker* JU88 WW2 bomber, which has not seen the light of day for about twenty years.

Next, the MS notes, starting with G4DCV who netted six new squares:— June 16, EA1YV (VC), I5JUX (FD) and GB4WQ (WQ) on the 26th, OE3OKS (IH) on the 29th, and EA3IH (BB) and SK3LH (JX) on the 30th. The 15 was on SSB, the rest on CW. G4IGO worked OK1YA (HK) on random CW on June 7, YU2EZA (IG) and SM5KWU (IT) on the 8th, and SM3JGG (HV) on the 9th, all CW. G4RGK's list includes EB5EHX and EA5EMM, both in ZZ, EA2LU (ZC) and LA6QBA (GV), all on CW.

G4YUZ listed 11 completed QSOs in June including I4GOC (GE), CT1WW (WB), EA6FB (AY), SK3LH and OE8FNK (GG). GI4OMK completed on SSB with SM1BSA (JR), DF1CF (FH), F1GTU (AF) and IW2BZY (EF), all on June 8. GW4LXO used CW and completed with YU3ZW (IG), SM0HJZ (IT), I6DQE/6 (GD) and SM4KYN (HT), but gave no dates.

G4SFY has been on MS and completed in 45 mins. on June 8 with EA1CYE (YD). On the 24th, Ray completed in 39 mins. with YU3FM (HG), and on the 30th, he took 55 mins. to work IV3HWT (GF). G8TGM heard nothing from IK2ABJ (EF) on June 6 or from SM5MIX on the 8th, but did complete with LA6QBA (FT) on the 7th for a new square.

On *E-M-E*, G3PBV got a nice letter from Dave Olean, K1WHS, who suggested a sked. This came off successfully on June 22. It seems that Dutch stations running 5-10w call Dave, he has such a good signal. It was reported last month that G3POI's QSO with ZL2BGJ on May 26 was a World record, but not so. That is held by K6MYC/KH6 and ZS6ALE at 19,450 kms. made on Feb. 18, 1983. However, it is a record by a Region 1 IARU operator. GW4LXO has heard 48 stations and worked 14 different ones including SM7BAE, KD8SI, WA6MGZ, YU3WV, UA1ZCL, WA1JXN, W7FU and F6BSJ.

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 inaudible in Norfolk. GM4IPK (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 worked the same way at 0050 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 with almost no activity. For G4HGT, broken coax at the rotator was not mended till late June, so nothing to report from John. G4RGK's only successes lately were 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 which had dire repercussions on his *IC-402* and some of his 13cm. gear. He is running 20w on the band at present while repairing the big PSU. Meantime, he has entered his score in the Annual Table. G4WND is QRV on the band with a *Trio TS-130V* and *Microwave Modules* transverter running 10w to a single 12-ele. *Yagi*. Three more *Yagis* are to be added and best DX so far from the Tamworth area is GM8MJV/P (IO85CW) in the contest on June 9.

G6DZH runs 10w to a single *Yagi* on 70cms. from Redditch (HWR) and has 63 squares worked so far. G6HKM has been more active on this band than she has on 2m. with nine more annual counties and three more countries added. Ela operated in the contest working GI6ATZ at 521 kms. and GM8MJV/P at 536 kms. G6YLO has his two times 4CX250BM valve amplifier running, with four 19-ele. *Tonna Yagis* and MGF1400 preamp. for portable and contest work. He plans to cooperate with G4DCV to attempt some *E-M-E* working. On June 1, Pete worked three OZs in EQ and two each LAs in CS, DS and FT, G1HGJ (ZP) and SM6EAN (FR). The previous day saw D, OZ and PAs in the log.

Following their 2m. QSO on June 29, G4HFO and EA8XS came on to 70cm. for an SSB QSO. Next they went over to FM with RS59 reports, so Martin wonders if this 2,808 kms. QSO sets some kind of record? Salvador was only running 10w from Las Palmas. G4SEU worked OZ1IJL for an all-time new one on June 3. PI4VLI/P on the 1st, and GM8MJV/P (SCD) and DG3LAS on the 3rd were new this year.

Now a plea for more CW activity from G4WGY who has only found 11 operators prepared to pound the brass — and two of those were GIs. 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 GD8EXI and GM8MJV/P, each all-time new country and square. YK and ZK were worked for

new ones, too. G6WZO also had a go in the contest and Graham found G3WTP/P (BFD), GM8MJV/P and GD8EXI for more 1985 table points.

GJ4ICD only needs two more cards for 100 squares confirmed on the band. LX1DB's took *five years* to arrive, but Geoff still needs confirmations from such as ZF, CI, ER, FH, FI, FQ, etc. In the tropo. lift from May 30 to June 4, GM0BPY heard a number of German repeaters at good strength, so just for the fun of it, Alex went through DB0SW, which serves the island of Sylt, and had a five minutes chat with DJ8DJ. By the direct route, he worked LA1ZE, whom he describes as the most reliable LA beacon, DC0HW in Aurich, PE1DTU on Texel Is., DG1BP in Wilhelmshaven, and lady operator Rita, DG6LAR/M in Heide, near the OZ border.

GW4LXO is looking for XN, YO and ZP squares on the band. Jon lists some nice DX worked from Cardiff in the May

Station	ANNUAL CW LADDER				Points
	4m.	2m.	70cm	μ Wave	
G4TWD	—	400	—	—	400
G4WHZ	—	279	26	—	305
G3GHY	—	289	11	—	300
G4UKM	6	233	20	—	259
G4SFP	—	244	—	—	244
G4WGY	—	164	11	—	175
G4NZU	7	162	2	—	171
GW4TTU	—	—	106	29	135
G4VXE	—	127	7	—	134
G4YIR	—	132	—	—	132
G4ARI	7	118	—	—	125
G4ZTR	—	111	—	8	119
GW4VVX	—	109	—	—	109
G4EZA	—	72	—	—	72
G4CMZ	21	42	—	—	63
GM4CXP	3	38	1	—	42
G2DHV	5	33	1	—	39
GW4HBK	34	—	—	—	34
G6ZPN	—	32	—	—	32
G6VMQ	—	30	—	—	30
G0CAS	—	22	—	—	22
G4LVE	—	13	—	—	13
G4PSS	—	10	1	—	11

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 SO73d. 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. G2DHV 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 GM8MBP (GRN) on June 2, and G4HWA/P (YSN) and G4NXO (HWR) on the 8th on 23cm. On 13cm., before the PSU backfire hit his 13cm. gear, he worked PA0GUS/P (CN), SM6ESG (GR) and DC9XO (EM) on June 1 and 2 on this band.

GW4LXO was QRV on 23cm. on May 31 and worked PE1JSE (CL), PA0RDY (CM), PA0EHG (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-ele. *Yagis*. John Tye, G4BYV, (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 VHF.

The exchange of QTH-type information has reached silly proportions now. Some operators start off by offering their E-QTHL, the Maidenhead version, 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 other data if the other person asks for it? When calling "CQ" why not say, for instance, "CQ from G0XYZ in Coventry

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.

Award News

Congratulations to Pete Godfrey, G8ULU, from Whitstable, Kent, who is member no. 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 – 1500 GMT, SSB and CW only. Max. e.r.p. is 250w and no QSOs above 144.295 MHz. Exchanges to be callsign, report and serial number, plus county, though it did not say if these were postal or administrative. Scoring is one point per QSO, 10 pts. for each new county, 10 pts. for each new country — G, GW, etc., all separate — and 10 pts. for contacting G3FKF/P. Entries by Sept. 18 to:— Salisbury R & ES, c/o Mr. M. E. Wright, 27 Bulbridge Road, Wilton, Salisbury, Wilts., SP2 0LQ. Include station details with your entry.

The 432 MHz Low Power contest is on July 27, 1700-2300 and the 144 MHz version is on the 28th, 0900-1700: see page 192 last month. On Aug. 18, from 0700-1300, there is the 1,296/2,320 MHz event, a Fixed and All-other contest with a basic one point per kilometre scoring. The penultimate legs of the 10 GHz and Microwave Cumulatives are on Aug. 11, 0900-2000, the latter being for 5.7 GHz.

In the April 70 MHz Contest, G4ZAP won the Fixed section with 357 pts. from 58 QSOs. Runner up was G4NRG with 280/55, and G4MHC was third 265/54. The All-other part was won by GW4MGR/P 561/75, with G3PMH/P second 408/67 and G4FRE/P third 390/55. BRS 52543 won the listeners' section with 180 pts.

DX Notes

Dave Storrs, 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 W1JR in July *Ham Radio Magazine*. From *DUBUS* issue 2/85, news that DG4FBG, DH3FAP, DL1ZBK and DL9ZAW 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

Not one reader has mentioned 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 be off for some 62% of each orbit from Aug. 1 for four weeks. Some attitude manoeuvring 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 190-206 Mode L; 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

Freslev, 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, SM4IVE and SM4LMV. 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.

Extract from the blurb for a Japanese mobile antenna for 26-28 MHz. "Deploying a minimized condenser stabilize the QSB value and minimize the VSWR fluctuation by rain. 17-7ph element has strong restoring force . . ." Ah, so!

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.

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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 2LO.

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 0-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 waveband. 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 Service — "This is the London 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

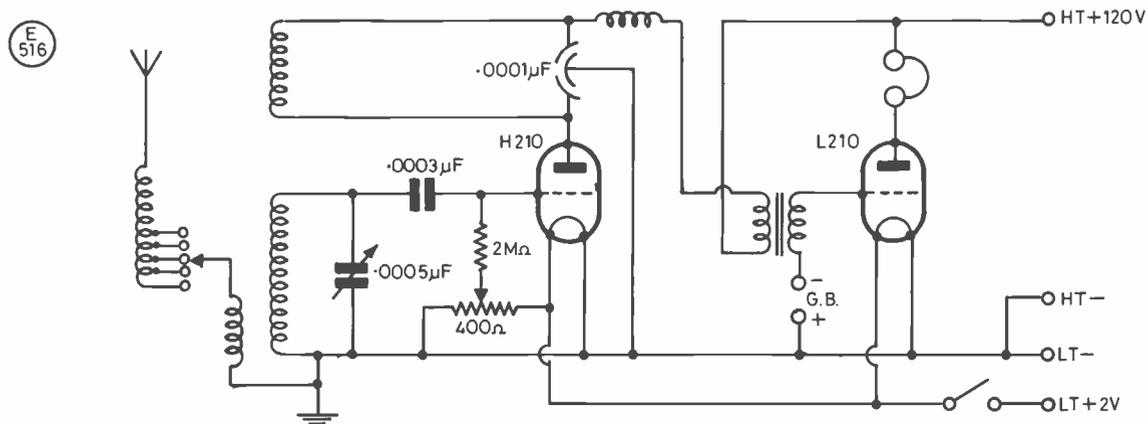


Fig. 1 "POPULAR WIRELESS" MAGIC-TWO RECEIVER



Fig. 2. RSGB membership certificate, 1934.

Northampton Plating Co. (under my desk of course), and Ward and Goldstone (Goltone). Later on Premier Radio entered the field; they had a shop in London and also issued a comprehensive mail-order catalogue. Eddystone Radio manufactured a range of high-quality components for professional and amateur use 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 Tungram and Dario cost 5/6 (27½p) 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/-(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 earth according to which side of the road one happened to live. Fortunately for me on our side of the road the negative pole was 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 forerunner of the present RSGB "Guide to 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



WIRELESS TELEGRAPHY ACTS, 1904-1926.

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FOR
EXPERIMENTS IN WIRELESS TELEGRAPHY.

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hereinafter called "the Licensee" is hereby authorized to establish a wireless telegraph receiving station for experimental purposes and to use wireless sending apparatus in conjunction with an "artificial" aerial at the above address

subject to the conditions overleaf and to the payment of 10s. on the grant hereof (the receipt of which the Postmaster General hereby acknowledges) and a fee of 10s. on the anniversary of the date hereof in each year.

This licence is subject to withdrawal or modification at any time, either by specific notice in writing sent to the Licensee by post at the address shown above, or by means of a general notice in the *London Gazette* addressed to all holders of licences for experimental wireless telegraph transmitting stations.

Failure to send the call signal, the use of unauthorized power or the connexion of the sending apparatus with any aerial other than an "artificial" aerial as defined overleaf, or any other breach of the conditions or non-payment of fees will render it necessary for this licence to be cancelled. In event of cancellation no part of any fee paid in respect of the current year will be returned.

This licence replaces that dated the _____ which is hereby withdrawn and should be returned to the address given below.

Issued on behalf of the Postmaster General { *J. Henderson*
10 August 1934

All communications should be addressed to The Engineer-in-Chief, General Post Office, Radio Section, 36, Wood Street, London, E.C.2, quoting Reference Radio A. 1450.

N.B.—Any change of address should be notified immediately.

(8888) 8888 4/24 318.

Fig. 3. 2A1H artificial aerial licence, 1934.

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 TPRG (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 ceased publication in 1934 but re-appeared later under an augmented title. However I transferred my allegiance to *Wireless World*, 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.

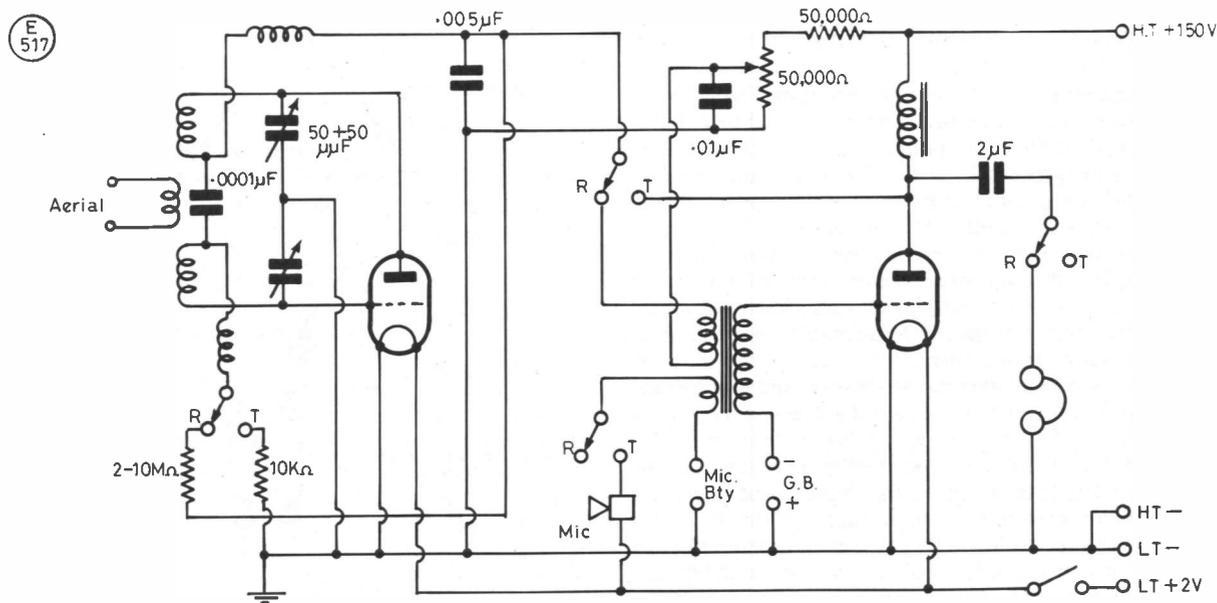


Fig. 4 CIRCUIT OF 1930's FIVE-METRE TRANSCEIVER

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 to a telephone pole conveniently sited on the pavement 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

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 more than 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

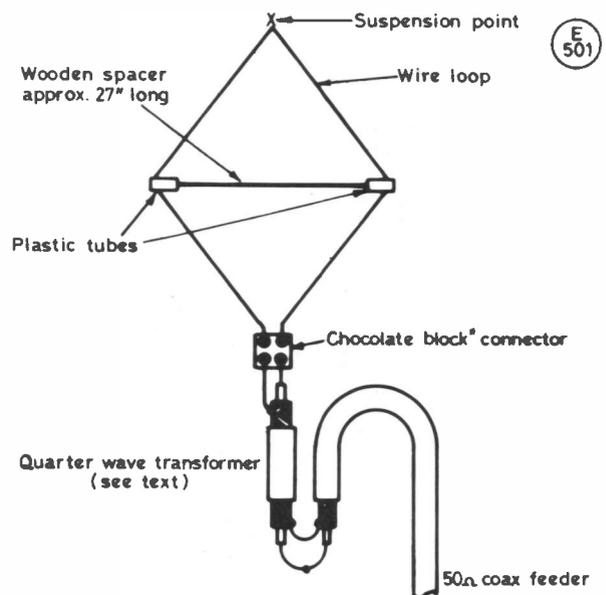


Fig.1 LIGHT WEIGHT AERIAL SYSTEM (showing method of feed).

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 tree-trunk 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

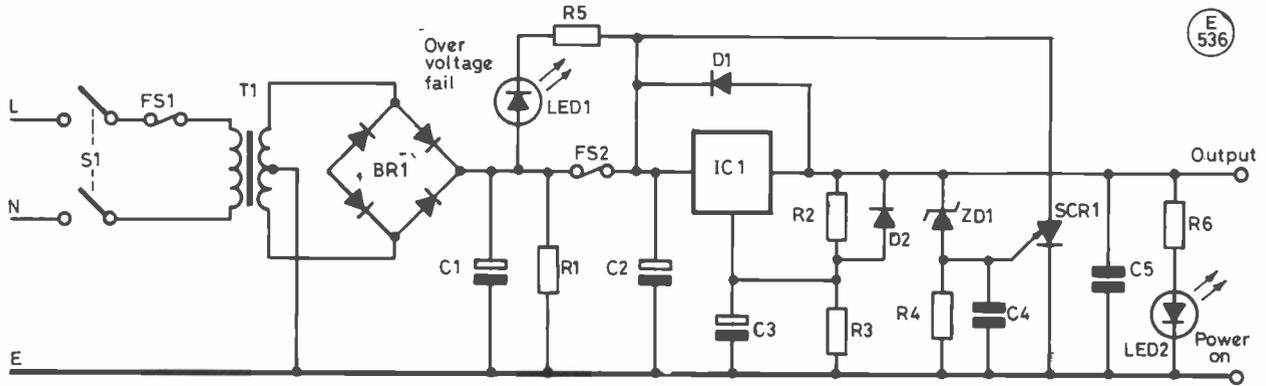


Fig.1 Circuit diagram of Power Supply Unit

Table of Values

Fig. 1

R1 = 10K	IC1 = LM350
R2 = 120R	SCR1 = TIC126D
R3 = 1K5 approx, adjust on test	T1 = 15-0-15V, 50VA
R4 = 100R	D1, D2 = 1N4002
R5, R6 = 560R	ZD1 = 16V, 400mW
C1 = 10000 μ F, 63V	BR1 = 6A bridge rectifier or similar diodes
C2, C3 = 10 μ F 63V	FS1 = 1A antisurge
C4 = 0.01 μ F, 25V	FS2 = 5A
C5 = 0.1 μ F, 25V	

transformer was rated at 50VA as it was only required to supply a peak current of three amps. However if the full three amps was 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 (9000 μ F 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.

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 a components stockist 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.

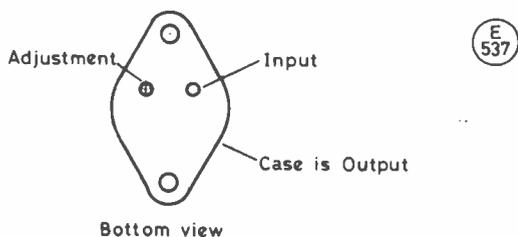


Fig. 2 Connection diagram for LM350

CLUBS ROUNDUP

By "Club Secretary"

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-Fal Hospital, Abergavenny; GB2PYF will be their contribution to the hospital fete 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 recommence 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., who will doubtless add the club details too!

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!

A very 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, Cecil 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 go-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 **Cornish** 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 foregathers 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 it 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.

Deadlines for "Clubs" for the next three months—

September issue — July 26th
 October issue — August 30th
 November issue — September 27th
 December issue — October 25th

Please be sure to note these dates!

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 noggin-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

Names and Addresses of Club Secretaries reporting in this issue:

- ABERGAVERN & NEVILL HALL: J. B. Davies, GW4XQH, 109 Croesonen Parc, Abergavenny, Gwent NP7 6PF. (0873 4655)
- ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London W3 8LB. (01-992 3778)
- ALYN & DEESIDE: G. C. Cook, GW4RXX, 20 Eccleston Road, Kinnerton, Chester CH4 9DY.
- BASINGSTOKE: D. A. Birleigh, G4WIZ, 14 Winchfield Gardens, Tadley, Basingstoke.
- BISHOPS STORTFORD: S. Mammott, G6HKK, 11 Twyford Gardens, Bishops Stortford, Herts. CM23 3SH. (0279 52297)
- BOLTON: P. Ingham, G6HDD, 49 Highfield Road, Farnworth, Bolton BL4 0AH. (Farnworth 0204) 791918.
- BRAINTREE: D. Willicombe, 355 Cressing Road, Braintree, Essex CM7 6PE.
- BRIGHTON: P. Turner, G4IIL, Flat 6, 132 Marine Parade, Brighton, Sussex BN2 1DE. (Brighton 607737)
- BRISTOL CITY RSGB: C. R. Hollister, G4SQQ, 34 Battersby Way, Henbury, Bristol BS10 7SU. (0272 508451).
- BURY: B. Tyldesley, G4TBT, 4 Colne Road, Burnley, Lancs. (Burnley 24254).
- CAMBRIDGE (Rep. Group): C. Lorek, G4HCL, 11 Bevills Close, Doddington, March, Cambs. PE15 0TT. (0354 740672).
- CHELTENHAM: T. Kirby, G4VXE, 29 Tivoli Road, Cheltenham, Glos. GL50 2TD. (0242 36723).
- CHESHUNT: R. Frisby, G4OAA, 2 Westfield Road, Hoddesdon, Herts. EN11 8QX.
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- CHICHESTER: C. Bryan, G4EHG, Marmanet, Salthill Road, Fishbourne, Chichester, Sussex PO19 3PZ. (Chichester 789587)
- CORNISH: N. Pascoe, G4USB, Bostuathick Farm, Constantine, Falmouth, Cornwall. (Falmouth 40367)
- COVENTRY: R. Tew, G4JDO, 4 Chetwode Close, Coventry CV5 9NA. (Coventry 73999)
- CRAWLEY: D. L. Hill, G4IQM, 14 The Garrones, Worth, Crawley, W. Sussex RH10 4YT. (Crawley 882641)
- CRYSTAL PALACE: G. M. C. Stone, G3FZL, 11 Liphook Crescent, London SE23 3BN. (01-699 6940)
- DARTFORD HEATH D/F: A. R. Burchmore, G4BWV, 49 School Lane, Horton Kirby, Dartford, Kent DA4 9DQ.
- DENBY DALE: G. Edinburgh, G3SDY, 37 Westerly Lane, Shelley, Huddersfield HD8 8HP. (0484 602905)
- DERBY: Mrs. J. Shardlow, G4EYM, 19 Portreath Drive, Darley Abbey, Derby DE3 2BJ. (0332 556875)
- DUDLEY: J. F. Tinsdale, G4NRA, 12 Digby Road, Kingswinford, W. Midlands DY6 7RP. (0384 278300)
- EAST LANCs: S. Westell, G6LXU, 19 Sussex Road, Rishton, Blackburn, Lancs. (Great Harwood 887385)
- EDGWARE: J. Cobley, G4RMD, 4 Briars Close, Hatfield, Herts. (Hatfield 64342)
- EXETER: R. Tipper, G4KXR, 11 Chancel Court, Chancel Lane, Pinhoe, Exeter. (Exeter 68065)
- FAREHAM: B. Davey, G4ITG, 31 Somervell Drive, Fareham, Hants PO16 7QL. (Fareham 234904).
- FARNBOROUGH: P. Taylor, G4MBZ, 12 Dunbar Road, Paddock Hill, Frimley, Camberley, Surrey GU16 5UZ.
- FYLDE: H. Fenton, G8GG, 5 Cromer Road, St. Annes, Lytham St. Annes, Lancs. FY8 3HD.
- G-QRP: Rev. G. C. Dobbs, G3RJV, St. Aidans Vicarage, 498 Manchester Road, Rochdale, Lancs. OL11 3HE. (0706) 31812)
- GRAFTON: J. Kaine, G4RPK, 74 Camden Mews, London NW1 9BX.
- GREAT PETERBOROUGH: F. Brisley, G4NRJ, 27 Lady Lodge Drive, Orton Longueville, Peterborough, Cambs. (0733 231848)
- HARROW: D. Atkins, G8XBZ, 25 Maxwell Close, Rickmansworth, Herts. (0923 779942)
- HASTINGS: D. Shirley, G4NVQ, 93 Alfred Road, Hastings, Sussex. (Hastings 420608)
- HAVERING: D. St. J. Gray, G1HTQ, 6 Devonshire Road, Hornchurch, Essex RM12 4LQ.
- HEREFORD: F. E. G. Cox, G3WRQ, 35 Thompson Place, Hereford. (54064)
- HILDERSTONE: A. Penfold, G0BEX, Staple Farmhouse, Staple, Canterbury, Kent CT3 1JX. (0304 812723).
- HOLYHEAD: Mrs. B. Anziani, 12 London Road, Holyhead, Anglesey, Gwynedd.
- HORNSEA: N. A. Bedford, G4NHP, 39 Hamilton Road, Bridlington, Yorks. YO15 3HP.
- IRTS: C. Hunter, EI9V, 30 Coolgariff Road, Beaumont, Dublin 9.
- ISLE OF MAN: Mrs. A. Mathewman, GD4GWQ, 20 Terence Avenue, Douglas, I.o.M. (0624 22295).
- KIDDERMINSTER: A. F. Hartland, G8WOX, 22 Grenville Crescent, Offmore Farm, Kidderminster. (Kidderminster 61584).
- MALTBY: I. Abel, G3ZHI, 52 Hollytree Avenue, Maltby, Rotherham, Yorks. (Rotherham 814911).
- MIDLAND: N. Gutteridge, G8BHE, 68 Max Road, Quinton, Birmingham B32 1LB. (021-422 9787)
- NEWBURY: M. J. Fereday, G3VOW, Spindlewood, Stoney Lane, Newbury, Berks. RG16 9HQ.
- OSWESTRY: J. B. Goldsmith, GW6YIY, Ivydene, Four Crosses, Llanymynech, Powys. (0691 831023).
- PRESTON: G. Earnshaw, G3ZXC, 12 Withy Parade, Fulwood, Preston.
- QTL: c/o 2 Cartmel Walk, North Anston, Sheffield, South Yorks. S31 7TU. (0909 566301).
- R.A.I.B.C.: Mrs. Cathy Clark, G1GQJ, 9 Conigre, Chinnor, Oxford OX9 4JY.
- R.A.O.T.A.: G. R. Jessop, G6JJP, 32 North View, Eastcote, Pinner, Middx. HA5 1PE.
- READING: C. Young, G4CCC, 18 Wincroft Road, Caversham, Reading, Berks. RG4 7HH.
- REIGATE: T. I. P. Trèw, G8JXV, Hoath Meadow, Church Hill, Merstham, Redhill, Surrey.
- ROYAL NAVY: M. Puttick, G3LIK, 21 Sandyfield Crescent, Cowplain, Portsmouth, Hants. (Waterlooville 55880).
- SCARBOROUGH: N. Lill, G4YWR, 7 Harewood Avenue, Newby, Scarborough, N. Yorks. YO12 6DH. (0723 360587).
- S.A.R.U.G.: P. Newman, G4INP, 3 Red House Lane, Leiston, Suffolk IP16 4JZ.
- SOUTH BRISTOL: L. Baker, G4RZY, 62 Court Farm Road, Whitchurch, Bristol, Avon BS14 0EG.
- SOUTHDOWN: T. Rawlance, G4MVN, 18 Royal Sussex Crescent, Eastbourne.
- SOUTH ESSEX: A. Smith, G4FMK, 8 The Parkway, Canvey Island, Essex, SS8 0AA. (0268 683805).
- SURREY: R. Howells, G4FFY, 7 Betchworth Close, Sutton, Surrey SM1 4NR. (01-642 9871)
- SUTTON & CHEAM: A. Keech, G4BOX, 26 St. Albans Road, Cheam, Surrey.
- SWALE: B. Hancock, G4NPM, Leahurst, Augustine Road, Minster, Sheerness, Kent ME12 2NB.
- TELFORD: T. Crosbie, G6PZZ, 41 Culmington, Stirchley, Telford, TF3 1UN. (Telford 597506).
- THORNTON CLEVELEYS: Mrs. E. E. Milne, G4WIC, 426 Queens Promenade, Norbreck, Thornton Cleveleys, Blackpool. (0253 821827)
- THREE COUNTRIES: R. S. Hodgson, G3TBT, Brackendene, Hollywater Road, Passfield, Bordon, Hants. (042877 368)
- TODMORDEN: Mrs. J. Gamble, G6MDB, 283 Halifax Road, Todmorden, Lancs. OL14 5SQ.
- TORBAY: B. Wall, G1EUA, 48 Pennyacre Road, Teignmouth, Devon TQ14 8LB. (Teignmouth 78554)
- TYNE-WEAR (Repeater Group.): J. W. Laverick, G4PFE, 5 York Crescent, Newton Hall, Co. Durham DH1 5PU.
- VERULAM: H. Clayton-Smith, G4JKS, 115 Marshalswick Lane, St. Albans, Herts. (St. Albans 59318)
- WEST KENT: Mrs. J. Green, G4UPI, 13 Culverden Down, Tunbridge Wells, Kent TN4 9SB. (Tunbridge Wells 28275).
- WEST MANCHESTER: T. Chapman, G6YIO, c/o Astley & Tyldesley, Miners Welfare, Meanley Road, Gin Pit Village, Astley, Tyldesley, Manchester.
- WESTMORLAND: G. Chapman, G11IE, 61 Rusland Park, Kendal, Cumbria. (0539 28491).
- WILLENHALL: J. Phillips, G4UPF, 16 Burnham Avenue, Oxley, Wolverhampton WV10 6DX. (0902 782076).
- WIRRAL: C. Cawthorne, G4KPY, 40 Westbourne Road, West Kirby, Wirral L48 4DH.
- WIRRAL: G. Scott, G8TRY, 19 Penkett Road, Wallasey, Merseyside. (051-630 1393).
- WOLVERHAMPTON: K. Jenkinson, 10 Avondale Road, Wolverhampton, West Midlands WV6 0AI. (0902 24870).
- WORCESTER: D. W. Batchelor, G4RBD, 14 Oakleigh Heath, Hallow, Worcester. (Worcester 641733).
- WORKSOP: C. Gee, G4ZUN, 100 Plantation Hill, Kilton, Worksop, Notts. (0909 486614).
- WORTHING: R. Jones, G4SWH, P.O. Box 599, Worthing, W. Sussex BN14 7TT. (Worthing 208752).
- YEOVIL: E. H. Godfrey, G3GC, Dorset Reach, 60 Chilton Grove, Yeovil, Somerset BA21 4AW. (0935 75533).
- YORK: K. R. Cass, G3WVO, 4 Heworth Village, York.

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 Lytham CAA to see the radar, and on August 20 they have a Top Band D/F Hunt. Details from the Hon. Sec. — see Panel.

G-QRP 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 G8IXC.

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 EI we stop at the **Isle of Man** where the locals foregather at 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 look out 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 foregather 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 G3UEC 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 **QTI-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;



Founder members of R.N.A.R.S. who were present at the recent Silver Jubilee Dinner. Back row, left to right, John G3ENI, Don G3HZL, John G3AWO, John G3DOT, Des G3LCS; front-row, Mick G3LIK (secretary), Ken G4PZR (chairman), Capt. Chatterton-Dickson (president), Mike G3JFF (founder). The Society has over 2000 members situated in 35 countries; its headquarters is at the Naval Communications School, H.M.S. Mercury, Petersfield, Hants., with call signs GB3RN and G3BZU.

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 **Reigate** the Hq. is at the Constitutional and Conservative club, Warwick 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 'Twinkletoes' 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 about being re-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, Prouds 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 Maltkins, 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 9EQ.

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 (J10A 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 55416), 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; *ARRA Exhibition*, Leicester, October 25/26th. Enquiries and applications to: Gavin Williams, BTI Radio Station, Worston Lane, Highbridge, Somerset TA9 3JY.

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