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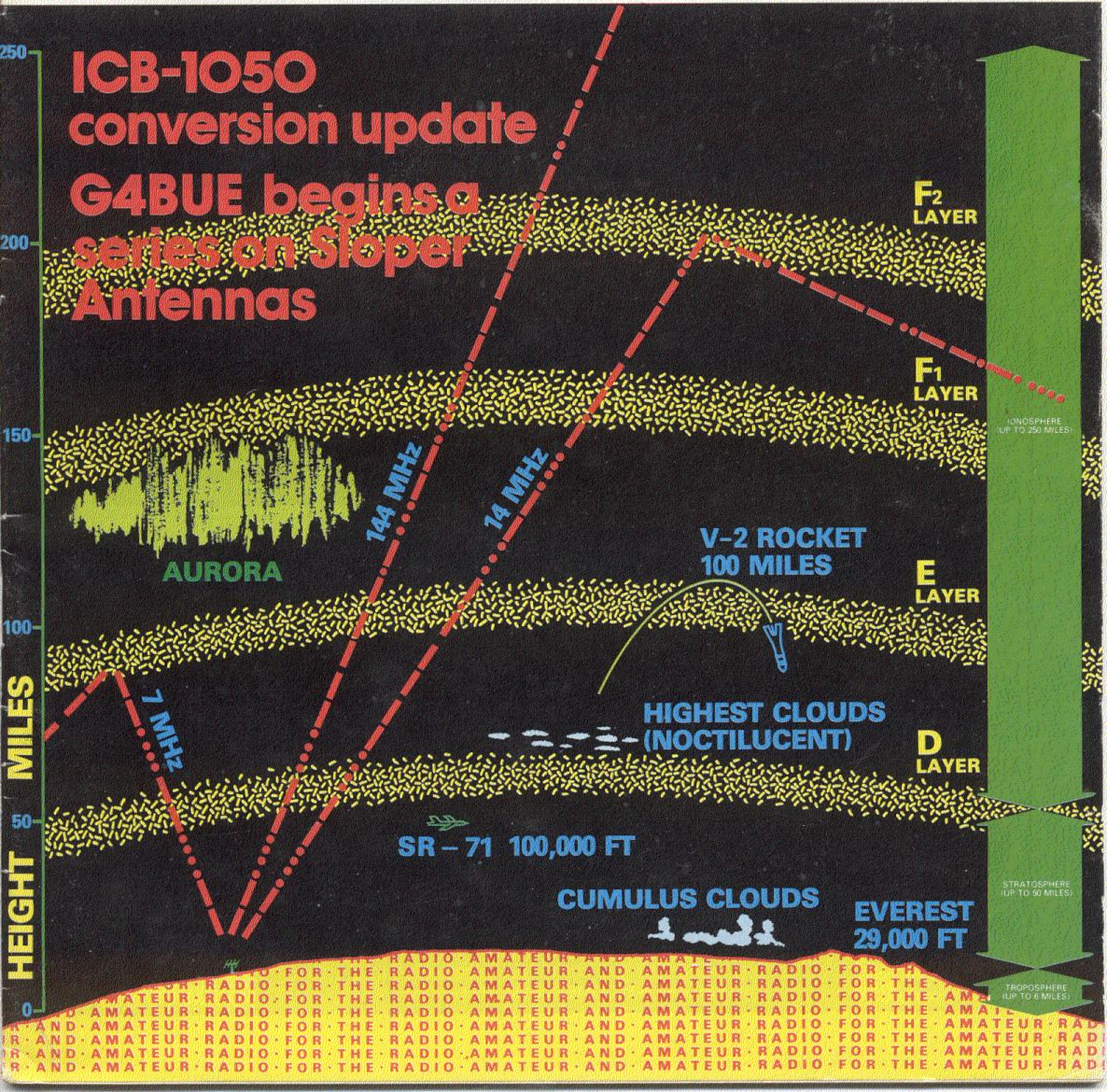
The SHORT WAVE Magazine

November 1984

Volume 42 Number 9

ICB-1050 conversion update

G4BUE begins a series on Sloper Antennas



SHORT WAVE MAGAZINE

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AUTHOR'S MSS

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

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LOWE SHOPS

Whenever you enter a LOWE ELECTRONICS' shop, be it Glasgow, Darlington, Cambridge, Cardiff, London or here at Matlock, then you can be certain that, along with a courteous welcome, you will receive straightforward advice. Advice given, not with the intention of ''making'' a sale, but the sort which is given freely by one radio amateur to another. Of course, if you decide to purchase then you have the knowledge that **LOWE ELECTRONICS** are the company that set the standard for amateur radio shops and after-sales service. The shops are open Tuesday to Friday from 9.00 to 5.30 p.m., Saturday from 9.00 to 5.00 p.m. and close for lunch each day from 12.30 till 1.30 p.m.

In Glasgow the LOWE ELECTRONICS' shop (the telephone number is 041-945 2626) is managed by Sim GM3SAN. Its address is 4/5 Queen Margaret's Road, off Queen Margaret's Drive. That's the right turn off Great Western Road at the Botanical Gardens' traffic lights. Street parking is available outside the shop and afterwards the Botanical gardens are well worth a visit.

In the North East the LOWE ELECTRONICS' shop is found in the delightful market town of Darlington (the telephone number is 0325 486121) and is managed by Don G3GEA. The shop's address is 56 North Road, Darlington. That is on the A167 Durham road out of town. A huge free car park across the road, a large supermarket and bistro restaurant combine to make a visit to Darlington a pleasure for the whole family.

Cambridge, not only a University town **but the location of a LOWE ELECTRONICS' shop** managed by Tony G4NBS. The address is 162 High Street, Chesterton, Cambridge (the telephone number is 0223 311230). From the A45 just to the north of Cambridge turn off into the town on the A1039, past the science park and turn left at the first roundabout, signposted Chesterton. After passing a children's playground on your left turn left again (between the shops) into Green End Road. Very quickly, and without you noticing it, Green End Road becomes High Street. Easy and free street parking is available outside the shop.

For South Wales, the LOWE ELECTRONICS' shop is located in Cardiff. Managed by Richard GW4NAD, who hails from Penarth, the shop (the telephone number is 0222 464154) is located within the premises (on the first floor) of South Wales Carpets, Clifton Street, Cardiff. Clifton Street is easily found, being a left turn off Newport Road just before the Infirmary. Once in Clifton Street, South Wales Carpets is the modern red brick building at the end of the street on the right hand side. Enter the shop, follow the arrows past the carpets, up the stairs and the ''Emporium'' awaits you. Free street parking is available outside the shop.

LOWE ELECTRONICS' London shop is located at 223/225 Field End Road, Eastcote, Middlesex (the telephone number is 01-429 3256). The shop, managed by Andy G4DHQ is easily found, being part of Eastcote tube station buildings and as such being on the Metropolitan and Piccadilly lines (approximately 30 minutes from Baker Street main junction). For the motorist, we are only about 10 minutes' driving time from the M40, A40, North Circular Road (at Hangar Lane) and the new M25 junction at Denham. Immediately behind the shop is a large car park where you can currently park for the day for 20p. There is also free street parking outside the shop.

Although not a shop there is on the South Coast a source of good advice and equipment — John G3JYG. His address is 16 Harvard Road, Ringmer, Lewes, Sussex. (telephone 0273 812071). An evening or weekend telephone call will put you in touch with John.

Finally, here in Matlock, David G4KFN is in charge. Located in an area of scenic beauty a visit to the shop can combine amateur radio with an outing for the whole family. May I suggest a meal in one of the town's inexpensive restaurants or a picnic on the hill tops followed by a spell of portable operation.

For many years.....

I have found much pleasure in slowly tuning a receiver across the short wave bands. I remember discovering that the new wireless, just purchased by my Grandfather, had on it a short wave section. So, after the family had listened to ''The Archers'' and set about the evening's activities, I was left with the set to myself, able to tune around and listen to the world. I am certain that the thing that fascinated me then is still the same today; the fact that transmissions from such exotic places so far away could be heard in my own surroundings. Perhaps I am a romantic at heart but to imagine the sights and sounds of the countries originating the transmissions was special. I find it difficult to describe the feeling. I have since spoken to many people who have shared the same experience, they too find it difficult to explain.

Since those days.....

things have changed and many receivers have come and gone. When compared with the large pieces of surplus equipment once used by the short wave listener in his shed at the bottom of the garden, today's equipment looks ''very HI-FI''. Most of the receivers carry the description ''general coverage'' meaning that it will tune without gaps frequencies from around 100 kHz to 30 MHz. Such wide coverage means that not only can you listen to amateurs and short wave broadcast stations worldwide, you can also hear Radios 1, 2, 3 and 4 and Laser on 588 kHz. To the short wave listener this is a great advantage over rigs which only have selected bands. It is usually the band you particularly want that the manufacturer had decided you could do without. The receivers which I now describe are all ''general coverage'', and I might add are each capable of giving you the satisfaction which I describe above.

the R600.....

TRIO R-600

At the start of the range is the **TRIO R600 which costs £272.83 including VAT.** This is the receiver for the beginner, the person of limited means or the cynic who does not really believe my enthuse. The R600 is a basic receiver covering from 150 kHz to 30 MHz and having switched upper and lower sidebands, wide and narrow am and cw. It has a 20 dB attenuator and a noise blanker fitted as standard. Operation is simple, select the mode of operation, turn the MHz dial to the correct band and, by using the VFO knob, tune to the desired frequency. The clear digital readout makes station selection simple. The TRIO R600 is an ideal receiver for shack, bedroom or lounge.

LOWE ELECTRONICS

Chesterfield Road, Matlock, Derbyshire. DE4 5LE.
Telephone 0629 2817, 2430, 4057, 4995. Telex 377482.

the R2000.....

Moving upward from the R600 we find the TRIO R2000. The receiver covers frequencies from 100 kHz to 30 MHz and has, in addition to the facilities found on the R600, a ten channel memory to hold for quick access your favourite stations. Memory operation is versatile, each memory retaining not only the frequency but the mode of operation. Each memory can be also used as a separate VFO. In addition to AM, USB, LSB and CW the R2000 is fitted with FM which, when used

TRIO R-2000

with the VC10 internal vhf converter, enables the amateur 2 metre band to be fully listened to. Another advantage over the R600 is that the R2000 tunes continuously up the band and not in 1 MHz sections. Three rates of tuning are provided enabling the band to be either searched diligently or quickly ''scanned''. With the optional VC10 fitted the R2000 adds to its frequency range the VHF section from 118 to 174 MHz and, of course, operates on AM, FM. USB, LSB and CW. Fast or slow AGC can also be easily selected using a front panel switch. Altogether a fine receiver and ideal for today's listener. **The TRIO R2000 costs £436.75 including VAT.** The optional VC10 costs £117.00 including VAT and is easily fitted inside the receiver.

from JRC, the NRD515.....

JCR NRD-515

There are amongst us a discerning few for whom only the best is good enough. For them there is only one receiver: this is the NRD515 manufactured by the JAPAN RADIO COMPANY. The receiver is built to professional standards and is designed to give its owner the ultimate in listening pleasure. Covering 100 kHz to 30 MHz the NRD515 has pass band tuning, slow and fast AGC and a preselector covering the broadcast bands from 600 kHz to 1.6 MHz. Optional accessories include a 96 channel memory unit (NDH518 £264,00 inc VAT), a remote frequency controller giving keyboard frequency entry, plus an additional four memories (NCM515 £169.75 inc VAT) and a matching speaker (NVA515 £45.41 inc VAT). **The NRD515 short wave monitor receiver costs £965.00 inc VAT.**

and the AR2001....

It is rare to use a piece of equipment so refreshingly new as to be devastating. Although it has been my pleasure to use numerous receivers over the past years nothing has so captured my attention as has the AR2001 from the company AOR. Authority On Radio, AOR, sums them up exactly. In the past there have been several receivers covering parts of the HF/VHF/UHF spectrum but never before a receiver

AR-2001

tuning continuously from 25 MHz to 550 MHz. Never before a receiver having AM, narrow band FM and wide band FM. Never one that could be afforded by all enthusiastic listeners. The AR2001 is the new concept in receiver design combining user friendly controls to aid listening with a carefully designed receiver that actually works. The receiver with its continuous coverage between 25 and 550 MHz enables its owner to listen to a multitude of transmission sources. The provision of three modes, AM, narrow band FM and wide band FM are essential when one considers the variety of information that can be received. AM for the VHF/UHF airband channels, narrow band FM for amateur radio, CB and business radio and finally wide band FM for broadcast and TV sound. Digital frequency readout is combined with visual reminders of receiver state and for night time listening the panel is illuminated. Scanning, memories, memory scan, programmable band scan are all part of the receiver and to aid operating the memory not only remembers the frequency but the mode of operation. **The AR2001 receiver costs £345.00 inc. VAT.**

ICOM

ON THE MOVE.

IC-27E

This must be the smallest, 2M, FM mobile available today, measuring only 38mm H x 144mm W x 177mm D. It has all the features that you probably require included in this microprocessor controlled unit. In addition, if you feel lonely and can't find anybody on the band, just press "speech" and the optional built in speech synthesizer will tell you the frequency you are tuned to. This is a boon to the blind operator or to those that tuck their rigs out of sight.

Brief features:- 25/1 Watt output, green LED readout, scanning (memories and programmable limit band scan), priority scan, programmable duplex splits, 25 and 5Khz tuning steps, 10 memory channels with lithium back up cell, normal and reverse repeater switch, dual VFO, internal speaker and optional speech synthesizer. Just ask for a leaflet and we'll be glad to send you one.

IC-02E
IC-04E, (70cm).

The new direct entry microprocessor controlled IC-02E is a 2 meter handheld jam packed with excellent features.

Some of these features include: scanning, 10 memories, duplex offset storage in memory and odd offsets also stored in memory. Internal Lithium battery backup and repeater tone are of course included. Keyboard entry is made through the 16 button pad allowing easy access to frequencies, duplex, memories, memory scan and priority.

The IC-02E has an LCD readout indicating frequency, memory channel, signal strength, transmitter output and scanning functions. New HS-10 Headset, with earphone and boom microphone, which operates with either of the following:- HS 10-SB Switch box with pre-amplifier giving biased toggle on, off and continuous transmit. HS 10-SA Voice operated switch box, with pre-amplifier, mic gain, vox gain and delay. The IC-2E continues to be available.

Please note that we now have a new retail branch at 95, Mortimer Street, Herne Bay, Kent. Give it a visit, BCNU.

Thanet ICOM Thanet ICOM Thanet ICOM Thanet ICOM Thanet ICOM Thanet ICOM Thanet ICOM Thanet ICOM Thanet ICOM Thanet ICOM Tha

ICOM

TONO FOR RTTY.

Tono 5000E

From the famous TONO stable comes the new THETA – 5000E now ready to send and receive AMTOR as well as CW, RTTY, and ASCII.

Features include:- 5" high resolution monitor displaying 400chr. x 16 lines x 2 pages, ARQ/FEC, time clock, Selcal (Selective calling), high speed RTTY demodulator – up to 300 bauds (600 baud using TTL level); 3 shifts (170,425 and 850 Hz) and two tones (2125 and 1275 Hz); manual or automatic Tx/Rx; Battery back-up memory (72 chars x 7 channels and 24 chars x 5 channels); type ahead correctable buffer memory; Morse code 5 – 100 wpm (variable weights) + autotrack on receive; CW practice feature with random generator; Automatic CR/LF with wrap around display; Automatic letters code insertion; Printer interface; Bargraph LED meter for tuning; TOR A, B and L – the list goes on and on..... Power requirements by the way are AC mains or 13.8v DC.

Tono 9100E

The famous TONO THETA 9000E has had AMTOR modes A, B and L added to its functions providing transmit and receive facilities with selective calling on AMTOR, RTTY (with 3 selective shifts and 2 tone pairs), CW with built in practice function and random generator, and ASCII with full Duplex facility. The 9100E requires an external VDU. The battery backed memory covers 256 characters x 7 channels with Channel 6 which is divided into 16 subsections of 16 characters each and Channel 7 into 8 subsections of 32 characters. Any of the subsections may be used individually and messages can be repeated 1 – 9 times from a keyboard command.

Agent: Gordon G3LEQ, or telephone Knutsford (0565) 4040.
Please telephone first, anytime
between 0900 – 2200 hrs.

You can get what you want just by picking up the telephone. Our mail-order dept. offers you: free, same-day despatch whenever possible, instant credit, interest-free H.P., telephone Barclaycard and Access facility and a 24 hour answering service.

Please note that we now have a new retail branch at 95, Mortimer Street, Herne Bay, Kent. Give it a visit, BCNU.

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Thanet Electronics
Dept SW,143 Reculver Road, Herne Bay, Kent.
Tel:(02273) 63859/63850

BARCLAYCARD VISA

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

THE past month has seen a complete change in the weather from summer into late-autumnal winds, rains and storms; and the activities of Hurricane Hortense on September 7 will have flooded many a south-east England shack and brought aerials down. For myself, as the lightning and noise seemed to travel over home and shack, I sat powerless and prayed that the receiver front-end would survive — having left it connected to one of the aerials. The moral is pretty obvious!

The Mail

The general consensus of opinion over the month is that the bands have been quite distinctly below par, continuing a trend noted over several weeks now, and regardless of aerials. Interestingly enough, the sunspot count isn't all that way down yet; July showed 37, and August 25, which equates to 1977, but, as the RSGB News on September 23 reminded us, the figure was 1.9 in July 1976 — so we've a way to go yet! On the other hand it is generally reckoned that as the sunspots fall away so conditions on the lower bands pick up — so let's start with Top Band.

160 Metres

The first thing for mention here has to be the receipt of "Canadian Top Band News", issue 4, comprising some 26 pages. While this is a Canadian source and therefore slants towards Canadian Top Band activities, it is also the nearest thing we have seen yet to the much-missed W1BB bulletins. This writer feels it is well worth the maximum support we can give to it (and so also, we believe, does W1BB). Apart from the reports of DX worked, and DX coming on the band, there are also some interesting articles on aerials. VE3INQ is the 'prime mover', with print done by VE3HCT. Ivan, VE3INQ, also mentions that there is another Top Band bulletin around, called the "West Coast 160 Bulletin". VE3INQ is very keen on expanding the coverage of his Canadian bulletin and would be amenable to receipt of IRCs to cover the costs of what is to be a non-profit making exercise. On that basis we weighed the copy we have here and made it just over 60gm, so the postage charge for that from VE land is appropriate. The address is: Ivan T. Payne, VE3INQ, Box 276, STN 'A', Weston, Ontario, Canada M9N 3M7. Turning to the "West Coast 160 Bulletin", the address for this is N7CKD, 4248 'A' Street, South East, Box 609, Auburn, Washington 98002, U.S.A.

Still with VE3INQ, an interesting proposal is to have a world-wide liaison frequency or Top Band DX net; plus (even more interesting) a summer world-wide DX contest on the band (southern hemisphere winter) — it has been suggested by GD4BEC that it be timed to coincide with the RSGB Summer Top Band contest, which always gets support on this side of the Pond; and we believe that G3SZA has some input on the subject too. Our own feeling is that to make it coincide with the RSGB event might be a bit unfair to those who aren't so ambitious, and so do the RSGB contest entry-list no good. Anyway, kick it around, everyone, and let us know your views, or write direct to VE3INQ.

On the subject of the revival of the 'DX window' concept, it has become pretty evident that a main reason this has gone by the board is that Europeans have been hearing Ws and calling them on their own channel; if the W didn't know or care about the 'window' scheme, then he took the QSO, others heard and copied, and the DX window was dead. Should we not — all of us — make some serious attempt this season to bring things back into line? And, still on this kind of theme, what about a revival of the "First-Timer's" tests of yore — would it not be a good thing to revive them, if only as a means of showing people how it ought to be done?

G2HKU (Sheppey) wasn't very keen on the band, thanks to the racket of static, but he did manage to work CW to E17CS, UQ2PQ and IV3DVN, plus his usual SSB to PA0PN and PA0KJF.

G4AKY (Newport) didn't have a particularly good month on the band; his CW went out to OK2PGT, OZ1BYB, UC2LCB, GI3ALT, F0IR/TK in Corsica (didn't he have a pile-up on him where ever he appeared — no-one believed he was only Corsica!), GM4DMA, F6IGQ, F6IFX, UA3VEW, DL1TM, GM3LOM, EA1AXX, UA4HBW, SV0AA, PA0HIP, I1BVJ, 14TSV, PA0AVV, DK0BP, SP5BAK, and UL7MAN. Heard but not worked were HZ1AB, UG6GAW, YB5ASO who is ex-YB5AES, VK6HD, and VE1ZZ.

In Hastings, G3BDQ wrote early as he was off for a holiday and was due to arrive back on deadline day. In the meantime, yet more aerial changes have been made, and the amount of vertically polarised signal being radiated has gone up. John offers contacts with UQ2PQ, OY7ML, RF6FFW, RA9QBX, UT4UC, LZ40KDP, EA6NB, I1BBJ, F0AHY/FC, and as the prize of them all, VK6HD on September 10 at the latter's sunrise time — 2200z.

November 30, at 2200z is the start time for the ARRL 160-Metre contest, going on to 1600z on Sunday, December 2. This one is W to DX, and QSO's between countries outside W don't count. Receive RST and the ARRL section, transmit RST plus country or if /MM your ITU zone. Multiplier is the number of ARRL sections plus VY1/VE8. Use of the 'DX window' is mandatory in this contest.

Eighty

Some more signs of life become apparent. Nick Carter, G2NJ, notes that the TOPS CW club net on Sunday afternoon continues; one day GW8PG was one of the first to call GW6AQ, from his spot near Wrexham where he was running one watt; that QRP signal was copied by all those in the group. G2NJ had a lunch-time contact with PA3BLQ/MM off Texel, G2CNN was worked in Norfolk, and it was learned that he was going to St. Albans the following day for five weeks, complete with the HW-8 — and a week later G2CNN/A was heard at good strength and calling PA0CQ. Nick also notes that the QRP beacon station PA0GG, at one watt, is run by the chairman of the Benelux QRP club, from a QTH near Haarlem.

A new reporter is G4VFG (Ivybridge, Devon) who spends most of his time on the HF bands a-chasing the countries; however, he can work the lower bands, albeit in the present report Peter says simply "nothing of interest on the band".

We have a letter from G3TIS of British Telecom, who asks us to mention that they have an eighty-metre net which is open to present or retired members of the Post Office or British Telecom, and also to PTT employees of other countries. Look for G4BHQ, around 3750 kHz (±QRM), every Wednesday evening at 2000 clock time.

We come now to a letter from Gus Taylor, G8PG, who says he has been away at the GW QTH near Wrexham. For most of the month there was a problem with family commitments so all that was done was the odd ragchew using one watt RF out on Eighty. Over the weekend September 30/31, Gus managed some more concentrated activity and during the 48 hours the one watt out was able to work 18 countries on 3 continents — VO1AW and VE1ZZ were also heard at S9 but local thunderstorms at the American end meant they just weren't hearing the EUs.

G3ZPF (Kingswinford) says his inverted-V is now up to 28 feet and will go up a few

more once the neighbourhood is used to the present position. The compressed trap dipole has been replaced by a full-sized one; it is at the moment set up for the SSB end, but has tails available to shift it to the CW end. It gets out well enough to G and Europe, but David was a bit miffed to hear a DL station working some VKs and JAs that David couldn't even hear! However, the pain was eased when the DL said he had a *three-element beam!*

G2HKU was not enormously impressed by conditions, but he did use his four watts of CW QRP to make contacts to ON6OG and G3HRV. On a totally different tack, Ted notes that he has not heard anything of EI9J lately — and a few discreet enquiries don't seem to have produced any answers. Any offers of news?

Forty

Most people don't like the band much; which is exactly the reason why others spend most of their time there! To be a bit more serious, it is true that the band suffers somewhat from the different band limits in other parts of the world, and from the attentions of the Red Army Choir — after all, for them, the band is just about ideal for cross-country QSOs — but, a few layers down, if you have an attenuator or a very good dynamic range in your receiver, there is DX to be had for the dab hands.

G2HKU mentions just one contact, with F0AHY/FC — why does he continue to sign /FC when the others all use /TK?

Forty for G6QQ (Hoveton) was a matter of SSB with LU8DYV, PY5EG, ZP5JCY, UF6VWA, and UZ9CWW, all worked in the WAE contest weekend.

New Bands

G4UZN (Leeds) describes conditions as "indescribable!" 18 and 24 MHz were both completely dead for most of the time while 10 MHz wasn't much better. The latter band, on CW gave contacts with W1, W2, W3, W4, W8, KP2V (U.S. Virgin Is.) EA8AGF and OK8ADY/P; 18 MHz accounted for CT2FN, DL8CM, I0FUQ, LU1DOW, and 24 MHz DL1RX, DL7AFV and LU1DJO. G4UZN says the Argentine stations are very active, with high power and beam aerials, plus very sharp ears!

Our only other new band reporter is G2HKU, who used CW, of course, to raise VK3MJ on the band.

Snippets

We have a letter from Nev. Kirk, G3JDK, who asks for a puff for the 'Aircrew Net' which they are trying to get off the ground as a part of the existing Aircrew Association. This association is made up of members and ex-members of aircrews of the R.A.F. and Allied Airforces, who flew before, during or after W.W.II and who now hold amateur transmitting licences. The pilot net — sorry about the pun! — took place as this was being written, on 3510 kHz CW at 1000z, October 7. However, a letter to Nev. with an s.a.e., will bring all the details and also details of the Association itself. If it gets airborne, membership certificates and QSL cards will be made available dependent on the degree of support. Write to: Nev. Kirk, G3JDK, 54 Allendale Road, Rotherham, Yorks S65 3BY.

There seems to have been a hang-up over our report that the G—QRP Club weren't notifed of the Yeovil Club QRP convention. They indeed were, and a mention *was* made in the G-QRP Club magazine *Sprat*. My apologies to all concerned.

DX News

This is culled from *The DX Bulletin* and also *DX News Sheet,* not to mention little words in my ear and, as has already been mentioned, VE3INQ's *Canadian Top Band Bulletin.*

It does seem at the time of writing that the DJ0UJ trip to Albania has aborted — and if the trip has aborted, the ZA operation is in the same boat. However, the noises being made are by way of saying that they aren't quite as rigid on this matter of amateur radio as they were; like the Chinese position, it looks like being a long and slow job to get the permissions, and then a long and slow job to get any form of operation by Albanian nationals, after which we might see some operation by foreigners of Albanian extraction. Patience is the thing.

5X5GK, we are now told, is ex-VE7FXX, and is getting new beams up. He is asking for support in getting up the documentation needed for ARRL/DXCC approval; thus reports *DXNS. TDXB,* who had the story Gerry was not licensed, amends this in issue 257, to say that he is VE7EXX . . . This column continues to doubt the whole story.

VE3FXT is heading into an operation which will see him operate from 100 DXCC countries; the first are to be GW3WNE, GD3WNE, and GM3WNE before heading off into Europe. If you work him in the 100 countries you will receive a gold medal; but the QSL information is not in yet.

What about S. Yemen, where the last operation was VS9ARS back in 1967, says *TDXB*? Apparently OE6EEG has the odd contact there and hopes to see 70 action from a local operator before the end of the year.

Operation from HS, Thailand, banned since 1982, is being pushed by the Thai P. & T. Director, Mahidol Chantrangkul with his government colleagues; however, they aren't too keen. Things, in fact, haven't been any too happy since the days of HS1WR, the late General Kamchai Chotikul, who could convince his colleagues we amateurs were trustworthy. HS stations which may be heard are usually pirates, but may be foreigners who obtained their licenses before the 'voluntary ban' and gear impoundment.

In Guinea Bissau, UB5WAD is there for a year as J5WAD; so far it has been Twenty SSB, but as a Soviet citizen, he is likely both to be legal and a good CW operator.

The CE0AA operation seems to be rocking them in the aisles, and has now spread its list operations to Forty and Eighty. Other ones to have spread are the BY1PK and BY4AA activities; both heard on Eighty and Forty and we understand, someone is asking them to appear on *Top Band!*

Sense!

From *TDXB* we not that ARRL has filed with FCC a 'Request for Issuance of Declaratory Ruling' asking FCC "to exercise federal pre-emptive authority over state and local zoning regulations which affect transmitters and antennas used by amateur radio operators." The gist of this one is that it is an attempt to remove amateur radio aerials and towers from the ambit of the local planners. FCC seeks comments on this, so it will be a while before we see an answer — but it is a thought that RSGB could well take up the matter on our behalf, the more so now that the TV and CB aerial users have driven a coach-and-four through the current legislation.

"CDXN" deadlines for the next three months:

December issue—November 8th
January issue—December 6th
February issue—January 4th
Please be sure to note these dates

Further to our note about S. Yemen just now, *DXNS* latest issue notes a station signing 7O2LZ, and asking for QSLs *via* I6PQP. All we can say is . . .?

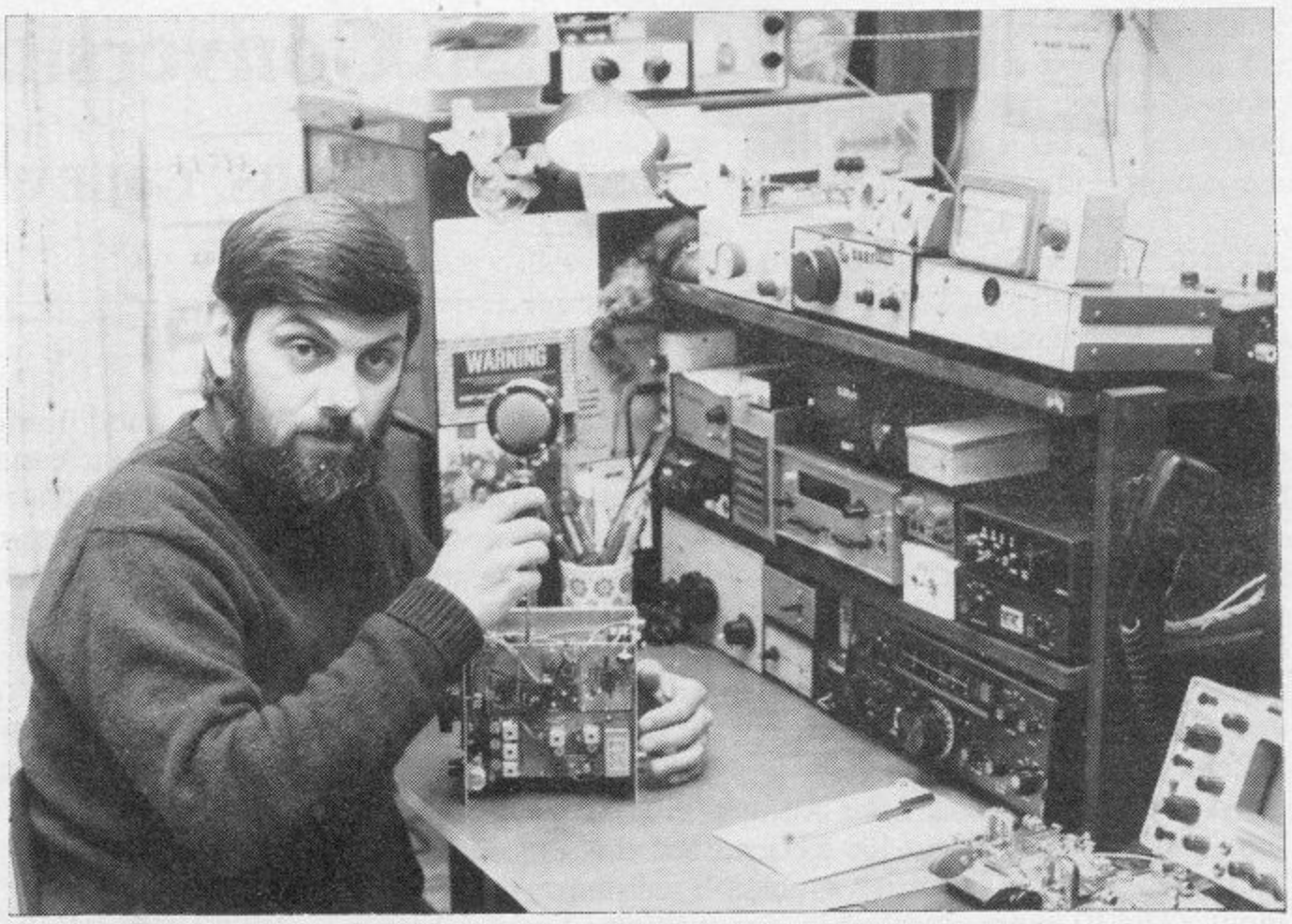
Ten Metres

Not a lot in the way of reports. G4HZW (Knutsford) sticks to the band and to his two-element Quad plus half-wave vertical. All he found was a little Sporadic-E, plus occasional poor openings to Africa and South America. It added up to LU7HJM, LU4HER, LU6FAZ, LU6ETB, PT2TF, PY5EG, EL2AK, I, YU, UZ2FWG, HB9, F6, EA and GD3ZAR/P. As for the RSGB Activity Contests, Tony says they were played off in very flat conditions, so that G4HZW only worked stations within a 100-mile radius of home.

Tony's comments on conditions are echoed by G3NOF (Yeovil); Don went through the month without making a contact on the band, but he did note some openings to PY and parts of Europe.

Ten metres was yielding the odd contact to G6QQ during the WAE SSB contest, with LU6ETB, LU7HJM, PY1YT, PY1BPE, PY2TF, and PY5EG booked in.

G4VFG (Ivybridge) points out the value



The operating corner of the Rev. George Dobbs', G3RJV, new shack in Rochdale, Lancs. The item of equipment receiving attention is a home-made 20m. portable transceiver.

photo: "Rochdale Observer"

of a CQ call when the band sounds dead; afternoons and early evenings seem to have been the best times for this ploy, and the best stations raised included CE3HFI, PP7HS, LU5DNC, LU3DGW and CE3CRL.

Fifteen

For most of the time, certainly as far as the column is concerned, a decided pain G3NOF (Yeovil) found the band poor, but with a few short-path openings to SE Asia around 1400z; Africans appeared around 1500z with the skip moving northwards until, around 2000z, some South Americans appeared. The North American stations were heard at odd times between 1300 and2000z, but there was nothing heard of VK, ZL or the Pacific. SSB contacts were made with A92F, A92P, CE0AA on San Felix, H5ADX, JH3YJM, PP7HS, S83H, TR8JLD, TR8SJC, VQ9CI, VU2DDT, VU2GI, ZS1AAQ, ZS6TUK, W2, W3, W4, W0, YC5NOF, YC6RO, 3X4EX, VP8ASO, VP8ASR and 9M2DC.

Turning to the log of G6QQ, we note on SSB PT7CAW and VE1AWG; CW came up with KA2QMU and 4X6IL. In addition, the SSB bash during the WAE contest worked N1AU, CE4EBJ, JA5RH, JA6LDD, JA6YDH, LU2AH, PY5EG, YV5JEA, ZS6BYK, ZS6TUK, 4X6FR, K1VSJ, K1XM, W2YV, N2VW, KV2CNJ, K2NJ, KY2P, N4UH, N4ZC, K4YKZ, WI4K, H5JB, KA5W, W0MJ, UFs, ULs, UMs, and UA9.

"Iffy but interesting" was the description by G4VFG; Peter worked PT7CAW, LU9FHF, YC3II, 9M2FD, TA1UA, ZS1OR, PT7CQ, S79CW, 5Z4OT, JY9CL and Z21BP. Gotaways were 3X4EX, EL2EF, TR8STC, CX2AQ, A22ME, the last two being on CW. Peter practices by working the louder and slower stuff on key, and mentions that earlier in the year BY2BB gave his QSL Manager as K5TT — we doubt that one being the real McCoy, somehow!

Now Twenty

G2HKU normally reckons on the autumn conditions showing his ZL morning skeds picking up again, but at the time of his letter nothing had been heard; CW has worked TI2PZ, HK3NR, YV5ANT, JX5DW and LU2WM, while a bash with the four watt QRP rig yielded a CW QSO with G8CJ/W0.

G3NOF says he hasn't heard a lot from the VK/ZL/ Pacific neck of the woods this month, save for a few short-path VK openings. North Americans were strong most days around 2100z and SSB QSOs were made with AP2MQ, C53CL, CT2BB, CT2CQ, CT2EF,CT2EJ, EP2MJ, F0AHY/FC, IM0LYN, J37AH, PP1AE, RF6FR, RF0FWW, S79WHW, TF5EP, TR8JLD, UA1OT (Franz Josef Land), VK3EZ, VK5QI, VP2MO, VS6CT, VU2CVP, UZ9CWW, UZ0QWE (Zone 19), VQ9CI, IZ9A, 5H3BH, 7X2LS, 9J2BO, 9M2CO, 9X5MH, 9Y4NP and 9Q5MA.

G6QQ's twenty-metre listing on SSB includes W4YJ, W1CKA, JX5DW, 4S7VK, and JX5DW again, plus contest contacts on SSB with K1AR, K2WK, WB2REM, KY2P, ZS6TUK, UA9, UF, and UL; CW accounted for W0UBT, K1RH, K9QIE, Z23JO, N3ATQ, AA4V, K1RH, WB9OBA and W6FAY.

All his aerials, bewails G4VFG, fire straight up in the air on this band — to make himself heard he reckons to need a Quad and full power, neither of which does he own! Take heart, much has been done on the band with four watts of output into a G5RV — provided you can get it up a bit higher. Increasing the height of the mast by a couple of feet a month is a good ploy . . .!

Finale

That's it for another month. The deadline for the arrival of your letters (and lets have *lots* of 'em!) for next time is in the 'box' and they should be addressed, as always, to your scribe, "CDXN", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. *Cheerio!*

December issue due to appear on Friday, November 30th

Icom ICB1050 Conversion Update

STEPHEN IBBS, G4LBW

Introduction

IN June 1983 a modification was published in *S.W.M.* for the Icom ICB1050 CB rig, to give 40 channel capability, with repeater shift, on 10 metres. In August of the same year this was followed by a modification to the two-digit display to read 31-70 (coresponding to 29.31-29.70 MHz), instead of 1-40, with the display automatically changing when operating in repeater-shift mode. Since then several readers have written and phoned with appreciative comments; however some have requested a slightly different modification.

To explain further . . . the repeater shift design worked by moving the frequency *up* 100 kHz on Rx; this was so that by flicking the repeater switch it was possible to listen on the repeater input. (The 10 metre repeaters in, for example, America have a 100 kHz shift, with the input lower than the output). The suggestion being made was that it would be better to follow normal convention and have the shift operate by *lowering* the transmit frequency by 100 kHz in repeater mode rather than raising the receiver frequency.

Circuit Diagram

Readers interested in building this design, shown in Fig. 1 are advised to refer to the June and August 1983 issues for more details of the principles of operation, particularly concerning the display modification. The channel coding changes basically consist of increasing the binary code inputs to the synthesizer divisor pins, using two CD4008 4-bit adder ICs. To convert the rig to 10 metres requires binary 171 to be added to the inputs generated by the channel switch, and the previous design produced this amount for Tx/Rx (simplex) and Tx (repeater), with 181 for Rx (repeater). What would now be needed to shift 'transit low' is 171 for Tx/Rx (simplex) and Rx (repeater), and 161 for Tx (repeater). By using pin 3 of the mic-socket which, when it has had the earth strap removed from it, goes to 0ve on Rx, it is possible to control one set of inputs to the 4008 to provide the repeater shift.

Table of Values
Figs. 1 and 2

R1 = 47K	TR1 = BC109
R2, R11 to R18 = 10K	IC1, IC2, IC4 = 4008
R3 to R9 = 100K	IC3 = 4070
R10 = 4K7	IC5 = 74LS47
R19 to R25 = 1K5	IC6 = 78L05

Also: PCB, Veropins, small aluminium brackets, and interconnecting wire.

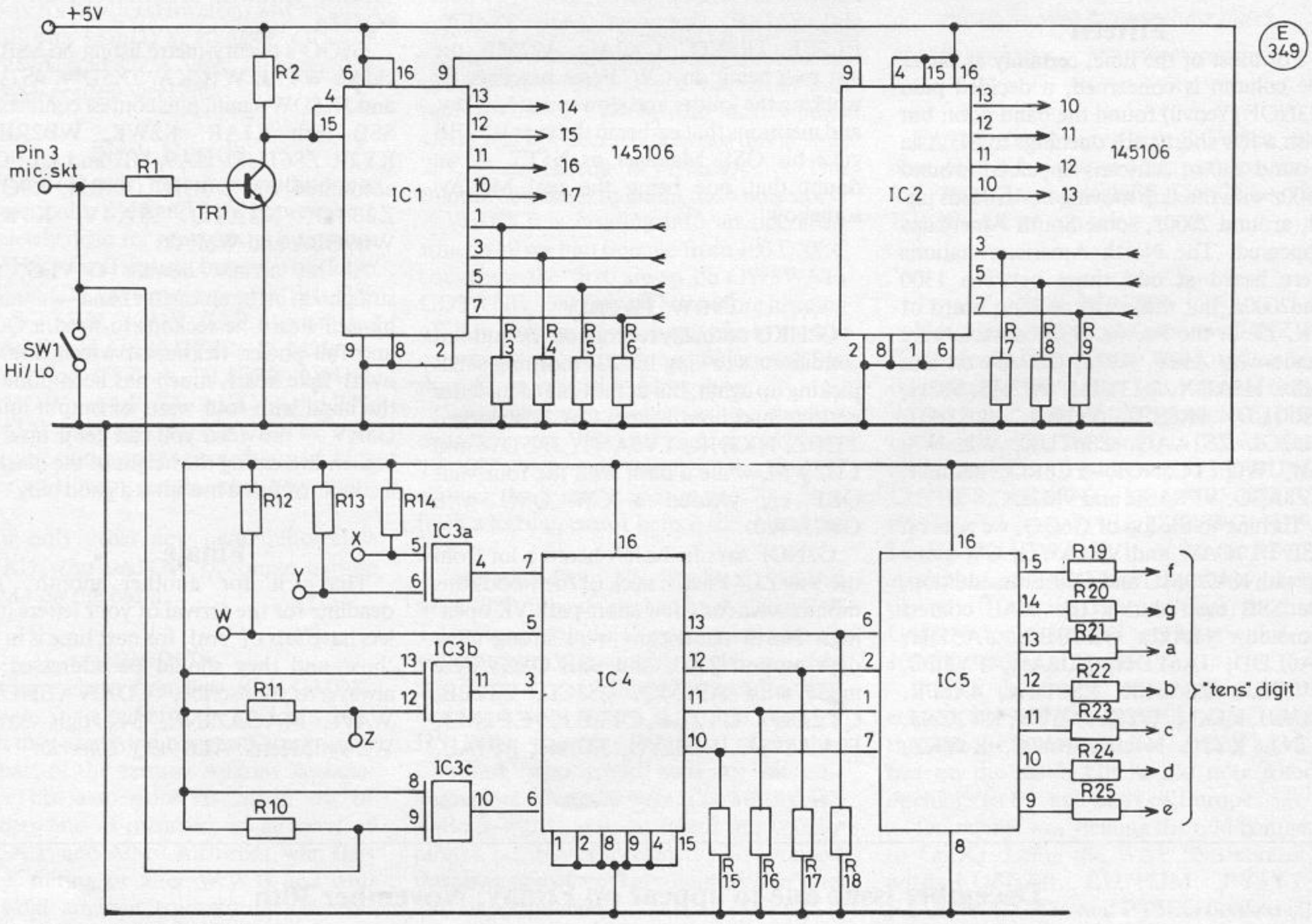


Fig. 1 CIRCUIT DIAGRAM

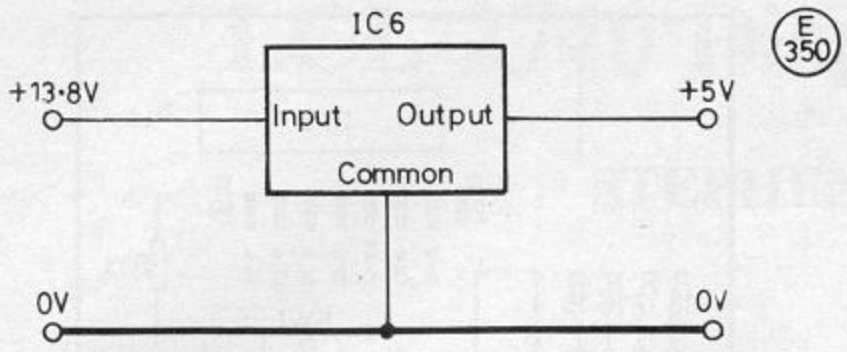


Fig. 2

All this might sound rather confusing, but thankfully the codes themselves are simple, being shown below.

171:	1 0 1 0 1 0 1 1	
161:	1 0 1 0 0 0 0 1	
pin:	15 2 4 6	(IC2)

It can be seen that only two pins, 4 and 15 of the first binary adder, need to change state from 'high' to 'low' This requires just one inverter, easily accomplished by a cheap *npn* transistor. Thus under 'normal' simplex conditions SW1 is closed. TR1 is consequently turned off, causing pins 4 and 15 of IC1 to be pulled 'high' by R2, thereby adding 10 to the 161 already being produced by tying pins 6 and 2 (IC1) and pins 6, 4, 2, and 15 (IC2) to 0ve or +ve as appropriate. This consequently generates output of binary 171 from ICs 1 and 2 (pins 10-13) which goes to the synthesizer IC, an MC145106.

In repeater mode SW1 is opened, and when on receive, the transistor is still turned off, the base being held 'low' by pin 3 of the mic. socket; thus the circuit continues to generate binary 171. However when transmitting, this pin is disconnected from earth and so R1 and R10 pull the base 'high'. Actually, measuring the voltage on the base will reveal approx. 0.6v, caused by the base-emitter diode conducting, but this is sufficient to turn the transistor hard on, pulling pins 4 and 15 low. This causes '10' to be subtracted from the binary code, resulting in 161, and 100 kHz drop in frequency, because each binary code unit equals 10 kHz, the standard CB channel spacing. The inputs from the channel switch all have pull-down resistors because when not held 'high' by the channel switch, the pins would otherwise just be allowed to 'float'

The August '83 modification to the display converted the 1-40 digital readout to 31-70, and this has been incorporated into the design presented here. It also registers the repeater mode when it will display 21-60 on transmit. Only the 'tens' digit needs changing, and a CD4008 is again used, this time to add or subtract one from the binary codes generated by using the switch digit-lines to control some EX OR gates. The final binary output from the 4008 is decoded by a 74LS47 7-segment driver, which drives the 'tens' digit.

Unfortunately the Icom rig has the 'a' and 'd' segments joined together, *see* Figs. 3(a) and 3(b), and the track joining these two (on the small display PCB) needs to be cut, so that they can be driven separately. Looking from the back of the rig, the track that needs to be cut is the 3rd from the left, and the break should be made between the junction of the two boards and the actual digit pin. There are a total of 8 connections on this edge. Readers unwilling to do this surgery can instead just connect the lead from pin 15 (IC5) to the 'a' pin on the switch board *via* a 680-ohm resistor (instead of the 1.5k), and ignore the 'd' output from IC5. The effect of this will be to cause some of the digits to look distinctly odd, but probably recognisable.

A small 3-terminal regulator IC6 has been included (Fig. 2), because the 5ve supply already in the rig may not be able to handle the slightly heavier current demand.

Construction

A single-sided PCB has been designed and is given in Fig. 4. Mount all the components according to Fig. 5, checking the polarity of the ICs, and please note that some of the resistors have to be mounted on end to save space. Insert Veropins for the various interconnections, and don't forget the link wires, necessary to avoid designing a double-sided PCB! After examining the board thoroughly, connect the supply, and check that the regulator is giving the correct output voltage.

If all is well, switch off, and remove, from the main PCB of the transceiver, the switch wires going to the divisor pins (10-17) of the 145106, but leave them attached to the switch PCB. Pin 10 originally had no lead connected to it, and the PCB hole will probably need clearing of solder. This article assumes that the Hi-Lo switch is going to be converted into the repeater switch, so remove the *yellow* wire from this switch and discard. The *orange* wire is soldered to the *red* +ve lead on the volume control.

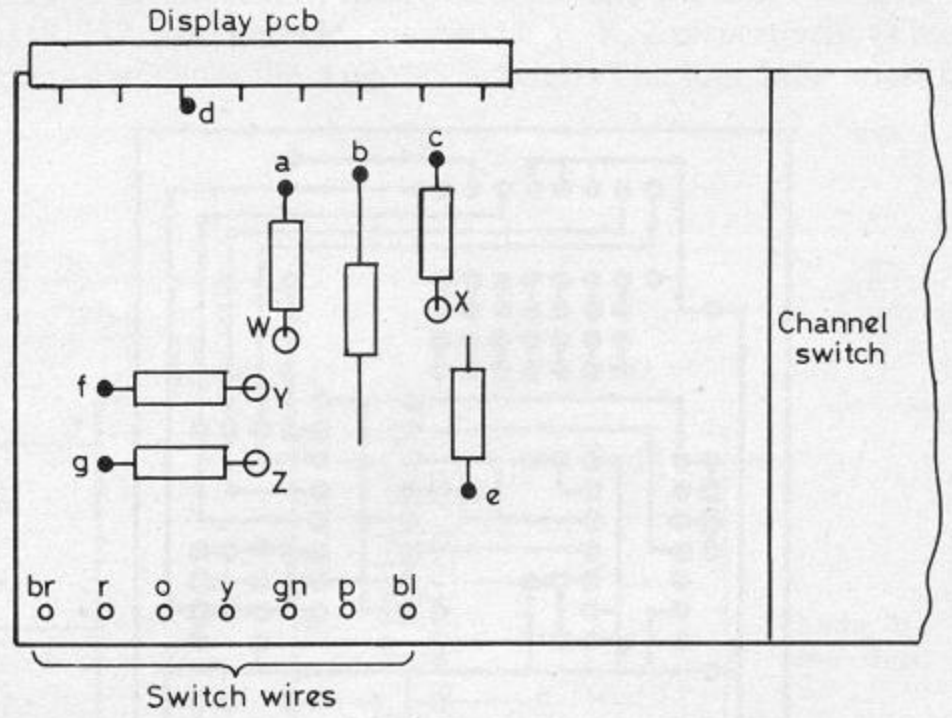
Part of the component side of the switch PCB should look similar to Fig. 3(a) when viewed from the rear of the rig, and the marked 6 resistors only must be removed. Veropins should be inserted into the holes marked W, X, Y, Z, ready for connection to IC3, and a-g for connection to R19-25. Note that two holes will be left vacant: one just below 'X' and the other between 'Z' and 'e'. Take time with the inter-wiring and check after each group for any errors. Do not be tempted to solder the wires in direct, without terminal pins, as the PCB tracks lift off the backing material very easily. Now proceed as follows:

(a) Connect the 7 switch wires to pins 7, 5, 3 and 1 of IC1 and pins 7, 5 and 3 of IC2 in order, according to the colours shown on the component overlay. They should be in the normal resistor colour coding order, brown to violet. *NB:* the June '83 component overlay showed the green and blue wires mixed up accidentally.

(b) Connect pin 3 of the mic. socket to one terminal of the Hi-Lo switch, and then from the same point run one lead to the base of TR1, and another to pin 9 of IC3. The other terminal is connected to 0ve. (*NB:* the switch has a spare pole which could be used, *e.g.* to light an LED showing that the rig is in repeater mode).

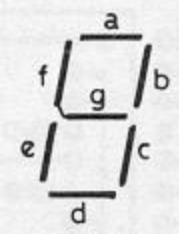
(c) Connect the 8 leads from ICs 1 and 2 to pins 10-17 of the 145106, according to the component overlay.

(d) Connect the 7 leads from the 74LS47 (IC5) to the switch board. The 'd' segment will have to be attached direct to the



br = brown
r = red
o = orange
y = yellow
gn = green
p = purple
bl = blue

Fig. 3(a)



"Tens" digit
(viewed from front)

Fig. 3(b)

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display PCB, on the digit pin itself; this is quite fiddly so take time, and don't use a hot poker soldering iron!

(e) Connect the W, X, Y and Z lead from IC3 to the switch board.

(f) Finally, connect the 13.8ve and 0ve lines.

Alignment

Note that the case is floating, as can be seen by the decoupling capacitors by the aerial socket, so a useful place for any probe earth is the screen of the transmit strip. The prototype was mounted in the case, above the 3 crystals, using two small aluminium brackets, after the rig had been tuned up. This was described in *S. W.M.*, February and June '83, but is repeated and much expanded here for convenience. Tune a nearby receiver to 29.6 MHz, and then press the p-t-t whilst on channel 60. *Slowly* unscrew the core of the VCO coil T202 until a signal is heard. If the core is sealed with wax it can be loosened by *very quickly* touching it with a soldering iron, then unscrewing the core. Be careful not to melt the plastic screw-thread in the former! Next tune T208 and T209 for maximum signal.

Some have experienced difficulty hearing the signal on the monitor receiver, and may find it easier to monitor the voltage on pin 7 of the 145106 whilst unscrewing the core. It should read approximately 1v. on receive and 2v. on transmit. Now tweak the transmit strip for maximum output on a power meter, adjusting T207, T208, T209, T301, T303, T305 and T307; 4 watts should be possible. Readers may find it easier to preset the coils. These were almost the same on three rigs aligned by the author, but obviously component tolerances mean that they are only approximate. Set T207, 208, 209 and 301 with the cores approximately 4-5mm. below the top of the former. The core of T303 projects about 2mm. above the former, whilst the cores of T305 and 307 are almost level with the former tops.

Use the most sensitive meter movement possible with a sniffer probe (coax terminated with 2-3 turns of 18-20 s.w.g.) placed over T301. Repeatedly tune T207, 208, 209 and 301 until the meter flickers, then tune for maximum deflection, moving the meter away gradually, until life appears on the power meter. The cores interact, so go through the transmit strip several times. If it appears to be tuning-up but on pressing the p-t-t some weird sounds come through the speaker, then the VCO is probably on the edge of lock. Slightly 'tweak' T202 until it locks securely, when the sounds should hopefully stop. All these adjustments take time, particularly finding that first spark of life, so patience is needed. On receive T101 and T102 are adjusted for best received signal, indicated on the 'S' meter. The Rx performance can also be improved by:

(a) Replacing the ceramic filter CF101 with a 2-pole crystal filter (10.695 MHz) available from *Cirkit*.

(b) Replacing C103 with 33pF and retune.

(c) Replacing C106 with 10pF and retune.

(d) Improving the squelch circuit and one course might be to fit the *Cirkit* noise squelch kit, designed for CB rigs.

(e) The silk-screened overlay of the main PCB shows an extra coil to the right of CF102. In the author's prototype the capacitor and resistor were removed from this position, and the wire link removed from the R118 pads close by. These were replaced with a 10k resistor and a Toko LLC4828 coil *(Cirkit)* in an effort to improve the receiver performance. The difference was marginal, and readers must decide if the effort is worthwhile.

After tuning, reseal the coils by holding an unlit candle over them, and melting the wax with the soldering iron, allowing a few drops to fall onto the coils.

Check final frequencies by adjusting CT202 on transmit for 29.6 MHz on channel 60 with a frequency meter. The receive frequency can be measured at the test point by T202, and should be 18.905 MHz (29.6 minus the IF 10.695 MHz).

Conclusion

With the sunspot cycle now inexorably progressing in the radio amateur's favour, more interest is being shown in 10 metres, and since the initial rush for Icom rigs is now over, it should be possible to purchase one fairly easily, and be on the air for a relatively small financial outlay. CB aerials can usually be converted for 28-30 MHz, and the satisfaction gained from working G4CFH, a friend living a mile away, through the Virgin Islands repeater, made it all worth while for the author!

Cirkit's address is Park Lane, Broxbourne, Herts. EN10 7NQ.

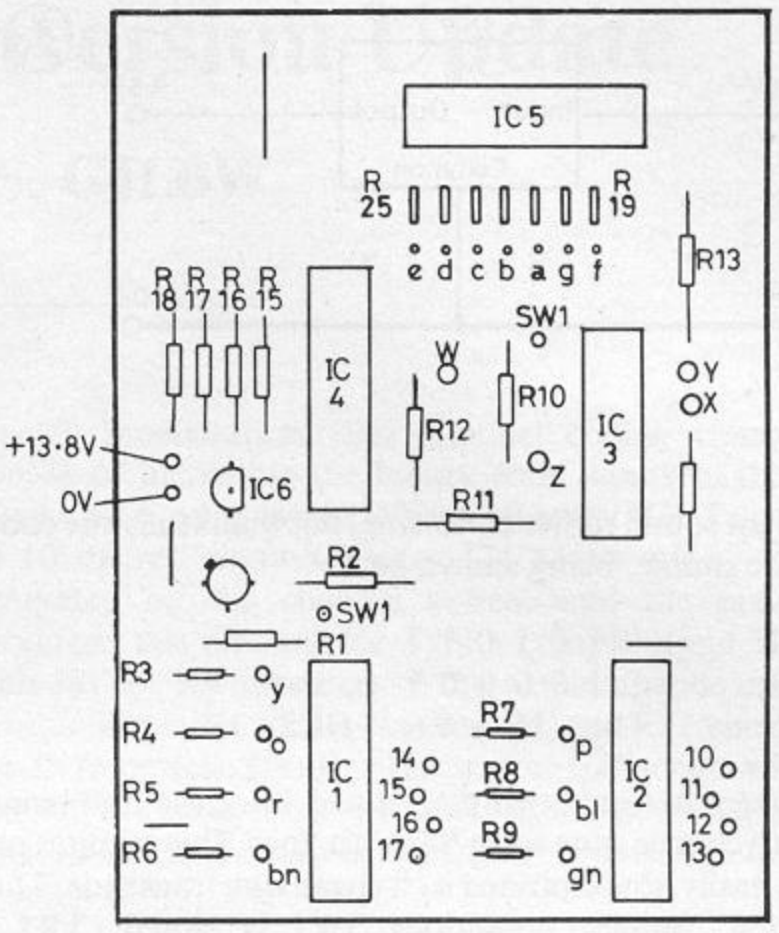

Fig. 5 Component overlay

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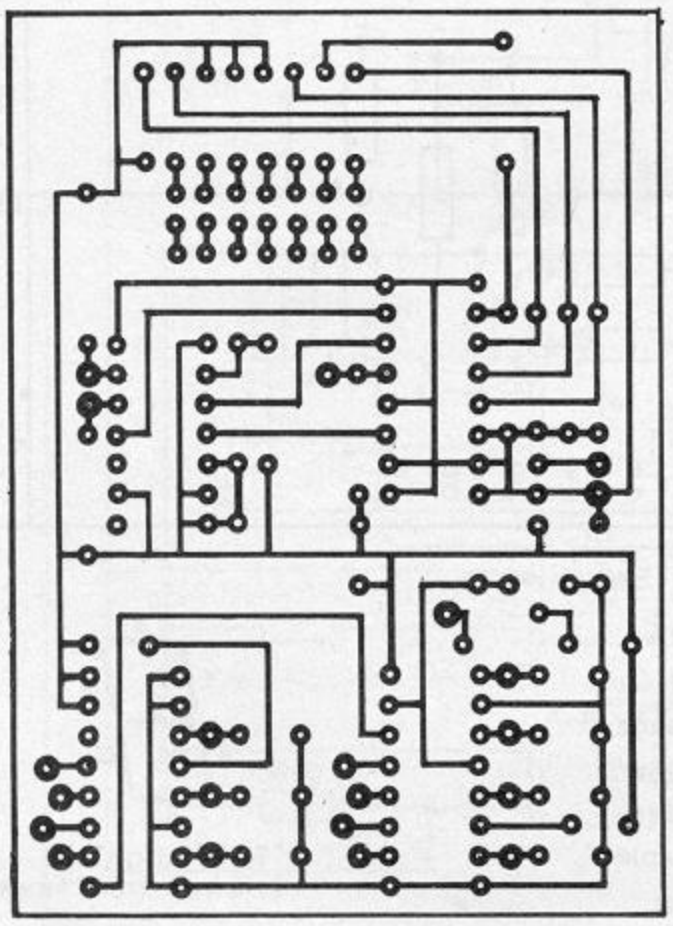

Fig. 4 PCB TRACK LAYOUT

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LCL-2740 Display Modifications

STEPHEN IBBS, G4LBW

THIS is simply an update to the author's August 1983 *S. W.M.* article on modifying displays fitted to ex-CB rigs, retuned for the 10m. band. Because it was primarily aimed at users of the Icom rig, readers may not have realised that the displays of several other rigs can also be adjusted so that instead of reading 1 – 40, they show 31 – 70, corresponding to 29.31 MHz – 29.70 MHz, making a lot more sense.

To illustrate this point, the display of the LCL-2740 has been modified, and is described here. This is a very popular CB rig for conversion, and for readers who are interested, an address is given at the end of the article where rigs and modification details can be obtained. The performance that can be obtained is extremely good, and the channel conversion is perhaps even easier than the Icom. Certainly the front panel, in matt black looks extremely smart! Most users of this transceiver have not bothered to insert the extra crystal for repeater working, so the circuit of August 1983 giving display repeater-shift, is not necessary and the simpler circuit of Fig. 1 will be perfectly adequate.

The circuit works by decoding the actual digit lines from the channel selector switch, using a 4077 Quad EX NOR gate IC. Using four of the 'tens' digit lines, b, c, f, and g, the three outputs of the gates will produce a 3-bit binary code corresponding to the numbers 3-7, whilst the switch still thinks it is producing 0 – 4! The resulting code is fed into a 74LS47 display driver, whose outputs feed the 'tens' segments, *via* the current-limiting resistors.

In terms of construction, the modification to the LCL-2740 is easier than the Icom. Referring to the component overlay diagram, insert the ICs, noting the polarity, then remove from the main rig PCB (close to the channel switch) the resistors numbered R118, 116, 115, 126, 113, 117 and R114. This last resistor is on the opposite side of the switch to all the others for some reason. Also remove the segment leads associated with these resistors; the colours should be as shown below.

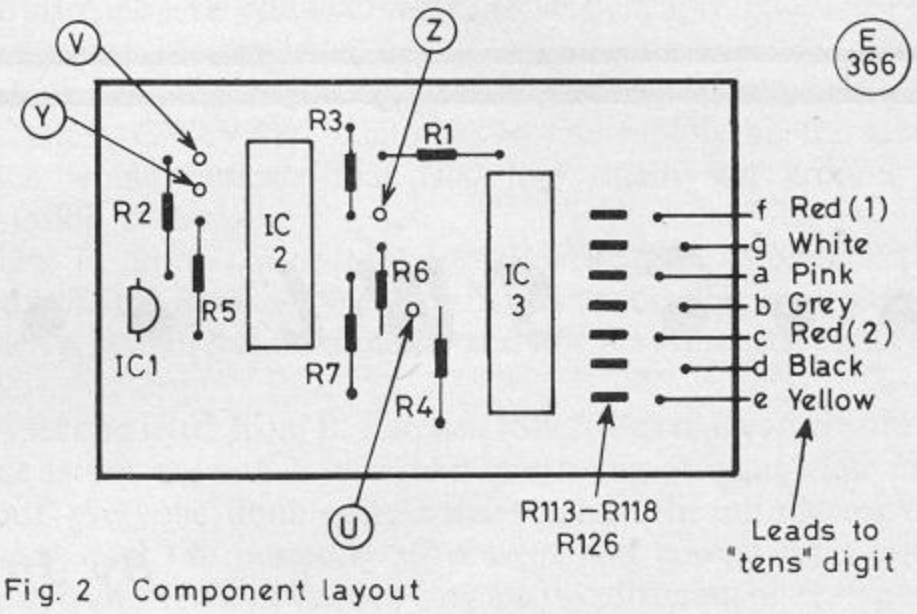

Fig. 2 Component layout

Colour	*Resistor*	*Segment*
Red	R114	f
White	R116	g
Pink	R115	a
Grey	R118	b
Red	R117	c
Black	R126	d
Yellow	R113	e

Note there are *two* red leads. Tie a knot in the one linked with R114 to distinguish it. Insert veropins into the holes vacated by R118, 117, 114, and 116, marked U, V, Y, Z respectively. (These letters date from the Aug. '83 article!). The four holes must be

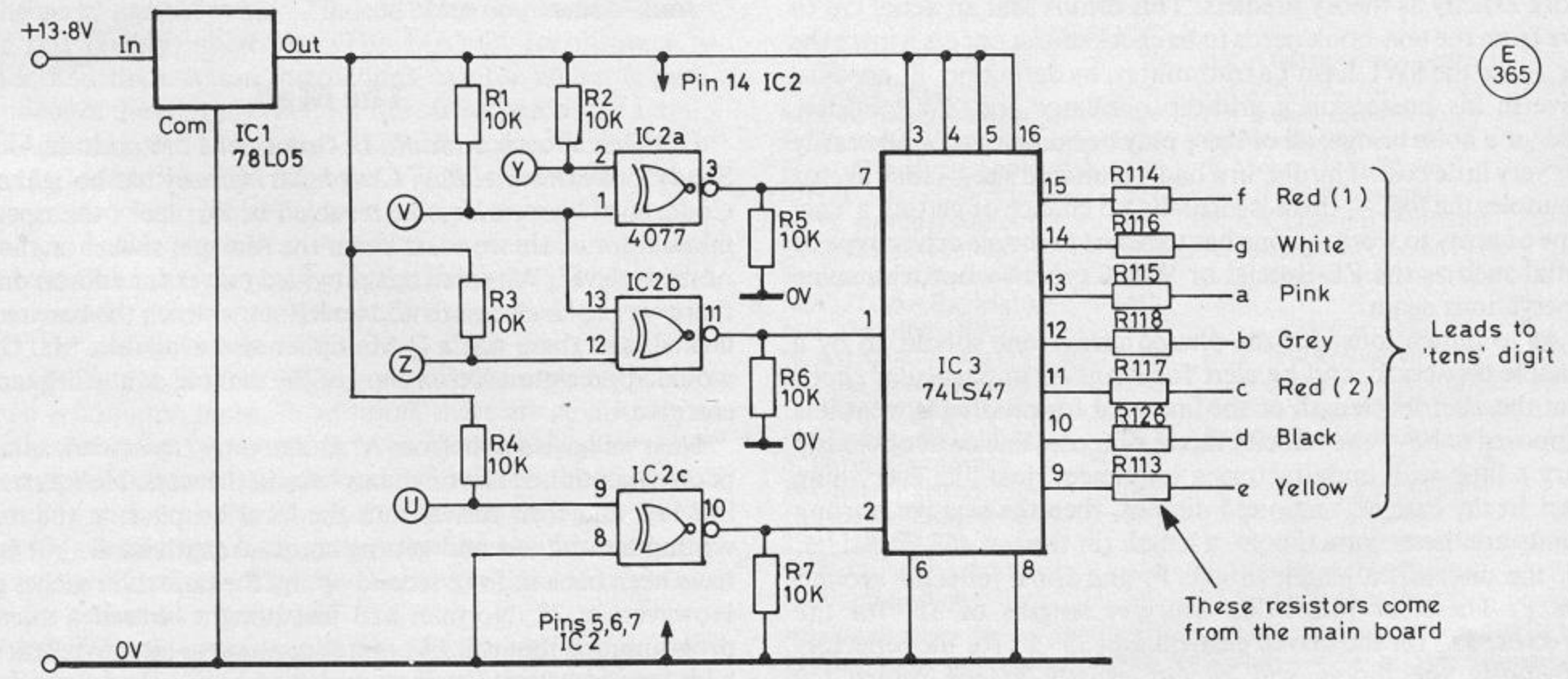

Fig.1 CIRCUIT DIAGRAM

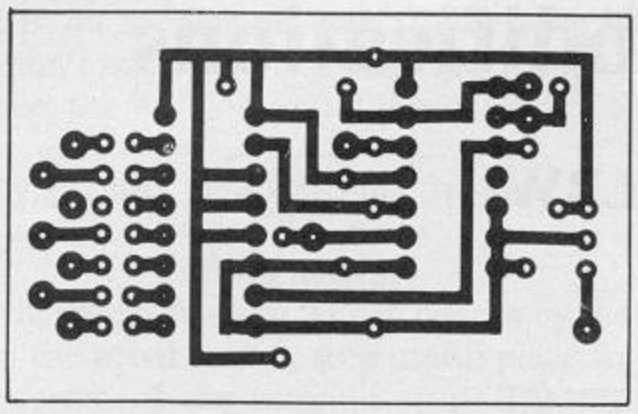

Fig. 3 Track layout (full size)

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those nearest to the channel switch. Insert all of the resistors into the new PCB. Connect leads from the new PCB to the four veropins as marked, and then connect the digit leads to the outputs of the 74LS47. The supply can be taken from any 13.8ve and Ove source, as the board has its own 5ve regulator.

The PCB can be mounted anywhere inside the case that is convenient, and no adjustment of any kind is required. The result is a much more meaningful display for an outlay of approx. £1.50. Readers who want more details about the LCL-2740 are invited to contact Ray, G4KZH, at Withers Communications, 021-421 8201.

••• SWL ••• SHORT WAVE LISTENER FEATURE

By Justin Cooper

IT seems we touched a sore spot with that last paragraph of September's *SWL;* rather surprising in view of the amount of 'aerials' information in the amateur radio press of the past few months.

If we are talking about directive aerials — as we indeed were — then a fixed wire beam *must* aim its main lobe somewhere useful at the times one is likely to be able to listen. For that purpose, one needs a Great Circle map centred on London if one is based in U.K.

Practically, one supposes, a fixed beam firing west is the most useful, as it will be handy for North and South America in the evenings, and the long-path VK and ZL stuff in the mornings; it will discriminate against the VK/ZL short path and much of Europe off the back (to some extent) and similarly it will not be very enthusiastic about the Mediterranean and Africa directions or over the North Pole. The second point to realise is that none of us is able to erect an aerial 'in the clear' to the point where it will work exactly as theory predicts. This means that an aerial cut to size from the text-book needs to be checked-out once is it up in the air. Since the SWL hasn't a transmitter, by definition, he needs to have in his possession a grid-dip oscillator and SWR bridge, and/or a noise bridge; all of these may be home-made quite easily for very little cost. Thirdly, in a badly cluttered site — such as, for example, the loft — there is virtually no chance of getting a Yagi type of array to work, so one has to resort to the all-driven type of aerial such as the ZL Special or W8JK types — but with some reservations again.

As to dimensions, for the phased arrays one should go by a reliable text-book, and be alert for snags — in particular check that the *electrical* length of the line used for phasing is what it is supposed to be — the velocity factor of feeder line must obviously vary a little with manufacturing tolerances, just like everything else! In the case of Yagis and dipoles, then the relative starting points are these: for a dipole, a length (in feet) of 468/F (MHz); for the director, a length of 440/F; and for a reflector around 498/F. These, at 14.2 MHz will give lengths of 31′ for the director, 33′ for the driven element and 35′ 1″ for the reflector. Obviously the dipole will be cut exactly at the centre for connection to the feeder. A 'chocolate-block' connector serves well for this. Another piece of 'chocolate-block' connector can be put at the centre of the director and of the reflector. Now, the 'boom' will be of string in the example quoted last time; terylene shark-line was what I used with one end made fast to a hook at the house end, and then threaded through the chocolate-block pieces in the desired order (through the screw holes, normally used for fixing the block to the wall); the far end attaches to a convenient tree. As the house is at the west end of the string, the order from the house is director, dipole, reflector — in your case it might be t'other way round. The string is hauled pretty tight to hold the aerial up, and the ends of the elements are insulated and made off so that they look like three inverted-vee aerials on a string. Because of this, they will almost certainly be too long. With the bridge or SWR indicator, 'prune' the elements carefully until you get it centred in the middle of the band. Don't forget to weatherproof the centre of the driven element — the best stuff for that is the RTV type of silicon rubber sealant/adhesive.

And — there you are!

The Mail

Our first letter is from *K. T. Gracey* of 11 Woodside Avenue, Sandy Cove, *Kinmel Bay,* Clwyd. Mr. Gracey has bought an old Codar CR-70 receiver and revalved it, but lacks the operating manual for it. He wonders about the four-pin socket on the back of the receiver. We recall this provided power for add-on units — there was a preselector to add an RF stage which the base receiver lacked, and there was a Q-Multiplier also available. Mr. Gracey would appreciate a Xerox copy of the manual or any help anyone can give.

Next we have a note from *N. E. Jennings (Rye)* who, as several people mentioned last time, has been in the wars. He was taken ill in May, and then rushed into the local hospital; at the time of writing he was out and getting some strength back, but he will have been back in for a second op. by the time this reaches print. However, at 75, Norman had just bought himself a micro, so programming that will give him something to bite (byte?) at while he is getting better. Our best wishes to him — and doubtless we shall hear from Norman's pals as to his progress.

We have 'just a score' this time from *G. W. Raven (London)* — obviously one of the strong silent he-man types!

Next comes a letter from *R. McQuire* of 24 Nightingale Place, *South Stanley,* Co. Durham DH9 6XG; he wants to know the current address to write to for details of ISWL. The answer is: ISWL, c/o H. J. Drinkwater, 88 Barley Lea, Coventry CV3 1DY.

Mrs. T. Parry (Blackpool) has not been very active; the fine weather has meant gardening and the OM has been hogging the gear for the VHF contests. But now the weather has broken Tina will be listening more.

A real long-time reader of *Short Wave Magazine* (since No. 1 in 1937, in fact!) is *J. W. Cave (Poole)* who recalls in his letter "DX Commentary", fore-runner of today's "Communications and DX News", then written by G6WY who later became VE3BWY and is still operational with that call. G6WY was succeeded by L. H. Thomas, G6QB, on whose death G3KFE took over the piece. All a long time ago. On a different tack altogether, SWL Cave wonders whether we could make our HPX Ladder into a two-column affair, featuring both Prefixes heard and Countries heard. A Good Question — what is the view of the jury?

D. B. Shapiro (Prestwich) has obtained G1EIK — congratulations! — and borrowed the club two-metre receiver for a week. David was quite happy to return the rig at the end of the week: he says that two metres is too predictable and too unexciting to hold the attention of an HF enthusiast for long. Not quite sure that one would entirely agree with that, all the unpredictability and excitement is distributed among the adventurous few who inhabit the lower end of the band, use big beams, and chase the DX, whether by E-M-E or MS in the lifts or whatever, on CW and SSB.

A. F. Roberts (Kidderminster) is another one for the congratulations as he is now G4ZIB, and actively into the DX and Prefix chase. One hopes that now he doesn't write to us your scribe, Tony will support G3KFE and "CDXN".

B. F. Hughes (Harvington) has another 21 to claim, and notes a mildly questionable 5N2WJN/2 — we also wonder, but if genuine he could possibly be out portable.

G. Carmichael (Lincoln) reckons he might have competition for the operating chair, as his wife is getting to be interested in the radio equipment. However the problem is, as it were, hanging fire as the receiver is "away at the doctor's" for a new FET; but before it went sick, the Inishbofin expedition, Mali, VR6TC, HL9 and some other new ones fell into the net. This is an interesting point, in that the breakdown was probably caused by a nearby thunderstorm. With an old-time valve rig one could get away with a lot, but the solid-state stuff is often eaten by a relatively distant strike, or, with some types of front-end circuit, static charges can be the killer. How to prevent? There are two entry routes possible, *via* the aerial or the mains. On the aerial side, one should be able to earth the aerial against static — indeed some commercial aerials provide this facility inherently. (The 14AVQ, for instance, is shunt-fed and the erection instructions call for an earth path, independent of the coaxial braid, for the earthy part of the aerial.) A simple dipole could have a high resistance across the feedpoint to give a DC earth. The lead from the ATU to the receiver should be disconnected from the aerials and earthed down when not in use, giving a double protection. As far as the mains is concerned, it must be realised that there are often quite large 'spikes' on line, some man-made, others atmospheric. These get in to the receiver through the 'leakage' stray capacitances which don't appear on any circuit diagram. Again, pulling out the mains plug while not on the air is common sense. In addition, there are circuits about which clip the 'spike' on the mains to an acceptable value, or one can use suppressors commercially obtainable. If one has overhead lines feeding mains to the house, it is a temptation to do the clipping very firmly with high-voltage zeners, but this method is really a bit *too* effective — it tends to both blow the mains fuse and destroy the zeners on a big spike!

M. Newell (Kenilworth) runs an SX-140 receiver, and is in dire need of some useful data on this box; if anyone can help him, would they please get in touch at 11 Lancaster Place, Kenilworth, Warwickshire, CV8 1GL. On a different tack, Michael usually seems to manage to miss the deadline, which puts him back to the next issue.

B. Patchett (Sheffield) holds G4VBP but raises a question of some interest when he asks if it is against the licence conditions to play a game of chess over the air. Having just re-read the licence here very carefully J.C. sees absolutely no reason why not; but of course, this may not be true of the licence issued by some other country, in which case one would not be able to play over the air as the other end would be in breach of the licence.

M. Rodgers (Harwood) sent in a goodly list of prefixes, many of which arise from the recent re-arrangement of the Russian prefixes — for a full list of these, one should go to Geoff Watts, who also sells a very handy *Prefix List* very cheaply indeed (*see* his advertisement in any issue).

The list from young *S. Baker (Cwmbran),* carefully edited by his father, GW6VZW, continues to rise rapidly up the scale; which would indicate that Dad had finally got around to mounting the aerial!

Mrs. R. Smith (Nuneaton) doesn't write quite as often as she used to, as the prefixes are getting harder to come by; but a change of aerial system has been made, and this may alter the picture a little.

A second letter from B. Patchett (Sheffield) makes it clear that some letters are either very slow in arriving or completely fail. Please, everyone, double-check that you have the full address, the county, and the postcode all present and correct (and note, Welwyn and Welwyn Garden City are two different places!) plus, as a precaution, being quite sure to put a return address on the back in case it strays.

Now to WAB and its companion HAB. We have a letter from G4HPU, enclosing a copy of the WAB constitution and the early pages of the WAB book. Should any readers want the details, the writer now has them, and it is understood that as long as G4HPU remains in office he will be advising us of any changes which may occur in good time. Most readers will already be aware that the WAB concept is to work squares based on the British and Irish National grid, and in so doing aim for an award. Monies collected for the awards and for the WAB books, go into a kitty after expenses are paid, and the funds are routed to our less fortunate amateurs, mainly by way of RAIBC. Thus, one gets some fun and helps others in the process.

HPX LADDER

(All-Time Post War)

SWL *PREFIXES*

PHONE ONLY

B. Hughes (Havington)	2866
Mrs. R. Smith (Nuneaton)	2424
E. W. Robinson (Felixstowe)	2328
H. M. Graham (Chesham)	1727
Mrs. T. Parry (Blackpool)	1621
G. W. Raven (London)	1547
E. M. Gauci (Malta)	1488
M. Rodgers (Harwood)	1470
M. G. Toms (Rayleigh)	1418
N. E. Jennings (Rye)	1354
N. Askew (Coventry)	1325
R. Fox (Northampton)	1273
D. Shapiro (Manchester)	1272
N. Henbrey (Northiam)	1232
S. Baker (Cwmbran)	1113
P. Oliver (Paisley)	1062
P. Lincoln (Aldershot)	883
J. Routledge (Hartlepool)	866
G. A. Carmichael (Lincoln)	852
G. Shipton (Rye)	843
I. F. Thorpe (Bracknell)	813
J. Heath (St. Ives, Hunts)	749
B. Patchett (Sheffield)	726
R. Wooden (Staines)	689
T. Morris (Headingley)	626
A. J. Hall (Alvaston)	624
P. A. Cardwell (Sheffield)	547
A. Pilkington (Chesterfield)	534
A. J. Chapman (Newark)	514

CW ONLY

E. B. Ward (Ruddington)	1848
J. Goodrick (Isle of Wight)	1691
A. F. Roberts (Kidderminster)	1344
R. Fox (Northampton)	433

RTTY ONLY

N. E. Jennings (Rye)	583
P. Lincoln (Aldershot)	468
J. Routledge (Hartlepool)	303
N. Henbrey (Northiam)	274

Minimum score for an entry: 500 for Phone, 200 for CW and RTTY. Listings to be in accordance with HPX Rules — *see* **p. 319, September issue.**

We turn now to *A. P. Lincoln (Aldershot)* who reports he talked on the landline to Norman Jennings down in Rye, who is awaiting his return to hospital; Peter has sent him some useful programs, including an HPX Ladder listing.

J. Goodrick in the *Isle of Wight* has been attacking the SWL contests with some enthusiasm, but reckons himself a little limited by the aerial. This of course may be true, but one should also recall that the aerial, unless a vertical, will have some directivity in azimuth, which may have a considerable impact on the problem. We seem to recall, back in the MCC contest days, that Verulam club used to rotate their half-wave dipole during the evening for just this reason, despite the formidable numbers required to do the rotating.

J. Heath (St. Ives, Hunts.) says he has been away from home for long periods of late so time for SWL has been very limited; and to add to his misery a letter went astray, so we have a copy to update by a small amount his score in the Ladder.

Now to *H. M. Graham (Chesham);* Maurice reckons it has been a lean time since July, with his August score of 40 countries and 13 zones the worst since September 1978. On Ten it was Europeans, with UB5 the nearest approach to DX, while Fifteen wasn't a lot better — all to the south save for WB3KBZ/VP9. On Twenty there was nothing of interest save for the odd W and masses of Europeans, but Forty turned up a brace of VKs, in the morning long-path opening. Eighty was useless in terms of DX but some more WAB squares were worked. Maurice has just sent off for his latest copy of the WAB book — its two predecessors are both, to put it mildly, well worn! Maurice is another one who is having problems with the Russians and their new Prefixes, for which the recommended medicine is a sharp dose of the Geoff Watts lists.

For *N. Henbrey (Northiam)* the RTTY score addition is zero, but the Phone total has taken a bit of a lift, and the VHF activity has been reasonably profitable despite the VHF beam being stuck facing NW for much of the time.

J. Routledge (Hartlepool) seems to have been missed out of the Table, so he has included a complete re-listing for us — thanks! Activity was not very high while the weather was nice, but doubtless things will change now.

A little spot of the holiday-making has kept *W. G. Shipton (Rye)* off the air, but he still has a few to add.

White Rose

The White Rose Amateur Radio Society is once again putting on a SWL contest; noon GMT on January 12, 1985, to noon GMT on 13th, of which up to 18 hours may be used during the period, the rest period being clearly shown. (Does this imply only one rest-period?) Rules are essentially the same as in previous years, covering Top Band, Eighty and Forty. Holders of Class 'B' licences are also allowed to take part. For the full rules of this very popular contest, drop a line, *plus an s.a.e.* to David A. Whitaker, Hillcourt, 57 Green Lane, Harrogate, N. Yorks. David himself has made a move into UHF, with the aid of a Microwave Modules converter and a 19-element Tonna, and was lucky enough to strike gold in the way of a big lift on the very first week of listening. Back on the HF bands David also managed, by way of CE0AA, to complete a full set of countries — 315 current ones, and an all-time score of 340C, in some 23 years. The absolute maximum post-war, we believe, is W1GKK's total of 367 — every one that has appeared since the restart after W.W.II; and since those are the *QST* Honor Roll figures they must not only be worked but confirmed too! Coming back to the White Rose contest, we do hope as many SWL readers as possible will put in an entry and save the Gs from disappearing in the heap from the rest of the world!

The SWL station of Henry Lee, LA-1419, in Oslo. Henry, who is 80 years old, is also ex-G2LV and has lived in Norway since the end of the war.

ANNUAL HPX LADDER

Starting date, January 1, 1984

SWL	*PREFIXES*		
N. Fox (Wakefield)	395	P. A. Cardwell (Sheffield)	333
A. Woods (Norwich)	395	M. R. Warburton (Leicester)	289
C. Burrells (Stevenage)	370		

Minimum of 200 Prefixes to have been heard since January 1, 1984, for an entry to be made, in accordance with HPX Rules — *see* p. 319, September issue. At score 500, transfer to the All-Time Table is automatic.

E. M. Gauci (Sliema, Malta) has added a few more, and extracted the earlier ones — which became appropriate once he was into the All-Time Post War list — to take him up to 1488.

P. A. Cardwell (Sheffield) has been in the horizontaly polarised mode with pneumonia (damp aerial feeders?) and so has occupied his time in completing his set of *Short Wave Magazine* issues, and completing his HPX List. Now he is better, reader Cardwell would like to hear from any SWLs with programs he can run on his Sharp MZ-700 micro; he is looking for Log Book, Antenna, Qth Locator, and other radio-oriented programs — contact him direct at 223 Chesterfield Road, Meersbrook, Sheffield S8 0PR, South Yorkshire.

Although he hasn't yet got a permanent aerial up, *E. W. Robinson (Felixstowe)* is quite reasonably pleased with things; after all the band conditions weren't exactly marvellous. E.W.R. also tried a CB vertical, fed through a Codar preselector into his EA-12 and was more than surprised to hear 9M2CW roaring in at well over S9; but of course some of that S-meter reading was down to the gain of the preselector rather than the improved sensitivity of the combination. It does go to show, which J.C. reckons was the real point, that DX can be found with the most unpromising aerials.

Finished

That's it for another month; deadline for the arrival of your letters for the next appearance of "SWL" is **November 22** latest, addressed to "SWL", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ.

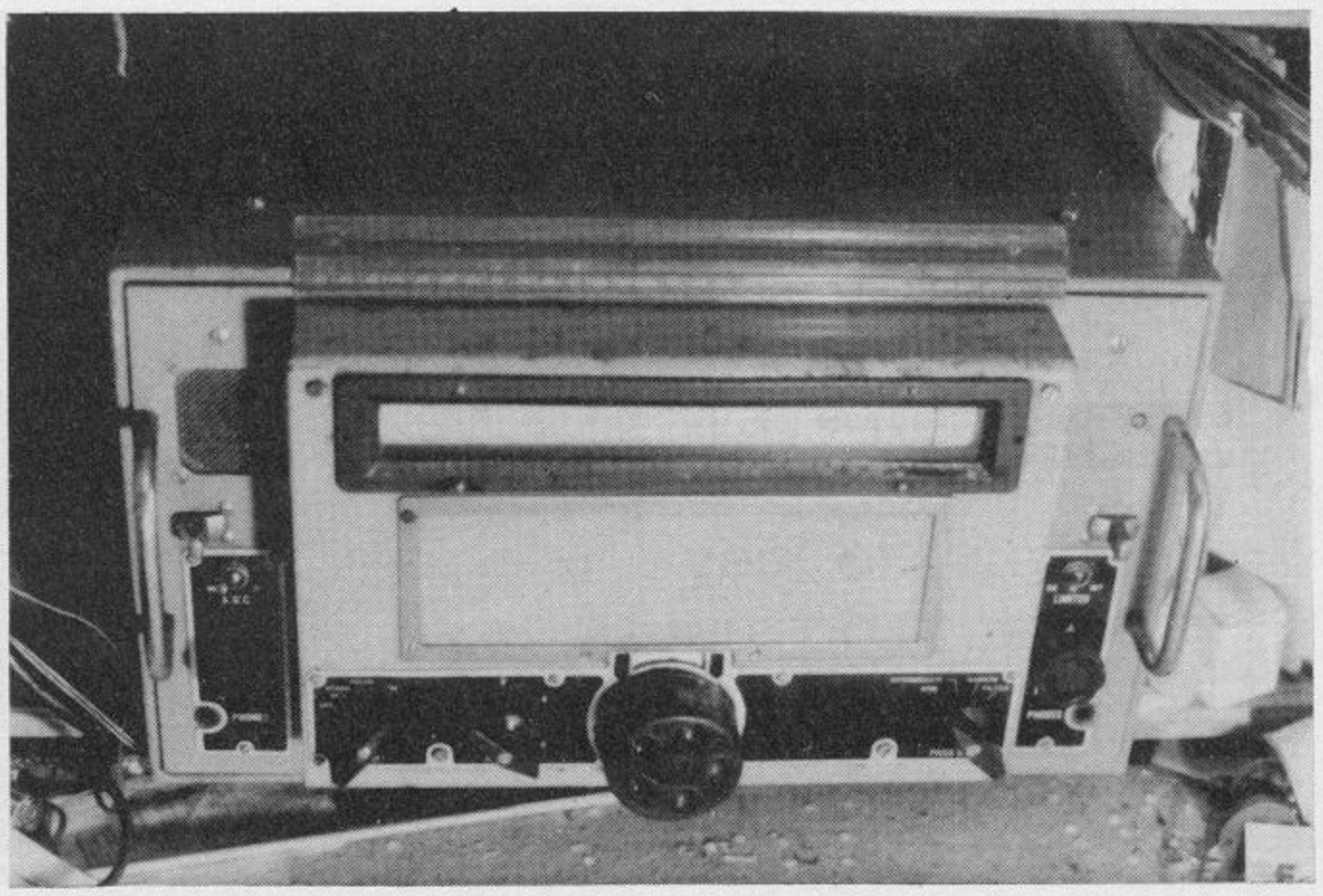
An Interesting Vintage Communications Receiver

REVITALISING A MARCONI 1017

CHAS. E. MILLER

WHAT is now a highly prized item in my collection of radio receivers came into my possesssion quite unexpectedly during an autumn holiday in East Anglia. My wife and I happened to visit an auction sale of agricultural implements chiefly because we are inveterate sale-goers, and with but little anticipation of obtaining a bargain. However, I noticed amongst the ranks of rusty equipment a largish steel case painted an intriguing shade of battleship grey, which seemed worthy of investigation. A single close glance told me that it was a communications set of some description, but not one that was familiar to me. The dial has an obvious affinity to that of the famous B28/CR100 series, but generally the appearance was more modern. Two quick-release clips enabled me to slip the chassis from its case and to note that there was a four-gang tuning condenser and around a dozen octal valves, confirming my opinion that here was something worth bidding for. Further inspection was not possible in the circumstances, or to my mind advisable, since the last thing a seasoned auction buyer wishes to do is to advertise the fact that he has found a bargain! In the event this caution was either successful or unnecessary, for only one other person envinced the slightest interest in the set and it was knocked down to me for £1.

I was naturally very keen to try out the receiver when we returned to our holiday chalet, only to discover that tests would have to be postponed until our return home, since a separate power pack was required for HT and LT supplies. However, I could, and did, make an assessment of its features and specification. The model number, I found, is 1017, the manufacturer being, as expected, Marconi. A central section of the front panel, just over the width of the dial, juts forward about 1¾" from the rest; at the bottom of this are situated the knobs for receiver system, band-change, tuning and IF band-width. To either side are the RF gain control and AGC on/off switch; and the AF gain and limiter on/off switch. Phone jacks are provided for two operators, and there is also a tiny built-in loudspeaker (2-inch diameter) at the top left hand corner of the panel. The system switch gives a choice of off/stand-by/phone/CW, and initially I was disappointed not to find an adjusting knob for the BFO. The bands covered extend from 15 kHZ(!) to 4 MHz in five ranges. Band 1 covers up to 40 kHz, the others providing continuous and overlapping coverage from 100 kHz to the upper limit. The dial, as mentioned earlier, resembles that of the B28 and it has a similar mechanical bandspread facility in the form of a scale graduated 0-40 beneath the main dial aperture in conjunction with an auxiliary circular dial marked 0-100 ganged to the tuning knob. The latter is a very heavy plastic-covered steel affair which acts as a flywheel and permits rapid excursions from one end of the dial to the other. The IF bandwith control has four settings, *viz.* wide, intermediate, narrow and "filter". Between the dial and the four main knobs is a rectangular space bounded by chrome strips which gives the impression of having been provided to hold lists of frequencies for the operators' information. I had to content myself for the moment, regarding the circuitry, with determining that there were eleven valves and a voltage regulator in a superhet with two RF amplifiers configuration. Further deductions were made empirically in my workshop, and I should state at once that I don't guarantee that they are 100% accurate. Long experience of writing magazine articles has taught me that there is usually some reader who knows



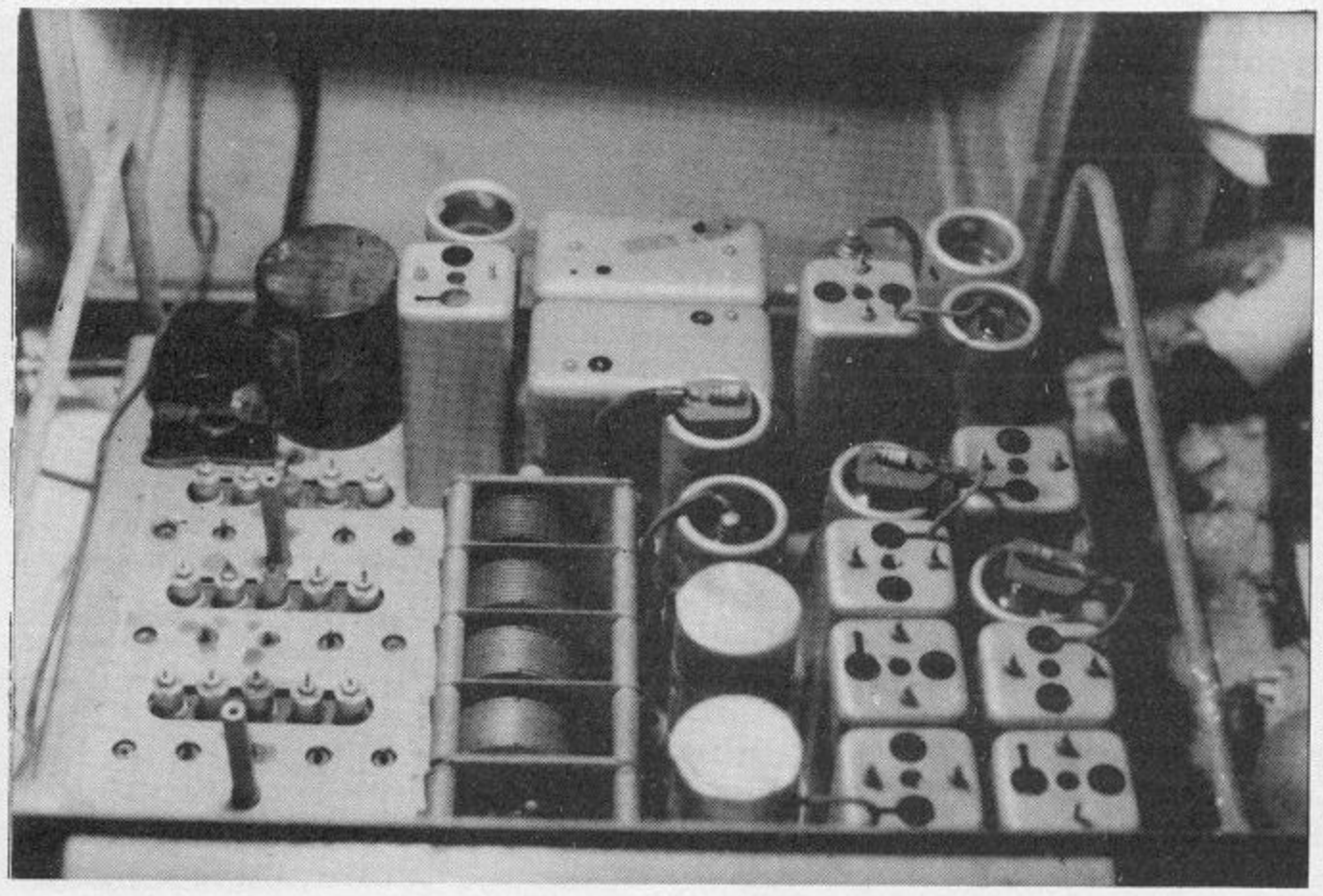
A top/front view of the vintage Marconi receiver; note the 12-inch ruler above the dial.

the subject backwards, and who is willing to put me right if I should happen to err!

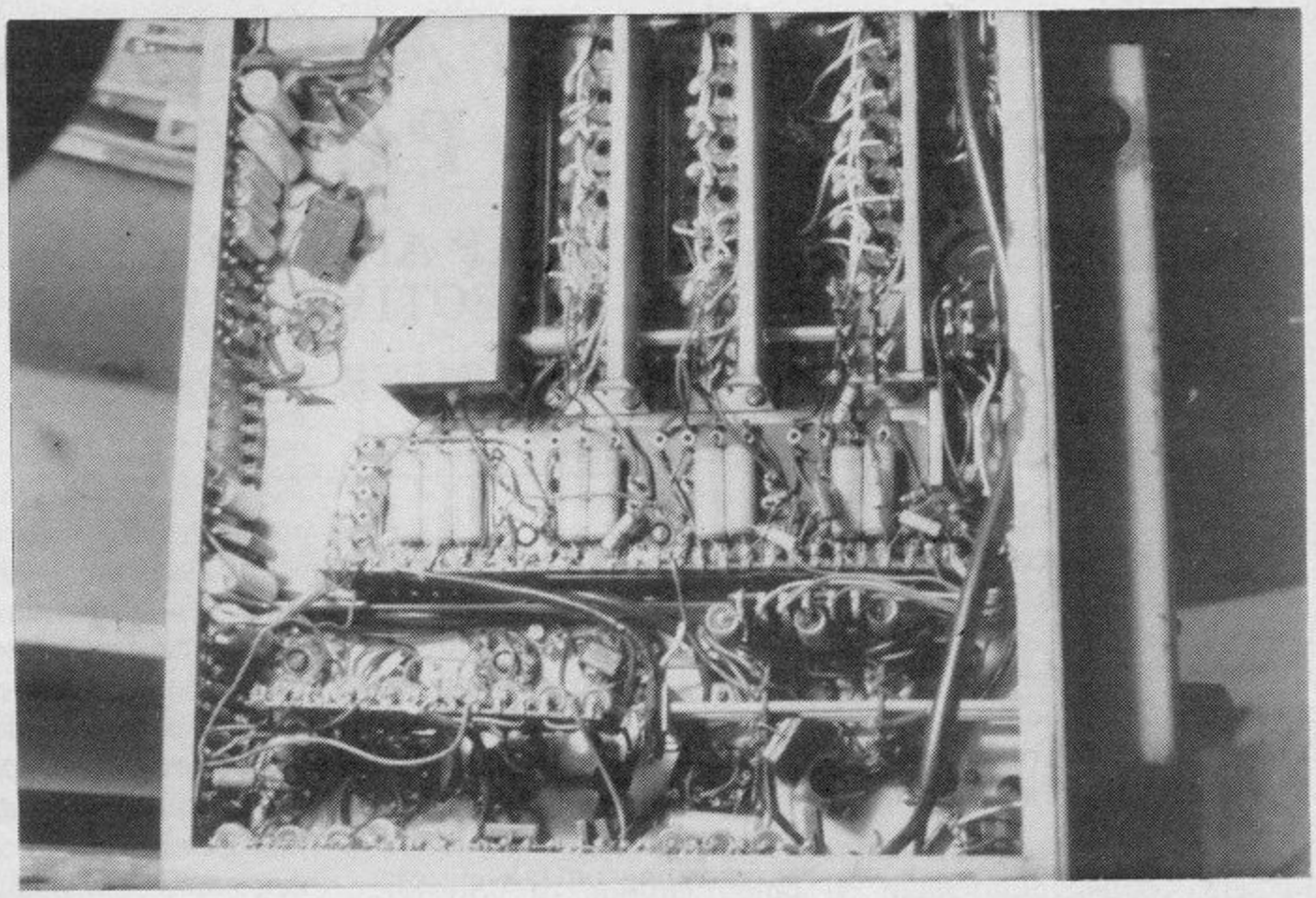
The first problem was to decide what power supply voltages should be. HT ought not to be critical as long as it lay between 200 and 300V, but LT was a bit of a puzzle at first. I noted that there was an AC/DC selector panel in the set, similar to that of the B28, and deduced that the valve heaters could be wired in series or parallel (or a combination of both) to suit transformer or battery operation. I expected that in the former mode the supply would be 6.3V, but applying this produced not even a dull glow from the valve heaters, and I raised it to 12.6V. This was still obviously insufficient, so I concluded that the arrangement must be for nominal 24V operation. This proved to be the case. A transformer from a scrap colour TV which had provided a 24V LT (DC) supply was pressed into service for this job. I am fortunate in having acquired a number of high-quality HT supply units from a major TV rental company and so the provision of HT was no problem at all. These units have built-in regulation *via* a valve circuit, which can be set within fairly wide limits. I tried 275V, which seems to be perfectly satisfactory.

However, the first tests produced no results whatsoever, on any band or system. Since all the valves appeared to be OK it was evident that the fault lay in the HT line. Confirming this suspicion was easy enough as there is a special small test panel within the set on which a number of pertinent voltages may be measured, and, in this case, found to be absent. Finding the cause was a completely different kettle of fish! The set has large tag strips set around three sides of the under-chassis, carrying a vast number of components, and tracing an open-circuit wire-wound resistor proved to be a time-consuming job. Because this component obviously carried the total HT current for the set, I was expecting to find rather a large resistor, and was surprised to discover that it was in fact quite small and probably rated at no more than 2W. Replacing it produced some results on Band 4 — very poor — but nothing on other bands. It appeared that there must be trouble in the coil pack, and here I was on surer ground.

The RF and oscillator coils in the 1017 are typical of their period in having iron-dust cores fitted with brass-screw adjusters. Experience shows that all too often the cores part company with the adjusters and simply drop away into positions where they do no good at all! This proved to be the case in this instance, so I had to set about the job of restoring nearly half the total complement. I usually find that the cores break so easily that it is useless to contemplate gluing them to the adjusters, and instead I employ a crude but effective technique. This consists of dispensing altogether with the adjusters, and of wrapping the broken piece of core with plastic insulation tape to make it a firm sliding fit within the coil former. Adjustment is made by pushing it to-and-fro with two insulated tools until the optimum point is reached, whereupon it is sealed with wax. This method produced such excellent results on the lower frequency bands that it was doubly infuriating to find that there was still silence on the coveted short-wave band. It transpired that the anode winding on the coupling coil between the first and second RF amplifiers had gone open circuit, and that the only course open to me was to rewind it. Removal was not difficult, and finding that it was covered with wax, I had high hopes that the latter might be melted off to reveal the break. I had reckoned without Marconi's high standards, for beneath the wax was a thick layer of some chemical dope which resisted various solvents and eventually had to be burned away with the aid of a soldering iron and a respirator to ward off the noxious fumes thus produced! I found that the anode coil had been wound beneath the other (grid) winding and that the break was simply not to be found without the removal of the latter. I ended up doing a complete rewind job — in fact several, in the interests of achieving consistent results over the band. The work was well justified as I managed to obtain sensitivity figures of down to 2 microvolts. With all bands now functioning I turned my attention to a more detailed look at the IF amplifier section. There was no indication that realignment was needed — the trimmers were patently undisturbed — but I wished to learn more about it. Only then did I realise that the line up of valves alongside the tuning condenser is made up of two KTW61 RF pentodes (the RF amplifiers) and *two* X61 triode-hexode frequency-changers. This suggested that a double-superhet configuration was employed. Tests with a signal generator confirmed that this is the case on the two higher bands, with a normal single-superhet on 1, 2 and 3. The first IF frequency showed up at around 4.125 MHz, whilst the second was too low for the generator in use, which only goes down to 100 kHz. I had to recall to duty a pre-war Cossor unit having a lower limit of 70 kHz and an unknown standard of accuracy; this indicated that the second IF was approximately 80 kHz. The use of such a low frequency is contributory to high gain and stability but it could not be employed unaided on the high frequency bands as it would introduce great susceptibility to ''images''. The first IF being just above the upper limit of band 5 provides immunity against this annoying and confusing effect. The IF bandwidths appear to be approximately 7, 4 and 1.5 kHz, plus the very narrow



General interior view; note the numerous IF cans!



An underview of the receiver showing the coil pack and the extensive use of tag boards.

crystal filter for CW signals. The widest pass band has pronounced double-humped characteristics while the intermediate is obviously steep-sided. A definite improvement over all the B28 sets I have operated is the maintenance of sensitivity at the lower pass bands, since on the older sets their use was severely limited by reduction of gain.

The two 80 kHz IF amplifiers (KTW61s) are followed by a couple of D63/6H6 double-diodes arranged as noise limiters. This is an effective circuit, again as opposed to that of the B28 which gave the impression of having been tacked on as an afterthought. It is possible to switch in the 1017 limiter on all classes of signals to give a marked improvement in signal/noise ratio without incurring the penalty of distortion.

Next comes the BFO stage which I suspect is rather sophisticated since it employs yet another X61 triode-hexode valve in, presumably, a form of product detector. The low IF will no doubt again be of assistance as regards stability of the oscillator. The result is extraordinary ease in resolving SSB signals, with the absence of a tuning control for the BFO no handicap at all. One just flicks the system switch to CW, slightly readjusts the main tuning, and that is that. Only on very powerful signals is it necessary to disable the AGC and employ the manual RF gain control. The stability on commercial stations (*e.g.* marine R/T) is such that criticisms can be made regarding some amateurs!

The conventional detector/AGC/first AF amplifier (DH63 double-diode-triode) is followed by an unusual choice of ''output'' valve — an L63 triode, more normally employed as a voltage amplifier. In its unaccustomed role it could be expected to produce no more than around 200mW of AF power, which would however, be more than adequate for headphones. I has my doubts about its performance in conjunction with a loudspeaker, and certainly the results through the diminutive monitor were frankly appalling! The thought of modifying to, say, a KT61 pentode crossed my mind, but as I prefer to keep vintage equipment original if possible, I tried the effect of connecting up a decent external speaker first. To my surprise the quality of reproduction on speech and music became first rate, to the extent where a stranger would be unaware that he was listening to music *via* a communications Rx. Obviously, sheer power is still restricted but this is of no consequence in my tiny study, where the 1017 now lives and is in daily use. It gives my much pleasure and I shudder to think what might have happened to it had not Fate drawn me to that auction sale!

The upper tuning limit of 4 MHz is admittedly rather frustrating since with the high standard of the set one aches to know what it would have been like at higher frequencies. One project which is in the pipeline is the use of a preselector unit tuning up to 30 MHz and having an IF output of, say, 3-4 MHz to give the equivalent of a triple-superhet. Time — or the lack of it — is the greatest factor in delaying fruition of this scheme, plus my determination that the preselector, too, shall be a vintage piece of equipment. Meanwhile I have splendid coverage of the 90m. and 180m. bands, plus, as mentioned earlier, many commercial stations, so I am fairly content. It might be argued that I ought to leave well alone, since extended coverage would inevitably lead to even more time spent away from my typewriter!

One last point, concerning putting a date on the 1017. The general finish of the set suggests that it was made for commercial rather than Service users, supported by the stamping of civilian valve type numbers alongside the valve holders. The use of octals points to the immediate post-war period, as does the use of the original type of PVC insulation for under-chassis wiring, which, as I found during my repair work, curls back alarmingly when subjected to the heat of a soldering iron. This type of insulation was superseded in the late '40s. Normally the manufacturers of electrolytic condensers used to date their products, but in the 1017 none is thus identified. So, I am restricted to a guesstimate of *circa* 1947, making this fine set some 35 years old. Long may it continue to give its highly satisfying performance!

The Sloper Antenna System, Part 1

A CHEAP AND EFFECTIVE DIRECTIVE ARRAY

CHRISTOPHER PAGE, G4BUE

THIS article describes the Sloper System, how it is constructed and the results that may be expected with it. The system was originally designed for 7 MHz, but the article will describe how it can be modified for use on other frequencies. In addition an examination will be made of the 'Extended Double-Zepp' for 3.5 MHz, the construction of open-wire feeder, and a system for suspending LF wire antennas on a tower or mast above a rotatable beam.

In the summer of 1975 I was concentrating on DX-ing on 3.5 MHz and 7 MHz, trying to work 100 countries on each band for Five-Band DXCC. It soon became obvious that some form of superior antenna design was required to make country chasing easier. Although Yagis for 7 MHz were becoming common in the U.S.A., they were quite a rarity in the United Kingdom, and in any case the cost and space required was far too excessive.

At that time I was living near Haywards Heath in East Sussex, and my garden was in excess of 500 feet long, with a large wooded area at the end. I had my 60-foot crank-up tower, holding the two-element tri-band quad for the HF bands. A long length of coax cable connected the antenna to the shack in the house (I did not realise at the time just how inefficient that system was, but that is another story!). Initially I hung inverted-vees for 3.5 MHz and 7 MHz from the tower, just below the quad, but as my first experiences at the low end of those bands showed, it would enable DX to be worked more successfully if I could improve on them.

A study of the different wire antennas resulted in the Extended Double-Zepp being chosen for 3.5 MHz. This was mainly due to my long garden and the claimed 3dB gain over a dipole; this only amounts to half an 'S' point, but is quite a useful gain on 3.5 MHz.

The Extended Double-Zepp consists of 0.64 of a wavelength in each leg, and on 3.5 MHz this is in the region of 52 metres or 175 feet, making a total antenna length of 350 feet. The TV mast on top of my house provided one support, and the oak trees at the bottom of the garden, the other. The antenna is fed with open-wire feeder, approximately 45 feet in length, which is then joined to coaxial cable and brought into the shack. The layout of the system is shown in Fig. 1 and Table 1 shows the lengths of the antenna for the CW and SSB portions of each band.

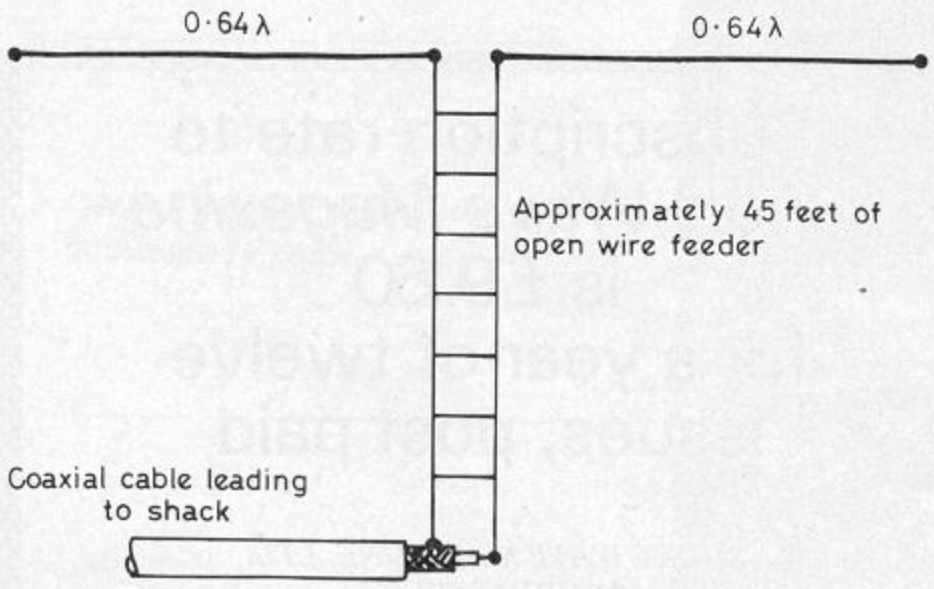


Fig. 1 Extended Double Zepp antenna for single band operation.

E 370

The open-wire feeder had to be very light to prevent pulling the centre of the antenna down. I achieved this very cheaply by using the outer sleeve of some old UR43 coaxial cable, about 5mm thick. The wires of the feeder consist of 18 s.w.g. wire which is fed through each end of the spacer, constructed from the coaxial cable sleeving; the spacers are three inches long and spaced six inches apart. Securing wires were then soldered at each end of the

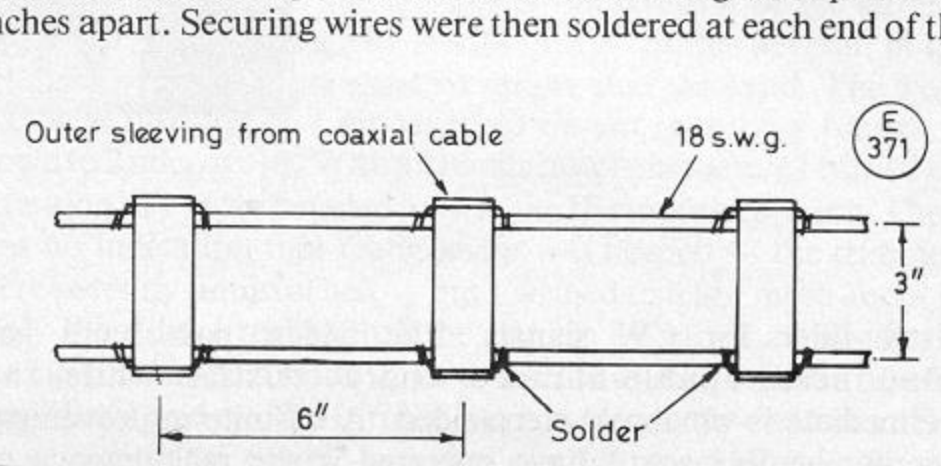


Fig. 2 A cheap, lightweight and weather resistant open wire feeder suitable for use with the Extended Double Zepp or the G5RV array.

spacers, as shown in Fig. 2. This resulted in a very light weight and cheap open-wire feeder, which did not drag the centre of the antenna down. It also provided a spring like effect so that when the wind blew, it enabled the antenna to move up and down in the wind, and prevent it from being blown down. The feeder is very resistant to the weather, and has since been used for several years feeding a G5RV antenna.

I was able to gradually alter the SWR of the antenna by adjusting the length of the open-wire feeder. This is best achieved by attaching two crocodile clips to the end of the coaxial cable (inner and outer), and then attaching the clips to different positions on the open-wire feeder. Once the ideal position has been found, the feeder can be cut, and a permanent join made direct to the coaxial cable. A perfect match was obtained with approximately 34 feet of open-wire feeder.

I was only interested in using the antenna on 3.5 MHz, but by using a tuning network between the open-wire feeder and the coaxial cable, it can be used on other bands.

At 0400 the following morning I tried it out, and worked five Brazilian stations in succession and then one in Argentina. The reports from the PY stations varied between S5 and S9, and the LU station gave me S4. I was quite satisfied, as I had not

Band	*CW*		*SSB*	
	Frequency	*Length*	*Frequency*	*Length*
10	28050	22.45	28600	22.02
15	21050	29.92	21275	29.6
20	14050	44.82	14225	44.27
40	7020	89.71	7070	89.07
80	3550	177.4	3700	170.2
160	1830	344.1	1875	335.9

Table 1. Shows the length (in feet) of each leg of the Extended Double Zepp antenna for the CW and SSB portions of each band.

previously experienced DX stations from South America queuing up to work me on 80 metres. I was even more satisfied the following day when a local amateur, who I had not previously met, called at my home to ask if he could have a look at my 3.5 MHz antenna; he had been listening to my QSOs with the South American stations, and as he had been unable to hear them, wanted to know what antenna I had been using.

During the next few days the antenna worked very well, and some interesting DX was worked. Early one morning, whilst in an SSB QSO with K2WSP, he demonstrated a sloper system which he had recently erected. The system comprised of five sloping dipoles supported from a single 120-foot tower. A relay box positioned half-way up the tower and a control box in the shack enabled one of the slopers to be selected, whilst the others were used as reflectors, resulting in a directive antenna system. The difference in his signal when transmitting on the dipole sloping towards Europe compared with the one sloping away from Europe was quite staggering.

Unbeknown to me, K2WSP had been recording our QSO, and afterwards went on to record QSOs I made with other North American stations. He sent me the cassette, and I was able to hear for myself the effect of the sloper system on European signals, including mine, being received in North America. Whilst other North American stations were giving me 55 or 56, K2WSP was receiving my signals at a minimum of 59 on the sloper towards Europe. As the band began to fade, my signals dropped to him to 57, but when he switched onto the dipole sloping away from Europe, my signal disappeared altogether. It was quite fantastic and certainly much more efficient than anything I had previously heard on 3.5 MHz. K2WSP was of the opinion that the sloper system, properly erected, was approaching the efficiency of a three-element beam, at least on 3.5 MHz. He based this on a comparison he had done between his signals and those of W2HCW, who lived close to him. W2HCW had three 90-foot elements, which were slightly loaded, mounted on a 125-foot tower, and results between the two stations were about the same.

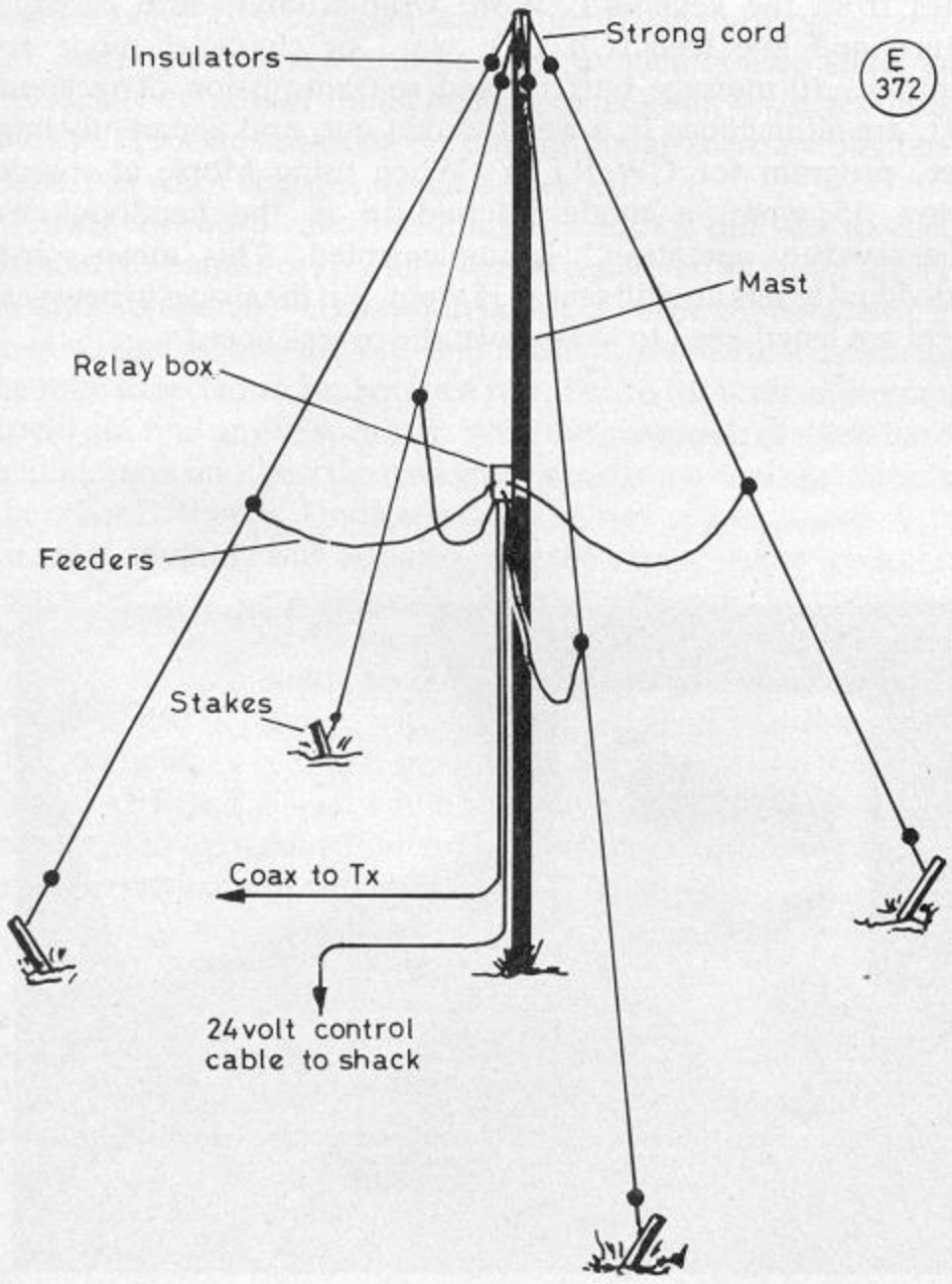


Fig. 3 The Full Sloper System using half-wave dipoles suspended from a single mast

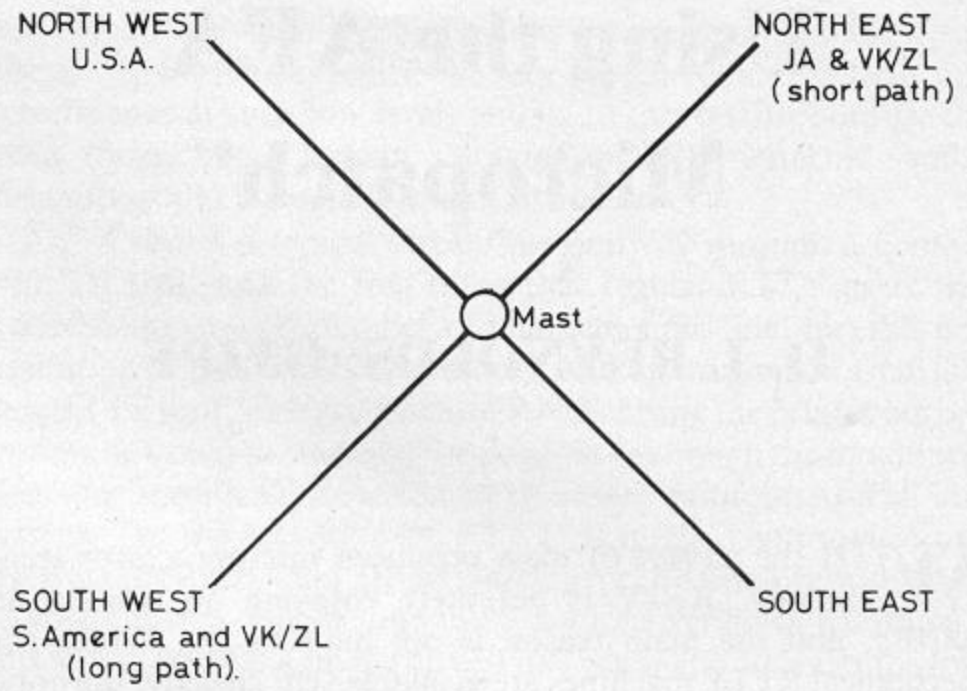


Fig. 4 The Full Sloper System looking from above showing the four best directions when using only four dipoles.

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The sloper system had an advantage in that selection from one direction to another could be made immediately, whereas W2HCW had to wait for the rotator to go round.

The QSO with K2WSP and the tape he sent, prompted me to make further enquiries about the sloper system. It is described in The ARRL *Antenna Book* (13th Edition), but for 7 MHz, and all K2WSP had done was to double-up on all the measurements. As I had a reasonable antenna for 3.5 MHz in the Extended Double-Zepp, I decided to try the sloper system for 7 MHz.

For 7 MHz the system consists of five sloping dipoles supported from a single 60-foot mast or tower, and sloping towards the ground at an angle of approximately 60 degrees. Each sloper has a feed line consisting of approximately 36 feet of coaxial cable which leads to a relay box positioned half-way up the mast; a control box in the shack enables any one of the five slopers to be selected for use. The four slopers not in use act as reflectors, giving forward gain of 4dB over a dipole, and a front-to-back ratio of up to 20dB. The feed line of each sloper, being 36 feet, is just over three-eighths of a wave-length; this electrically lengthens the sloper by adding inductance to the centre of it when the end of the feeder at the relay box is open circuited.

In addition to a forward gain of 4dB, the claimed front-to-back ratio of 20dB also impressed me. Anything that can assist in attenuating the loud East European signals on 7 MHz, whilst trying to work DX in North America and the Caribbean, has to be worth serious consideration.

Five slopers are recommended in order to give good directivity throughout 360 degrees. This means using a relay box consisting of four relays, but to keep the system simple, I decided to use four slopers and three relays. The system was constructed and erected on the tower, just below the rotator, at about the fifty-foot level. Fig. 3 shows the system as erected and Fig. 4 the system as looking from above. My dipoles sloped in the direction of northwest (for the U.S.A.), northeast (for Japan and VK/ZL on the short path), southwest (for South America and VK/ZL on the long path) and southeast. The compromise in using four slopers had to be Africa, which was between the southwest and southeast slopers, but I decided this was a small price to pay.

The slopers are cut to length using the formula: Length in feet $= \frac{492}{f}$ with no adjustment being made for the insulators, etc. The reasons for this will be explained later. The feeders were cut from lengths of UR43, 50-ohm, coaxial cable. I found this a useful size in that it was not too heavy to drag the centres of the slopers down towards the mast. A three-foot length of strong cord is used at the top of the sloper between the end insulator and fixing to the top of the mast. At the other end strong cord is used to hold the sloper out from the mast at an angle of approximately 60 degrees, by being fixed to something convenient on the ground.

to be continued

Using the AEA 'Micropatch'

D. J. REYNOLDS, G3ZPF

WITH the advent of mass produced microprocessor technology, RTTY is definitely enjoying an upsurge in activity, and the main reason is not hard to see. Whilst the mechanical RTTY machines are available very cheaply, the noise that they generate is deafening, and even with a 'silence' cover fitted, are still rather large for some shacks.

Today a microprocessor based system offers silent operation with a VDU, in a smaller unit with no moving parts to wear out or need adjustment. Add to this the ability to change baud rates at the press of key, to precompose text for transmission during receive periods, to memorise 'standard' QSO exchanges, or to store data to disc or tape, and the attraction becomes greater. Prices of such systems were initially astronomical, but with the introduction in recent years of some very low cost personal computers they have dropped dramatically. A personal computer needs a suitable program to send or receive RTTY, plus an interface (or terminal unit) to link it to the station equipment, and the AEA Micropatch provides both of these functions in one compact module for either the VIC-20 or the Commodore 64 personal computers.

The 'Micropatch' and Its Manual

The **Micropatch** comes in two versions, designated the **MP-64** (for the Commodore) and the **MP-20** (for the VIC). The model reviewed is the **MP-20,** together with a VIC-20 (the author currently uses a BBC disc system), and Fig. 1 shows the unit as supplied. In addition to the unit itself there is a very well written 32-page handbook, a sheet of keyboard overlays, and a small packet containing various plugs.

The simple plastic case around the unit belies the very professional interior, which can be seen in Fig. 2. It measures 6″ by 7½″ by 1″ approx, and plugs into the back of the VIC-20 as shown in Fig.3. This connects only the EPROM, containing the operating program, which can be seen by studying the PCB tracks on the internal photo. The terminal unit itself connects, *via* the supplied lead, from a miniature socket on the side of the **Micropatch** to the I/O socket of the VIC-20.

Sockets on the rear of the unit allow it to be placed in parallel with the external speaker of the station receiver, and to deliver true FSK keying for transmitters with that facility. The majority of users will probably make use of the AFSK (audio FSK) facility provided *via* the cable seen exiting the lefthand side of the unit in Fig. 3. This lead carries the audio tones to be fed into the mic. socket of a normal SSB transceiver, and a p-t-t line to switch from transmit to receive from the computer keyboard. As supplied, the p-t-t line is configured to switch + ve p-t-t rails, but the manual gives full details of how to change this for − ve p-t-t rails, as well as how to vary the 30mV level of the audio tones up to 200mV for rigs with an inbuilt mic. preamplifier (*e.g.* Icom).

There is no power switch on the **Micropatch,** which requires an external mains PSU giving 12V output. The current supply required is not great, and most amateurs will have a suitable source of 12V somewhere in the shack, although an optional PSU can be supplied if needed. An LED indicates when 12V is applied, and a group of 3 LEDs labelled 'mark', 'null', and 'space' are used for tuning in RTTY or CW signals.

On the rear of the unit are 3 pushbuttons for selecting the filters for each mode; 800 Hz for CW, 170 Hz for RTTY, and 850 Hz (adjustable) for wide shifts. A note in the handbook mentions that the filters have been optimised for baud rates less than 100 baud, but for the adventurous gives a simple modification for using the **Micropatch** at 300 baud.

A warning given in the handbook is worth repeating here, and concerns the drive level to an SSB transceiver. Under normal voice conditions the duty cycle of an SSB transmission is around 20%, but RTTY is a 100% duty cycle, so unless your rig has been specifically designed to cater for RTTY, you will have to reduce the input to the PA if you want it to survive. Some rigs may be capable of full output on RTTY, but even then check to see if your PSU is up to it, because some are not. Destroying a PA section, or an external PSU is a simple mistake to make in the enthusiasm of starting on a new mode — so beware.

For those (like the author) new to RTTY, the handbook contains a brief introduction to the mode, with preferred baud rates and frequencies but it would be advisable to consult a more detailed treatise on RTTY before delving too deeply, especially on the subject of operating procedure.

A ''troubleshooting guide'', circuit diagram, and parts layout diagram complete the technical part of the handbook, together with full details on how to completely align the unit, should it ever prove necessary. The author's advice on this latter point would be . . . if in doubt, *don't*. The second part of the book consists of the instructions for using the program contained in the EPROM, which looks fairly complicated at first glance, but is actually quite well written, and very easy to use after only a few moments practice. After reading through this section, the author found it an advantage to run through a couple of 'dummy' QSOs off-air to familiarise himself with the available functions and key positions. The key overlays are invaluable at this point.

The EPROM Program

The program contained within the EPROM alloys you to send and receive Morse or RTTY (ASCII or BAUDOT), without having to load from tape each time. It has a type-ahead buffer, which can be used to compose text for transmission whilst receiving a signal, and can be switched between all common baud rates from the keyboard. Word wrap-around, auto carriage return and line feed (CR/LF), word or character mode on transmit, 10 message buffers, and re-transmission of received text, are all included in a well thought out, and apparently bug free, program for CW/RTTY. When using Morse at speeds below 15 wpm, a mode referred to in the handbook as ''Farnsworth operation'' is implemented. This means that individual letters are still sent at 15 wpm, but the spaces in between them are lengthened to slow down the overall speed.

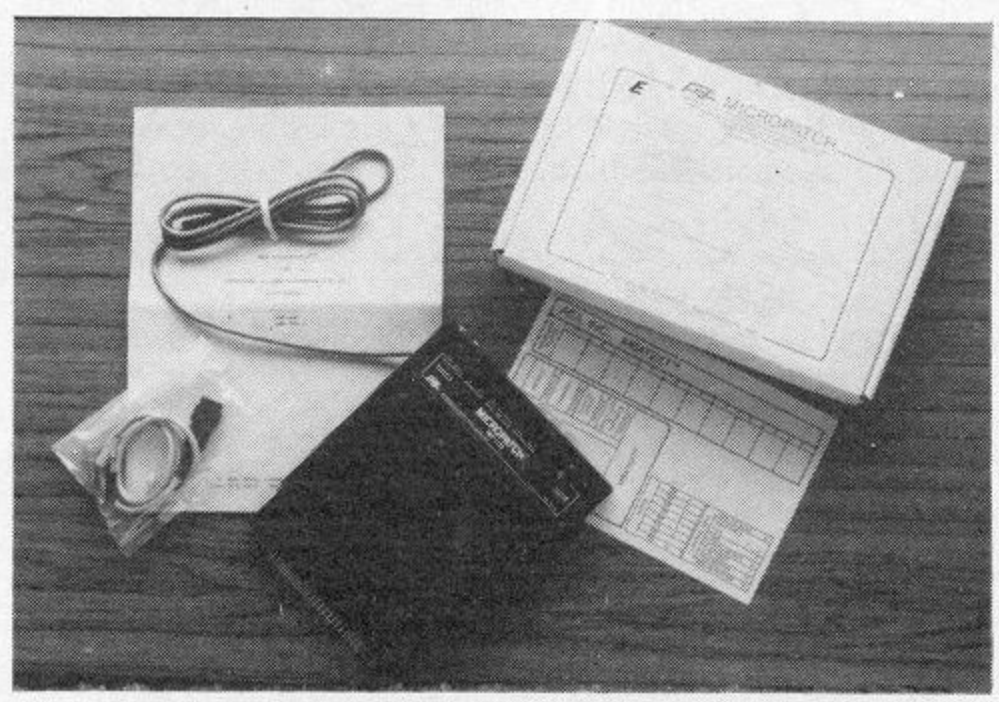

Fig. 1. The Micropatch as supplied, complete with instruction manual, plugs, leads and keyboard overlay.

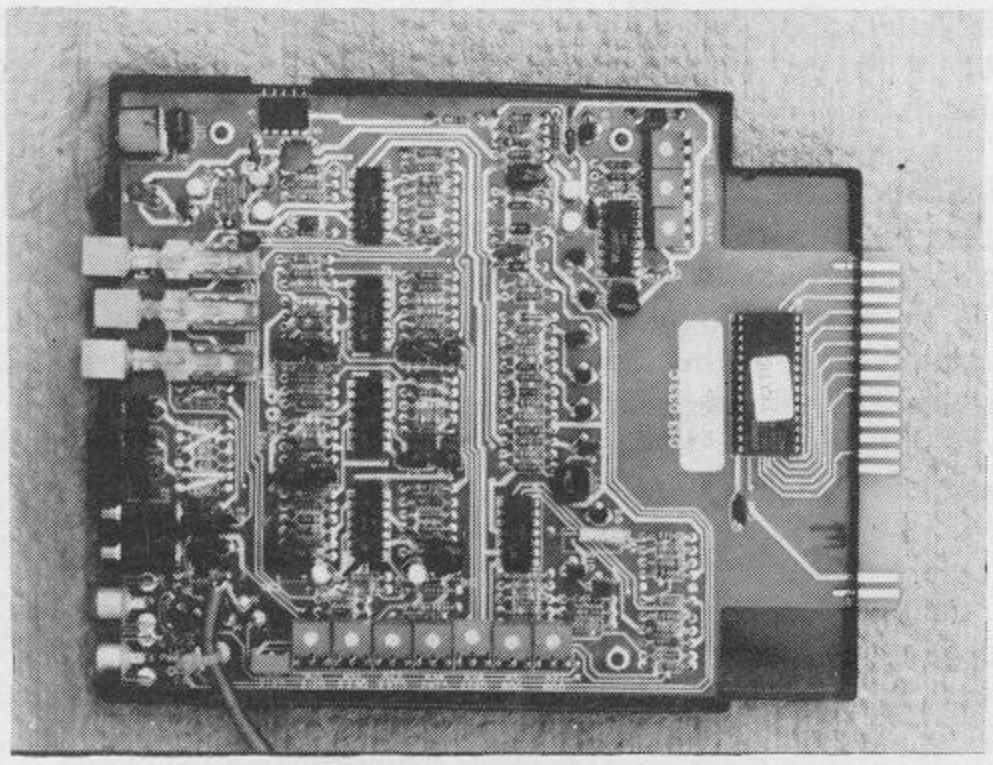

Fig. 2. What you get for your money.

Getting Started

With the computer and the **Micropatch** wired-up and powered-up, the message "READY" appears on the screen. Entering SYS44444 at this point, followed by "RETURN" starts the program running, and the main menu is displayed, which allows selection of the mode, or the entry into the "command" and "options" menus.

The command menu is for loading pre-recorded data from tape or disc, into the 10 message buffers, or for saving them to tape or disc. It also allows initialisation of the on-screen clock, and entering data into the message buffers from the keyboard, or editing any data they already contain.

The options menu allows you to turn on or off things like the auto CR/LF (for RTTY pictures), the RTTY sync character (preset to NULL), the idle character, word/character mode, word wrap-around, CW break in, and so on. When the program starts up, each option is preset to its most frequently used state, and personally the author found no need to make any changes during the short time he was using the unit, although there are obviously occasions when changes would be needed.

Being awkward, the first thing the author did was to check around the bands for spurious signals generated by either the VIC or the **Micropatch** — a common failing of earlier systems. Bearing in mind that neither the VIC or the **Micropatch** have a metal case, he fully expected to find quite a few, but to his utter amazement could not find any to speak of. With the exception of a few barely audible ones on 10m., the background noise masked any traces on the other HF bands. Undeterred, the aerial was then disconnected to see if anything was being transferred *via* the mains leads, and again the *spurii* were noticeable by their abscence. The aerial was at least 45ft. away from the units, on the far side of the house and fed *via* coax to a balun, so this may have helped, and users with indoor aerials or random wires might get some pickup — although they are unlikely to find it significant. Some years ago the author had an APPLE 2, which would gleefully open the squelch of a 2m. handheld in the same room as itself, so manufacturers nowadays must be paying more attention to RF radiation.

Using RTTY

The 3 LEDs work very well as a tuning indicator, and in spite of never having used RTTY before, the author had absolutely no difficulty in resolving dozens of signals around the bands, and even after turning down the power of his TS-520 to keep the PA happy did not have any trouble working stateside on 15m.

It is often said that "machine systems are big-signal-only systems" but quite frankly the ability of the unit to pull an RTTY signal out of the noise can only be described as staggering. Since the receiver speaker is in parallel with the unit, it is possible to 'eavesdrop' on what the machine is listening to, and the weak signal performance really is very good. Granted that any interference at such low levels tended to thoroughly confuse the poor thing, but a human resolving an SSB signal of similar strength would have had similar difficulty.

Fig. 4 shows a typical screenshot partway through a contact with DL1MI, and the first thing that regular RTTY users will notice is the limited number of characters per line, but this is a limitation of the VIC-20 screen only, and on transmit normal line lengths are sent, with automatic CR/LF. Using the printer output option, it would presumably be possible (although the handbook does not specifically mention it) to obtain printouts to full line widths, for the reception of RTTY pictures. The provision to override the word wrap-around facility for this very purpose tends to confirm this. For anyone using a micro purely as a terminal, this minor detail is a small price to pay when you consider the low cost of the VIC-20. Whilst it is limited for serious computer use, as a terminal keyboard it is more than adequate.

Having mentioned the fact that word wrap-around is provided, readers may well be wondering how (for example) the word VIERSEN is split at the end of one line, which caused the author to raise an eyebrow too. When all else fails; read the instructions, which produced the following. "Word wrap-around prevents words from breaking up on the display between lines. A new line is started if a space is detected in the last 4 positions on a line." This is not true wrap-around in its strictest sense, but a useful facility which works well most of the time, although it will obviously get caught out by the sesquimidaditionists amongst you (users of long words — honest!).

As can be deduced from the photograph, the mode, Tx/Rx state, baud rate, time, and buffer states are displayed at the very top of the screen, with the received text below them. The pre-compose buffer is at the very bottom of the screen, with the actual transmit buffer above it, between the parallel lines. In the photo the transmit buffer can be seen to contain the tail-end of the reply to DL1MI's CQ call, shown in the pre-compose buffer, and which had been transmitted prior to his reply in the main text area.

Using CW

The screen display on CW is much the same as for RTTY, although the receive speed can either be "locked" or "unlocked". Initially you are asked to select a CW transmit speed, and the receive speed will default to the same value, until a signal is detected. The receive speed then 'hunts' until the unit can make some sense of it, at which point the receive speed may be locked to aid weak signal reception. As a regular user of CW, the author listened to the same signals as the **Micropatch,** to see just how well the **AEA** unit fared against the one between his ears.

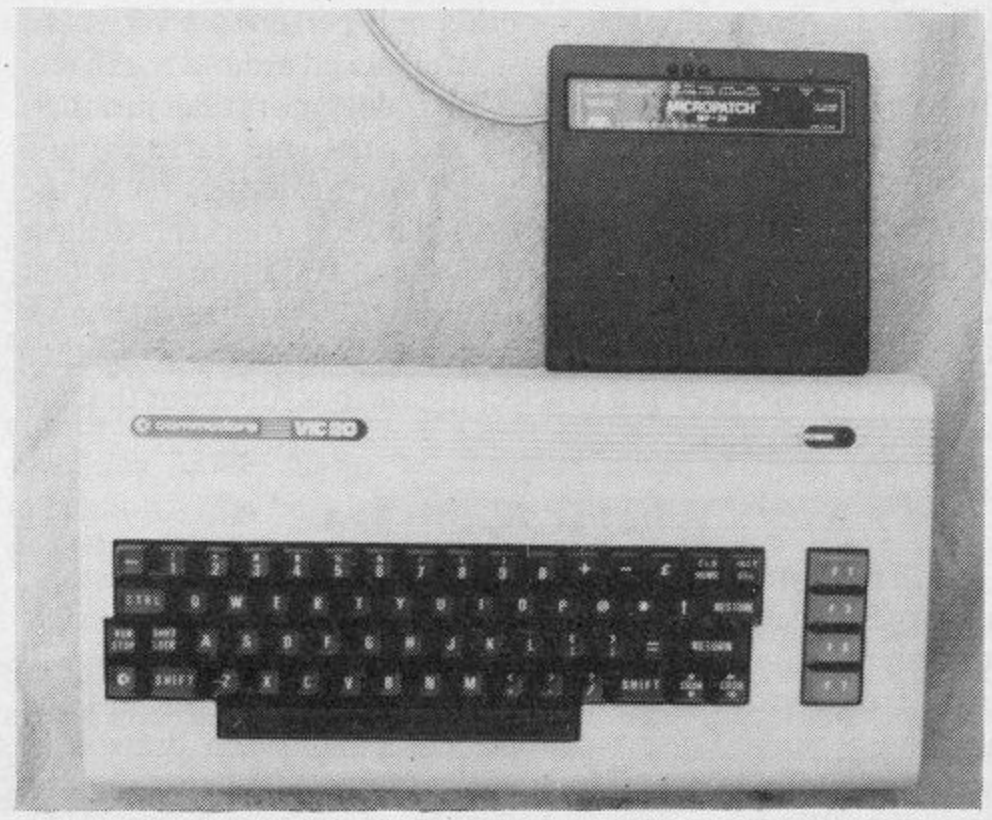

Fig. 3. How the Micropatch connects to the VIC-20 microcomputer.

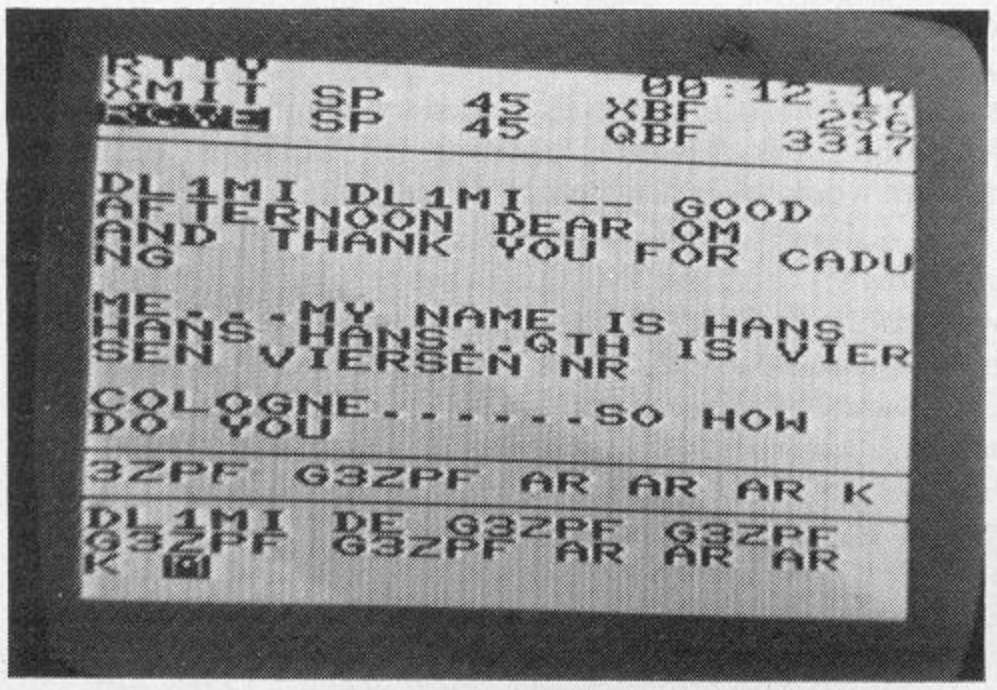

Fig. 4. Screenshot of a QSO between the author and DL1MI on RTTY.

On a clear channel the weak signal detection was quite good, but not quite so good as for RTTY, although it seemed less tolerant of QRM in this mode on all but the strongest signals. It also needs the received CW to be well proportioned, and if any signals were fairly poor, the unit got thoroughly confused. This is in no way a fault of the machine, because on commercial CW it purred along quite happily, even in QRM. For serious CW work, the author still prefers his own ears, but for the newcomer to CW, to someone learning CW, or for the public's benefit at a demonstration station, the CW receive option could be useful. Do not take this as in any way as a criticism of the **Micropatch,** as any other would be the same. CW was designed for human reception, and RTTY for machines, which is why they fare rather better in the latter mode. Since I've yet to meet anyone who can decode RTTY "by ear", I suppose it says a good deal for a machine to be able to decode CW even fairly well.

On CW transmit, the **Micropatch** is really very nice, and would be a boon to the chap with a poor fist. Letters, words, and even the spaces between them all come out precisely formed, and listening to the sidetone as it keyed the rig left no doubt as to the quality of CW it sends. It made a pleasant change to the straight key, and is certainly easier on the elbow, and resulted in less errors than on an el-bug. The only snag is that you need to be able to type passably well, although the 'standard' message memories, and the pre-compose buffer help out no end.

Conclusions

On first seeing the simple plastic case I must confess that I was sceptical, and ready to be underwhelmed, but it really is a very good performer, especially on RTTY, and on *good* CW. On RTTY, both mark and space tones are separately demodulated, unlike many simpler units, and this undoubtedly helps it to excel in this mode. I now discover that the reason for the simple case is to provide a virtually 'bare-board', low cost unit, and that the PCB can be used as an upgrade to the AEA *CP-1 Computerpatch,* which is a metal cased unit offering a few more facilities at a slightly increased cost, and containing its own PSU.

The handbook is excellent, and provides all information for those with the nous to service it themselves. The program is very easy to use straight from the word go. Having had no previous experience with RTTY it was nice to be able to use the basic facilities straight away, with all of the other facilities requiring only a little practice.

The **Micropatch** was kindly loaned for review by *Dewsbury Electronics* (176 Lower High St., Stourbridge), from whom they are available at £129.

• • • *"Practically Yours"* • • •

with GLEN ROSS, G8MWR

The Do-It-All

WELL, nearly all! This month's unit performs a variety of tasks, which makes it very useful indeed around the shack. The basic idea is a transistor tester, but is does more than just that; it will also test FETs (both single and dual gate varieties) and diodes. It will check on crystals and give an indication of the 'activity' of them and will also act as a band edge marker. All these tests are done under dynamic, or working, conditions. The unit may also function as a Morse oscillator for CW practice, and as an untuned field strength meter. Switching is available to change from *npn* to *pnp* types and to select the various functions that are provided on the unit.

What It Won't Do

It will not dynamically test low gain audio or power transistors, but provision is made for 'static' testing of these types. Crystals can only be checked on the fundamental frequency; this will depart from the divided-down marked frequency by perhaps one kilohertz or so and does not represent a significant drawback. Crystals with fundamental frequencies of over 30 MHz cannot be checked but these are extremely rare beasts.

Switching Description

The unit is powered by a small 9 volt battery of the HP3 type. the double-pole switch, S1, changes the supply polarity to enable *npn/pnp* tests to be made. S2 functions as the on/off switch and S3, which is double-pole, selects bipolar or FET types. S4 makes it possible to adjust the amount of feedback applied to the crystal circuit, and S5 selects either the internal crystal or connects to a panel mounted socket which makes it possible to insert units for test or calibration. S6 brings the internal meter out to front panel terminals where it may be used to test diodes or for connection to external circuits for other purposes.

Circuit Description

The basis of the circuit, *see* Fig. 1, is a Pierce crystal oscillator. All the components are built into the case with the exception of the semiconductor which is, of course, the device you want to check. This is connected to terminals on the case and if it is 'good' the oscillator will burst into life at the frequency of the internal crystal. The output is available at an external terminal for connection to a frequency counter if one is to hand; alternatively a short length of wire can be connected and the signals received on

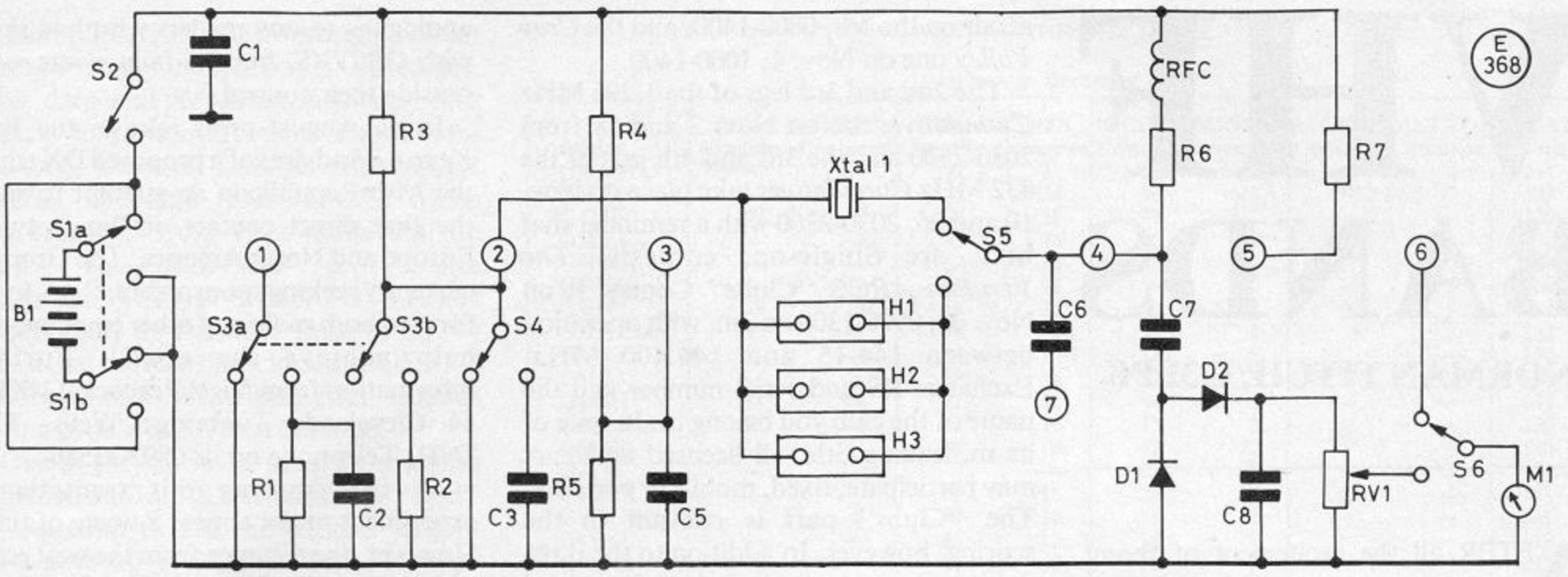

Fig. 1 CIRCUIT DIAGRAM

Table of Values
Fig. 1

R1 = 820R
R2 = 270K
R3 = 220K
R4 = 330K
R5 = 120K
R6 = 33R
R7 = 68K
VR1 = 10K linear
C1, C8 = 0.01 μF disc
C2, C5 = 0.005 μF disc
C3 = 15 pF ceramic
C4 = 45 pF ceramic
C6 = 68 pF ceramic
C7 = 5 pF ceramic
X1 = xtal, *see* text
H1 to H3 = xtal holders
S1, S3 = DPCO
S2 = SP on/off
S4 to S6 = SPCO
B1 = 9v. battery (PP3)
M1 = 200 μA meter (for other values adjust R7 to suit)

Note: 7 small terminals also required; all resistors ¼-watt.

the station receiver. If a Morse key is connected across the on/off switch the unit could be used as a Morse training aid but *do not connect* it to your aerial system. The output from the oscillator is rectified by the voltage doubler system D1-D2 and is then read on the meter M1. Sensitivity may be set using the variable resistor. If a device is not plugged into the unit but a pick-up aerial is connected to the frequency counter test point, the unit will function as an untuned field strength meter.

Construction

The method of construction is not critical and will depend largely on what case is available. If a small meter of the tape recorder type is used in conjunction with small toggle switches and terminals, all of which are cheaply and readily obtained at rallies, the whole unit can easily be built in a small diecast box. All wiring can be fixed to the switches and terminals so there is no need for a printed circuit board to carry the components. Wiring should be kept sensibly short but there is no need to be to fussy about this point. A layout is shown in Fig. 2.

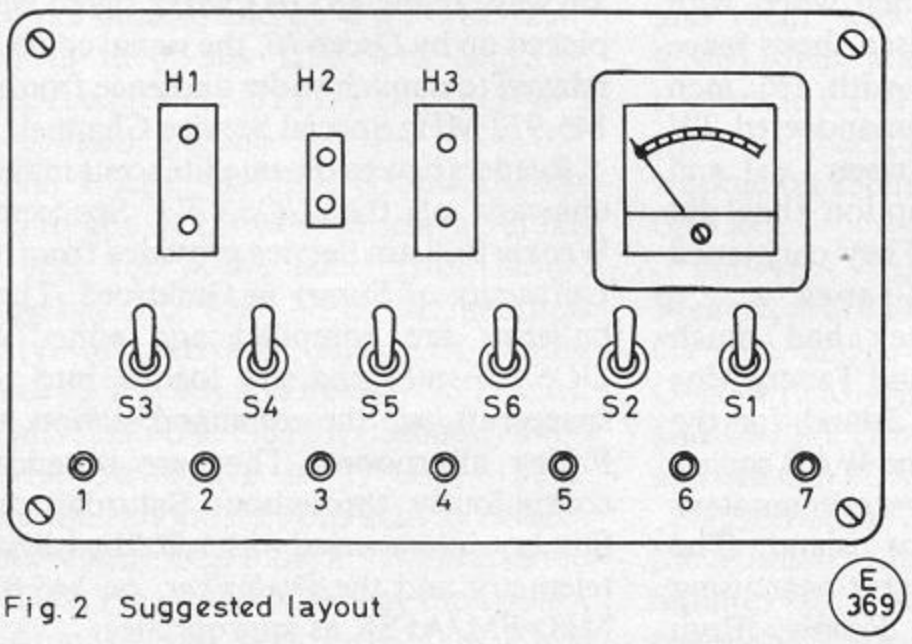

Fig. 2 Suggested layout

Choice of Crystal

The unit will operate as a tester with practically any crystal you care to use provided it is between 1 and 30 MHz; simply switch to the feedback position that produces best results. However if a little thought is used it will be seen that if a crystal of close to 3.5 or 7 MHz is used then the unit will produce harmonics at the LF end of the more popular HF bands. If a frequency of close to 8 or 12 MHz is used then harmonics in the VHF bands will be obtained. (There is a better method of producing these which will be covered in a forthcoming article.)

Using the Unit

Before testing any device always make sure the polarity switch is in the correct position. Four terminals are provided for the connection of the device. On an FET these correspond to 1 = S; 2 = G1; 3 = G2; 4 = D. For transistors the connections are 1 = E; 2 = B; 3 = NC; 4 = C. Diodes are connected between terminals 5 and 6 and the polarity switch is then used to check the forward and reverse characteristics of the diode. A resistor is included in this section of the circuit to limit the current flowing through the diode to a safe level. This test may also be used to check the junctions of LF and power transistors which will not oscillate in the unit due to the low FT figures.

Checking Crystals

The choice of crystal sockets provided is left to the constructor but will most likely be those for HC6 and HC25 types, although a lot of surplus units are still available with the FT243, and to a lesser extent 10X. To test a crystal it should be plugged into the appropriate socket and a good transistor connected to the terminals. The meter sensitivity should firstly be set at maximum and the unit switched on. If no meter deflection is observed try switching to the higher feedback position; if there is still no indication it may be safely assumed that the crystal is dud. Most of the other functions are self-explanatory.

IDEAS. It is nice to get your ideas for this series of articles. Some of the ideas submitted would require a major constructional article and that is not the intention of this column. If you have an idea for a useful piece of equipment please send them to me *via* the Editor or direct to me at 81 Ringwood Highway, Coventry CV2 2GT.

VHF BANDS

NORMAN FITCH, G3FPK

AFTER all the excitement of recent months, we seem to be back to normal again, particularly when considering tropospheric propagation. Conditions have varied from flat to, "Has my receiver packed up?" Even so, the postbag was quite respectable.

Awards News

Michael Starkey, G6AVQ, from Chadsmoor, Staffs., has joined the 144 MHz VHF Century Club his certificate, no. 369, being sent on Sept. 12. He started out as an enthusiastic short wave listener and still enjoys listening on the HF bands. His QTH is 420ft. *a.s.l.* with exceptional paths to the east, south and west, but no good at all to the north due to high ground a mile away. Michael's station comprises a *Yaesu* FT-101ZD plus digital VFO, and he uses the matching *FTV-901R* transverter unit. The antenna is a *Cushcraft* 14-ele. *Yagi.* He plans to get a transverter for 70cm. some time.

Repeater Notes

It seems that there is interest in a 23cm. TV repeater in the Bournemouth and Southampton area. Several possible locations are being discussed as are the merits of two relays; one for the Poole/Bournemouth area, the other for Southampton. All interested amateurs are asked to contact Nick Foot, G4WHO, at 47 Mallard Road, Colehill, Wimborne, Dorset.

Contest News

The results of VHF NFD have been published and the *Sheppey Combined Contest Group* won the Open Section with 3,371 pts. The *Hillbillies* were second with 3,319 and the *Parallel Lines CG* third with 3,164 pts. In the Restricted Section, the *Cotswold and Big M CG* were first with 3,319 pts., the *East Kent RS* next with 3,294 and the *Bracknell ARC* third with 2,390 pts. Full results can be found in October's *RadCom.*

A reminder about contests mentioned last month, see page 358. These were the 70 MHz Fixed on Oct. 28, 1000–1500; the CW events on 144 MHz on Nov. 3/4 from 1400–1400 which includes the *RSGB* affair on the 4th, 0800-1400; and the *Cray Valley* one on Nov. 4, 1000-1400.

The 2nd and 3rd legs of the 1,296 MHz *Cumulatives* are on Nov. 2 and 18 from 2030-2300 and the 3rd and 4th legs of the 432 MHz *Cumulatives* take place on Nov. 10 and 26, 2030-2300 with a reminder that both are Single-op. contests. *The Verulam ARC's* "Clubs" Contest is on Nov. 25, 0900-1300 on 2m. with operation between 144.15 and 144.400 MHz. Exchange RS and serial number and the name of the club you belong to. In spite of its misleading title, all licensed amateurs may participate, fixed, mobile or portable. The "Clubs" part is relevant in the scoring, however. In addition to the three points per contact, there is a five point bonus for the first member worked in each new club. Contact with G3VER is worth a 50 pt. bonus while any club station worked it worth 25 bonus points. Entries postmarked Dec. 10 latest go to:— G4JKS, 115 Marshalswick Lane, St. Albans, Herts., AL1 4UU.

DX-Peditions

Not all DX-Peditions are as successful as those recently reported in this feature and one that went sadly wrong was that to the Summer Islands off the northwest Scottish coast, organised by the *Southend and District Radio Club*. Bryn Llewellyn, G4DEZ, has provided an account of the affair which was publicised in the July *VHFB*. The cause of the failure was that the large removal van hired to transport all the equipment broke down after just twenty miles. The main party, however, arrived on the island of Tanera Mor on Aug. 22 as planned, without food or gear, apart from a *Yaesu* FT-107M transceiver minus mains lead or antennas, two *FDK-750s* with neither antennas nor feeders, a *Yaesu* FT-290 and a 2m. hand-held transceiver.

Bryn and G1DZM then crossed back to the mainland making a 170 miles round trip to Inverness to buy food, wire, plugs, etc., and a soldering iron. On 2m. they started off working GMs using a five-eighths wavelength whip antenna, later a 60ft. long wire. By the 24th, they realised they needed a beam so they made one from a 10ft. length of 2 x 1 inch wood with elements cut from galvanised sheep fence wire fixed to the boom with 1½ inch staples and fed with commandeered TV coax. The VSWR was between 1.8:1 and 3:1 and with this contraption they did work into LA and OZ. They christened this beam "a nine element Tanna".

During their stay, they had much success on the HF bands and Tanera Mor was confirmed as a new island for the IOTA award, as EU92. The WAB square is NB90 and this was the first ever amateur radio operation from the island. The group plans to try again next year using more reliable transport. Finally, Bryn apologises to any readers who had skeds with GB0TXS, but the failure was really outside their control.

In an August press release, the *West Kent ARS* advises of a proposed DX trip to the Irish Republic in an attempt to make the first direct contact on 2m. between Europe and North America. The Group is currently seeking sponsorship, ". . . in the form of both radio and other equipment to help achieve the goal". Further information from Nigel Peacock, G4KIU, 64 Cleveland, Tunbridge Wells, TN2 2NH. Telephone no. is 0892 33586.

At first reading this transatlantic experiment might appear a waste of time. However, the distance from the west coast of Ireland to St. John's in Newfoundland is a little over 3,000 kms. and this has been exceeded in the European area both *via* tropo. — EA8XS to GD8EXI — and *via Es* — G3VYF to 4X4IX. In the "Top List" in *Dubus Informationen* over a dozen operators are claiming *Es* QRBs well in excess of this distance.

Timing of any tests is the key. It is likely that suitable tropo. conditions could occur once or twice each year, but the best bet would be *via* the *E*-layer. Past records suggest that the second week in June usually produces an *Es* opening, with the added advantage, in this case, of likely tropo. assistance by sea ducting. Of course, the group will need to find a dedicated North American operator to participate, probably by constantly monitoring *Es* propagation on 10m. and 6m. Perhaps the TV DX-ers might have some useful reception records of North American TV in Band 1 from which prime dates/times could be deduced?

Satellite News

Last month, mention was made of amateur radio transmissions from the *Space Shuttle* mission 41G. The vehicle was eventually launched at 1103 UTC on Oct. 5 but up to the time of editing — Oct. 8 — *AMSAT-UK* had received no reception reports of the 435.033 MHz FM signal from the "Get-Away Special" package. Furthermore it seemed that none of the transmission periods would coincide with orbits which were in range of the U.K. anyway. If the 435.033 MHz signal were picked up by *Oscar-10,* the signal could be relayed to a much wider audience from its 145.972 MHz Special Service Channel.

Readers new to the satellite scene may be unaware of the *UOSAT-1* Spacecraft Weekly Bulletin Service provided from the *University of Surrey* in Guildford. These bulletins are compiled and edited by *UOSAT* staff and are loaded into the spacecraft, *via* the command station, on Friday afternoons. They are broadcast continuously throughout Saturday and Sunday, interspersed with 1,200 bps digital telemetry and the *Digitalker,* on 145.825 MHz FM/AFSK as appropriate.

The bulletins include information about various amateur spacecraft schedules, orbit data and *Keplerian* elements, plus general and scientific news about non-amateur satellites such as the *NOAA* weather ones and *AMPTE-UKS* which was launched from Cape Canaveral on Aug. 16. *AMPTE* is Active Magnetospheric Particle Tracer Experiment, by the way. Bulletin no. 94 stated that the real-time clock in *UOSAT-2* was reset to GMT within four seconds during orbit no. 3077 on Sept. 28.

One of the six Soviet amateur satellites launched on Dec. 18, 1981 has now "died" or degraded to use the official jargon. *RS-6* gave up at 0430 on Sept. 16 after giving reliable service. Only *RS-7* and *RS-8* are left for the use of Mode A operators; *i.e.* 2m. uplink to 10m. downlink.

Oscar-10 has recently gone through a *perigee eclipse period* which reached a maximum duration of about 70 minutes around Sept. 21. This eclipse season was over in mid-October and another schedule adjustment is likely once the health of the spacecraft's batteries has been ascertained.

Only two user reports on *O-10,* the first from Russell Coward, G4XKR, (Blackpool) who has found it difficult to make QSOs due to the high elevation required. The other mention is from Adrian Chamberlain, G4ROA, (Coventry) who has been copying the RTTY, which uses 170 Hz shift, 50 baud FSK *Baudot*. On Sept. 22, as the spacecraft was getting low in the east, he made a nice lot of contacts including three new JAs, VS6XLN in Hong Kong, VK3XEX and HZ1AB in Saudi Arabia. On the 23rd, as the satellite was rapidly climbing to the west, Adrian worked VE3EVW and W7FGQ in Seattle.

ANNUAL VHF/UHF TABLE

January to December 1984

Station	FOUR METRES Counties	FOUR METRES Countries	TWO METRES Counties	TWO METRES Countries	70 CENTIMETRES Counties	70 CENTIMETRES Countries	23 CENTIMETRES Counties	23 CENTIMETRES Countries	TOTAL Points
GW4TTU	—	—	92	37	49	10	19	4	211
G6DER	—	—	75	24	56	13	18	7	193
G4TIF	31	3	69	18	47	11	—	—	179
G1EZF	—	—	83	26	50	10	3	1	173
G8PNN	—	—	62	14	48	10	27	10	171
G4ROA	—	—	59	12	50	10	32	5	168
G3BW	39	6	58	21	22	7	*16*	*5*	153
GD2HDZ	43	5	58	8	33	5	*6*	*3*	152
G6XLL	—	—	74	17	51	8	—	—	150
G8ULU	—	—	58	18	32	13	8	7	136
G4ARI	39	4	71	18	—	—	—	—	132
G4MUT	37	4	43	16	25	5	—	—	130
G6MGL	—	—	58	18	42	12	—	—	130
G8TFI	—	—	—	—	63	18	32	12	125
G8KAX	—	—	53	16	26	9	13	4	121
GW8UCQ	—	—	59	16	38	8	—	—	121
G4VXE	—	—	63	12	38	8	—	—	119
G4XKR	—	—	61	9	38	7	—	—	115
G6ZPN	—	—	72	14	20	4	—	—	110
G6ECM	—	—	77	27	—	—	—	—	104
G4HGT	14	2	50	6	24	7	—	—	103
GW3CBY	6	3	52	14	21	5	*6*	*3*	101
G3FPK	—	—	73	22	—	—	—	—	95
G4SFY	—	—	71	23	—	—	—	—	94
G6YIN	—	—	71	16	3	1	—	—	91
G6HFF	—	—	57	8	20	5	—	—	90
G6XVV	—	—	51	13	18	6	—	—	88
G4NRG	22	4	23	18	17	3	—	—	87
G6AJE	—	—	64	16	—	—	—	—	80
G8RWG	—	—	59	20	—	—	—	—	79
G4LZD	—	—	60	15	—	—	—	—	75
GM8YPI	—	—	32	14	20	8	—	—	74
G8XTJ	—	—	59	14	—	—	—	—	73
G8HHI	—	—	5	9	33	3	18	4	72
G6NVQ	—	—	60	7	—	—	—	—	67
G8VFV	—	—	50	14	—	—	—	—	64
G4YIR	—	—	48	10	—	—	—	—	58
G2DHV	7	1	33	4	3	1	—	—	49
G6XSU	—	—	—	—	40	8	—	—	48
GW4HBK	25	4	6	3	7	2	—	—	47
G4CMZ	34	4	1	1	—	—	—	—	40
G8FMK	—	—	3	1	21	2	7	2	36
GM4CXP	—	—	20	7	6	2	—	—	35
G3PBV	—	—	—	—	—	—	29	5	34
G4EZA	—	—	24	8	—	—	—	—	32
GU4HUY	—	—	26	5	—	—	—	—	31
G6CSY	—	—	8	5	7	1	4	2	27
GW3MHW	16	2	—	—	—	—	—	—	18

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

Microwave News

Denis Jones, G3UVR, (Wirral) after his runaway success in the Annual Table last year, has spent much of this year building. On 23cm. he has a 2C39 valve in a cavity for his PA and is now up to 41 counties and 10 countries on the band. During August and September he worked GB2XQ (XQ), GM8TFI/P (YP), and GD3WOH/P (I.O.M.) on SSB and on CW, G4KNZ/P (WJ) in the Scilly Isles. On Sept. 16 G4ROA added GW8TFI/P (XL) in Dyfed for new table points.

John Pilags, G8HHI, (Hants.) wrote again to update his various scores but has not been too active lately from home. Going back to VHF NFD, he mentions plenty of activity, best DX being PA0BPC/P (CM) and PE0MAR/P (CL).

Chris Easton's, G8TFI, (Gloucs.) main interest nowadays is 23 and 13cm. operation and most of this activity is from portable sites. Last month, it was reported by G3PBV and GJ4ICD that the contest on Aug. 19 was very poor. Yet Chris reports that his team, using the call GW4NXO/P (YL25j) made 74 QSOs on 23cm. at 250 kms. per QSO. On 13cm. they used Chris's gear which runs 40W to a 4ft. dish for GW4LXO/P and made 20 two-way and one one-way contacts. Best DX was PA0EZ (CM) at 567 kms.

Chris and Jon, GW4LXO, operated on Aug. 16 for a couple of days from near Eyemouth (Borders) in YP20j. GB3BPO on 23cm. was always audible at good strength and the sea path to Holland on 23 and 13cm. was reliable with little QSB. GM8TFI/P made several QSOs with stations in CL03 and Chris concludes that with comparable *e.r.p.,* what can be worked on 23cm. can just as well be done on 13cm.

Between Aug. 27 and 31, Kelvin Weaver, GW4TTU (Gwent) lists QSOs on CW on 23cm. with G3UVR (YN55j), G4CVI (ZK04f), GW3JXN/A (XM78a) and G4LRT (ZM45d) and on Sept. 16 he worked GW4LXO/P (XL10a).

Now that the 23cm. band is included in the Annual Table and in the on-going Squares list, your scribe proposes to replace the 23cm. All-Time Table with one for 13cm. so as to encourage more activity thereon. It is proposed to "draw the line" at Dec. 31 and to publish the final 23cm. listing as soon as possible thereafter, so please make a note in your diaries to send in your totals.

Seventy Centimetres

David Whitaker, (N. Yorks.) now listens on the band. Since Aug. 19 he has heard seven countries using a *Trio* JR-310 Rx with *Microwave Modules* converter, the antenna being a 19-ele. *Tonna Yagi* at 35ft. His best DX was SM7FMX (GP35j) on Aug. 22 and LA4IW (CS) on the 25th. New squares for G3UVR recently were EI2VPB/P (WL) on Aug. 4, EI2VRS/P (VL) on the 7th and G3YGF/P (WJ) in the Scilly Isles on Sept. 1, all on SSB.

Derek Hilleard, G4CQM, (Surrey) has recently moved a short distance to a higher QTH, 247m. *a.s.l.* in Hindhead and is busy tidying up the station. He has made a 19-ele. antenna to the very successful *N.B.S.* design and hopes to launch it soon to accompany a 5-ele. 2m. version on the mast. Sue Frost, G4WGY, (London) uses

a *Yaesu* FT-790R running 10w, with a 19-ele. crossed *Yagi* antenna and is a keen CW operator. Like Dave Cater, G4WHZ, (Essex) she bemoans the dearth of CW activity and Dave suggested that Tuesday be tried as CW night on the band. He also uses an *FT-790R* but with a 48-ele. *Parabeam.*

G4XKR writes he will be QRV from YO square during the *Cumulatives.* Keith Hewitt, G6DER, (S. Yorks.) found September a very quiet month, the only new one being GU8FBO on the 12th. He has won his planning appeal for his antenna tower so now has permission to erect it when finances permit. G8HHI operated in the Low Power Contest on Aug. 4 getting 29 counties and three countries. John's best DX was GM3KJF/P (XO19a) at 456 kms.

Philip Hocking, G8ZDS, (Cornwall) added VL and WJ squares recently to bring his total to 30, but says there are many in Cornwall and the southwest who are looking for ZP square. (G8PNN is active, OMs.) GW4TTU is another who has received full, permanent planning permission for antennas. Kelvin listed F2LQ/P (YI27j) on Aug. 27, GD3WOH/P, G3YGF/P (WJ) and F6DDV (XI) also. On the 28th, GU6EFB, plus other Gs. He reports that GW4LXO is now sporting four 23-ele. *Yagis* on the band from YL34d.

John Hunter, G3IMV, uses a 21-ele. *Tonna Yagi* and mentions the considerable detuning caused by rain. In dry periods, his antenna resonates at 431-432 MHz with a VSWR of 1.2:1. However, after heavy rain, the VSWR went up to 5.9:1 with minimum VSWR at 438 MHz. He took measurements over some hours after the rain had stopped and the VSWR and resonant frequency gradually dropped. Have other readers noted such dramatic changes with *Yagis?*

Two Metres

David Whitaker discovered the *Aurora* on Sept. 23 at 1500 and logged stations in EI, GI, GM, GD, OZ and SM. In the tropo. lift on Aug. 25 he copied OY9JD (WV11b) at RS34 at 1740, along with many GMs. In the Sept. 1/2 contest G4VWH/P (XJ) and F6HBP/P (CF) were new squares. George Haylock, G2DHV, (AL41f) also worked G4VWH/P, plus G3IGQ/P (ZO) and ON and PA folk in CL on SSB. Dave Sellars, G3PBV, (Devon) heard the Sept. 23 *Ar* mentioning SM7BAE and GM3JIJ (WS). The only other continental was PA2VST. Later on, towards Moonset, he copied K9HMB on a *Yaesu* FT-221R with *muTek* BF981 "front end" in a 2.4 kHz bandwidth. The antenna is a 14-ele. *MET Yagi* with 10m. of *Pope* H-100 cable.

Clive Penna, G3POI, (Kent) was on in the Sept. 22/23 *E-M-E* contest and contacted 28 stations. These were:—

ANNUAL CW LADDER

Station	4m.	2m.	70cm	μWave	Points
GW4TTU	—	318	72	19	409
G4SFY	—	401	—	—	401
G4ARI	67	193	—	—	260
G4WHZ	—	243	2	—	245
G4TVH	—	213	—	—	213
G4NOZ	—	188	—	—	188
G4TON	—	130	2	—	132
G4UNL	—	89	—	—	89
G4WGY	—	85	—	—	85
G2DHV	22	61	1	—	84
G4VXE	—	65	11	—	76
G4LZD	—	70	—	—	70
G4EZA	—	54	—	—	54
G4SGO	—	43	1	—	44
G4YIR	—	30	—	—	30
G4PSS	—	23	—	—	23
GM4CXP	—	21	—	—	21
GU4HUY	—	13	—	—	13
G3URA	—	11	—	—	11

No. of different stations worked since Jan. 1.

Y22ME, YU3ZV, SM4GVF, DL8DAT, YU3WV, F6CJG, UA1ZCL, K1WHS, ON7RB, K2QR, K9HMB, WA1JXN/7, KX0O, W7IUV, K5GW, VE7BQH, KD8SI/4 (Kentucky), VE2DFO, SM4IVE, K6MYC, LX1GR, DK3FW, SM2GGF, OZ5VHF, K2OS, SM7BAE, KB8RQ and HG1W. The *Aurora* on the 23rd messed up the last four hours but he did work OH5IY (NU03) to bring his overall squares tally to 429.

Dick Whittering, G3URA, was dismayed that there were no G3s in the CW Ladder lately so decided to join. At present, he is very QRP with just 200mw from a *Mizuho* MX-2 and 5-ele. *Yagi* at 25ft. from Cheshunt, Herts. His best DX was G4PNP/A in Peacehaven, E. Sussex, at 58 miles. G3UVR has been busy building a new transverter but did work some *Es* on June 8 and 30. Paul Whatton, G4DCV, (Kent) just missed last month's deadline so his letter covers lots of MS sked and random successes in the August *Perseids* shower. Of 12 QSOs, six were in new squares and YO and OH were new countries, too. On Aug. 24, in a CW sked on MS with I3LGP (GF) he received a 42s. burst. In the excellent tropo. on Aug. 25, OY9JD/P (WV07b) was a new country and square. An *Ar* on Aug. 28 brought SM0HAY (JT) and one on Sept. 5, RQ2GAG (MQ) and LA6VBA (ES).

Tim Charles, G4EZA, has not been too active lately but hopes to add to his CW totals in the CW Contests on Nov. 3/4. Les Bober, G4NOZ, (Essex), like G4EZA, lives in Colchester and operates a lot on CW. He added another 30 new stations in September including DL2OM on the 28th, who is near the SP border.

Welcome to Steve Black (Sunderland) who joins the CW Ladder with 23 stations worked. He promises to take part more seriously next year and to get going on 70cm. too. He asks southern readers to, ". . . point their antennas north of Watford", as they do listen for us. G4ROA heard the *Ar* on Sept. 23 with strong signals from PA, GM and GI. Adrian worked GI6ATZ in Belfast, who he hopes is in Co. Down. Ray Baker, G4SFY, (Norfolk) has so far worked over 400 different CW stations this year. He caught the *Ar* on Sept. 5 in which SM4IVE was worked along with GMs and GI, and the one on the 23rd when he contacted LA9BM (EU). His 36 new stations included three ladies, Carol, G4TIL, G4WGY and Iris, G4RRK. SSB on Sept. 2 brought some good French DX including F1ITD/P (BD), F6KOU/P (CE) and F6FNL/P (AE).

Martyn Jones, G4TIF, (Warks.) got ". . . the elusive Tyne and Wear . . ." during the Sept. 23 *Ar* thanks to G1HGJ. Roy Charlesworth, G4UNL, (London) added another 18 on CW including PA3CZN, ON4KJ and three F6s. G4WGY is now up to 85 on CW and Sue met some of the fists behind the keys at the Harlow rally on Sept. 30. G4WHZ should be running 100w now on CW. Dave has a *muTek* board in his *Icom* IC-251E and his antenna is a 6-ele. *Quad.*

June Charles, G4YIR, (Essex) has entered the CW ladder and yes, it will certainly start again in 1985. In September, she added GM4LIP/P on the Isle of Arran (Strathclyde) for a new county. Mike Johnson, G6AJE, (Leics.) made his first *Ar* QSOs on Sept. 5 with GM4WZL (XP) and GM6KAY (YP) and in the 23rd affair he managed GM8GFF (YP) which is not bad for 30w and a 6-ele. *Quad.* He also worked GM4LIP/P on the 15th on tropo. He has now worked all G counties this year but is still looking for Mid and West Glamorgan.

G6DER caught the end of the Sept. 23 *Ar* working F1EPX (BK), PE1KLQ (DN) and DK7UY and DK1VI in EJ. Keith had an uncertain QSO with DG7SAB (?) in GI square. Glenn Bates, G6HFF, (Bolton) managed F6CTT, and GM8GFF in Lothian in the above *Ar.* Laurie Segal, G6XLL, (London) sent in another computer print out of the month's activity which brought HB9G/P on the 2nd for a new country. In the Sept. 5 *Ar,* GM6WQC (Highlands) and GM6KAY (Lothian) were new regions for the Annual Table.

Usually sons inherit their fathers' callsigns but Maurice Whatton from SE London now has his son Paul's, G4DCV, old call, G8FUR. He recently retired after 40 years as a professional radio engineer, passed the *RAE* and got going on Sept. 1 working 17 squares and seven countries in the contest. His station comprises a *Yaesu* FT-480R and 7-ele. *MET Yagi* at 12ft. In this contest, G8HHI lists 16 assorted F and HB stations contacted including DK9TV/HB0/P (EH79g). His tally shows HB9MM/P (DG) and HB9MMM/P (DH).

Congratulations to John Lemay, G8KAX, (Essex) who passed his Morse test on his birthday and was awaiting a G4Z.. Call. He worked GM4YLN (YP) and EI3BQB (WO) in the Sept. 23 *Ar* in which signals were strong. G8TFI and friends took part in the 144 MHz Trophy

QTH LOCATOR SQUARES TABLE

Station	23cm.	70cm.	2m.	Total
G3JXN	68	109	170	347
G4NQC	60	84	195	327
G3XDY	54	101	149	304
G8TFI	51	109	126	286
G8PNN	45	79	125	249
G3COJ	41	95	170	306
G4FRE	41	106	68	215
G3PBV	40	105	188	333
G8FUO	39	105	88	232
G4MAW	39	102	52	193
G8ULU	35	90	125	250
G8FMK	35	68	80	183
G8KAX	35	57	82	174
G4STO	29	48	113	190
GJ8SBT	26	47	182	255
G6DER	26	69	139	234
G3UVR	25	86	202	313
G4ROA	25	60	65	150
G8ATK	23	82	129	234
GJ4ICD	22	116	237	375
G8KBQ	22	96	188	306
G8HHI	22	77	135	234
GJ8KNV	18	79	201	298
G4MCU	18	81	198	297
GW4TTU	15	65	207	287
G6CSY	15	25	30	70
G4NBS	14	77	94	185
GD2HDZ	13	50	91	154
GW3CBY	9	32	101	142
G4BVY	9	100	—	109
G3BW	8	37	245	290
GM8BDX	8	24	29	61
G4RGK	5	52	154	211
G8WPL	5	59	100	164
EA3LL	3	32	300	335
G6DDK	3	15	131	149
G8VR	2	24	246	272
G4HMF	2	35	152	189
G1EZF	2	36	111	149
G4RSN	2	23	84	109
GW8UCQ	1	68	115	184
G6CMV	1	29	142	172
G6JNS	1	32	116	149
G3IMV	—	98	366	464
OZ1EKI	—	116	345	461
G3POI	—	—	429	429
G4IJE	—	—	325	325
G4ERG	—	16	261	277
GW3NYY	—	48	219	267
G4DCV	—	41	211	252
G4TIF	—	86	165	251
G4DEZ	—	—	242	242
G4KUX	—	36	200	236
G4OAE	—	42	184	226
GW4EAI	—	—	218	218
G4BWG	—	64	152	216
G3FPK	—	—	203	203
GM4IPK	—	—	201	201
GM4CXP	—	27	172	199
G4HFO	—	69	115	184
G6ECM	—	—	184	184
G4MUT	—	70	108	178
G3BDQ	—	—	177	177
G8LFB	—	—	175	175
G8TGM	—	—	174	174
G6MGL	—	44	127	171
G6HKS	—	—	169	169
G8SRL	—	53	106	159
G4TJX	—	59	94	153
G4MJC	—	12	140	152
G4FRX	—	60	90	150
G4MEJ	—	—	150	150
G6DZH	—	52	97	149
G4NRG	—	33	112	145
GM8YPI	—	37	105	142
G4SFY	—	—	142	142
G8ZDS	—	30	100	130
G4IGO	—	—	129	129
G4DOL	—	—	126	126
G4MWD	—	1	120	121
G4YUZ	—	—	117	117
G4GHA	—	6	110	116
G4CQM	—	49	67	116
GW8VHI	—	35	80	115
G6XLL	—	26	82	108
G8VFV	—	—	107	107
G8RWG	—	—	103	103
G6HCV	—	—	102	102
G6NWF	—	—	86	86
G8XTJ	—	—	82	82
G6AJE	—	—	82	82
G4UYL	—	—	81	81
G4LZD	—	—	71	71
G6YIN	—	1	66	67
G6XVV	—	20	45	65
G6XSU	—	42	—	42
G2DHV	—	2	22	24

Starting date January 1, 1975. No satellite or repeater QSOs. "Band of the month", 23cm.

Contest on Sept. 1/2 using the call GW4NXO/P and making over 920 QSOs, many over 1,000 kms. Best DX was 1,164 kms. to GH square and they made 40 HB contacts, five HB0s and five Is; I2FAK, I1KTC, IW2BNA, IK2DMF and IW2CSM/P. Although conditions were good to the south and southeast, few QSOs were made to the "normal" direction to Holland and central Germany.

John Fitzgerald, G8XTJ, (Bucks.) heard the *Ar* events on Sept. 3, 4 and 23rd but the GIs and GMs he would like to have worked seemed only interested in European DX. The only new 1984 county was GW3KJW in Gwynedd. G8ZDS has now reached the 100 squares milestone on the band from Cornwall.

From Scotland, a very interesting letter about *Auroral* events from Andy Steven, GM4IPK in Edinburgh. He sent a copy of a letter from Ron Livesey, of the *British Astronomical Association,* that confirms a magnetic storm started at 0746 on Sept. 4, ending at 1200 the next day at mid-latitudes, but going on till 0600 on the 6th at higher ones. It was caused by a 30° long filament near the Sun's central meridian before the 3rd and which disappeared, the energy presumably being dispersed by the solar wind.

As to the radio event, Andy reports those on the 4th and 5th as very strong and extensive, extending very far south. He reports a phase from 0025 to 0205 on the 5th, the major phase starting later at 1603 in which he worked over 100 stations up to 1756. These included Y22ME (HM), OK1AGI (HK) and SP5AD (KM). A UA2, possibly 'KAY, called repeatedly but the PA/DL QRM was so relentless he was not sure. There was another brief phase when GM6LXN (YS) was contacted at 1850. Andy notes further *Ar* events on the 9th and 11th and a good one on the 19th which began at 1616 favouring NE Scandinavia. He worked SM5CBN (HS) and SM3AKW (JW31h) at QTE 25°. At 1620, LA9FY (EU) was a tremendous signal. UR2RQ and UR2RDR, both in MS, were worked at 1636 and fade-out was at 1700 although GB3LER was still *Auroral* up to 1830 at 15°. Another weak event was recorded on the 20th from 1510-1603. Andy will not be QRV again till next February.

John Eden, GM6LXN, (Caithness) has resolved to keep off the air till he has learned the morse code. GW4TTU listed 42 completed MS QSOs in the *Perseids,* 24 of which were random ones on SSB mode and 30 completed in minimum time. Kelvin mentioned 27 incomplete QSOs and reckons the shower peaked between 2300 on Aug. 11 and 0200 on the 12th. He lists F, ON, PA and GMs worked on tropo. on Sept. 1 plus EA1RCA/P (WD32g), all on SSB.

Reg Woolley, GW8VHI, (W. Glam.) has some useful comments on MS operation. He reckons that, at peaks of showers, random SSB working with "break-in" procedure is very efficient. If you are in a "wanted" square, then best to avoid 144.200 and 144.400 MHz since DX-ers will come to you on "your" QRG. As a Class B licensee, he cannot transmit on the 20m. VHF net. However, he is always listening so suggests those who do operate on 20m. state their 2m. QRG and Tx periods so that Class B operators can listen for them. Finally, Reg wonders why some stations claim to "work" lots of QTH squares when, simply by monitoring the so-called QSO, they obviously did not complete the contact.

An 11th hour note from Geoff Brown, GJ4ICD, states he worked his 237th square, FG in the Sept. 1/2 contest. He had 1,037 QSOs in 85 squares and 17 countries, claiming to be the first single operator in a 24 hour contest to make over 1,000 contacts. His *RSGB* score was 17,025 pts. and the *IARU* points came to 425,379. His best DX was OK1OA/P (GK55h) at 1,076 kms.

Four Metres

G2DHV took part in the Contest on Sept. 16 using 200mw of CW from AL41f. G3UVR has been constructing a new transverter and Denis worked EI2VRL/P (WL) on Aug. 6 on SSB tropo, and on the 11th he completed an SSB MS QSO with EI2CA in UO. Welcome to Kev Archer, G4CMZ, (Derby) who enters the Annual Table with a healthy score bearing in mind he runs 600mw to an HB9CV antenna at 25ft. His best DX was GMLIP/P (XP) at 375 kms. G4TIF added GW4BVY/P in Dyfed and GW3NYY in W. Glam. for new 1984 counties in the contest. GD2HDZ also added the Dyfed station, along with G5FZ/P (Lincs.) and GW4VIX/P (Gwent) in that event. Ian Parker, G4YUZ, (Herts.) also had a determined crack at the Contest and made 52 QSOs. For much of the time, beacon GB3ANG was S3, better that it was on 2m. However, Ian did not work any EI, GD, GI, GJ or GU stations.

Six Metres

Paul Turner, G4IJE, (Essex) is the only reader to mention 6m. this month. He has regular MS skeds with GM3WOJ limited to 15 mins. but they usually manage to complete *three* contacts in that time. Similar tests with GM3WCS are not normally as good but there are long bursts at times; *e.g.* one of 82s. on Sept. 26 at S9 from Ken.

Useful Tip

G4CQM suggests that plumber's PTFE thread tape, wrapped around coaxial cable to the appropriate thickness, is a successful way to replace damaged rubber rings in "N-type" plugs to restore their waterproofness.

Deadlines

Not such a hectic month for a change. All your news, views and claims for December by **Nov. 7,** please, and for the next month, by Dec. 5. Everything to:— "VHF Bands", SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts. AL6 9EQ. *73 de G3FPK.*

Understanding Doppler Shift in Satellite Signals

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

THIS shift in frequency is analogous to that observed in sound. A pedestrian observes a drop in the frequency of a car horn as the car passes at speed. If the car is travelling at a tenth of the velocity of sound, say 60 m.p.h., the note of the horn, say 250 Hz (middle C), will be about 10% high (*i.e.* 275 Hz) as it approaches and 10% low (*i.e.* 225 Hz) as it recedes.

If the car is in the near lane to the pedestrian the change in frequency is almost instantaneous as the car passes. If it is some distance away, the far side of a motorway for example, the change is more gradual. The total change is still the same, however.

Doppler Shift in Satellite Signals

Radio signals from satellites likewise undergo a shift in frequency as received on the ground due to their motion with respect to the observer. In the case of low satellites, periods of 90 to 100 minutes, radiating in the 100 MHz region, the frequency shift can be many kHz. Consider UOSAT with a period of 95 mins. The distance once round the earth at 500 km height is 43000 km. This implies an orbital velocity of 7.5 kms^{-1}. Expressed as a fraction of the velocity of light (and radio waves), 3×10^5 kms^{-1}, this amounts to a 2.5×10^{-5} change in the apparent frequency of the transmitted frequency.

For the 2m. beacon (145.825 MHz) this is a shift of $145.825 \times 10^6 \times 2.5 \times 10^{-5}$ or about 3.6 kHz. That is to say when the satellite comes over the horizon on a direct path towards the observer the received frequency is some 3 kHz high and as it disappears over the horizon some 3 kHz low. Satellites of larger orbits and greater radii will show less proportional change as they are still ascending as they come over the horizon and, therefore, not approaching the observer directly. A transmitter on the Moon would show negligible Doppler shift; a geo-stationary satellite, obviously, none.

To follow such small changes in frequency as 3 kHz in 150 MHz a stable local oscillator is needed. The technique is to mix the two frequencies together and observe the beat note. If the BFO on a receiver is set to zero beat with true satellite frequency then the beat note is equal to the actual Doppler shift.

At any instant the shift is directly proportional to the relative velocity of the satellite. Fig. 1 shows that the frequency change depends on closeness of the path. If it is a distant path the frequency will slowly change from the approach to the recession frequency. A near pass, on the other hand, will display a high shift for a long time, rapidly changing to an equal shift low as the satellite passes, which remains nearly constant as the satellite recedes. The slope of the graph ($kHz.s^{-1}$) as the beat frequency falls to zero (zero beat) is a measure of the satellite's nearest approach to the observer.

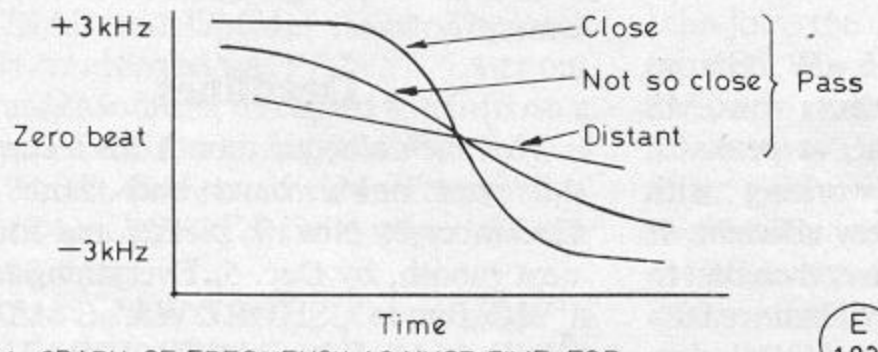

Fig.1 GRAPH OF FREQUENCY AGAINST TIME FOR DIFFERENT PASSES OF THE SATELLITE

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A mathematical analysis shows that the rate of change of frequency at the nearest approach can give the range of the satellite. Further analysis which relates this slope to the instantaneous Doppler shift gives the range at any time. However, the possibility of computing this with any accuracy is very limited for the amateur. It is worthy of note that knowing the satellite's position with precision at accurately known moments in time, is the basis of navigation by satellite, now recognised as possibly the most effective system of navigation currently available.

Plotting the Doppler Shift Frequency

A receiver is tuned to 145.825 MHz accurately in advance of the pass and the BFO left on. As the satellite comes over the horizon an audio beat of about 3 kHz will be heard. This note falls in frequency to zero beat at the nearest approach and then rises as the satellite's apparent frequency falls still further to around 3 kHz lower. The technique to show this is most easily implemented by first recording the audio on cassette. On play back the audio is amplified and squared using a Schmidt trigger; this gives a 5V square wave which can be presented to an input port of a microcomputer for analysis.

The program is run to test (in machine code) the level of the port which is either 0 or 5V. The test is run for a precise time of, say, a few milliseconds. During this time the port is checked continuously to see (*a*) has this time expired?, (*b*) is the port high? When the port goes low a memory location is incremented by one and checked to see, (*c*) has the time expired? and (*d*) is the port low? When the port goes high the program returns to (*a*). When the time expires the program goes into graphics mode and displays the count in memory. This is a measure of frequency. After the elapse of a further interval, say one second, the process is repeated thus a plot is obtained, suitably scaled, of actual frequency every second during the satellite's pass. As displayed on the VDU a good indication of the range of the satellite may be obtained for successive passes.

While this may be of little practical use to the amateur, the understanding of 'Doppler Shift' is greatly enhanced.

APPENDIX

Doppler shift of transmission from satellite; *see* Fig. 2. For a low orbiting satellite an approximate relation between the range, the frequency shift and the rate of change of frequency may be obtained as follows. We assume that the satellite is on a straight path over a flat earth! The satellite's velocity, v, is known from the period. At a time, t, from the nearest approach it will be at a distance vt from that point. Let its range be R and the elevation of the satellite above the horizon be θ.

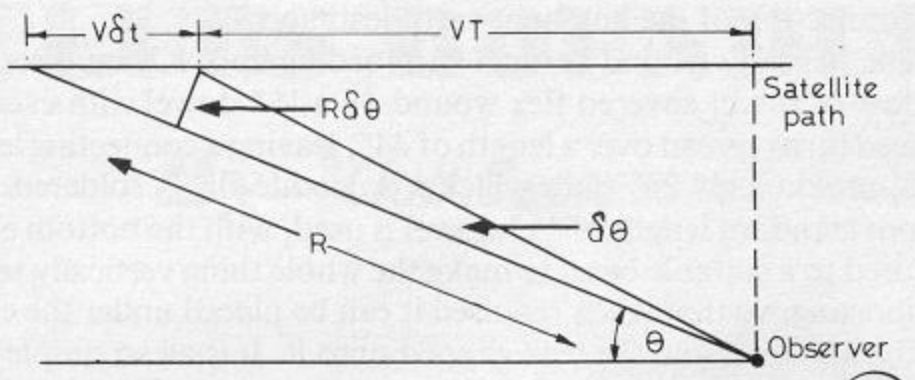


Fig. 2 DOPPLER SHIFT OF TRANSMISSION FROM SATELLITE (E 184)

When the satellite is approaching the observer directly the Doppler shift in frequency, f, will be related to the transmission frequency, F, and the velocity of em-radiation, c, by:

$$f = \frac{Fv}{c}$$

When the satellite's path makes the angle θ with the observer the relative velocity will be v.cos θ, and so

$$f = \frac{Fv.\cos\theta}{c} \qquad 1$$

The rate of change of frequency will be

$$\frac{\delta f}{\delta t} = \frac{-Fv.\sin\theta.\delta\theta}{c\ \ \delta t} \qquad 2$$

Now $$\frac{R\delta\theta}{v\delta t} = \sin\theta, \text{ so } \frac{\delta\theta}{\delta t} = \frac{v.\sin\theta}{R}$$

Substituting in 2

$$\frac{-\delta f}{\delta t} = \frac{Fv.\sin\theta.v.\sin\theta}{cR}$$

$$= \frac{Fv^2.}{cR}\sin^2\theta$$

$$= \frac{Fv^2}{cR}\left(1 - \cos^2\theta\right) \qquad 3$$

From 1 $$\cos^2\theta = \frac{c^2f^2}{F^2v^2}$$

Substituting in 3

$$\frac{-\delta f}{\delta t} = \frac{1}{cR}\left(Fv^2 - \frac{f^2c^2}{F}\right)$$

and so

$$R = \frac{1}{-c.\frac{\delta f}{\delta t}}\left(Fv^2 - \frac{f^2c^2}{F}\right) \qquad 4$$

Nearest approach

If the beat frequency falls to zero (and the beat frequency oscillator has been correctly set to the satellite's transmission frequency) expression 4 gives the nearest approach.
If f = 0, then

$$R = \frac{Fv^2}{-c\frac{\delta f}{\delta t}} \qquad 5$$

Worked example: A stop watch is started when the audio beat note has dropped to middle C (250Hz) and stopped after it has dropped to zero and risen again to middle C. This is the time (say 20 seconds) for a change of 500 Hz. Dividing we get 25 $Hz.s^{-1}$.
Substituting in 5 we get

$$R = \frac{146.10^6(7.5.10^3)^2}{3.10^8.25}$$

$$= 1100 \text{ km.}$$

A No-Tears Indoor HF Antenna

RICHARD MARRIS, G2BZQ

THE licensed apartment dweller has many problems when operating on the HF bands. These include difficulties in designing and erecting an effective antenna; the lack of an effective ground connection; local rules and regulations; TVI accusations, for which, whether true or false, it is always convenient to blame him. On the face of it, the dice are 110% loaded against him! Or are they?

For the last 20 years or so, the writer has operated from apartments, with indoor antennae, in both the U.K. and the U.S.A. (W0), with a minimum of problems and acceptable results. The favourite band has been 20 metres using CW, with a backup of 80 metres CW when 20 metres is dead or uninteresting.

Various 20-metre indoor antenna types have been tried, including "best bent" dipoles, loops and end-fed. Over the last 20 years or so, in the U.K. and the U.S.A. the writer always comes back to one particular 20-metre antenna — *the simplest,* which proves that the "simplest is the bestest". What is more, this antenna can quickly be converted to 80 metres. An outdoor dipole, or beam antenna will, no doubt, give better results, but there is a lot of personal satisfaction and fun in getting the best out of a restricted indoor situation, with no difficulty in working Eastern Europe, North America and occasionally VK and ZL, plus quite unexpected contacts from elsewhere in the world, who respond to a short CQ call.

The 20-Metre Indoor Antenna

This antenna is illustrated in Fig. 1(a). It consists of 23 feet of white p.v.c. covered flex (against a white ceiling it is nearly invisible!). Approximately 19 feet are suspended, horizontally and diagonally, across the room using nylon fishing line for insulation and support (again invisible). The present antenna runs approximately north-south. The remaining four feet are dropped down to the simple ATU which consists of a 60pF series capacitor (VC), and that is about all there is to it. Where, in the past it has not been possible to have 19 feet of wire horizontally, it has been found quite acceptable to operate with a shorter length, and drop the surplus down vertically from the end away from the transmitter.

By using 23 feet of wire (approximately $\lambda/3$) the terminal impedance is around 75 ohms, and therefore very convenient for coaxial feeding. The capacitor (VC) is used to tune out the reactive element at the feedpoint, and the adjustment is by no means critical. One setting can easily be found to cover the whole of the 20-metre CW band, by adjusting it at around 14050 kHz; VC should be of the wide-spaced transmitting type.

Looking for an effective ground connection, on 20 metres, produces problems indoors. If the operating position is below a very large metal frame window, then a short connection to this can often be used. Running a 12 foot, or so, lead to the nearest metal water pipe means a long RF prone lead on 20 metres, and gives all sorts of problems. Therefore a helical RF earth was developed, as illustrated in Fig. 1(b). This is connected to the coaxial cable outer screen near to VC1.

The helical earth consists of a ⅝" dia. dowel of standard six foot length; on to this is wound 32 feet of p.v.c. covered flex to the

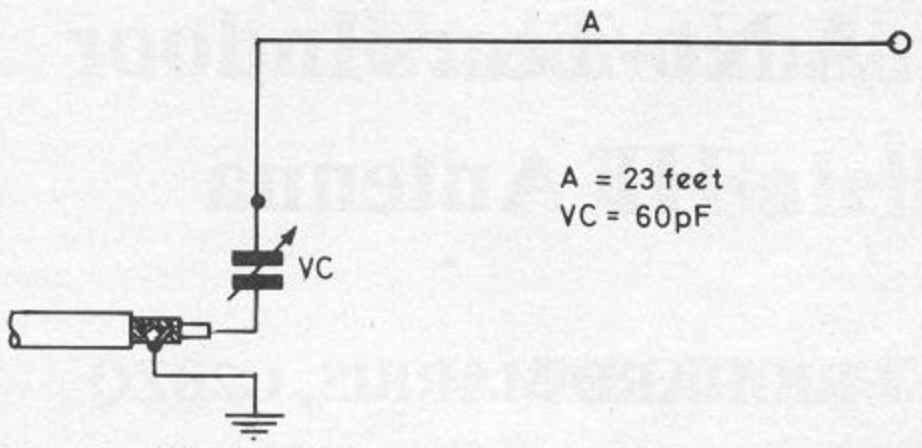


Fig. 1a 20 metre Antenna

Fig. 1b 20 metre helical earth (see text).

E 329

full length of dowel, and spaced approximately ½" between turns. The connecting lead is four feet long, giving a total wire length of 36 feet, the whole device being suspended horizontally, when required, a few feet above the floor.

The capacitor VC is mounted in a small plastic box, with suitable sockets for quick connection and disconnection of the antenna, helical earth and Tx.

To tune up the antenna, the transmitter/receiver is first adjusted into a dummy load. This is then replaced by the coaxial lead from the antenna (about 30" long), and VC is adjusted for maximum signal strength on the receiver at about 14050 kHz. It is found that, with possibly minor peaking adjustments, the transmitter is now loaded into the antenna to cover the CW portion of the 20-metre band.

A portable TV is used for checking for TVI by placing it on a stool under the antenna.

The RF high voltage parts of the antenna can easily be located by using a good old fashioned neon bulb. The RF high voltage points should be at both ends of the antenna.

Conversion to 80-Metres

For the 80-metre CW band the same antenna wire of 23 feet is used. A simple L-network ATU is employed and to improve performance, and loading, a vertical helical-wound coil is clipped to the far end of the antenna.

On 80 metres it has been found that a 15-foot long heavy insulated cable, connected to a copper water pipe, is quite satisfactory as a ground connection; this should be connected to the ATU. The whole set-up is illustrated in Fig. 2.

The ATU coil L1 consists of 14 turns of 18 s.w.g. covered wire, close-wound, on a 1.2" dia. plastic tube, the capacitor (VC) being a good quality receiving type estimated at about 250pF. This is satisfactory up to about 75 watts, but no doubt a transmitting type capacitor would be preferable. The ATU is mounted in a small plastic box, with suitable sockets for quick connection and

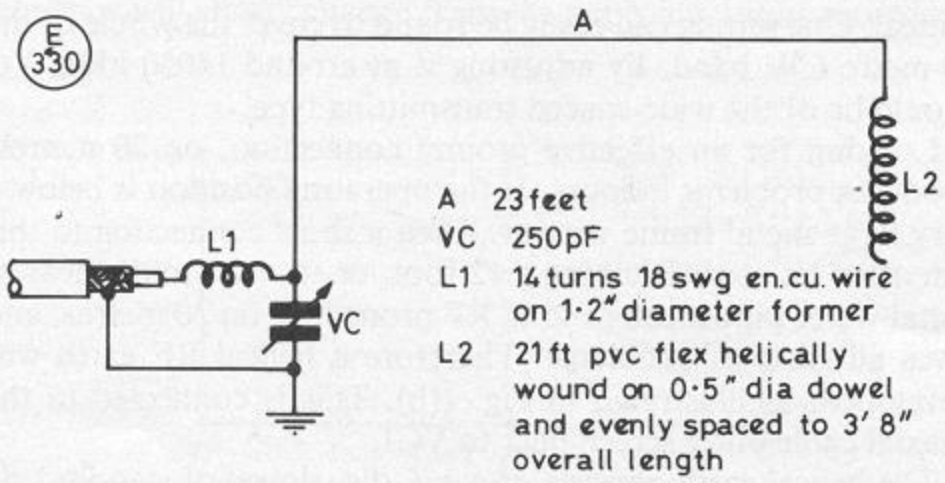


Fig. 2 80 metre Antenna

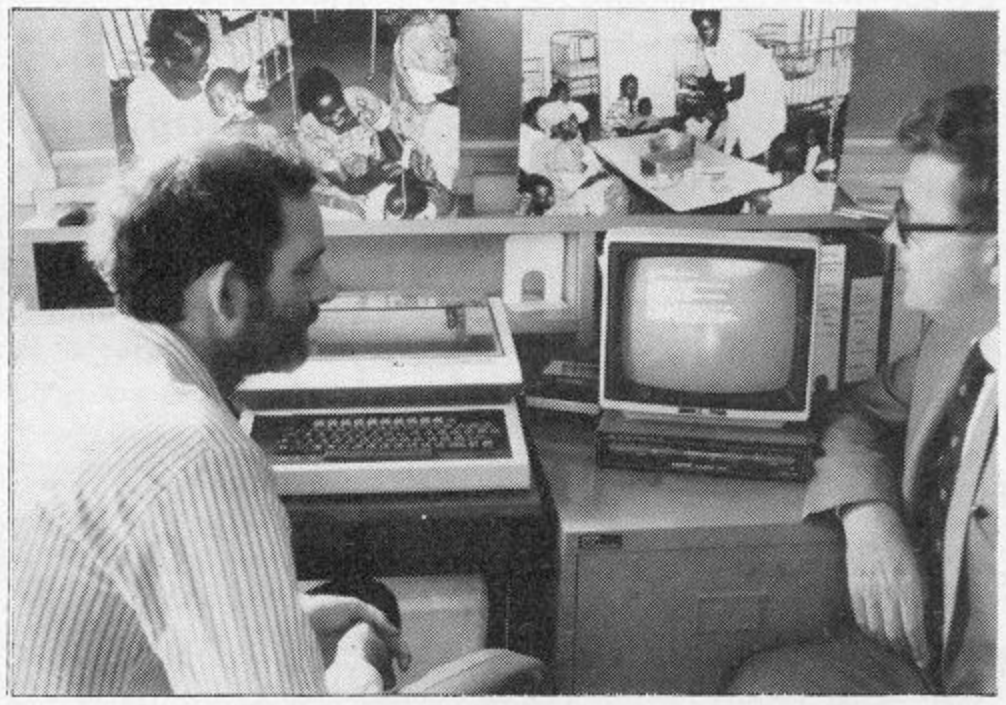
disconnection of the antenna, earth lead and Tx.

The helically-wound vertical end-loading coil, L2, consists of 21 feet of p.v.c. covered flex wound on a ½" dowel with evenly spaced turns spread over a length of 44", leaving a connecting lead of approximately 24" onto which a crocodile clip is soldered. A 6-foot standard length of ½" dowel is used, with the bottom end secured to a suitable base, to make the whole thing vertically self-supporting, so that when required it can be placed under the end of the antenna, and the lead clipped onto it. It is all so simple — and there is no shortage of QSO's on 80 metres CW using this antenna. No doubt, for use on 40 metres, a change in the number of turns on L1 is all that is necessary.

The transition from 20 metres to 80 metres, and *vice versa,* takes about two minutes.

In Conclusion

If one starts off with the acceptance that an indoor antenna is unlikely to be as effective as a good one located in the garden, then one can have a lot of fun, and good results, along the lines discussed above. The original spirit of Amateur Radio was research and experimentation; research into indoor antennae (and especially earthing systems) for the HF bands is still in its infancy. No masts, heavy insulators and heavy constructional work are required: an indoor antenna can be erected in a few minutes, and quickly discarded if it does not perform well.



The Medical Research Council's Dunn Nutrition Unit in Cambridge has been a licensed amateur radio station, G4DUN, since 1976. Part of the Unit's work involves research into malnutrition, and they have a research station in Keneba, an isolated village in The Gambia, West Africa. The radio link is invaluable for keeping in touch with colleagues in Keneba, both for maintaining morale and exchanging factual data. G4DUN is run by the Unit's director, Dr. Roger Whitehead, G3ZUK, (right) and Dr. Tim Cole, G4RQH, (left); also newly licensed in Cambridge is Dr. Chris Bates, G1DAR. Roger also has a Gambian licence (C53U) and has previously been an amateur in Uganda (5X5NA); six other members of staff have had Gambian callsigns at different times, the current holders being Dr. Bill Lamb, C53EE, and Dr. Mark Lawrence, C53EW. Until last year, daily voice skeds were held between Cambridge and Keneba using a Yaesu FT-101ZD at each end, but with the drop in sunspot activity the skeds became more and more difficult. The purchase of two AMT-1 Amtor units from *ICS Electronics Ltd.* in May last year (one for each end) transformed the contacts: previously anything factual had to be repeated several times, whereas with the Amtor unit information typed in at one end only appears on the sender's screen when it has been received at the other end, thereby removing all the uncertainty about whether or not the message was copied correctly. The two AMT-1 units, connected to BBC 'B' micros, are left on standby so that either end can call up the other whenever necessary. Operation is usually on 21.100 MHz, so give them a call!

CLUBS ROUNDUP

By "Club Secretary"

Letters

OUR pile for this month starts, as so often, with **Acton, Brentford & Chiswick;** they have Tuesday, November 20 in the diary, for a discussion evening on the new licence schedule and the IARU Conference. The venue is Chiswick Town Hall, High Road, Chiswick, and the time 7.30 p.m.

Aycliffe & Shildon are to be found at Sunnydale Leisure Centre, Middridge Lane, Shildon, Co. Durham, on Tuesday evenings; November 6 is film and natter, and on 13th there is a demonstration on the use of the oscilloscope. November 20 sees a visit to Durham Constabulary Hq. Communications Room and on 27th the word is "You Name It".

For **Bangor,** November 2 is down for a surplus sale at the Co-op Hall, Castle Square — this is a Big One in the GI social calendar. Notice this change of venue — just for the one meeting, as they will be back in the Sands Hotel on December 7.

As far as **Barry College of Further Education** goes, we understand they foregather at the Annex, Weycock Cross, but for the other details we must refer you to the Hon. Sec. — *see* the Secretaries panel for the details.

Over to **Biggin Hill** and on November 20 they have a visit from RSGB Hq. staff, the place to go being St. Mark's Church Hall, Biggin Hill.

The **Bishops Stortford** club is to be found on the third Monday of each month at the British Legion Club in Windhill, for the formal session, and there is also an informal at the "Nag's Head" on the Dunmow Road, on the first Thursday of the month, in the saloon bar.

Not so very far away is **Braintree;** this group has moved its Hq. to be at St. Peter's Church Hall, St. Peters Close, Braintree, with the result that club dates have moved as well, to now be the first and third Wednesday of each month.

Bridgend is now based on the YMCA in Bridgend, where they have two meetings each month, one a formal, and the other is an evening when they can natter or operate the club rig. More details from the Hon. Sec. — *see* Panel — and we hope to have some clarifications ourselves for next time!

Now to **Bristol,** which has its being at the YMCA in Park Road, Kingswood. Tuesday is RAE night, plus Morse, while the club meetings are — on Tuesdays! November 6 is a talk on aerial theory by G3JMY, and on 13th they put the club's new RTTY station on the air. November 20 is a nostalgic talk by G5KT, as a forerunner to the club's 21st birthday celebrations in 1985. On December 27 they have a demonstration on SS/TV reception using a Spectrum 48K micro-computer.

If you are into RTTY, or data communications. **BARTG** is the one for you — and with their new enormous membership list, everyone who is anyone is a member! Details from the Hon. Sec. — *see* Panel for the address.

Those who work in **British Rail** and its offshoots have a club of their own; details from the Hon. Sec. — *see* Panel.

Now we go to **Bury** where they seem to have a job in the club for almost every member! They are to be found every Tuesday evening in the Mosses Community Centre, Cecil Street, Bury, with the main meeting usually on the second Tuesday of the month; November 13 will be a talk on PCB manufacture at home, by G4KLT, to include practical demonstrations.

November 2 at **Cheltenham** is a junk sale, and 16th a natter night; both are the club Hq. at Stanton Room, Charlton Kings Library, Cheltenham.

At **Cheshunt** the weekly meetings are held at the Church Room, Church Lane, Wormley on Wednesdays. However, we are aware of a proposed change of venue, over which the club has been in prolonged negotiation, so it may be wise to contact the Hon. Sec. at the address in the Panel.

Chichester has a junk sale on November 6, and a club meeting on 15th — the general routine is the first Tuesday and the third Thursday, in the Green Room, Fernleigh Centre, 40 North Street, Chichester, at 7.30 p.m.

The date for **Cornish** is November 1, at Treleigh Church Hall, Redruth, for a surplus equipment sale. Start is at 7.30.p.m.

On we go now to **Crawley** where they have their main base at the United Reformed Church Hall, Ifield; November 29 is a junk sale. Before that they have an informal at a member's home, for details on which we have to refer you to the Hon. Sec. — *see* Panel.

The **Cray Valley,** crowd have their base in the Christchurch Centre, Eltham High Street, on November 1 for a "Surprise Evening', and on 15th for a judgement on the crystal sets of the September meeting, plus a natter session.

November 17 is an Informal 'bring a transceiver' evening for the **Crystal Palace** crowd; the venue is All Saints Parish Room, Upper Norwood, London SE19, which is at the junction of Beulah Hill and Church Road, opposite the IBA mast.

The **Dartford Heath D/F** club seems to have a club meeting the week before their club Sunday hunts. In this case we find Tuesday, November 6 as the meeting date, at the "Horse and Groom", Leyton Cross, Dartford Heath, from 2100 on; the hunt the following Sunday will have a starting place to be announced at the pub meeting. More data from the Hon. Sec. — *see* Panel.

Deadlines for "Clubs" for the next three months—

December issue—October 26th

January issue—November 30th

February issue—December 28th

March issue—January 25th

Please be sure to note these dates!

Turning to **Dudley** they have their gatherings at the Allied Centre, Greenman Alley, off Tower Street, at 7.45; November 5 is a natter night, and on November 19 there is a talk and demonstration by the Microwave Society. November 26 is down for G3BA to do his talk on his experiences on the Burma-Siam Railway.

November 8 is an 'Emmet' Key Evening at **Edgware,** and on 22nd G3PSP will be talking about professional video tape recording. The club has its meetings at 145 Orange Hill Road, Burnt Oak, Edgware.

The Community Centre, St. Davids Hill, **Exeter,** will see the local club taking on Exmouth on November 12 in an inter-club quiz.

The **Farnborough** date is November 14, for the Annual General Meeting; the venue the Railway Enthusiasts' Club, Access Road, off Hawley Lane at 7.30 p.m. Members are requested to make a special effort to attend.

A talk on the history, general usage, and value to the amateur of the Morse Code, will be given to the **Fylde** group, at the Kite Club, Blackpool Airport on November 6, while on 20th they have an equipment sale. It should be noted that membership of this club includes in the subscription membership of the Kite Club, which is very popular locally.

Glenrothes group are based at Provosts Land, Leslie, Fife; every Wednesday evening and the third Sunday seems to be about

Names and Addresses of Club Secretaries reporting in this issue:

ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London W3 8LB. *(01-992 3778)*

AYCLIFFE & SHILDON: E. W. Bate, G3LUC, 5 Elm Road, Shildon, Co. Durham DL4 1BH. *(0388 774466)*

BANGOR: S. Mackay, GI4OCK, 11 Dellmount Park, Bangor, N. Ireland BT20 4UA.

BARRY COLLEGE of FURTHER EDUCATION: Mrs. M. Beynon, GW4GSH, Bungalow No. 1. Racal-Decca Station, Llancarfan, Barry, S. Glamorgan CF6 9AE.

BIGGIN HILL: I. Mitchell, G4NSD, Greenway Cottage, Tatsfield, Westerham TN16 2BT. *(Tatsfield 376)*

BISHOPS STORTFORD: S. Mammett, G6HKK, 31 Atherton End, Sawbridgworth, Herts. CM21 0BS. *(0279 724669)*

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BRIDGEND: T. C. Morgan, GW4SML, 4 Rhiw Brackla, Bridgend, Mid-Glam.

BRISTOL: T. E. A. Rowe, G8NNU, 68 Cobourg Road, Montpelier, Bristol, Avon BS6 5HX. *(Bristol 559398)*

B.A.R.T.G.: J. Beedie, G6MOK, 161 Tudor Road, Hayes, Middx. UB3 2QG. *(01-561 0010)*

BRITISH RAIL: G. Sims, G4GNQ, 85 Surrey Street, Glossop, Derbyshire SK13 9AJ.

BURY: B. Tyldesley, G4TBT, 4 Colne Road, Burnley, Lancs. *(Burnley 24254)*

CHELTENHAM: Mrs. G. Harmsworth, G6COH, 42 Leckhampton Road, Cheltenham, Glos. *(Cheltenham 25162)*

CHESHUNT: R. Frisby, G4OAA, 2 Westfield Road, Hoddesdon, Herts. EN11 8QX.

CHICHESTER: T. M. Allen, G4ETU, 2 Hillside, West Stoke, Chichester, Sussex PO18 9BL. *(West Ashling 463)*

CORNISH: N. Pascoe, G4USB, Bosuathick Farm, Constantine, Falmouth, Cornwall. *(Falmouth 40367)*

CRAWLEY: D. L. Hill, G4IQM, 14 The Garrones, Worth, Crawley, Sussex RH10 4YT. *(Crawley 882641)*

CRAY VALLEY: P. J. Clark, G4FUG, 42 Shooters Hill Road, London SE3. *(01-858 3703)*

CRYSTAL PALACE: G. M. C. Stone, G3FZL, 11 Liphook Crescent, London SE23 3BN. *(01-699 6940)*

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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.

GLENROTHES: A. Givens, GM3YOR, 41 Veronica Crescent, Kirkcaldy, Fife KY1 2LH.

GLOSSOP: E. Calvert, G4EIC, 6 Barber Street, Padfield, Hadfield, *via* Hyde, Cheshire SK14 7EG.

G-QRP CLUB: Rev. G. C. Dobbs, G3RJV, St. Aidans Vicarage, 498 Manchester Road, Rochdale, Lancs. OL11 3HE.

GREATER PETERBOROUGH: F. Brisley, G4NRJ, 27 Lady Lodge Drive, Orton Longueville, Peterborough, Cambs.

HARROW: D. Atkins, G8XBZ, 25 Maxwell Close, Rickmansworth, Herts. *(0923 779942)*

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HEREFORD: F. E. G. Cox, G3WRQ, 35 Thompson Place, Hereford. *(Hereford 54064)*

I.R.T.S.: C. Hunter, EI9V, 30 Coolgariff Road, Beaumont, Dublin 9.

ISLE OF MAN: Mrs. A. Matthewman, GD4GWQ, 20 Terence Avenue, Douglas, I.o.M. *(0624 22295)*

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MALTBY: I Abel, G3ZHI, 52 Hollytree Avenue, Maltby, Rotherham, Yorks.

MIDLAND: N. Gutteridge, G8BHE, 68 Max Road, Quinton, Birmingham B32 1LB. *(021-422 9787)*

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NORTH WAKEFIELD: S. Thompson, G4RCH, 3 Harlington Court, Morley LS27 0RT. *(0532 536603)*

RACAL USER: P. Barber, G8BBZ, 8A Alwyne Place, London N1 2NL.

R.A.I.B.C.: Mrs. F. Woolley, G3LWY, 9 Rannoch Court, Adelaide Road, Surbiton KT6 4TE.

RAMTOP: Rev. R. P. Butcher, G4NWH, Great Billing Rectory, Northampton NN3 4ED.

REIGATE: T. I. P. Trew, G8JXV, Hoath Meadow, Church Hill, Merstham, Redhill, Surrey.

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TODMORDEN: Ms. J. Gamble, G6MDB, 283 Halifax Road, Todmorden, Lancs. OL14 5SQ.

TORBAY: B. Wall, G1EUE, 48 Pennyacre Road, Teignmouth, TQ14 8LB. *(Teignmouth 78554)*

U.K. FM GROUP (NORTHERN): B. Senior, G6BHK, Clevella, Frickley Bridge Lane, Brierley, Barnsley, S. Yorks. S72 9LQ.

VERULAM: H. Claytonsmith, G4JKS, 115 Marshalswick Lane, St. Albans, Herts. *(St. Albans 59318)*

WELLAND VALLEY: A. Faint, G4TZY, 33 Fairway, Market Harborough, Leics. LE16 9QL. *(0858 62827)*

WEST KENT: Mrs. J. Green, G4UPI, 13 Culverden Down, Tunbridge Wells, Kent TN14 9SB. *(T. Wells 28275)*

WESTMORLAND: G. Chapman, G1IIE, 61 Rusland Park, Kendal, Cumbria, LA9 6AJ. *(0539 28491)*

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YEOVIL: E. H. Godfrey, G3GC, Dorset Reach, 60 Chilton Grove, Yeovil, Somerset BA21 4AW. *(0935 75533)*

the form. If that isn't enough 'gen' to make contact, try a call to the Hon. Sec. after November 2, when he is due back from a contest entry in Montserrat.

At **Glossop** they will be at the "Nags Head", Glossop, on November 29, to pay subscriptions for the coming year at the AGM.

If you are interested in low-power operating or in construction, you should be a member of the **G-QRP Club;** for all the details contact the Hon. Sec. at the address in the Panel.

No details are available to the writer of the meeting at **Greater Peterborough,** save that it is on November 22 and at Southfields Junior School, Stanground, at 7.30 p.m. More details from the Hon. Sec. — *see* Panel.

Fridays are the evenings for **Harrow** members to head for the Harrow Arts Centre, High Road, Harrow Weald, where their club is based. Unfortunately we don't have the November programme details for which we have to refer you to the Hon. Sec. at the address in the Panel.

At **Hastings** every Friday the group meets at Ashdown Farm Community Centre, Downey Close for an informal, while the main meeting is at West Hill Community Centre, Croft Road, Hastings, on the third Wednesday of each month.

The **Havering** Hq. is Havering's Fairkytes Arts Centre, Billet Lane, Hornchurch, where November 7 and 21 are informals; November 14 is a surplus equipment and junk sale, and November 28 a talk entitled "Seeing is Believing — VSWR" by G3EUR.

The **Hereford** club is to be found on the first and third Friday of each month at County Control, Civil Defence Hq., Gaol Street; November 9 is down for a talk on WAB, and on 23rd there is a junk and surplus equipment sale.

Over to EI-land now and **I.R.T.S.** — the source of all the details on amateur radio activity in Eire. The contact, of course is *via* the Hon. Sec. — *see* Panel for his details.

Part-way back, and we bump into the **Isle of Man;** the locals foregather at the Keppel Hotel, Creg-ny-Baa each Monday evening. For more details of what's what, contact the Hon. Sec. — *see* Panel.

At **Loughor,** the locals are to be found fortnightly at the Loughor Scout Hall, which is situated off Heol-Cae-ty-Newydd, with talk-in *via* GW4HVJ on S20, or the local repeater GB3WW on R7 from 1900 onwards on the relevant Tuesdays.

We head now to the North and **Maltby,** where they gather every Friday evening at the Old School Buildings, Church Lane, Maltby.

One thing the **Midland** newsletter does is hide all the meeting details! However, we do know that the address is 294A Broad Street, opposite Birmingham Repertory Theatre; and while there is a main meeting on the third Wednesday, our card-index says that there are usually activities like RAE, Morse, or informals going on on most evenings. If that's not good enough, contact the Hon. Sec., or ask G8GAZ on S17!

For the details on **Nene Valley** club, we must refer you to the Hon. Sec. — *see* Panel. However, we believe they are to be found at the "Dolben Arms" in Finedon, near Wellingborough, Northants, apparently every Wednesday.

At **Newark** they have the first Thursday of the month at the Palace Theatre, Appletongate, Newark, at 7.30 p.m. More details from the Hon. Sec. — *see* Panel.

The weekly, Thursday evening, meetings of the **North Wakefield** group are at Carr Gate Working Men's Club; on November 1 they have an on-the-air-night, and on 8th a pool competition. November 15 is a lecture on awards by G4RCG, and the main meeting is on 29th.

New Formation

Racal User Group this one is called, and it hopes to bring together all those amateurs and SWLs who are using or own RACAL equipment. We have received a copy of the first newsletter, put together by founder G8BBZ, and it seems to be good and interesting, if he can keep it up. More details from him, at the address in the Panel.

R.A.I.B.C: this is the one for anyone in amateur radio who is blind or disabled; or indeed who might be interested in taking up the hobby. Details, of course, from the Hon. Sec. — *see* Panel.

Another New One

Not quite true really, but new to us. This one is called **RAMTOP,** and as you might guess it is very micro oriented. We had to chuckle at the interpretation of BASIC as 'plain language' — wishful thinking indeed and totally misleading in the interpretation of the new schedule. However, that could have been tongue-in-cheek, and the rest of the newsletter is certainly of considerably more interest. Details from the Hon. Sec. — *see* Panel.

November 20 is, at the time of their letter, still to be finalised by **Reigate,** but we know they will have something going on at the Constitutional and Conservative Club, Warwick Road, Redhill, Surrey.

If you served on the Royal Navy, or are in it now, or are currently or were in the Merchant or a foreign navy, you are eligible to be a member of the **Royal Navy** group. Details from the Hon. Sec. — *see* Panel.

The **South Bristol** group are at Whitchurch Folk House, East Dundry Road, Whitchurch, Bristol, Avon BS14 0LN. Here, on November 7, they have a talk on GWR steam railway engines; 14th is a 28 MHz, and 21st a VHF, activity night, while on November 28 pocketphones are revisited.

Looking at the **Southdown** newsletter, we see they are at Chaseley Home for Disabled Ex-Servicemen, Southcliff, Eastbourne, on the first Monday of each month. For November, G2LL will be coming along to give a talk on *Oscar-10.*

The current **Southgate** newsletter is quite an improvement on the one your scribe used to be involved with some 28 years ago! The main thing it tells us is that they foregather at St. Thomas' Church Hall, Prince George Avenue, Oakwood, on the second Thursday of every month.

Over to **Surrey,** and the Mess Deck on the first floor of *TS Terra Nova,* 34 The Waldrons, South Croydon, on the first and third Monday of the month. On November 5 they will be having a talk by G3SJX on how he does his equipment evaluation exercises for RSGB.

Sutton & Cheam are at the Downs Lawn Tennis Club on the third Friday in each month for their main meeting; the informal is on the first Monday, also at Downs. November 5 is the natter date, in the bar, and on November 16 they have a combined effort by G3CDK, G3MES and G3HSK on packet radio.

It's been a while since we last heard from the **Swindon** group; nowadays they gather at Oakfield School, Marlow Avenue, Swindon, every Thursday. November 1 is down for a talk on the history and activities of Raynet. On November 15 they have an evening with Thamesdown Repeater Group, and on 29th they have a construction competition. The remaining Thursday evenings are noted as chat nights.

New One Again!

This one is called **Three Counties** and is based at the Railway Hotel, Liphook, Hampshire, on the second and fourth Wednesday. November 7 is down for a talk on fast-scan TV by G8LES, and on November 21 Mr. Poole will give a talk on hints and tips for home construction.'

Todmorden now, and here we see they will be entertaining the local crime prevention officer on November 5, at the Queens Hotel, starting at 8 p.m.

A new Hon. Sec. is noted by **Torbay** where the group is in session every Friday evening informally, with a main meeting on the last Saturday of the month. Venue is at Bath Lane, rear of 94 Belgrave Road.

The **UK FM Group (Northern)** has its regular meetings on the first Sunday in the month at the Royal Hotel, Church Street, Barnsley, at 7.30; the next one is on November 4, and is the all-important AGM. The group is responsible for both GB3NA on R3 and GB3SY on RB6 — more details from the Hon. Sec. — *see* Panel.

Now to **Verulam,** which means the R.A.F.A. Hq. New Kent Road, off Marlborough Road, St. Albans, on the second and fourth Tuesday of each month. On November 27, G4DJX will be giving a talk on operating techniques.

For more details on the **Welland Valley** club we must refer you to the Hon. Sec. — *see* Panel. The group has its meeting on the second Monday, it seems, at Welland Park College, Market Harborough.

Every Friday evening the **West Kent** crowd heads for the Adult Centre Annexe in Quarry Road, Tunbridge Wells; November 2 is for a surplus sale, and on 16th G6SX will talk about "Adventures in Amateur Radio"; Then on November 30, Chris Page, G4BUE, will give a talk on QRP. The informals are thus on November 9 and 23. On a different tack, some members are off to Ireland's west coast to try for a direct GI-North America contact.

The **Wirral** meetings are at the Parish Hall, Heswall, on the first and third Wednesday of each month. More details from the Hon. Sec. — *see* Panel.

At **Worksop** the lads get together every Thursday evening at the Old Ship Inn, Market Place, Worksop.

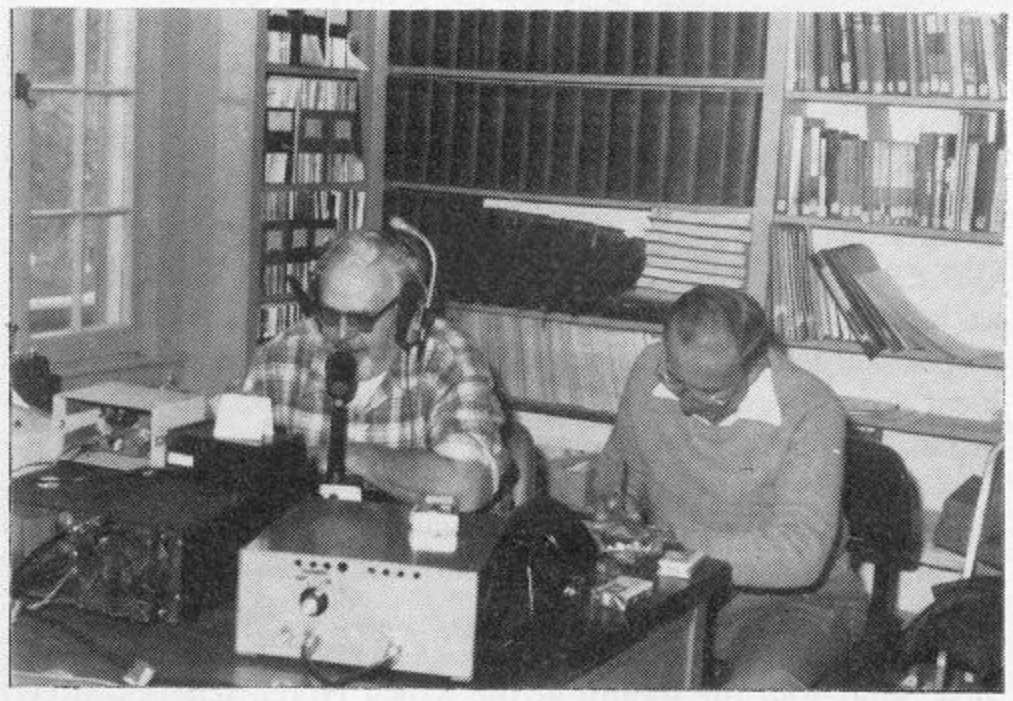
The **Yeovil** troops are to be found every Thursday evening in the Recreation Centre, Chilton Grove, Yeovil; the programme shows November 1 for a talk by G3VEH on the Mendip Repeaters, and on 8th G3MYM will discuss magneto-ionic splitting of radio waves. November 15 sees the G3MYM VFO-driven QRP transmitter under discussion, and on 22nd G6XME talks about the Smith Chart and its use in designing gamma matches. Finally, November 29 is RAE revision and natter night.

Finale

Which is where we tell you that the deadlines for the next few times are in the 'box'; these dates are for the *arrival* of your input, which should be addressed to "Club Secretary", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. Till then *73,88.*

The "Mayflower" Event

The 1984 hands-across-the-sea commemorative station, WA1NPO, will be on the air on America's Thanksgiving Day, November 22nd. For the fourth year, the station will be located at the Plimoth Plantation — near Plymouth, Massachusetts — which is a living-history museum vividly depicting life in Plymouth Colony, the first permanent English settlement in the New World. Among the museum's many exhibits is a full-size replica of the *Mayflower*.



Above, WA1NPO on the air from Plimoth Plantation, with Ray, W1TC, operating and Mike, WA1FSD, logging. Below, members of Sidmouth A.R.S. at the town's astronomical observatory. Seated are Paul, G1EEK, (left) and Graham, G4NVH; standing, left to right, are SWL Steve, John, G6YWX, Mick, G1IAR, Bob, G6SMY, Dick, G6BJL, John, G6YTL, and SWL John.

On the U.K. side, a complementary station, GB2UST, will be operated by Sidmouth A.R.S. from the astronomical observatory 200 feet above the town, which lies in the heart of Devon's Sir Walter Raleigh country.

The operating schedule (all times GMT) at WA1NPO will be: 14180 or 14255 kHz SSB from 1300 to 1400, 14180 kHz CW from 1400 to 1500, 14180 or 14255 kHz SSB from 1500 to 1600, 14345 kHz SSB from 1600 to 2000; and on 15 metres: 21260 kHz SSB from 1300 to 1430, 21385 kHz SSB from 1730 to 2000.

WA1NPO will be looking for calls from any U.K. station, and a certificate featuring the *Mayflower* will be available for confirmed contacts.

Museum Re-Named

The National Wireless Museum, housed at Arreton Manor on the Isle of Wight, has been re-named the National Wireless and Communications Museum, thus considerably widening its scope. Arreton Manor is near Newport, and the museum is open to the public from 10 a.m. to 6 p.m. on week-days, and from 2 to 6 p.m. on Sundays. Museum curator is Douglas Byrne, G3KPO, and the exhibition station uses the call GB3WM on 40 and 80 metres.

Devon Rally

The fourth North Devon Radio Rally is to be held in Bradworthy Memorial Hall (near Holsworthy) on Saturday, November 3rd; doors open 10.30 a.m., bring-and-buy stand, etc., and talk-in on 2 metres (S22). For further details contact G8MXI (QTHR).

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Wanted: Racal SSB adaptor, RA-63G or RA-63D, with any information or manuals, etc. Also transmitters or information.—Ring Streeter, G6XNC, 01-462 4461.

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December issue: due to appear on Friday, November 30th. Single copies at 90p post paid will be sent by first-class mail for orders received by Wednesday, November 28th, as available.— Circulation Dept., Short Wave Magazine, 34 High Street, Welwyn, Herts. AL6 9EQ.

For Sale: Trio TR-9130 2m. multimode, £350. BNOS 6A PSU, £35. Hansen FS-7 144/432 SWR/power meter, £30. Or the lot for £420 or near offer, or would swap for Icom IC-R70. Can deliver South-West, Midlands, London. — Ring Striplin, G1FXS, 07555-7945.

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Sale: FRG-7 receiver with manual and plastic front cover, excellent condition, £115. — Ring Eden, 061-773 3040.

Receivers for sale: Models R.1155, R.208 (10-80 MHz), R.1224A (0-180 MHz). "Short Wave Magazine", 1953-63; "Practical Wireless", 1930-37, 1947-59; "Wireless World", 1945-51; "Radio Constructor", 1952-53. Offers invited. — Ring Curtis, 01-524 1894.

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Sale: Datong D70 Morse tutor, £40. Sony ICF-2001 digital all-band world receiver, complete with handbook and external aerial, £85. Both 'or near offer'. Kent/Wales (M4). — Ring 0322-27790.

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