

The SHORT WAVE Magazine

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an amateur band transceiver for the discerning, the JST100



The Japan Radio Company has, in the manufacture of the JST100, produced an amateur band transceiver, the quality of which most amateurs have only been able to dream about. Whilst other manufacturers have concentrated on producing transceivers which along with the amateur bands include a general coverage receiver, JRC has devoted time and effort to produce the finest performance possible on purely the amateur bands. Their considerable efforts have been justified, the JST100 is the finest amateur band transceiver that we have seen for many years. To produce perfection is not easy, neither is it cheap, there are amateur band transceivers which cost less than the JST100, but, and it is as large but, we are certain that none of them in any way approaches the quality found in the JST100. However there is one thing that is certain. As with other rigs in the Japan Radio Company's range, and I am referring to the NRD505 and the NRD515 general coverage receivers, they become the property of the discerning few. Indeed it is true that one can savour the enjoyment of owning a JST100 transceiver without ever switching it on.

Taking a trip across the front panel one finds a comprehensive display of operating information; a digital

frequency readout down to 10 Hz which in shift mode indicates the frequency difference between VFO's F1 and F2. Above the readout are a string of LED's showing that the transceiver is reading the frequency shift, transmitting, that the mike gain is set high (at the optimum setting the LED "twinkles"), that the attenuator is on, a memory channel is either in use or has been accessed and which of the four modes is being used. A fully backlit meter enables Vc, Ic, transmitter output power, compression level and reflected power to be closely and accurately monitored, whilst on receive it functions as an S-meter. Front panel controls adjust the intensity of the readout, set the mike gain and compression levels, adjust the threshold level of the noise blander and provide VOX control. Transmitted power is adjustable, a front panel knob reducing output from 100 watts PEP to approximately 10 watts. All the usual modes of communication are available on the transceiver, USB, LSB, RTTY and CW wide, narrow (600Hz) and narrower (300Hz). The transceiver has 11 memory channels, each channel holding not only the frequency and band but also the operating mode. Two digital VFO's are incorporated in the transceiver, each tuning across the band in 10Hz steps. Use of the two VFO's together permits split frequency or cross-mode operation.

Taking into account the high levels of activity to be found on the HF bands today, JRC have included a notch filter as well as pass band tuning so that the desired signal may be "lifted" from the QRM. It is in the reception of extremely weak signals that the Japan Radio Company's careful attention to circuit design, components and construction can really be noticed. This, however, is the most difficult aspect of the transceiver to describe.

One way to experience the quality of the JST100 transceiver is to visit a Lowe Electronics shop, either here in Matlock, London, Glasgow or Darlington. Ask to see the amateur band rig for the discerning, a JST100.

JST100 AMATEUR BAND TRANSCEIVER.....	£998.00
NDB500G POWER SUPPLY.....	£149.50
NFG97 ANTENNA TUNING UNIT.....	£150.00
NVA88 SPEAKER.....	£37.00
CFL260 600 Hz CW FILTER.....	£39.10
CFL230 300 Hz CW FILTER.....	£64.00
CHG14 HAND MICROPHONE.....	£14.25
CHG43 DESK MICROPHONE.....	£47.61

LOWE ELECTRONICS

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

LOWE SHOPS

in Matlock

0629.2817 2430 4057 4995

Lowe Electronics in Matlock, located on the Chesterfield road out of Matlock, that is the A632 and open Tuesday to Friday from 9am to 5.30pm (closed for lunch 12.30 to 1.30) and Saturday, open all day from 9am to 5pm. A visit to Matlock can be an outing for the family, the local scenery, the Heights of Abraham, Lovers Walk etc. Ample free parking in our car park and when you have browsed then lunch in one of the towns pleasant restaurants. Amateur Radio with the family in mind.

in Glasgow

041.945.2626

Lowe Electronics in Glasgow, located at 4/5 Queen Margarets Road, which you will find off Queen Margarets Drive (take Great Western road out of the City and turn right at the Botanical Gardens traffic lights). A quiet sedate part of the city, easy street parking and a warm welcome from Sim, our shop manager. Open all day from Tuesday to Saturday, 9am till 5.30pm during the week and 9am till 5pm on Saturday. Whilst in the area the Botanical Gardens are well worth a visit. The Glasgow Shop has a full display of our range of amateur radio products and a stock room to meet your every demand. For your Amateur Radio needs visit Lowe Electronics in Glasgow.

in Darlington

0325.486121

Lowe Electronics in the North East of England, set in the delightful market town of Darlington, the shop displays the full range of amateur products sold by the company. Our address in the town is 56 North Road, that is the A167 Durham road out of Darlington. Open Tuesday to Friday from 9am till 5.30pm, Saturday from 9am till 5pm (closed for lunch 12.30 to 1.30). A huge free car park across the road, a large supermarket, bistro restaurant and banking facilities combine to make a visit to this delightful market town a pleasure for the whole family.

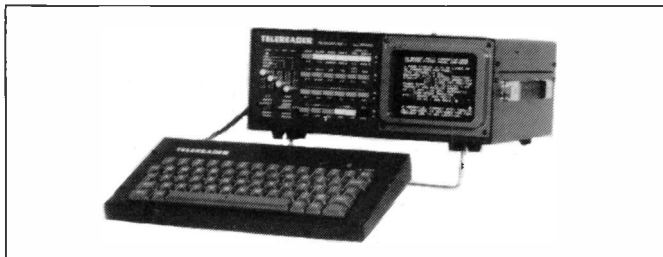
in London

01.837.6702

Lowe Electronics in London, our shop in the Capital City, easily found on the lower sales floor of the Hepworths' shop on Pentonville Road, within 3 minutes walk of Kings Cross railway station. Open all day Monday to Saturday, six days a week, from 9.30am to 5.30pm during the week and from 9.30am to 5pm on Saturday, a warm and courteous welcome, together with sound advice awaits those who enter. The entire range of amateur products is on display, backed by a considerable amount of stock. When in the City, visit Lowe Electronics.

please add TELEREADER to the list

We are pleased to announce that the company has recently been appointed U.K. distributors for the TELEREADER range of equipment. Those of you who have seen TELEREADER products will know that outstanding performance allied with ease of operation are the hallmarks of this particular company. The three models in our range are the TELEREADER CWR685E combined transmitter and receiver, the TELEREADER CWR670E having receive only and the CODE MASTER CWR610E which not only receives CW and RTTY (Baudot and ASCII) but doubles as a morse tutor.



The TELEREADER CWR685E has many outstanding features:
 CW, Baudot and ASCII receive and transmit: CW at 3-40 wpm, RTTY at 45.45-300 bauds (six speeds); ASCII transmission/reception of both upper and lower case letters.
 Built-in 5" green phosphor screen giving a clarity and brightness that I have not seen before.
 A 4 page display giving 32 characters x 20 lines.
 An external QWERTY keyboard housed in a substantial metal case and supplied with 3 feet of connecting cable. Not a 'rubber key or plastic faced touchpad' but a true moving keyboard.
 6 Memory channels (63 character capacity each). If required total memory capacity can be allocated to one channel. In addition the 4 standard test transmissions (RY, QBF, Baudot all characters, ASCII all characters) are permanently stored in memory and can be recalled and transmitted in a variety of formats. 480 characters of transmitting buffer memory are also included.
 Automatic and manual transmit/receive switching.
 Printer output: Centronics compatible parallel interface for hard copy.



The TELEREADER CWR670E has a similar specification to the CWR685E but does not include the transmit facility or the built-in 5" green monitor. The CWR670E provides for both the enthusiastic radio amateur and short wave listener access to both the amateur and commercial world of RTTY as well as providing a visual display of received morse code.



The TELEREADER CWR610E Code Master is a compact morse and RTTY converter which also includes an audio-visual morse tutor.
 Features of the CWR610E Code Master are:
 CW, RTTY (Baudot and ASCII reception)
 CW: 3-40 wpm, Baudot/ASCII: 45.45-600 bauds (seven speeds)
 CW morse practice at 2-30 wpm.
 Display characters: 612 characters x 2 pages.
 Centronics compatible parallel interface for printer output.
 UHF/VIDEO display output.
 12 Volt DC operation.
 TELEREADER CWR685E £730.94 inc. VAT. carr. £6.00
 TELEREADER CWR670E £335.00 inc. VAT. carr. £6.00
 TELEREADER CWR610E £175.00 inc. VAT. carr. £6.00

LOWE ELECTRONICS

Chesterfield Road, Matlock, Derbyshire. DE4 5LE.

Telephone 0629 2817, 2430, 4057, 4995. Telex 377482.

(Delivery of stock items normally by return of post)



TR9130 TWO METRE ALL MODE TRANSCEIVER

This rig is proof, if one needed it, that TRIO do not bring out new models just for the sake of it. The TR9000 is remembered as a classic rig and today people are still asking for second hand ones, even they are a rarity on our S/H shelf. The TR9130 incorporates the improvements that all amateurs asked for, green display, reverse repeater, tune whilst transmitting, higher power, more memories and of course memory scan. TRIO's answer, the TR9130.

TR9130..... £433.32 inc vat.



TS780 DUAL BAND BASE STATION TRANSCEIVER

The TS780 is the perfect base station VHF/UHF transceiver for the enthusiastic operator. The rig has all the necessary control functions essential for operating on both today's busy two metre band and the wide spaces of seventy centimetres. Full repeater facilities plus reverse repeater are included and the transceiver has the usual memory channels (10), two VFO's, up/down frequency shift microphone, IF shift, two priority channels, memory and band scan, etc. A superb rig, I have one myself, ring for a full enthuse!

TS780..... £795.00 inc vat.



TR7930 TWO METRE FM MOBILE TRANSCEIVER

Those who have used or owned a Trio TR7800 will know what I mean when I say that Trio, with the introduction of the TR7930 have improved on the unimprovable. The Trio TR7930 improves on the TR7800 by giving a green floodlight liquid crystal display, extra memory channels, both timed and carrier scan hold, selectable priority frequency and correct mode selection (simplex or repeater). The most significant change is the liquid crystal display, but closely following this must be the ability to omit specific memory channels when scanning and the programmable scan between user designated frequencies.

TR7930..... £305.21 inc vat.



R2000 GENERAL COVERAGE RECEIVER

The amateur bands are only a very small part of the radio spectrum, many other transmissions are available for the short wave listener. Broadcast stations provide an alternative source of current information both political and regarding the life style of the country. Fitted with the internal VHF converter the R2000 covers continuously frequencies from 118 to 174 MHz giving access to amateur two metre transmissions (am, fm, ssb and cw) plus a lot more. Having 10 memories, memory scan and programmable scan the R2000 provides in one rig the perfect receiver.

R2000..... £398.82 inc vat.



TS930S HF TRANSCEIVER WITH GENERAL COVERAGE RECEIVE FACILITIES

Much has been said about the TS930S transceiver and it now has a place high in the affection of those amateurs fortunate enough to own one, indeed it has become the "flagship" of the TRIO range. Providing full amateur bands plus a general coverage receiver (150kHz to 30MHz), the TS930S has every conceivable operating feature for today's crowded frequencies.

TS930S..... £1216.70 inc vat.



TR2500/TR3500 HANDHELD TRANSCEIVERS

Two first class hand held transceivers, one for two metres and the other for seventy centimetres. Ten memory channels, band and memory scan, repeater shift, reverse repeater and a low power position make the rigs extremely useful for the radio amateur who wishes to keep in touch with his local scene. A comprehensive range of accessories, base station charger, speaker microphone, mobile mount, etc. can be added to enhance operation, accessories used with one rig being compatible with the other.

TR2500..... £232.53 inc vat.

TR3500..... £250.70 inc vat.



TS530S HF AMATEUR BAND TRANSCEIVER

A logical progression from the reliable TS520 series the TS530S was the most popular HF rig in the range. I use the term "was" because TRIO decided to cease production and supplies were no more, however the demand from radio amateurs worldwide for the transceiver have continued and TRIO have reintroduced the rig. A standard HF valve transceiver without the frills but providing today's amateur with all necessary facilities for reliable world wide communication, the TRIO TS530S.

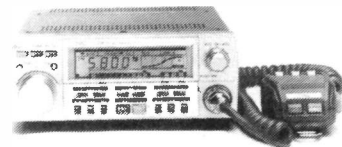
TS530S..... £595.00 inc vat.



TW4000A DUAL BAND FM TRANSCEIVER

I have been waiting for this rig for the last three years, now it is here and I am using one, words fail me. Send for details.

TW4000A..... £469.00 inc vat.



just a part of the range

Securicor carriage on the above items £6.00

LOWE ELECTRONICS

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Telephone 0629 2817, 2430, 4057, 4995. Telex 377482.



IC-751, £969. HF Transceiver



Think about the IC-740. One of the most popular amateur bands transceivers, make a few improvements such as adding 36 memory channels, doing away with mechanical bandswitching and then add full HF receive capability (0.1-30 MHz) which is even an improvement on the famous R70 and you get a pretty good idea of what the IC-751 is like. It is fully compatible with Icom Auto units such as the AT-500 and IC-2KL and a further option for computer control can be added. There is also a digital speech synthesizer option which will be ideal for blind operators. For power supplies you have the option of the IC-PS740 (which fits inside) or the PS-15/PS20 range for external use.

As you would expect there is a built in speech processor, a switchable choice of a J-FET pre-amp, straight through or a 20dB pin diode attenuator and two VFOs allowing split frequency operation.

Other standard features include:- 36 memory channels with scan facility and start/stop timers, a marker, 4 variable tuning rates, Pass Band Tuning, notch, variable noise blanker, monitor switch, DFM (direct feed mixer) in the front end, full break-in on CW and AMTOR compatibility. The first IF is 70.045 MHz. Any XIT and RIT adjustment is shown on the display. The transmitter features high reliability 2SC2904 transistors in a low IMD (-32dB @ 100W) full 100% duty cycle. Power is restricted to 40W on AM and adjustable from 10W on all modes. FM and the IC-FL44A crystal SSB filter are both fitted as standard. As you can see from this brief description the IC-751 is certainly a transceiver worth considering - Why not call us for details?

IC-290D, VHF, £433. Multimode Mobile



The recently introduced IC-290H has proved so popular that we have decided to concentrate on this (25W) model 2m multimode. With its bright green display, 5 memories, scan facilities on either memories or the whole band, tone-call button on the microphone and instant listen input for repeaters, this little box really is a beauty.

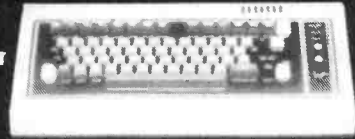
As well as stocking the complete ICOM range of equipment suitable for European use, we also sell Yaesu, Jaybeam, Datong, Wetz, G-Whip, Western, TAL, Bearcat, Versatower and RSGB publications from our shop and showroom at the address below. Come in for a demonstration or just a chat, our qualified sales staff and technicians will be glad to assist you.

RTTY, Morse & ASCII

Shortwave listeners and amateurs are able to take more interest in other modes of transmission than speech with the latest range of decoders and senders available. As well as amateur transmissions, there is an abundance of news and other interesting broadcasts which can be read using these space-age devices.

Some models in our range are the Tono 550, 9000E and the Telereader CWR-670, CWR-685E and CWR-610E. There is now available a professional version of the Tono 9000E, the PRO-1, which has a built-in scrambler. The Telereader CWR-670 is also available with a built-in VDU which can include a 40 column printer.

TONO 9000E Sender/Decoder £669.



CWR-610E, Decoder £189.

TONO 550, Decoder £299.



As U.K. importers of the renowned TONO and TELEREADER products, we can offer you a wide range, from a simple morse and RTTY reader which can be plugged into your TV., to a complete send and receive system with memories and built-in displays, or outputs for high-definition VDU.

NEW! IC-120, 1296 MHz FM £419.



Thinking of 1296? Then Icom IC-120 could be the answer.

Now you can have the sophistication of today's technology on this up and coming band-all built into a unit the same size as the IC-25E, very compact...

- | | |
|--|---------------------------|
| Features include: | Output Power = 1W or more |
| Frequency coverage 1260 - 1300 | Mode - FM |
| Adjustable Repeater Shift | 2 VFO's |
| 6 Memories - with scanning facility | Deviation + 5 KHz |
| Spurious Emissions - 40dB or better | RIT |
| 8 W and 16W (Puma) Linear Amps available shortly | |

Agent Please telephone first, anytime between 0900 - 2200 hrs.
Gordon Adams G3LEQ Tel: Knutsford (0565) 4040

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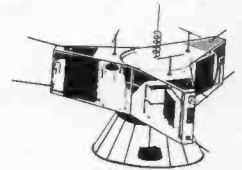


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FT726R

TRANSCIVERS

FT 726R	Transceiver c/w 2M	£675.00
430/726	70CM Module	£230.00
SAT726	Full duplex module	£90.00
FT780R	70CM All mode 10W	£289.00*
FT480R	2M All mode 10W	£399.00
FT790R	70CM All mode 1W	£299.00
FT290R	2M All mode 2.5W	£249.00

* Special offer price 1.6MHz shift version £10 extra.

LINEAR AMPLIFIERS

FL7010	70CM 1W to 10W o/p	£91.00
MML432/30L	70CM 1 or 3W to 30W	£129.95
MML432/50	70CM 10W to 50W	£129.95
MML432/100	70CM 10W to 100W	£245.00
MML1296/10W	23CM 1W to 10W	T.B.A.

COAXIAL FEEDERS

UR67	P/Metre	£0.67
H100	25 Metres	£19.50
H100	50 Metres	£39.00
LDF2/50	Andrews Heliax p/m	£2.85
LDF4/50	Andrews Heliax p/m	£3.58

Carriage on coaxial cables £2.50 for up to 25M, over 25M £3.20.

TRANSVERTORS, CONVERTORS AND PREAMPS

FTV707R	Transvertor c/w 2M	£99.00
FTV107R	Transvertor c/w 2M	£89.00
FTV901R	Transvertor c/w 2M	£139.00
432TV	70CM Module for above	£214.65
MMT432/28S	Transvertor 432-436MHz	£159.95
MMT432/144S	Transvertor 432-436MHz	£184.00
MMC144/28	Converter 2M down to 10M	£29.90
MMC432/28	Converter 70CM down to 10M	£37.90
MMC432/144S	Converter 70CM down to 2M	£37.90
MMX1268/144	1268Mhz Tx Converter	£135.00
MMA144V	2M Preamp RF switched	£34.90
SLNA144S	2M Preamp RF switched	£37.10
SLNA144U	2M Preamp unswitched	£22.40
SLNA144JB	2M Unboxed (144U)	£13.70
GBFA144E	2M Gasfet masthead preamp	£129.90
SBLA144E	Mosfet Mast head pre-amp	£79.90
SLNA1455B	FT290R Preamp	£27.40
TLNA432S	70CM switched preamp	£74.90
TLNA432U	Unswitched (432S)	£29.00
GLNA432U	70CM Gasfet unswitched	£52.90



MML 432/100

Carriage is free except where indicated.

CR/23CM	23cm Corner reflector	£31.05
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KR500 elevation Rotator

ROTATORS

KR400	Meter controller	£97.75*
KR400RC	Round controller	£114.94
KR600RC	Round controller	£163.30
AR40	CDE	£90.85
CD45	Meter controller	£136.85
HAMIV	Meter controller	£258.75
KC038	KR400/600 Lower bracket	£12.07
KR500	Elevation rotator	£112.12*

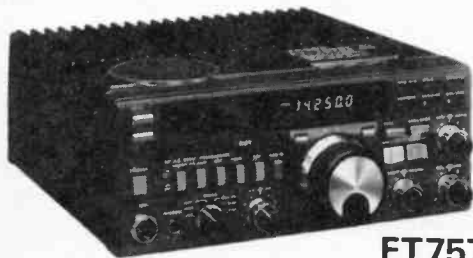
* Rotators could be used with a home computer for automatic tracking of satellite.

ANTENNAS

5X Y/2M	2M 5 Ele crossed	£28.17
8X Y/2M	2M 8 Ele crossed	£35.65
10X Y/2M	2M 10 Ele crossed	£46.00
PMH/2C	2M Circular harness	£9.77
8X Y/70	70CM 8 Ele crossed	£48.87
12X Y/70	70CM 12 Ele crossed	£52.90
MBM48/70	70CM 48 Ele multibeam	£35.65
PBM18/70	70CM 18 Ele parabeam	£32.20

Carriage on antennas Each £2.50

NEW FROM YAESU



FT757GX

Frequency range 160-10m Tx general coverage Rx. 10Hz VFO steps and 500KHz band steps Modes, USB, LSB, CW, AM, FM all as standard.
 Power output 100W SSB, CW, FM 25W carrier AM, 3rd order products -40dB at 100W on 14 MHz.
 Dynamic range better than 100dB CW(N) at 14MHz.
 Frequency stability better than ± 10ppm after warm up.
 Qual VFO's and 8 memories with VFO/memory transfer buttons allowing more flexible split frequency operation.
 Programmable memory scanning with scanstop threshold adjustable with the RF Gain control. All accessories installed including SWR/M, Marker, Speech processor, shift filters, 600Hz CW filter and keyer.
 New heatsink design and ducted cooling system allow 100W o/p at 100% transmitter duty cycle.
 Selectable semi break-in or full break-in and built in inambic keyer with dot-dash memory.
 Three microprocessors control most of the switching and adjusting functions normally done by hand and optional CAT interface unit allow further operating flexibility with an external computer.



REMEMBER

Only authorised Yaesu dealers have direct contact with the factory in Japan, and only if you buy your radio from an authorised dealer can you be assured of spares and service back up. So **BEWARE** of grey importers who offer sets a few pounds cheaper, they may not be around if your set goes wrong!!



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 * On many regular priced items SMC offers Free Finance (on invoice balances over £120). 20% down and the balance over 6 months or 50% down and the balance over a year. You pay no more than the cash price!! Further details and eligible items available on request.

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SMC NEW LOW YAESU PRICES



FT980

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| FT ONE | Transceiver General Coverage | £1395.00 |
| KEYT901 | Curtis Keyer | £26.85 |
| DCT1 | DC Power Cable | £9.60 |
| RAMT1 | Non volatile memory board | £13.05 |
| FMUT1 | FM unit | £39.85 |
| XF8.9KC | 300Hz CW filter | £17.25 |
| XF8.9KC | 600Hz CW filter | £17.25 |
| XF8.9KA | 6KHz AM filter | £17.25 |
| XF10.7KC | 800Hz CW filter | £11.90 |
| FTV107R | Transverter CW 2m | £89.00* |
| FT980 | Transceiver General Coverage Rx Amateur Tx | £1150.00 |
| SP980 | External speaker | £54.80 |
| SP980P | External speaker phonic patch | £69.75 |
| FT102 | Transceiver 9 band multimode speaker with audio filter | £685.00 |
| SP102 | speaker and phone patch | £49.05 |
| SP102P | speaker and phone patch | £69.00 |
| FV102DM | Synthesized scanning VFO | £230.00 |
| FC102 | Antenna coupler 1.2KW PEP | £200.00 |
| AMFMUT102 | AM/FM unit option | £46.00 |
| FA514R | 4 Way antenna selector | £39.10 |
| XF82GA | 6KHz AM filter | £18.80 |
| XF82HSN | 1.8KHz Narrow SSB filter | £18.80 |
| XF82HC | 600Hz CW filter | £18.80 |
| XF82HCN | 300Hz CW filter narrow | £18.80 |
| XF455C | 500Hz CW filter | £44.85 |
| XF455CN | 270Hz CW filter narrow | £44.85 |
| FT77 | Transceiver 9 band mobile multimode | £459.00 |
| FT77S | Transceiver 9 band mobile 10 watts | £399.00 |
| MRKT77 | Calibration marker unit option | £9.60 |
| FMUT77 | FM Board option | £25.30 |
| FP700 | external power supply/speaker | £110.00 |
| FC700 | Antenna tuner | £85.00 |
| XF8.9KC | 600Hz CW filter | £17.25 |
| FT902DM | Transceiver 9 band multimode 90ZDM less inverter, memory & FM | £885.00 |
| FT902DE | 90ZDM less inverter, memory & FM | £790.00 |
| FT902D | 90ZDM less inverter, memory & keyer | £800.00 |
| FMU901 | FM Module | £28.00 |
| KEYT901 | Curtis Keyer | £26.85 |
| MEMT901 | Memory Unit | £87.90 |
| DCT901 | Inverter (from 12VDC) | £46.75 |
| XF89GF | 12KHz crystal filter FM | £26.05 |
| 50TV | 6m transverter module | £79.75 |
| 70TV | 4m transverter module | £84.70 |
| 144TV | 2m transverter module | £109.65 |
| 430TV | 70cms transverter module | £214.65 |
| XF8.9HC | CW Filter 600Hz | £26.05 |
| XF8.9HCN | CW Filter 300Hz | £26.05 |
| XF8.9GA | AM Filter 6KHz | £26.05 |
| FL210CZ | Linear Amplifier 1200W + (PIP) | £475.00 |

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| FT707 | Transceiver 100W 10-80M (8 bands) | £499.00 |
| FT707FM | FT707 with SMCs FM unit fitted | £549.00 |
| FP707 | Mains power supply/speaker | £110.00 |
| FV707DM | Digital VFO | £170.00 |
| FC707 | Antenna Tuner | £85.00 |
| FTV707R | Transverter C/W 2M | £99.00* |
| FRB707 | Relay switching box | £15.35 |
| FT757GX | HF Transceiver | £625.00 |
| FP757GX | Switch mode P.S.U. | £135.00 |
| FC757AT | Automatic antenna tuner | £210.00 |



FT77

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|-----------|---|----------|
| FT726R(2) | Multimode multiband c/w 2M | £675.00 |
| FT726R | Main frame only | £550.00 |
| 50/726 | 6m module | £170.00 |
| 21/24/28 | HF module for 15m, 12m, and 10m | £180.00 |
| 144/726 | 2m module | £135.00 |
| 430/726 | 70cm module | £230.00 |
| SAT726 | Full duplex module | £90.00 |
| XF455MC | 600Hz CW filter | £39.85 |
| FT230R | Transceiver 2m FM 25W | £239.00 |
| FT790R | Transceiver 70cm FM 10W | £259.00 |
| FT690R | Transceiver 6m 2.5W multimode | £239.00 |
| FT290R | Transceiver 2m 2.5W multimode | £249.00 |
| FT790R | Transceiver 70cm 1W multimode | £299.00 |
| SMC2.2C | Nicad cell, 2.2 A/Hr 'C' size | £2.70 |
| SMC8C | Slow charger (220mA) | £8.80 |
| MMB11 | Mobile mount | £24.90 |
| CSC1A | Soft carrying case | £3.85 |
| YHA15 | Flexible helical antenna | £5.00 |
| FL2010 | Linear amplifier 2m 10W | £59.00 |
| FL7010 | Linear amplifier 70cm | £91.00 |
| FT680R | Multimode transceiver 6m | £349.00 |
| FT480R | Multimode transceiver 2cm | £399.00 |
| FT780R | Multimode transceiver 72cm c/w 1.6MHz shift | £289.00* |
| FT780R | Power supply unit | £299.00* |
| FP80A | Station console - | £138.00 |
| SC1 | Linear amplifier 50W | £115.00 |
| FL2050 | Transceivers 2m 10W FM | £199.00 |
| FT720RVH | Transceivers 2m 25W FM | £209.00 |
| FT720RU | Transceiver 70cms 10W FM | £229.00 |
| FT720R | Control head | £100.00 |
| 720RV | deck only 2m 10W | £100.00 |
| 720RVH | deck only 2m 25W | £110.00 |
| 720RU | deck only 70cms 10W | £130.00 |
| S72 | Switching box | £39.00 |
| E72S | cable, 2m long | £10.00 |
| E72L | cable, 4m long | £15.00 |

* Denotes special offer price



FT290R

- | | | |
|----------|--|---------|
| FT208R | Transceiver Handheld 2.5 2m | £199.00 |
| FT708R | Transceiver Handheld 1W 70cms | £209.00 |
| FNB2 | Nicad Battery Pack | £19.95 |
| FBA2 | Battery pack sleeve (fits FNB2) | £3.05 |
| FBA3 | Charging sleeve (for FT207 acc) | £5.35 |
| NC9C | Slow charger | £8.00 |
| NC7C | Base Master | £30.65 |
| NC8C | quick charge and PSU | £50.60 |
| MMB10 | Mobile bracket | £6.90 |
| FRG7700 | Receiver 0.15-3.0MHz AM/CW SSB/FM | £335.00 |
| FRG7700M | Receiver c/w 12 channel memory | £389.00 |
| DCRG7700 | DC modification kit | £1.15 |
| MEMG7700 | Memory option | £98.90 |
| FRT7700 | Antenna tuner/switch | £42.55 |
| FRA7700 | Active antenna | £38.70 |
| FF5 | Low pass filter 500KHz | £9.95 |
| FRV7700A | Converter 118-130, 130-140, 140-150MHz | £78.95 |
| FRV7700B | Converter 118-130, 140-150, 50-59MHz | £84.70 |
| FRV7700C | Converter 140-150, 150-160, 160-170MHz | £74.75 |
| FRV7700D | Converter 118-130, 140-150, 70-80MHz | £80.90 |
| FRV7700E | Converter 140-150, 150-160, 118-130MHz | £83.95 |
| FRV7700F | Converter 150-160, 160-170, 118-130MHz | £83.95 |
| YM21 | Hand 600, 4 pin noise cancel | £15.70 |
| YM24A | Hand 2K, 6 pin min, speaker/mic | £18.40 |
| YM35 | Hand 600, 8 pin scan | £15.35 |
| YM36 | Hand 600, 8 pin, noise cancel | £14.95 |
| YM37 | Hand 600, 8 pin | £7.30 |
| YM38 | Stand 600/50K, 8 pin scan | £27.20 |
| YM47 | Hand 600, 7 pin, scan control | £10.75 |
| YM49 | Hand 600, 7 pin, speaker/mic | £16.85 |
| YE7A | Hand 600, 4 pin | £7.65 |
| YD148A | Stand 600/50K, 4 pin | £22.60 |
| YD844A | Stand 600/50K, 4 pin | £26.85 |
| MH-188 | Hand 600, 8 pin scan | £13.80 |
| MD-188 | Desk 600, 8 pin scan | £49.85 |
| FSP1 | Mobile speaker 8 ohms | £11.15 |
| FSP2 | Mobile speaker 4 ohms | £11.15 |
| YH55 | Headphones padded low Z | £9.95 |
| YH77 | Headphones lightweight low Z | £9.95 |
| YH1 | Lightweight mobile headset/ boom mic | £13.80 |
| SB1 | PTT switch box for FT208/FT708 | £14.95 |
| SB2 | PTT switch box for FT290/FT790 | £12.65 |
| SB3 | PTT switch box for FT202 | £13.80 |
| FP4 | 12V power supply 4 amps | £44.45 |
| QTR24D | World time clock quartz | £31.45 |
| FF501DX | Low pass filter | £25.70 |
| YP150Z | Terminated Wattmeter 5-30-150W FSD | £92.00 |

Prices include VAT and Carriage.

YAESU SPECIAL OFFERS

- | | |
|----------------------------|--------|
| FTV107R TRANSVERTER c/w 2m | £89.00 |
| FTV707R TRANSVERTER c/w 2m | £99.00 |
| DMS 107 DMS UNIT for FT107 | £69.00 |

- | | |
|---------------------|---------|
| FV707DM VFO | £170.00 |
| AMU101 1012 AM UNIT | £10.00 |
| FP107 PSU | £79.00 |



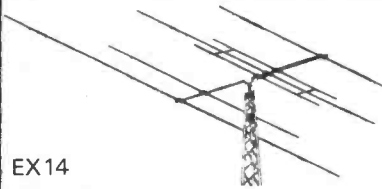
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HF ANTENNAS

S.M.C. have the greatest range of H.F. antennas eg. Multi Beams/Quads, over 20 models. Shown below is the sensational new Explorer 14 - contact us for full details.



EX 14

MULTIBAND BEAMS		Inc VAT	P&P
EX 14	Explorer 10-20	P.O.A.	
TH3JN	3 Ele 10-20	£202.40	£3.50
TH2MK3	2 Ele 10-20	£169.05	£3.50
TH3MK3	3 Ele 10-20	£274.85	£5.30
TH5DX	5 Ele 10-20	£419.75	£6.70
TH7DX	7 Ele 10-20	£511.75	£8.75
TB3	3 Ele 10-20 Jaybeam	£181.70	£5.40
HQ1	Mini Quad 10-20	£139.00	£4.00
G4MH	Mini Beam 1-20	£82.50	£4.00
TA33JNR	3 Ele 10-20 Moseley	£161.00	£3.40
Mustang 2	2 Ele 10-20 Moseley	£177.10	£3.50
Mustang 3	3 Ele 10-20	£220.80	£3.70
GQ2E	2 Ele 10-20 Quad	£189.75	£5.40
GQ3E	3 Ele 10-20 Quad	£313.95	£9.20
GQ4E	4 Ele 10-20 Quad	£446.20	£10.00
Hyquad	2 Ele 10-20	£171.35	£6.70
LP1007	Log Periodic 13-20MHz	£1474.30	DIST
3Y1015D20	3 Ele 10-20m	£134.95	£5.00
DB10/15A	3 Ele 10-15m	£198.95	£4.80



TB3

MONO BAND BEAMS		Inc VAT	P&P
103BA	3 Ele Yagi 10M	£67.85	£3.50
105BA	5 Ele Yagi 10M	£155.25	£3.75
153BA	3 Ele Yagi 15M	£90.85	£3.50
155BA	5 Ele Yagi 15M	£236.90	£5.90
203BA	3 Ele Yagi 20M	£178.25	£4.90
204BA	4 Ele Yagi 20M	£286.35	£7.30
205BA	5 Ele Yagi 20M	£396.75	£9.40
402BA	2 Ele Yagi 40M	£247.25	£6.50
18TD	Dipole Tape 10-80M		



HF 5 V

HF 5 R

VERTICALS		Inc VAT	P&P
12AVQ	Vertical 10-20M	£50.60	£2.75
14AVQ	Vertical 10-40M	£64.40	£2.75
18AVT/WB	Vertical 10-80M	£113.85	£2.75
18V	Vertical 10-80M taped	£36.22	£2.75
C4	Vertical 10-20	£59.00	£2.50
SMCHF5	Vertical 10-80	£54.80	£2.50
SMCHFP	Radial Kit for above	£34.90	£2.50

TRAP DIPOLE		Inc VAT	P&P
SMCTD/HP	High Power 10-80M	£43.41	£2.50
SMCTP/P	Portable inc coax	£59.80	£2.50

MOBILE		Inc VAT	P&P
Tribander	10-20M Slide sw.	£25.88	£1.50
Multiband	10-20M	£30.48	£1.50
Flexiwhip	10M only	£18.11	£1.85
Extra Coils	For above to 160m	£5.70	£1.00
Flexiten	2, 10, 12, 17, 18, 20, 30, 40, 80M	£49.00	£2.00
Bases	For above	£5.75	£1.00

NB: PRICES INCLUDE VAT AT 15%
Carriage extra. Mainland rate shown.

POWER METERS

IN LINE POWER/SWR BRIDGES P.E.P., R.M.S. 1-8-440 MHz

The Hansen range covers 30 quality models with top-of-the-line the FS710. This is a flat frequency response peak envelope power and average in-line wattmeter with many novel features. Notable being the 'power independent' SWR scale - no forward power calibration knob, just direct reading SWR.



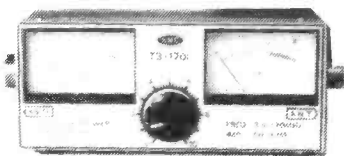
HANSEN FS500H

HANSEN		Inc VAT	P&P
FS710H	1.8-60 MHz 15/150/1500W Pep	£89.70	FOC
FS710V	50-150 MHz 15/150W Pep	£89.70	FOC
FS50HP	1.8-60MHz 20/200/2000W Pep	£89.70	FOC
FS50VP	50-150MHz 20/200W Pep	£89.70	FOC
FS500H	1.8-80 MHz 20/200/2000W Pep	£69.75	FOC
FS500V	50-150 MHz 20/200W Pep	£69.75	FOC
FS300H	1.8-60MHz 20/200/1000	£46.40	FOC
FS300V	50-150 MHz 20/200	£46.40	FOC
FS200	1.8-150 MHz 20/200 Pep	£50.60	FOC
FS601M	1.8-30 MHz 20/200W Pep	£51.35	FOC
FS601MH	1.8-30 MHz 200/2000W Pep	£51.35	FOC
FS602M	50-150 MHz 20/200W Pep	£51.35	FOC
FS603M	430-440 MHz 5/20W Pep	£51.35	FOC
FS210	1.8-150 MHz 20/200W Auto SWR	£55.20	FOC
FS301M	2-30 MHz 20/200W	£36.65	FOC
FS301MH	2-30 MHz 200/2000W	£36.65	FOC
FS302M	50-150 MHz 20/200W	£36.65	FOC
FS711H	2-30 MHz 20/200W Head	£36.80	FOC
FS711V	50-150 MHz 20/200W Head	£36.80	FOC
FS711U	430-440 MHz 5/20W Head	£36.80	FOC
HB1	FS711H Coupler	£23.75	FOC
VB1	FS711V Coupler	£23.75	FOC
UB1	FS711U Coupler	£23.75	FOC
FS5E	3.5-150 MHz 20/200/1000W HF	£37.20	FOC
FS5S	1.8-150 MHz 20/200/1000W HF	£37.95	FOC
FS7	145.8 (432 MHz) 5/20/200 144	£41.00	FOC
SWR3E	3.5-150 MHz 20/200/1000W HF	£25.00	FOC
SWR3S	3.5-150 MHz F/S Meter ant.	£26.45	FOC
SWR50B	3.5-150 MHz Twin Meter	£26.45	FOC
FS20D	3-150 MHz 5/20W	£37.95	FOC
FS-800	1.8-150 MHz 6/30/150W	£115.00	FOC

JD			
JD110	1.5-150 MHz 10/100W	£13.80	FOC

MIRAGE		Inc VAT	P&P
MP2	50-150 MHz 50/500/1500W Pep	£100.00	FOC

SMC		Inc VAT	P&P
S3-30L	Mini	£8.80	FOC
T3-170L	3.5-170 MHz Relative	£14.95	FOC



SMC T3170L

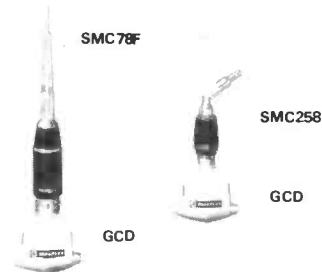
NB: PRICES INCLUDE VAT AT 15%
Carriage free by post



SMC-HS

HF, VHF, UHF ANTENNAS MOBILE VERTICALS

SMC-HS Mobile Elements, tabulated below, feature an inbuilt PL259M connector, which mates with the SO239M on any of the four standard mounts. This arrangement is ideal for easy removal - band changes, comparative test, car wash, and anti-vandal, system checks from the feed point, portable operation and for ease of garaging, etc. All models have fold over bases (either lift and lay or locking collar) except the 78B which has an inbuilt ball in case the mount must be fitted askew.



SMC258

GCD

SMC-HS MOBILE ANTENNA		Inc VAT	P&P
SMC6P2T/PL	Telescopic 2M PL259 fitting OdB $\frac{1}{2}$	£3.45	£0.60
SMC6P2T/BNC	Telescopic 2M BNC fitting OdB $\frac{1}{2}$	£5.00	£0.60
SMC2H/PL	Helical 2M PL259 fitting	£3.45	£0.60
SMC2H/BNC	Helical 2M BNC fitting	£5.00	£0.60
SMCHS430	70cm $\frac{1}{2}$ wave BNC fitting 2.5dB	£6.90	£0.60
SMC20W	2M $\frac{1}{4}$ wave OdB $\frac{1}{4}$ 1.6'	£2.30	£1.50
SMC2NE	2M $\frac{1}{4}$ wave fold 3.0dB $\frac{1}{4}$ 4.3	£6.90	£1.80
SMC2VF	2M $\frac{1}{2}$ wave fold 3.0dB $\frac{1}{4}$ 3.5	£11.50	£1.80
SMC78F	2M $\frac{1}{2}$ wave fold 4.5dB $\frac{1}{4}$ 5.7	£13.80	£2.00
SMC78B	2M $\frac{1}{2}$ wave ball 4.5dB $\frac{1}{4}$ 5.6	£13.80	£2.00
SMC78SF	2M $\frac{1}{2}$ wave short 4.7'	£13.00	£2.00
SMC88F	2M 8/8 wave 5.2dB $\frac{1}{4}$ 6.5'	£18.80	£2.00
SMC118M	Colinear 2M 11/8 wave fold 7dB $\frac{1}{4}$ 9.7'	£29.90	£2.50
SMC258	70cm 2 x $\frac{1}{2}$ fold 5.5dB $\frac{1}{4}$ 3.1'	£12.65	£1.80
SMC358	70cm 3 x $\frac{1}{2}$ fold 6.3dB $\frac{1}{4}$ 4.7'	£16.85	£1.80
SMC70N 2M	Dual band 2M 2.7dB $\frac{1}{4}$ 70cm 5.1dB $\frac{1}{4}$	£16.85	£1.80
SMCHS770	144/432 Duplexer 50W	£15.35	£1.50
SMC20SE	20M 1.72M 'fold over' 100W PEP	£17.65	£2.00
SMC15SE	15M 1.72M 'fold over' 130W PEP	£14.55	£2.00
SMC10SE	10M 1.72M 'fold over' 200W PEP	£13.80	£2.00
SMC17SE	17M 1.915M 'fold over' 200W PEP	£15.70	£2.00
SMC12SE	12M 1.915M 'fold over' 200W PEP	£14.20	£2.00
SMCGCCA	Gutter clip 4 mtrs cable	£9.95	£1.80
SMCSOCA	Cable assembly 4M	£5.00	£1.20
SMCSOCAL	Cable assembly 6M	£5.35	£1.20
SMCTMCAS	Trunk mount c/w 6M cable	£8.45	£1.80
SMCSOMM	Magnetic base c/w 4M cable	£9.95	£1.80
SMCSOWM	Adjustable wing mount base	£4.20	£0.90
SMCGDM	Gutter clip deluxe	£4.60	£1.20
SMCBSDB	Bumper strap deluxe	£8.80	£1.20
HS88BK	Bumper mounted extension for 144 MHz ant.	£18.80	£1.80

SOMM

HS770



NB: PRICES INCLUDE VAT AT 15%

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TRIO		£	c&p
TS930S	9 Band TX General Cov. Rx.	1216.00	(-)
AT930	Int. Auto A.T.U. 80-10M Bands	141.90	(-)
SP930	Ext. Speaker with audio filters	59.00	(1.50)
TS830S	160-10M Transceiver 9 Bands	697.00	(-)
TS530S	HF Transceiver	595.00	(-)
AT230	All Band ATU/Power Meter	135.00	(2.00)
SP230	External Speaker Unit	41.00	(1.50)
TS430	160-10M Transceiver	736.00	(-)
PS430S	Matching Power Supply	112.00	(3.00)
SP430	Matching Speaker	29.44	(1.50)
MB430	Mobile Mounting Bracket	11.27	(1.50)
FM430	FM Board for TS430	34.50	(1.00)
TS130S	8 Band 200W Pep Transceiver	559.00	(-)
TS130V	8 Band 20W Pep Transceiver	456.00	(-)
SP120	Base Station External Speaker	26.40	(1.50)
AT130	100W Antenna Tuner	93.00	(1.50)
PS20	AC Power Supply — TS130V	57.96	(2.50)
MC50	Dual Impedance Desk Microphone	30.00	(1.50)
MC35S	Fist Microphone 50K ohm IMP	14.70	(0.75)
MC30S	Fist Microphone 500 ohm IMP	14.70	(0.75)
LF30A	H.F. Low Pass Filter 1kW	21.00	(1.00)
TL922	160M-10M 2kW Linear (inc. valves)		p.o.a. (-)
TR9130	2M Multimode	433.00	(-)
TS9500	70cm Multimode	419.00	(-)
BO9A	Base Pinth for TR9130	39.30	(0.50)
TW4000A	2M/70cm mobile	469.00	(-)
TM201A	2M 25W mobile	269.00	(-)
TS780	2M/70cm all mode transceiver	795.00	(-)
TR2300	FM Portable	152.00	(-)
VB2300	10W Amplifier for TR2300	36.50	(1.50)
MB2	Mobile Mount for TR2300	21.00	(1.50)
TR3500	70cm Handheld	250.00	(-)
TR2500	2M Synthesised Handheld	232.00	(-)
ST2	Base Stand	51.90	(1.50)
SC4	Soft Case	13.80	(0.50)
SMC25	Speaker Mike	16.10	(1.00)
PB25	Spare Battery Pack	25.00	(1.00)
MS1	Mobile Stand	31.90	(1.00)
R600	General Coverage Receiver 150kHz - 30MHz	257.00	(-)
R2000	Gen. Cov. receiver + mem. + scan	398.00	(-)
VC10	VHF Converter to fit R2000	113.00	(-)

FDK

Multi 725X	2M FM Mobile 25W	199.00	(-)
Multi 750XX	2M Multimode	299.00	(-)

ICOM

IC751	New H.F. transceiver	969.00	(-)
IC745	H.F. 9 Band Transceiver	769.00	(-)
IC-PS20	P.S.U. for above with Speaker	155.00	(-)
IC-PS15	P.S.U.	119.00	(-)
IC2KL	H.F. Linear 500 Watts O/P	915.00	(-)
IC2KLPS	P.S.U. for above	256.00	(-)
ICAT500	1.8-30 MHz Auto A.T.U.	349.00	(-)
ICAT100	3.5-30 MHz Auto A.T.U.	249.00	(-)
IC271	2M Multimode base	571.00	(-)
IC290H	2M Multimode Mobile	433.00	(-)
IC265E	2M FM Mobile 25W	269.00	(-)
IC2E	2M Handheld	179.00	(-)
IC4E	70cm Handheld	199.00	(-)
ICBC30	Base Charger	45.00	(1.50)
ICHM9	Speaker — Microphone	15.00	(1.00)
ICML1	10 Watt 2M Booster IC2E	64.00	(1.00)
ICSM5	Desk Mic. (8 pin for Icom only)	29.00	(1.00)
ICR70	General Cov. Receiver	499.00	(-)

TELEREADERS (CW & RTTY)

TONO 550		299.00	(-)
TONO 9000		669.00	(-)

YAESU

		£	c&p
FT1	Superb H.F. Transceiver	1395.00	(-)
FT102	AM Band Transceiver	685.00	(-)
SP102	Matching Speaker	49.00	(2.00)
FC102	Matching A.T.U. 1.2kw	200.00	(2.50)
FC902	All Band A.T.U.	135.00	(1.50)
SP901	External Speaker	31.00	(1.50)
FT77	Economy H.F. Transceiver	459.00	(-)
FP700	Ext. P.S.U./Speaker	110.00	(3.00)
FC700	Antenna Tuner	85.00	(1.00)
FRG7700	200KHz-30MHz Gen. Coverage Receiver	335.00	(-)
FRG7700M	As above but with Memories	389.00	(-)
FRT7700	Antenna Tuner Unit	42.55	(1.00)
FT208R	2M FM Synthesised Handheld	199.00	(-)
FT708R	70cm FM Synthesised Handheld	209.00	(-)
NC7	Base Trickle Charger	30.60	(1.30)
NC8	Base Fast/Trickle Charger	50.60	(1.50)
NC9C	Compact Tricke Charger	8.00	(0.75)
FNB2	Spare Battery Pack	19.95	(0.75)
PA3	12 DC Adaptor	14.20	(0.75)
FT480R	2M Synthesised Multimode	399.00	(-)
FT780	70cm Synthesised Multimode (1.6MHz Shift)	315.00	(-)
FT790R	70cm Portable Multimode	299.00	(-)
FT290R	2M Portable Multimode	249.00	(-)
MMB11	Mobile Mounting Bracket	24.90	(1.00)
CSC1	Soft Carrying Case	3.85	(0.75)
NC11C	240V AC Trickle Charger	8.80	(0.75)
FL2010	Matching 10W Linear FT290R	59.00	(1.20)
Nicads	2.2 amp HR Nicads Each	2.50	(-)
FT1726R(2)	Multimode Base Stn.	675.00	(-)
FF501DX	HF Low Pass Filter 1kW	25.70	(1.00)
FSP1	Mobile External Speaker 8 ohm	11.15	(0.75)
YH55	Headphones 8 ohm	9.95	(0.75)
YH77	Lightweight Headphones 8 ohm	9.95	(0.75)
QTR24D	World Clock (Quartz)	31.00	(0.75)
YM24A	Speaker/Mic 207/208/708	18.40	(0.75)
YD148	Stand Mic Dual Imp 4 Pin Plug	22.60	(1.50)
YM38	Stand Mic Dual Imp 8 pin	27.20	(1.50)

HEADPHONES

HS4	Trio economy	11.27	(1.00)
HS5	Trio deluxe	23.00	(1.00)
HS6	Trio lightweight	16.79	(0.75)
YH55	Yaesu standard	9.95	(0.75)
YH77	Yaesu lightweight	9.95	(0.75)

TV INTERFERENCE AIDS

Ferrite Rings 1 1/2" dia. per pair	0.80	(0.20)	
Toroid Filter TV down lead	2.50	(0.50)	
HPF1	High Pass Filter with braid breaker	6.30	(0.50)
BB1	Braid Breaker (very low insertion loss)	6.75	(-)
TNF2	Tuned Notch Filter (State frequency of interference)	7.50	(0.50)
HPF2	High Pass Filter with tuned notch filter (State frequency of interference)	6.40	(0.50)
Trio Low Pass Filter LF30A 1kW	21.00	(1.00)	
Yaesu Low Pass Filter FF501DX 1kW	25.70	(1.00)	
LP30 Low Pass Filter	3.95	(0.50)	

SX 200N



VHF-UHF receiver £299.00

DATONG D70 MORSE TUTOR



£56.35

DATONG PRODUCTS

		£	c&p
SRB2	Auto Wookpecker blanker	86.25	(-)
PC1	Gen. Cov. Converter HF on 2M	137.42	(-)
VLF	Very Low Frequency Converter	29.90	(-)
FL1	Frequency Agile Converter	79.35	(-)
FL2	Multi-mode Audio Filter	89.70	(-)
FL3	Audio Filter and Notch	129.37	(-)
ANF	Auto Notch Filter	67.85	(-)
ASP	Auto RF Speech Clipper (Trio or Yaesu 4 pin plug)	82.80	(-)
D75	Manually controlled RF Speech Clipper	56.35	(-)
RFC/M	RF Speech Clipper Module	29.90	(-)
D70	Morse Tutor	56.35	(-)
AD270	Indoor Active Antenna	47.15	(-)
AD370	Outdoor Active Antenna	64.40	(-)
MK	Keyboard Morse Sender	137.42	(-)
Codecall	Selective Calling Device (Switch prog)	33.92	(-)
RFA	Wideband Preamplifier	33.92	(-)
DC144/28	2 Metre to 28MHz converter	39.67	(-)
MPU	Mains Power Unit	6.90	(-)

DUMMY LOADS

DL30	PL259 30W Max 150MHz	3.95	(0.50)
CT15A	WELZ PL259 50W Max 450MHz	7.95	(0.75)
CT15N	WELZ N connector 50W Max 450MHz	13.95	(0.75)
T100	SO239 100W Max 500MHz	22.95	(0.75)
T200	SO239 200W Max 500MHz	34.00	(0.75)
DL600	SO239 600W Max 350MHz	34.00	(1.50)
CT300	WELZ SO239 1kW Max 250MHz	49.50	(2.00)

COAXIAL SWITCHES

-	2 Way Toggle Switch (HF/2M)	6.00	(0.50)
SA450	2 Way Diecast - SO239 (500 MHz)	10.00	(0.75)
SA450N	2 Way Diecast - N plugs (500 MHz)	12.95	(0.75)
CH20A	2 Way WELZ - SO239 (900 MHz)	17.95	(1.00)
CH20N	2 Way WELZ - N plugs (900 MHz)	31.95	(1.00)
-	Drae 3Way (spec to 450MHz)	15.40	(0.50)
-	5 Way Western Rotary (HF)	15.95	(1.00)
-	3 Way LAR Rotary (HF)	19.95	(1.25)

POWER SUPPLIES

DRAE	4 AMP	30.75	(1.50)	12 AMP	74.00	(2.00)
	6 AMP	49.00	(2.00)	24 AMP	105.00	(3.00)
BNO5	6 AMP	48.00	(-)	25 AMP	125.00	(-)
	12 AMP	86.00	(-)	40 AMP	225.00	(-)

ANTENNA BITS

H1-Q	Balun 1:1 5kW Pep (PL259 Fitting)	9.95	(0.75)
W2AU	Unadilla 4:1 Balun	16.95	(1.20)
7.1/14/21	MHz Unadilla Traps — Pr.	16.95	(1.20)
7.1MHz	Rat Traps — Epoxy — Pr.	8.95	(1.50)
T Piece	Polyprop Dipole Centre	1.50	(0.30)
	Polyprop Strain Insulators	0.40	(0.10)
	Small Egg Insulators	0.40	(0.10)
	Large Egg Insulators	0.50	(0.10)
	75 ohm Twin Feeder — Light Duty — Per Metre	0.16	(0.04)
	300ohm Twin Feeder — Per Metre	0.14	(0.04)
URM67	Low Loss 50 ohm Coax — Per Metre	0.60	(0.20)
UR76	50 ohm Coax — Per Metre	0.25	(0.05)
UR70	ohm Coax — Per Metre	0.30	(0.05)
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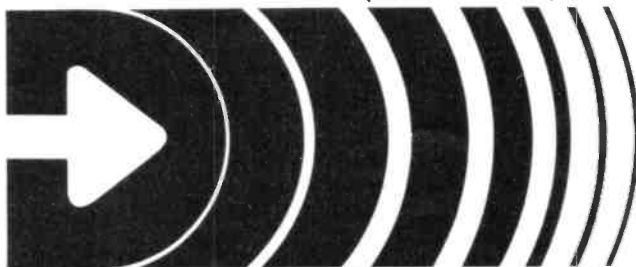


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DATONG ELECTRONICS LIMITED

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ADVANCE INFORMATION
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 ★ Continuous coverage 25-550MHz (no gaps).
 ★ Receive modes of AM (for VHF/UHF airband), FM narrow (for amateur radio, CB, business radio) and FM wide (for broadcast and TV FM).
 ★ Digital display of frequency, mode and memory channel.
 ★ Memory channels which store frequency and mode.
 ★ Full range of scan facilities.
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D70 Morse Tutor	£ 56.35
AD370 Active Antenna (outdoor)	£ 64.40
AD270 Active Antenna (indoor)	£ 47.15
2M Converter	£ 39.67
Keyboard Morse Sender	£ 137.42

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Diawa DR7500X	£ 113.00
DR7500R	£ 125.00
DR7600X	£ 141.00
DR7600R	£ 156.00

KENPRO

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KR600RC	£ 154.10
KR500 Elevation Rotator	£ 97.75

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Welz SP200PWR/SWR Meter	£ 61.95
SP300	£ 85.00
SP400	£ 61.95
SP10X	£ 21.95
SP15M	£ 32.00
SP45M	£ 45.00
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Global SWL AT1000 Tuner	£ 34.95
SWR25	£ 12.75
HK 708 Morse Keys	£ 13.50
Diawa 2 way Ant Switch	£ 13.95
SWL 2 way Ant Switch	£ 4.75
V2 2 way Ant Switch	£ 6.00
V3 3 way Ant Switch	£ 10.00
V4 4 way Ant Switch	£ 11.00
DL50 500hm 50 watt D. Load	£ 6.50
DL300 500hm 300 watt D. Load	£ 20.70
DL600 500hm 600 watt D. Load	£ 29.50
DL1000 500hm 1 KW D Load	£ 43.70
DL150 1 KW D Load Wattmeter	£ 56.00
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TH3MK3 3EI Tribander Beam	£ 274.85
TH3JNR 3EI Tribander Beam	£ 202.40
TH6DX Tribander Beam	£ 396.75
205BA 5Element 20m Beam	£ 396.00
Explorer 14. Tribander	£ 325.00

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HQ11 Minibeam 10-15-20m	£ 139.00
C4 3Band Vertical	£ 59.00

T.E.T.

HB23SP 2EL Tribander	£ 135.60
HB23M Triband Minibeam	£ 169.00
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MV58H 5Band Vertical	£ 63.95
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G4MH

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9 Element 2m Yagi	£ 17.71
17 Element 2m Yagi	£ 37.66
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21 Element 432MHz Yagi	£ 29.67

Welz Diamond Antennas

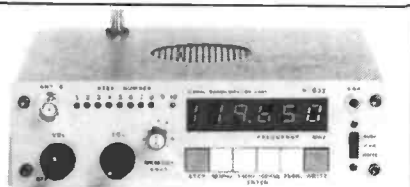
DP CP5 Vertical	£ 115.00
KB105 Vertical	£ 79.00
DP CP4 Vertical	£ 89.00

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GPV-7.70cm Base Station Co-Linear	£ 29.00
GPV 720 144/432MHz dual base station	£ 33.90
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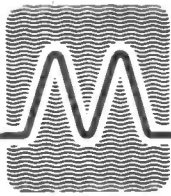
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LW5 5EI 2m Yagi	£ 14.37
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LW16 16EI 2m Yagi	£ 35.08
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D5 2m Double 5 Element Slot Yagi	£ 25.30
D8 2m Double 8 Element Slot Yagi	£ 34.50
Q4 2m 4 Element 2m Quad	£ 29.33
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Q8 2m 8 Element 2m Quad	£ 44.85
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 £ 159.40 inc. VAT

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In this issue of *Short Wave Magazine* we are briefly describing our entire range of top quality British-made products, so that our regular customers and the many newcomers to amateur radio can see for themselves the extensive range we have to offer.

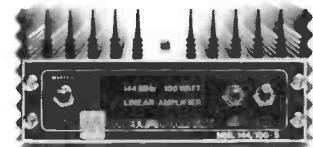
Microwave Modules, formed in 1969, is a wholly independent British company manufacturing quality products to professional standards solely for the amateur market, and it is this dedication together with strong customer loyalty that has enabled us to go from strength to strength in expanding and diversifying our product range.

Please note the addition of various new products (marked ●) which are now in full production. A full data sheet on each product is available on request.



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THE ENTIRE RANGE



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MM1001KB	Morse keyboard	135.00		C
MM2001	RTTY to TV converter	189.00		B
MM4001KB	RTTY transceiver with keyboard	299.00		D
MMS1	THE MORSETALKER - Speaking Morse Tutor	115.00		B
MMS2	Advanced Morse Trainer	169.00		B

AMATEUR TELEVISION PRODUCTS

MMC435/51	70cm ATV converter, VHF output	37.90		A
MMC435/600	70cm ATV converter, UHF output	29.90		A
MTV435	70cm ATV 20 watt transmitter	159.95		B

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		Price £	Post inc. VAT	Rate
MMT28/144	10m linear transverter, 2m input, 10w output	129.95		B
MMT70/28	4m linear transverter, 10m input, 10w output	129.95		B
MMT70/144	4m linear transverter, 2m input, 10w output	129.95		B
MMT144/28	2m linear transverter, 10m input, 10w output	109.95		B
MMT432/28-S	70cm linear transverter, 10m input, 10w output	159.95		B
MMT432/144-R	70cm linear transverter, 2m input, 10w output	184.00		D
● MMT1296/144	23cm linear transverter, 2m input, 2w output	● 199.00		D
● MMX1268/144	1268MHz Satellite Up Converter, 2w output	● 135.00		B

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MMDP1	Frequency counter amplifier/probe	14.90		A
MMF144	2m bandpass filter	11.90		A
MMF432	70cm bandpass filter	11.90		A
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MMR15/10	15dB 10watt in-line attenuator	14.50		A
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MML70/50-S	4m 50 watt linear/preamp, switchable	92.00		B
MML70/100-S	4m 100 watt linear/preamp, switchable	149.95		C
MML144/30-LS	2m 30 watt linear/preamp, 1/3w i/p, switchable	69.95		B
MML144/50-S	2m 50 watt linear/preamp, switchable	92.00		B
MML144/100-S	2m 100 watt linear/preamp, 10w i/p, switchable	149.95		C
● MML144/100-HS	2m 100watt linear/preamp, 25w i/p, switchable	● 149.95		C
● MML144/100-LS	2m 100 watt linear/preamp, 1/3w i/p, switchable	● 169.95		C
MML432/30-L	70cm 30 watt linear/preamp, 1/3w i/p	129.95		C
MML432/50	70cm 50 watt linear/preamp, 10w i/p	129.95		C
MML432/100	70cm 100 watt linear, 10w i/p	245.00		D

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		Price £	Post inc. VAT	Rate
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MMA144V	2m RF switched low noise preamp, 100w capacity	34.90		A
MMA1296	23cm bipolar low noise preamp	37.90		A
● MMG1296	23cm GASFET low noise preamp	● 59.95		B
● MMG1691	1691MHz Meteosat GASFET preamp	● 92.00		B

RECEIVE CONVERTERS

		Price £	Post inc. VAT	Rate
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MMC28/144	10m to 2m up converter	29.90		A
MMC50/28	6m to 10m down converter	29.90		A
MMC70/28	4m to 10m down converter	29.90		A
MMC70/28LO	4m to 10m down converter with 42 MHz LO output	32.90		A
MMC144/28	2m to 10m down converter	29.90		A
MMC144/28LO	2m to 10m down converter with 116 MHz LO output	32.90		A
MMC432/28-S	70cm to 10m down converter	37.90		A
MMC432/144-S	70cm to 2m down converter	37.90		A
MMC1296/28	23cm to 10m down converter	34.90		A
MMK1296/144	23cm to 2m down converter, GASFET preamp	79.95		B
MMK1691/137.5	1691 MHz Meteosat converter	145.00		B

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SPECIFICATION

144-148MHz coverage; 5kHz or 100Hz steps; power output of 20 watts or 1 watt; receiver sensitivity 0.3dB for 20dB; Automatic tone burst; 600kHz positive and negative shifts; dual programmable vfo; up/down mic. control; band scanning facility; 70cms operation with matching Expander 430; clear LED display and bar S-meter; noise blanker circuit; receiver incremental tuning control; RF gain control; complete with mobile bracket, mic. base stand and all hardware.



M750XX

20w FM - SSB - CW

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inc. VAT

AZDEN
PCS 4000
25W 2M FM
TRANSCEIVER



- ★ Size 2" x 5 1/2" x 6 3/4"
- ★ Coverage 144-146MHz
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- ★ 16 memories in 2 banks
- ★ Remote control mic.
- ★ Comprehensive scanning
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ULTRA SENSITIVE
HIGH POWER**

NEW!



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TRANSCEIVER**

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CD6000

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**RX 40
VHF/FM
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(GB3SWM)

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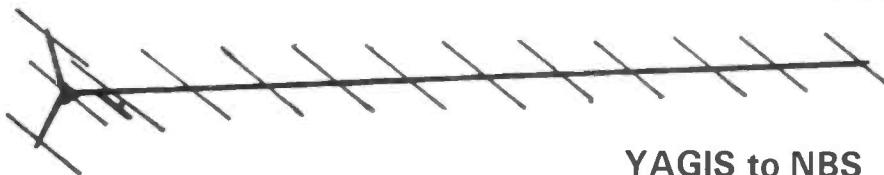
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The
SHORT WAVE
Magazine

EDITORIAL

Radio Interference Service

It is with considerable alarm that we note the proposal that British Telecom should discontinue its Interference Service. This, if it comes to pass, will be nothing short of a disaster — can nothing be done to make the authorities see sense? An increased charge rate would be infinitely preferable to the complete cessation of a vital service, if the problem is one of money.

Congratulations are due to Dr. John Allaway, G3FKM, on the award to him of the Golden Needle by the Austrian national radio society, OVSV. A well-deserved honour indeed, recognising his work for Amateur Radio over many years.

John Allaway
G3KFE.

WORLD-WIDE COMMUNICATION

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

THIS month is the time when we should be reporting the autumnal lift in conditions; on the lower bands it seems to have happened according to the book, but up until the end of the first week in October there wasn't much sign of it happening on the HF Bands. Perhaps someone's changed the Laws of Nature and forgotten to advise us!

Last month, for some reason, quite a lot of mail landed too late to be taken in, even though it was posted in plenty of time to meet the deadline. We can but apologise to readers, thank the originators, and take them all in to this lot. Oh, and shoot a postman or two, to encourage the others!

Top Band

Things are very definitely hopping; the faithful have been scrapping over the bodies of various ZL stations, JAs are known to have been heard, and there is at least one known case of a ZL having been worked in the *evening* opening. There's been some other DX about, too, come to think of it.

G4PYR (Solihull) seems to have operated on all bands, but as far as One-Sixty goes he has stuck to the inter-G signals, largely because of the troublesome static problems. However, he has also managed to get on other bands, of which more anon.

G2HKU (Sheppey) says it's been a poor month anyway; he has been busy in other unspecified directions. He did, however, look over his shoulder and spot PAOPN on SSB, plus UK2GKB, YU4YA, GW3HCL, OZ1W, and G6ZO/EA6.

Next we turn to G3OUC (Newbury) who writes to say that his home-brew all solid-state rig is now working well, the reports in general seeming to say it is better than its predecessor. The SSB is generated at 455 kHz by way of a home-made filter, and eventually it is intended to make it operate on Eighty too — but that awaits a modification to the home-station vertical. On a totally different tack, Pat has a problem of a nastier sort by way of a local telephone system which seems to have digital characteristics and a dialling device, followed by an FM signal; the mess is (of course!) audible all over the Top Band allocation. Pat did think of sitting a carrier on 1935 kHz where the thing lurks, but as there is a commercial station on that spot he is a bit chary. We would suggest that a spot of D/F activity is called for, followed by a strong complaint that the thing is causing interference and a threat to call in the Interference people. That could be

enough — and after all, it is an illegal phone anyway, so nothing can be lost.

SWL David Whitaker in Harrogate has all the connections to be sure he knows about everything that goes on, and he writes to mention that he heard ZL2BT at 0630z on October 3; he says that VP8ANT is known to be on and that A92NH was scheduled to 'show' on the nights of the first two days of the Doncaster Show, while he also found 7X5AB on Top Band SSB.

Working ZL on Top Band is a matter of very careful timing and much propagation knowledge. For example, it is far easier to work ZL from U.K. in the mornings from the west part of the country than it is from the east; and going a bit further east, we find the PAs can only do it through their evening openings, which is of course by the short path. By implication there is an area of the North Sea where there isn't a grey-line path in either direction, making a ZL contact impossible. But then, JA would be considered by most as an impossible path for Top Band, but we do know that during the past month at least one JA has broken through to audibility for long enough to have been workable provided the propagation was two-way. Another indication of the declining sunspot level and its effect on Top Band is that paths are remaining open on the more mundane DX signals for several minutes longer after dawn in the mornings, as compared with the previous two seasons.

G3BDQ (Hastings) sent his first letter on October 3, indicating his QSO with ZL2BT. This was the first morning of the skeds, so John was understandably chuffed. On October 5, G3BDQ worked ZL2BT again, and then, at 1837z, had an unexpected evening QSO with ZL1AH. From G3BDQ's more easterly QTH, the openings only last about three minutes, but for G4AKY (Harlow) the available time is if anything even less.

Which leads us, naturally, to G4AKY (Harlow); Dave's log for the month was in for this column before the ZL situation has for him been settled by a QSO. He had in fact heard the ZL, and indeed been told by GW3YDX that the ZL was calling G4AKY! The problem, in essence, was that G3BDQ's signal was all but zero-beat but on the 'wrong' side for the G4AKY rig to notch him out, plus the sad situation that even allowing for the clicks on G3BDQ's signal there was a little ripple on the G3BDQ signal which made going to dead-zero-beat an unusual but impossible option for G4AKY — so he lost his ZL

QSO, and a little verbal (is it verbal on CW?) back-chat occurred as the ZL faded away. Having heard both sides of the argument *and* the actual event, all your scribe can say is that the G3BDQ signal was clicky and had a ripple on the carrier, G4AKY had 'hard' keying but no ripple. However, we digress from our reports. Dave found EA8AK, and the evening before SV0AA was noted in full cry after 4X4NJ; RF6FFW in Tbilisi was a good signal, while, again SV0AA hovered in the background after various ploys of his own. Then UA9FFD, G6ZY/EA6 (showing the hand has not lost its cunning), UL7MAN, C30ANN for Andorra, UA9MS, TF3KG, a hearing of UA0AHY at 2245 on September 13, UK9CAA, HZ1AB, VE1BVL, KA1PE, SV0AA, W2FZY, W2BXA, and a questioned WA3EUL contact — which was settled by another one a day later; GI3OQR (passing on the word that VK9NS was about each morning), K1ZM, CY0SPI and WA2SPL.

A telephone call from GW3YDX brought some interesting comments; Ron has been working the ZLs with some success from his more westerly QTH. He wrote to say that the proposal to donate a trophy in memory of Ed, G3XTJ, whose obituary we carried last month, is being actively considered by the relevant echelons of RSGB. Should they agree to the idea of such a trophy, then Ron will pass the word to us and any one else who can make it public, so that we can ask for donations. Please note, however, no donations *until* it is known that RSGB will accept, and the nature of such a trophy has been determined.

Eighty

G2NJ (Peterborough) noted in August a marked increase in the number of new calls on Eighty, and some home-brew QRP signals of note, too. For instance Nick mentions G4ELD/A using a watt and a folded dipole from under a tree in the Poly Sports Ground, Leeds; G4RAR in Derby was a good one too. Not to forget G2CNN/A, this time at Brill, near Thame, and apparently planning some interesting out-and-about exercises over the next few months. Turning to September, we notice EA2AWV/MM as a good signal on CW. G3BEX/P was operating with his aerial propped up by a delta-wing kite, while G2CNN/A was snagged at High Easter, passing the word that he was going to be in Inverness for three months and would be taking the Big Rig with him. G4/KL7PJ was over for the FOC dinner, and used to

sign G5DOK; he was visiting G6ZO. The TOPS CW club call, GW6AQ, has been around on 3508 kHz in a net, with GW8WJ as the net controller. Other contacts included G3HCN using a ten-watt crystal oscillator with a fine note, G8PG in Greasby, who was using one watt — and a steady old signal throughout a full hour's QSO; and of course the Sevenoaks School lads, G4RIZ and G4RWB, both using home-brew to give Nick a couple of good contacts.

'Our man in Harrogate', D. A. Whitaker, heard UI8ZAC around midnight GMT, at 0100 A92BW, at 0200 JW5NM, at 0400 6Y5DA, at 0500 VP9AD. CY0SPI, 6Y5IC, YN1MAT and TG9NX; and at 0600 there were OA4OS, V2AN, TF5TP, ZL4OY/C and CY0SPI. Evenings yielded VS5DD and TL8CK around 2100, and UK6LK an hour later.

A first time report form G4SXE (Burton-on-Trent) is very welcome; the more so as his equipment is a QRP rig with just two watts DC input, which was bought at the local club bring-and-buy. This cost was neatly covered by selling the Datong Morse tutor to another aspirant to G4-dom. Also in the station is a Trio JR-500S receiver, which is normally netted to the transceiver. On the aerial side there is an inverted-L quarter-wave at about twenty feet, and just prior to writing Brian ran a wire down the garden with the inboard end tacked to the earth stake, to make a considerable improvement. The first contact with this was with GM3DZB in Banff, some 350 miles for a 599 report, in mid-afternoon on a fairly flat band. During September, Brian notes his best as being CW contacts with GM3YOR, GM3DZB, ON5NO, DK7PE, DL9FAV, OZ1DVV, UK2GAB, UP2BKZ and SP3FHV. It just goes to prove, as we have said so often, that you don't have to spend a mint of money to get on the air and enjoy QSOs. Let's hope we hear more of the progress of G4SXE.

Now we have two letters from G4LDS (Chelmsford); the first indicates that progress on the linear while the rig was away for service came to a stop in favour of just lying in the sun! However some time was spent on a demonstration station for the local Boys Brigade, and aerial work was also done. Chris says, that NL7K will be looking for Gs this winter around 3795 kHz and asks that the top-end of Eighty be kept for DX working rather than being soaked up by local QSOs — one hopes we don't find ourselves up against the problem we had sometime back when attempts to work DX on Eighty were hampered by local natterers 'asserting their rights' by QRM-ing the distant stations and those seeking to work them. Chris' second letter mentions that his inverted-V for the lower bands hasn't worked out as well as had been hoped, but that he was going to add a third section to the tower to take it up to 60 feet at which

height the inverted-V should do rather better. Meantime G4LDS used SSB to work C30ALL, 4U1ITU, OK1ARS, GU4/DJ2YB, GU5ENK, all for new ones on the band.

New Bands

Only reports on 10 MHz, although our own observations show 18 and 24 MHz to be quite interesting if observed consistently and patiently. G4PYR (Shirley) says he is hoping to get something up and send in a report on the band next time; always providing that the RF emitted doesn't accidentally blast every local stereo into orbit along with Oscar 10!



A special-event station at Plymouth in Massachusetts, WA1NPO, will be operated on November 24th — America's Thanksgiving Day — from a site overlooking a replica of the *Mayflower* at Plimoth Plantation, which is a living museum depicting life as it was in the early days of America's history. On the U.K. side, a complementary station, GB2PRC, will be operated by Plymouth Radio Club from Plymouth Hoe in Devon, from which the original *Mayflower* set sail in 1620. The operating schedule at WA1NPO will be: 14180 or 14255 kHz from 1300 to 1600, and 14355 kHz from 1600 to 2000; 21260 kHz from 1300 to 1430, and 21385 kHz from 1730 to 2000. All times GMT. WA1NPO will welcome calls from any U.K. station, and a certificate featuring the *Mayflower* will be available for confirmed contacts. The photograph shows members of the Whitman A.R.C. hoisting the ARRI flag on the beam antenna in preparation for WA1NPO, with the *Mayflower* in the background. Left to right: Mike WA1FSD, Ray W1TC, Ed KA1CZS, Jim WB1CNM and Arnie KJ1X.

photo and information: G3ADV

For 10 MHz, new reporter G4NJH (Nottingham) says he manages to tune up a trap dipole for 40/80m. with the help of an S.E.M. Transmatch; but it is proposed to put up something "a bit better" in the near future as Jeremy sees this as a very popular band in the longer-term. On a different tack, G4NJH took up your conductor on the editorial last time about operating practices, and implied an appeal to remember the case of the foreign station who has very little English and has to struggle to make himself understood; agreed — it must be realised that to try and convey meaning when one has to stop and think about each and every word *must*

slow things down somewhat, and we should therefore be patient. That sort of slowness is not liddery in any way, but a chap doing his best.

G3RJV was the inspiration for G3SFZ (Ealing) to get out the soldering iron and make a QRP rig for 10 MHz, using three separate crystals, VXO controlled, three transistors, three watts RF output, and a dipole aerial. So far the result, with time on his hands, has been a delight to John; he has worked some 37 countries to date, and made some 100 QSOs on the band. Next stop, he hopes, is to make a DXCC QRP 10 MHz only — but for that some more countries will have to get on the band! An interesting comment from G3SFZ is that he finds it a very difficult band to work due to conditions; Forty CW is paradise by comparison!

Forty

Here we have an unexpected bonus in the form of a few notes from G3NOF (Yeovil) — nice to see Don back in top gear. The VKs and ZLs, G3NOF notes, have come in from 0630-0800, peaking as it gets dark at their end. Heard but not worked were ZK9RW, JA5JBC, TR8IG; around 2300z the South Americans were heard, and QSOs were booked in with CE6COR, EA8AHB, ED9EA, FO0V/FC, LA1EKO/P on an oil platform in the North Sea, LU1FJH, OH2AQ/0, PT7ZE, PY2HDY, PY5NW, PY8ZWM, SV8RV, UA9SCT, UK9CAA, UK9HTT, VK2WC, VK3HW, VK3RE, VK3XI, VK4TM, VK5BC, VK5ARK, VK5MS, VK0GC, VP8AEN, WP4CBB, YS9EW, YV5BQS, YV5HNI, ZL2BT, ZL4AV, ZL4BO, ZL4IG, ZL4ND, 4U1ITU and 4Z4DX — all of course on SSB.

G4LDS in his first letter mentions C30LA1, G4LJF/LA9, ON7XC, GM3GCL, G3YXJ, GB2WW1, GJ3MWR/MM; in the second letter, covering the September period, it was only a list of Europeans and G stations, but relieved by a first-time hearing of PY.

David Whitaker next; David offers from his mornings VP2KM, 6Y5MC, T77V, 3V8DC, ZP5JCY, TG9VT, LU1FJH, CE3DNP, CE5CV, ZK2RP, FK0AQ, VP2MF, VP9JT, 5K2LR, VE7ZG and VE7SZ, progressively from 0500z through to 0700z. Turning to the evenings, at 1900z there was 5Z4WD, then on the way to 2200 came UM8MDX, TR8GM, CY0SPI, UK0AAB, UD6DFO, VK6HD, CN8CC, VP8AEN, 7X5AB, 4K1GDW (South Shetlands) for a nice haul from a Trio JR-310 and some 180 feet of wire.

As we have already commented, G4NJH is equipped to tackle most things, but Jeremy seems to have voted on Forty with his feet — just two SSB contacts, with YO5CBX, and Y26XD.

Another one to more or less disregard the band was G4PYR, who says he

lowered his 7 MHz dipole carefully, took a pair of cutters and turned it into a 14 MHz one — then hoisted it back up and applied it to its new duties. One could almost wonder if the band had been eating garlic!

Comments

Various little snippets fall to be noted. G3NYV in Cannock writes to point out that OH2LP will be QRV from The Gambia between 22 and 27 November, and signing C53V; in addition, C53V will be operating in the CQ WW CW contest on 3.5 MHz single-op, and C53T will be trying a 28 MHz single-op entry in the same contest if the bands will be obliging enough. Thanks G3NYV for passing this on from OH2LP himself.

From G4BUE we have details of the G-QRP Club activity weekends for 1984, of which the first one is over March 17/18. However, we have already mentioned these, and we suggest that anyone interested gets in touch with the G-QRP Club membership secretary, Fred Garratt, G4HOM, 47 Tilshead Close, Druids Heath, Birmingham B14 5LT.

W1WY's Contest Calendar notes the DARC WAE RTTY contest over the weekend November 12/13, with rules the same as the WAE CW and Phone contests held over August and September last, save that contacts in this one are permitted with stations in other continents. Logs should be on the forms available from Klaus Zielski, DF7FB, PO Box 1147, D-6455 Erlensee, West Germany, to whom also the entries should be addressed and mailed before December 15.

The CQ WW DX Contest CW leg is on November 26/27, the Phone leg being over October 29/30. Mailing deadlines for the logs are: Phone by December 1 to N6AR, and CW by January 15 to K3EST, or for either contest to *CQ Magazine*, 76 North Broadway, Hicksville, NY 11801, U.S.A., indicating which contest on the envelope.

Still with W1WY, we have 1982's contest CW leg results. The overall winner outside U.S.A. was 9Y4VT in the all-band, with Top Dog in the multi-multi category being P42E. Not a G callsign anywhere among the winners in any category in this one, though there were one or two entries with quite good scores.

Turning now to the crystal ball, we look at *DXNS* on the one hand and *The DX Bulletin* on the other.

Firstly there seems to have been a split vote in the DXAC as to continuing retention of Spratly as a country for DXCC, but a ruling can be expected 'ere long. That CY0SPI station was on St. Paul, the call being a very-last minute change; they rolled out the banner on all bands, with a particularly good signal on 7 MHz. The XF4AA and XF0QQ stations some have noted are, in the view of *TDXB*, almost certainly bogus; the give-away is the "QSL via W2OY" bit, the latter having been a silent key for a while now.

If you are short of Zone 23 for WAZ then it is worth noting that U0Y is the call to listen out for, as the only other chance of Zone 23 would be by way of a JT — not very likely on the lower bands. *TDXB* seems to think U0Y is likely to be around.

VK9NS and his Kermadec expedition are still progressing with their preparations for next February; and it is worth noting that VK9NS's 14.220 kHz net is gathering steam again at 0700z on Saturdays, with a possible change to daily in the offing. On a different tack, the OH exercise to try and train Albanian amateurs and get things legalised is mentioned in *TDXB*, and there is even a picture of OH2NB with the Albanian Radio Sport Director, a prospective ZA amateur and an interpreter. While we hope this is a hint of good things to come, we still have personal doubts, particularly as *DXNS* has some notes from DJ0UJ and DL7FT which indicate they got the frozen mitt from the ZA authorities to a proposed operation this autumn.

Over to *DXNS* now and we note that VE7BC has been worked on SSB while he was at BY1PK; and there are mutterings of various other stations who are going to China and have the word of possible operating on SSB. Rumours of a Desecheo operation in the early part of 1984 abound, and noises are still being made as to the DXCC status of the recent Pribilof Is. expedition. Oh, and by the time you get this, Malpelo will have come and gone! Just after you get this, you should be on the lookout for Jarvis Is. Again we hear that the word is in the DXAC for this to be made a separate country — the argument being that Jarvis and Palmyra are separated by the new country of Kiribati. Work 'em first, and wait till the argument is resolved!

Two awards next; The Malaysian club, MARTS, offers those who have 'WCY' fever to get a certificate for it! The rules are simple: work seven stations in 9M2 9M6, 9M8 during December 1983. Send certificated copies of your log sheets (two active amateurs to certify), and three IRCs. The classes are for Phone, CW or mixed-mode, to your own choice, and the address is: MARTS, PO Box 777, Kuala Lumpur, West Malaysia.

Now from SKA we have the Helvetia Award; for this you must produce QSLs from all 26 cantons and half-cantons since 1979. No cross-mode or cross-band contacts are valid. Four classes: all-mode mixed, all CW, all RTTY, or all SS/TV. QSLs to clearly show the canton and should go together with a summary sheet giving callsign, location, date, band and mode, to HB9MX, Kurt Bindschedler, Strahleggweg 28, 8400 Winterthur, Switzerland. Include enough IRCs to cover the return of the cards, but the certificate is free.

TOPS CW Activity Contest this year is over the weekend December 3/4, 1800z to

1800z — indeed it is always the first weekend in December. A single-operator must take one break of seven hours and clearly show in the log; multi-operator stations can go the full period. Frequencies to be in the area 3.500 to 3.585 MHz CW but the lowest 12 kHz will be reserved for DX working, and anyone in the contest noted working the same continent in that segment will have the points deducted. Send CW TAC or CQ QMF, exchange the usual six-digit number plus, if you are TOPS, your membership number. Score one point for own country, another country same continent two points, other continent six points. Two bonus points for QSOs with TOPS members. The classes are for single operators, multi-operators, and QRP single-op. Logs to go to Bertil Arting, SM3VE, Bergesvegan 26, S-823-00, Kilafors, Sweden, not later than January 31, 1984.

Up Higher

To 28 MHz in fact! G2ADZ (Chesington) comes in now; he reckons — as indeed did DXNS — that September 4 was the big event. It started quietly enough, with a QSO with a YU who kept calling CQ with no takers that morning, but it livened up during the evening and from 2100z to 0030 on 5th it was just like the peak. Bill noted all W call areas, Central America, with PZ1DV popping up, and then right out of the blue FO8FO appeared working Ws; and of course the PY, LU and small fry were about too — but what a pity there wasn't more activity to enjoy the conditions! G2ADZ's CW worked out to VK6SM, CX7BBB, 3B8FK/3B9, CE3ZW, CE31YU, ZS, ZV, ZS6PT, ZL1DH, EA8CL with one watt, YB5ASO, CE3WD, lots of W, PY, LU, FO8FO, PZ1DV, and more.

Another one to be a bit startled by an unexpected opening was G2HKU, who tripped over the CW coming from WORLI one night at 2200z and promptly hooked him. However, in Ted's area the band is still infested with expatriate CB-ers, and Ted doesn't think a lot either of their language or their choice of subjects. Snap!

G6QQ (Hoveton) is now swinging to more SSB operation as he seems to have developed the knack of making the blighters rise; his rig is an FT-102 and a Cushcraft R3 vertical. Thus, on Ten, we see SSB to PY5EG, 4X6IQ, ZS6BCR, and JY5ZM, with CW put in for PY2CY.

Our tame 28 MHz specialist is G4HZW (Knutsford) and as usual he is using SSB at ex-citer level to a two-element Quad. During September there were odd openings to all sorts of places on most days for those who were able to take advantage; Tony offers 3B9FK, N2BZQ/4X, 4X6CP, VE3MQH/4U, 5Z4KA, 9J2JN, CE1DLL, CE2HZ, CE3BUC, CE3DNV, CE7BAL/3, E19DS, G4SKJ/MM, J28DM, UA1-6, UA9FHJ, UA9SEW, W1-5, W9, VE3NBL, VP8ZV, LU2HCO,

LU5FGG, LU6DSI, LU2EPE, LU1HTF, ZP0MJU, ZP5RFN, ZY5EG, ZS5IV and ZS6CCA. A pity space doesn't permit Tony's tale of the five-element Quad being taken to the /P site atop a Land Rover; quite comic!

G3NOF says he found the band would open N-S on most days, usually around 1500-1800z; Don worked J28DN, K1RM, K4YT/ZS6, TL8CK, TL8DC, VP8AQA (Antarctica), Z21GO, ZS1HE, ZS4KW, ZS6BUR, ZS6BWE, ZS6MK, ZY5EG, 3D6AW and 7Q7LW.

G4LDS says the band is not quite so plagued with CBQRM, and so he was able to work CE3DNP, VP8JP, ZY5EG, ZS6WB, ZS1U, KC1F, N1AU and LU5FGG.

15/20 Metres

We must lump these together as your scribe's garrulity has run away with the space . . . G2ADZ notes mainly the frustration of those who don't come back, but he did get out to DK6NJ/ST2, TA1UA, KJ9W/KS2 (QSL via K9XR), XU1CK, HL1AQ; BY1PK and BY8AA both went QRT just as the band was peaking them up!

"CDXN" deadlines for the next three months:

December issue — November 3rd
 January issue — December 8th
 February issue — January 5th

Please be sure to note these dates

G4PYR says he did most execution on Twenty; CW saw to VK3BXN, VK3DNP, UL7WH, TA1MN, UA9AJC, VE4FA, PY1ECL, JA6PA, W8EY, W7AYJ, while SSB was used for contacts with 9V1VP, HZ1AB, G4JVG/OH0/OJ0, 5N9GM, 5H3BH, CN9CN, G4JMB/CT3, G4LJF/EA9, EK5A (Ukraine), R2PR, KH6BB, OX3WJ, PP8DD, OY5J, 9K2FX, G4DUW/DU1, AP2MQ, leaving 21 MHz clear for just working European stations!

G4NJH uses mainly SSB, but some CW; on Twenty we see VE2DZ, VE2AKW, V2AO, CN9JM, VK3AYE, FY7YE/FM7, C6ANV, VS6DO, F0AHY/P/FC, VE3BWR, VE6EO, VE7ALC, YV4AYK, VS6DO again, and EI6AK, while 21 MHz accounted for ZS2RJ, 5B4NC, ED8CGP, 9L1SL, 9J2WS, VE3CNE, VE3BSA, VE3NEI, VE7GI, VE7DG, a UB5 on CW, VE4FA, 9V0OK, 4Z4WCY/P5, ZS5AM, 5N8AM, a string of JAs, J28DX, VK4RK short-path, lots more W-VE, H44DX (Jeremy waited an hour for this one!) 3V8CH and EI6AK.

Twenty was the one for G2HKU, with SSB to ZL3RS and ZL3FV, and CW out to

HH2VP, VK3BXN, JA6PA, U5AAP, LU4DC, VK4RF, VK4BHI, UF6DA and UA9WBU.

Space, sad to say, forces us to prune the list from G6QQ, who seems to have snaffled everything! On 21 MHz we see SSB to VP8ANT (twice), JH1KLN, VE3NCH, KF7E, 9K2BE, K6Y RA, VK6AJW, N6AR, ZY3EG, OD5BP, YV1ACC, 4X4WCY/7, 5N8MYE, K6YRA a couple more times; then CW dealt with PY1BVY, PS8TK, EN6A, JH5AEN, and JA9YBA. After that, Twenty's list must be an anti-climax, showing SSB to VKs assorted, TF5TP, VO1CA, and smaller fry, plus one CW contact with W2DB.

G3NOF heard little from the Pacific, long-path, nor of Asia, but the short path has been 'giving' rather more. Africans were heard from 1500-1800, U.S.A. from 1130-1800z but often with fade-outs. SSB worked A22BW, A92P, CP6EL, CR9WW, C21FS, CY0SPI, DK6OT/C6A, DU1PIT, EA9OI, ED8CGP, EL7C, EN6A, FK8CE, FK0AQ, H44JA, HH5CB, HH7PV, HI8MFS, HL1AOF, J28DM, J28DX, J37AH, J39CM, lots of JAs, JY9CL, K5OVC, K6YRA, K0GU (Colorado), KA5W, KB7RV (Nevada), KD7P/KH2, K8CE/J8, Ws, P29NSF, PZ1AN, S79WHW, S83H, T30DB, TL8DC, TL8ER, TR8CR, TU2NA, UM8MCI, UM8MDX, VE4DF, VKs, VP8AOD (South Orkney), VP8MT (Falklands), VP8NO, VS6DO, XT2EB, YC4FW, YC6DN, YC0VM, YJ8TT, YV5BQS, ZD7BW, ZD9BV, ZD9CD, ZD9CJ, ZM1AXO, ZF2OCZ, assorted ZS, IZ9C, 3D2DM, 3D6AN, 3B9FK, 5Z4DA, 5Z4DK, 5Z4RK, 6U1WCY, 7P8CT, 7P8CS, 9N1MM and 9Q5JE. As for Twenty we will just summarise the way Don found the band: 0600-0700 the long-path opening to VK, albeit with not very strong signals in the week before he wrote; a few Pacific types around 0730z. Nothing listened to later in the day as 21 MHz too interesting!

G4LDS waxes argumentative on the subject of DX stations asking for calls from specific areas — where in U.K., he asks, is UK3 or 12? Well, we do know that Moscow is just up the road from Gilsland, if that's any help! He offers OX3SG, K2OZ, HK3CNB/KP4, A4XVM, JAs, HZ1AB, ZS6CCS, VS5GA, VKs, VEs (including VE8RCS), CY0SPI, 9M2YK, ZM2ACP (ZL2 special), AX3FY, 9V1VP, Y11BGD, CR9G and a whole load of small fry.

Finale

Which is where we will tell you the deadline date for next issue: **November 3** to arrive, addressed as always to your scribe, "CDXN", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. Till then, take care and keep the reports rolling in!

TWO METHODS FOR AUTO CW IDENTIFICATION FOR RTTY

P. J. COOK, G4NCA

BEING one of those goggle-eyed RTTY buffs (of the clankin' Creed variety of course!), the author decided that the time had come to cease the endless fumbling for the Morse key during each transmission for identification purposes. This was contemplated during yet another of those 'NCA modernisation attempts — not easy, I must admit, when running a Creed 7 into the statutory shack electric fire (more commonly referred to as the KW-2000B!). However, having recently obtained a 6S4 tape reader to facilitate full-speed RTTY transmission from one of the locals, all that was required to 'pseudo modernise' the old system was the addition of an auto CW I/D sender.

An investigation into the various methods available was undertaken in an attempt to produce the simplest, most effective and economical solution applicable to amateur "one off" breadboard construction. Two such solutions seemed attractive. One to store the Morse characters in the form of an on/off audio tone on magnetic tape, upon subsequent playback the tone is rectified and is used to pulse a relay; alternatively, the Morse characters are stored in a type of read-only memory.

First Method

At first sight the magnetic tape approach seems very crude and cumbersome, but in practice the author found it to be very effective and, additionally, the unit could be adapted to send (for example) CQ contest sequences. Fig. 1 shows the completed unit, used in conjunction with a small portable cassette recorder.

When preparing a recording transistor Q1, an R-C phase shift sinewave oscillator, is keyed directly to produce an on/off audio tone of approximately 1700 Hz. The crystal ear-piece X1, is used as a sidetone monitor with the interrupted tone being applied to the mic. socket of the cassette recorder. In the case of the CW I/D unit all that is required is a repetition of the station callsign at, say, 10 second intervals. Upon playback, audio from the cassette recorder is applied to the low impedance winding of an old valve audio output transformer, the secondary of which is fed to a bridge rectifier (D1-4), the resultant DC "cleaned up" by C6 and applied to the coil of RLA. Most miniature relays can be pressed into service as the ident can never exceed 20 w.p.m. under licence conditions; however best results were obtained using miniature 12-24 volt working, 400-1Kohm, coil resistance relays. Reed relays are ideal for this purpose (if you can afford them!).

Second Method

See Figs. 2 and 3. The desired Morse message is stored in a matrix arrangement, the Morse characters broken down into dot length time slots. This operation is probably best described with

the aid of Fig. 3, a 'matrix map'. Here the author's callsign, G4NCA, is stored. A key down condition is indicated by a logic '1', or in the case of the matrix, the presence of a diode. Each time slot is scanned sequentially, starting at column 0, row 0 along to row 9, then moving down to column 1 proceeding along row 0-9, etc. It can be seen that a single dot is represented by a single diode in a time slot, a dash by 3 diodes in succession, an inter-element space by a single time slot with no diode, and an inter-character space by 3 timeslots without diodes.

Message lengths of up to 99 equivalent dot lengths can be stored, the final slot at column 9, row 9, is used to stop the scan of the matrix field and is used as a parking slot awaiting a reset pulse to the counters.

Operation: See Fig. 2. All timing is achieved by clock pulses generated by a 555 astable multivibrator; with components as shown Morse of approximately 18 w.p.m. will be produced. Upon operation of the send switch, both 4017 decade counters (IC2, 3) are reset to 0. Upon receiving subsequent clock pulses, the IC2 outputs 0-9 will go high sequentially; when a diode is present at any such output a logic '1' is applied to the input of an AND gate whose second input is present at logic '1' due to IC3 still having counted zero clock pulses (hence 0 output is high). A carry pulse from IC2 sets IC3 to '1' and again IC2 counts 0-9. Thus the row associated with column 1 is read; this counting process continues . . .

All of the outputs from the read gates are OR'ed by D1-10 and when a logic '1' is present, a positive potential is applied to the base of Q1, the keying transistor. When both counters are at 9 an AND gate sends the clock inhibit pin of IC2 and IC3 high, halting the counters until the send reset pulse is applied again.

Table of Values

Fig. 1

R1 = 12K	C5 = 1 nF
R2 = 6K8	C6 = 100 nF
R3 = 56K	C7 = 10 nF
R4 = 150K	Q1 = BC109
R5 = 4K7	D1 to D4 = 1N4005
R6 = 1K	RLA1 = see text
RV1 = 47K	T1 = see text
C1, C2, C3 = 4n7	X1 = crystal earpiece
C4 = 1 μF	

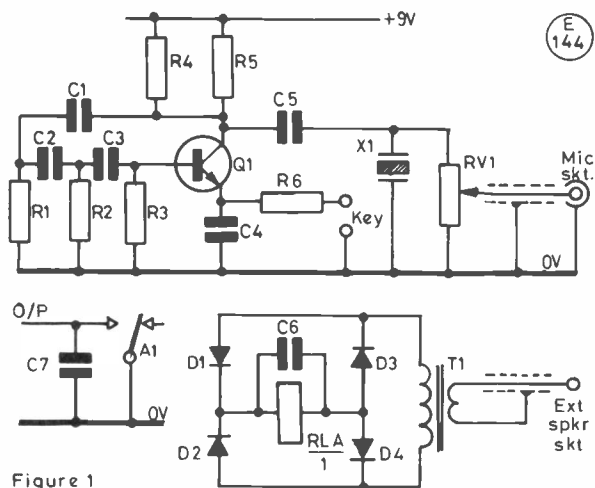


Figure 1

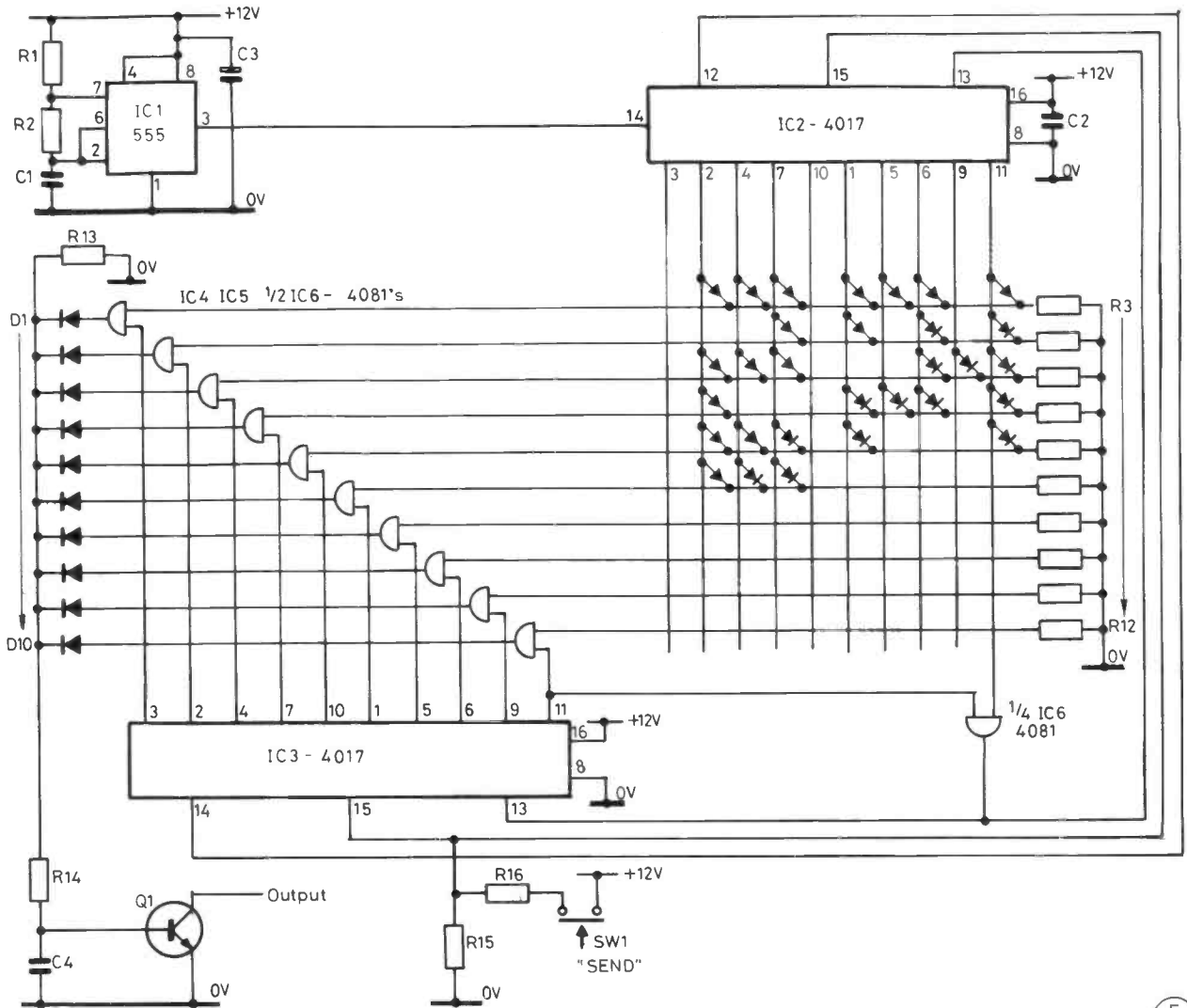


FIGURE 2

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Table of Values
Fig. 2

R1 = 220K	C3 = 10 μF
R2 = 470K	Q1 = BC109
R3 to R13 = 100K	IC1 = 555
R14 = 47K	IC2, IC3 = 4017
R15 = 100K	IC4, IC5, IC6 = 4081
R16 = 10K	All diodes = 1N4148
C1, C4 = 100 nF	SW1 = miniature push-to-make switch
C2 = 10 nF	

Modifying the BARTG T.U.

It is usual when using AFSK/FSK RTTY to adopt a similar approach when keying in Morse, in most cases the keying is from marking (1445 Hz), to spacing tone (1275 Hz). However, this can be very annoying when receiving as the receiving teleprinter "races" during the ident period. A better solution to the problem is to shift the marking tone up in frequency, creating a 'super marking' tone; using this approach the Morse is easily read and the receiving teleprinter is held to marking as the offset in frequency is in favour of the marking filter. Using the BARTG terminal unit the modification required is very simple: just a 22K resistor being substituted for a 10 and 12K in series, with the addition of a keying wire. See Fig. 4. The modification of other

T.U.'s is likely to be similar for FSK/AFSK (via varicap diode) signalling.

Conclusion

Both units described should give simple, work-first-time operation — provided they are programmed correctly!

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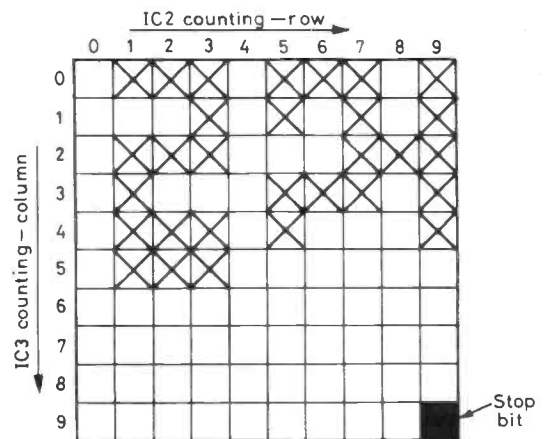
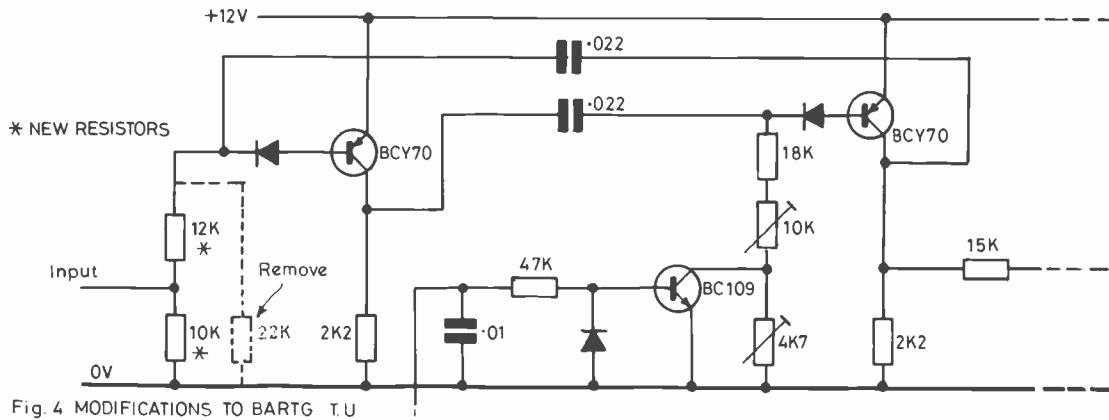


Fig.3 MATRIX MAP - 'X' indicates diode inserted. Programmed to send "G4NCA"



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Fig. 4 MODIFICATIONS TO BARTG T.U

Veroboard was used extensively in the author's prototypes; DIL sockets and the usual CMOS precautions are necessary for the second unit. The units are readily adaptable for other uses such as SSTV and MS work where identification using CW proves to be awkward. By altering the clock frequency to 45.5 Hz the second

unit can be adapted to send RTTY. An 8-unit code would be necessary (one startbit, 5 unit code elements, 2 stop bits), allowing a maximum of 12 characters.

The author also has fond memories of 'training' one unit to play "Jingle Bells" one dark week-end several months ago!

EQUIPMENT REVIEW

SSB-ELECTRONICS
TWO-METRE TO
TEN-METRE
TRANSVERTER

THE SSB-Electronics 2m/10m. transverter is of German origin and is distributed in the U.K. by *Piper Communications*, 4 Severn Road, Chilton, Didcot, Oxon. (tel: 0235-834328). Supplied in kit form, it produces a low power output on the 10m. band when driven by a low-power 2m. transceiver and is relatively simple to construct and get working. A double-balanced ring mixer provides good strong signal handling while easing the problems of switching between transmit and receive. A noise figure of better than 3dB is achievable — which is ample for 10m. work.

Description

The transverter is housed in a tin-plate chassis measuring 105 x 63 x 30mm. RF connections are made by standard BNC connectors and power is supplied via two p.t.f.e. feedthrough insulators. Separate 10m. input and output connections are provided — this is useful for some 70cm. transverters — or an RF relay must be used for 10m. operation. A 9v. zener diode is used to regulate the oscillator power supply so an overall voltage supply of 12v. is necessary. Most of the components are placed on a double-sided printed circuit board which is attached to the chassis on all four edges; all the tuned circuits are individually screened so the level of spurious pickup or radiation is kept very low.

A block diagram of the circuit is shown in Fig. 1. The local oscillator signal is generated directly at 116 MHz by TR1 so easing

the filtering required by the more usual 38.666 MHz x 3 approach. TR2 acts as a buffer amplifying the signal up to +7dBm as required by the mixer. The bi-directional 144 MHz port is arranged so that the mixer is always correctly terminated with 50 ohms and a diode is used to limit the amount of 144 MHz signal reaching the mixer when on transmit. The transverter incorporates a dummy load which is capable of dissipating 15W, although only 1W of drive is needed for full output on 10m. Dual-gate Mosfets TR3 and TR4 are the 10m. transmit and receive amplifiers and each has a gain control so that overload on receive and overdriving on transmit can be prevented.

Construction

The transverter is supplied with the original German constructional details (photographs and component placings), together with a translation of the constructional method in English. The instructions are concise but complete, and there should be few problems understanding them; with a little common sense the German notes can be understood also.

The two side and end parts of the case are soldered together and a large (60-100W) soldering iron is needed for this operation. Using a smaller iron the printed circuit board is attached inside

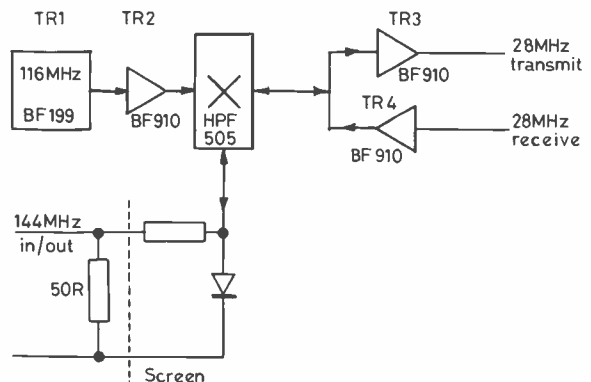


Fig. 1. "SSB ELECTRONICS" 2m to 10m TRANSVERTER BLOCK SCHEMATIC DIAGRAM

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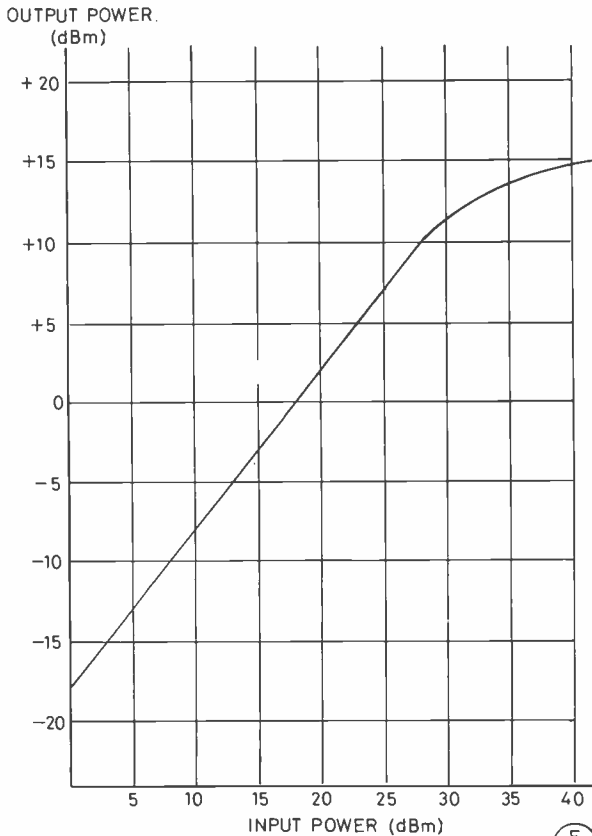


Fig. 2

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An image rejection (at 260 MHz) of 90dB was only estimated, the amount of signal required (-30dBm) meant that the noise sidebands of the signal generator could be heard. IF rejection (at 144 MHz) was measured as 67dB. A signal generator was then tuned from 10 to 500 MHz with its output level set at -60dBm (0.22mV). No other responses were found.

Transmit Gain: A low level (+10dBm) signal was fed into the transverter. The output at 28 MHz was variable between -14dBm and -36dBm, i.e. a loss of 24 to 46dB is present under linear conditions. Fig. 2 shows that the transverter is linear for inputs up to about 1W; above this level the output power levels off to +14dBm.

There are two ways to tune up the transverter, either for maximum output or for optimum harmonic rejection at a given power level which is best carried out using a spectrum analyser. The maximum power output obtainable for an input of 3W was +14dBm and optimum harmonic rejection was measured at a level of +10dBm. The results shown below indicate that the transverter will give a clean output when "tuned for maximum smoke" and that, when optimized, the output spectrum is extremely good.

	Tuning Method	
	max. power	min. harmonics
f_0	+14dBm	+10dBm
$2f_0$	-34dBc	-52dBc
$3f_0$	-35dBc	-42dBc
$4f_0$	-47dBc	-54dBc

and the attenuator made up, after which the screen can be soldered into place. These operations are worth doing slowly and carefully to keep things tidy — a pair of tweezers and a small vice will help enormously.

Now the rest of the components are placed on the circuit board, in the order specified in the instructions (the supplier always knows best). A lot of the components have one lead earthed. Both leads are put through the holes provided and soldered connections are made on opposite sides of the board. The author has found that bending the earth lead so that it lies on the ground plane makes removal of the component easier — although changes were not needed in the author's kit. A 1.5mm. ($\frac{1}{16}$ ") drill is necessary to enlarge the holes for the crystal leads which must be soldered in quickly; using a socket would cause problems. An extra hole must be drilled so that the earth connection to the crystal can be made; if the leads are left long enough to solder the earth, the lid may not fit on properly.

The author found the kit simple to assemble, spending about 90 minutes on the mechanical work and about 2 hours putting the components on the circuit board.

Measurements

The equipment used for the measurements included a Marconi Instruments spectrum analyser and signal generator, Rohde and Schwarz noise figure meter and the author's Icom IC-202 transceiver.

Receiver Gain: The transverter has gain on receive band which is adjustable between +13dB and -4dB using the internal preset potentiometer. There is enough gain available to overcome the noise figure of most 2m. receivers.

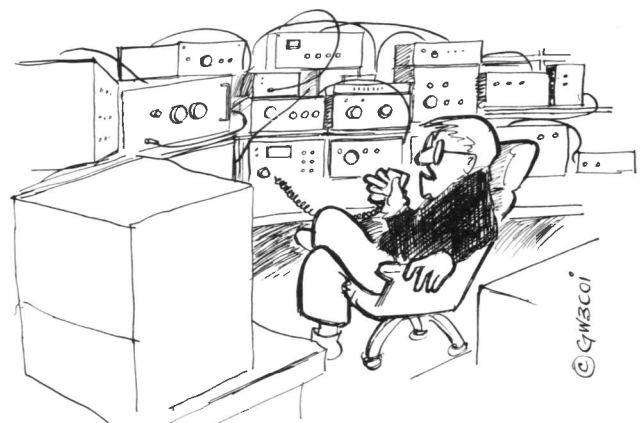
Noise Figure: A noise figure of 2.5dB was estimated after taking into account the noise figure of the IC-202 receiver. The noise figure was almost independent of the gain setting.

Spurious Responses: Due to the direct generation of the local oscillator signal at 116 MHz, there are few problems with spuri.

Conclusion

The SSB-Electronics transverter provides a simple means of getting on to 10m., either for operating or to transvert to another band. When correctly set up the unit is capable of giving an exceptionally clean output spectrum — and it can be set up well using the minimum of test equipment. The transverter is compact and self contained, requiring a coaxial relay to switch the 28 MHz signals to the aerial. By including gain setting controls the input and output signal levels can be optimized to suit most requirements. In all, a very well designed and versatile piece of equipment.

John Wilkinson, G4HGT



"I've always tried to keep a simple set-up. . . ."

• • • SWL • • •

SHORT WAVE LISTENER FEATURE

By Justin Cooper

AMONG those who sail there is a saying about the chap who finds himself on an anchorage, in sight of the welcome lights of a pub, but with no means of getting ashore and the cook's store down to a few mouldy biscuits and a half-pack of milk . . . and there should be a similar one in our hobby too!

Let us in that context, consider the question of the SWL who has a conventional HF receiver, covering, say, Top Band to Ten in amateur bands; and let us postulate an upsurge of interest in some other area of the spectrum, be it other parts of the HF regions, VHF, UHF or whatever. The answer is not a new receiver, but a *converter* ahead of the existing one. Until the advent of two-metre FM, where deaf receivers and QRP transmissions was the norm, a crystal-controlled converter was the rule; your conductor has one yet, tucked away at the bottom of his filing-cabinet—and still it is, with the main station receiver, a sharp-eared little beauty. Just tuck in twelve volts up the appropriate rathole, an aerial input, and a coaxial output which can be fed direct to the main receiver, or alternatively to one of the input ports of the HF ATU—and away you go!

Almost immediately you will feel the need for a rotary beam (and don't forget when talking VHF aeriels that FM stations are using vertical aeriels while the rest are horizontal), so perhaps we'd best tell you how to make one that will do quite well for your first explorations, provided you keep it up in the loft, or, if you must put it outside, bring it down regularly for inspection every couple of months. Take yourself off to the cleaners with enough clothes to ensure you come back with three wire coat-hangers, take them down to your workshop and straighten them out. Obtain a piece of dowelling some 23 inches long—say a couple of feet. Mark a balance point by experiment across your finger, and make a pencil line there across one face, and then right round. From this line measure 10¼ inches (260mm) towards each end, and draw a line at each of these places. Go down to the local electrical shop and obtain a 'chocolate-block' connector and cut yourself a 'two-way' piece from it—or you *may* be able to obtain the same thing, made as a two- or three-way connector, in ceramic, which is better. Our beam is going to want a director of length 36 inches (914mm) and a reflector of length 40 inches (1016mm) so cut two of your retired coat-hangers to suit, one as director and one as reflector. Lay this aside with the piece of dowel which we have measured out already to serve as the boom. Now for our driven element; this needs to be, overall, 38½ inches (977mm) but cut in the middle for the coaxial connection. So what we need, then, is two pieces from our coat-hanger remaining, each of 19¼" (489mm) length. Inspect all the elements you have made to see that there are no sharp edges, and file to ensure this is so—or rub the edges on a paving slab for the same result.

Now we can start the assembly. Place the piece of chocolate block on the dowel, such that the through holes in the brass inserts are looking along the dowel boom. Locate temporarily using rubber bands; adjust along the boom until you can visualise the elements of the dipole turning out of the connector, at right-angles, to be the driven element, and can see that they would lie nicely over the line at the balance point. Screw (or stick with *Araldite*) the block in the position found. If you stick it, then the rubber bands will hold it in place while it sets, but be sure you don't get any *Araldite* inside the chocolate block. Fit the director and reflector where the other two lines come—one at each end of the boom; these can be attached with *Araldite* direct to the boom, or you can drill a hole through the boom and push the wire clean through until it is 'centred' before locking it in place with a drop of

Araldite again. Let it all set hard—while epoxy resin sets in a short time it takes much longer to gain full strength.

Next fit the driven element parts, one each side; you will need a right-angle bend where the inboard end turns into the chocolate block insert. One half of the element goes into one insert, and the opposite element in t'other insert. Hold up your new toy, and inspect it; it'll be a bit skew-wiff, for sure, but a gentle bend of the reflector and director will deal with them, while the driven element halves can be adjusted by slackening the screw in the insert of the chocolate-block and re-adjusting. Now for the coaxial cable—it should be 50-ohm stuff. The inner and the outer respectively go into the two vacant holes in the chocolate block, and are locked in by the screws—give the coax a gentle tug to see both are firmly connected. If it is going outside, this is the time to give the boom several coats of yacht varnish—and it is worthwhile even if the aerial is to go in the loft. Once the varnish is dry, tape the coaxial cable to the boom such that there can be no strain on the connections. Now obtain some of the self-amalgamating rubber tape—sometimes sold for repairing car radiator hoses, or available in most yacht chandlers. Wrap this all round the chocolate block and the centre of the driven element and the coaxial connections, so everything is watertight. Put a suitable connector on the other end of the coaxial, and—there you are!

For first trials up in the loft you can hang it from a piece of string—with the elements vertical you should be able to aim it at a repeater, and then you can rotate it gently and see the signal strength vary as you do so. A similar test can be done with the aerial horizontal.

A rotator to allow the aerial to be either horizontal or vertical at will needs a little engineering; but if you can fix a broomstick or a longish length of round dowel such that it can rotate but stay upright(!), then rotation requires little more than a long length of string and a spring. Attach the spring to a convenient beam at one end and to the string at the other. Lead the string three turns round the broomstick and away to a convenient point. Attach the beam you have just made to the mast you have just made; pull the string, and the beam on the broomstick will rotate. Some sort of a cleat on which you can belay the string firmly, and a mark on the string alongside a 'scale' which will enable you to tell which direction you are aiming, and the job is done! Incidentally, for directions, most people think of a compass: don't forget that it is subject to *variation*, which you can predict, and *deviation* which is a function of your immediate surroundings. A change in the latter can occur if you change your keys from one pocket to another, or even your steel spectacle-frames . . . it's really easier to go outside and find the pole-star one clear night and work from there!

The Mail

C. Burrells (Stevenage) has been filling in the blanks in his WAB log-book, to the detriment of prefix-hunting; and why not—it's all part of the hobby. Charlie says he has a problem—he never hears AM signals with his FRG-7 unless they be broadcasters. Not too surprising, OM, as AM is really an obsolete mode, and only remains for broadcasting while cheap radios aren't good enough for SSB reception and until a good method of SSB generation can be devised which will permit better quality audio transmission. At the moment one uses filters to generate the SSB, and it is a paradox that the better the SSB filter, the worse the output from the receiver sounds! Charlie's other queries, around

HPX, are all answered by a read of the Rules, *see* September issue, p. 375.

The list for last time sent in by *G. Skipton (Rye)*, failed to reach us, and George wonders what to do; send us a copy with the next lot, and meanwhile we'll credit them—any adjustment when we see the copy list.

Next we have *A. Gatrell (Lewes)*, G4SVB, who advises that the A82LC/AK queried last time around was in fact A82LC/EL2AK; the latter was the operator's call, while the first part indicates the station was that of the Leprosy Control Project. QSL *via* SM4CWY, and they would appreciate lots of IRCs or folding stuff, as all the proceeds go to the Leprosy Control Project. Tnx, Tony.

Congratulations to *A. Pyne (Bradford)* who is now G4UNH and tearing up the ether after the DX he used to listen to.

A. F. Roberts (Kidderminster) was another who was kept out of his shack by the hot weather, but since the summer heatwave disappeared over Scandinavia he has been back in business, as the HPX Ladder total shows.

Next we come to the ladies, and firstly we must offer congratulations to *Mrs. J. Charles (Colchester)* who has now obtained the call G6WXX.

Mrs. T. Parry (Blackpool) comes in this time with a 'Nil' entry to hold a place—other things have got in the way of her amateur radio activity, sad to say. However, Tina says she hopes to be able to get back to the receiver before long.

A short list, too, from *Mrs. R. Smith (Nuneaton)* who says the new ones get harder and harder to come by . . . not surprising at the top end of the Table.

N. Askew (Coventry) wrote his entry on the back of a poster advertising a cat show in Newton Abbot, Devon—so *that's* where he goes for his holidays!

Turning to the long letter from *D. J. S. Williams (Romsey)* we see it says: "HPX Nil, Back soon!"—and nothing else.

G. A. Carmichael (Lincoln) wonders about the TE32 prefix; others have indicated it to be some sort of Russian 'special'.

Penfriend Wanted

Carlos Garcia Castaneda is 23, and interested in DX, and electronics; he is looking for correspondents to keep in touch with, in either English or Spanish. His address is Apartado Postal 30, Sagua la Grande, Villa Clara, Cuba. Carlos adds that other interests are in films, rock music, and various sports; he sounds very keen to hear from someone (or two!) and his English is very good indeed. Incidentally, he first heard about us from the BBC Latin-American Service DX feature.

The business of the TE32 prefix gets even more interesting. *N. Askew* said it was UK5UDX operating as TE32J, heard early in the morning (0550z) on Twenty; *T. Morris (Leeds)* heard TE32CCC, also on Twenty, and also early in the morning (0456z) giving his details as Costa Rica and QSL *via* T12CCC. This last sounds the most likely.

From *G. de Baets*, ONL3647, we have a quick note to clear up *B. Patchett's* question about ONY52. It seems that this is a military station operating on 3843 and 6999.5 kHz, sending Morse practice daily. The 1981 schedule is enclosed by George, who says that it probably is current now. Starting at 0830 Belgian time it goes through to noon on both frequencies, at various speeds from 5 to 16 w.p.m.; then there is a break and the signals restart at 1400 Belgian time for another spell until 1630. Again there is a break, until 1830, when transmissions restart and continue till 2000. During the day, both frequencies have the same transmissions, but the evening sessions have a different speed signal on each frequency, the routine being reversed on the odd and even days. The point here is that the evening transmissions range from 6 to 14 w.p.m.—ideal for those wishing to get in some concentrated practice for the Morse test. Thanks George, from *Stabroek* for this useful contribution.

More congratulations are due now, this time to *B. Patchett (Sheffield)* who had passed the Morse test and by now should have

HPX LADDER (All Time Post War)

SWL

PREFIXES

PHONE ONLY

B. Hughes (Harvington)	2745	B. Patchett (Sheffield 9)	643
Mrs. R. Smith (Nuneaton)	2349	R. Wooden (Staines)	638
S. Foster (Lincoln)	2304	A. J. Hall (Alvaston)	624
E. W. Robinson (Bury St. Edmunds)	2203	D. Woods (Swindon)	589
H. M. Graham (Chesham)	1621	G. Shipton (Rye)	584
G. W. Raven (London SE13)	1491	T. Morris (Headingley)	549
Mrs. T. Parry (Blackpool)	1479	R. G. Hurst (London SE23)	548
M. Toms (Barkingside)	1400	G. A. Carmichael (Lincoln)	523
M. Rodgers (Harwood)	1400	A. Pilkington (Chesterfield)	518
N. Askew (Coventry)	1288		
N. E. Jennings (Rye)	1190	CW ONLY	
J. Doughty (Bloxwich)	1190	E. B. Ward (Ruddington)	1714
H. Bale (Cardiff)	1186	J. Goodrick (I.o.W.)	1502
A. Pyne (Bradford)	1179	A. F. Roberts	
R. Fox (Northampton)	1123	(Kidderminster)	1212
M. Everitt (Blunisham)	1082	J. M. Dunnett (Prestatyn)	1127
D. J. S. Williams (Wednesbury)	1051	H. Scott (Weiberby)	1105
D. B. Shapiro (Manchester)	991	R. Fox (Northampton)	380
Mrs. J. Charles (Colchester)	983	D. J. S. Williams (Romsey)	273
S. Burgess (Stockport)	906		
P. Lincoln (Aldershot)	830	RTTY ONLY	
A. Chadwick (Bury)	724	N. E. Jennings (Rye)	499
J. Heath (St. Ives)	682	P. Lincoln (Aldershot)	416

Minimum score for an entry: 200 for CW or RTTY, 500 for Phone. Listings to include only recent claims and to be in accordance with HPX Rules; *see* p. 375, September issue.

his G4 ticket safely received—the time for waiting is down now to a few days. On the subject of equipment, Brian says he must now save up—but we would have thought one of the home-brew QRP designs featured in the G-QRP Club magazine, or indeed in our pages, would do very nicely, especially for UK nattering on Top Band CW, while saving-up. If, as Brian says, he isn't hearing much on two-metres FM with his Trio 2300, then he is likely to be in a bad VHF site, in which case he will have a problem unless he can 'see' a repeater.

Welcome back to *J. Singleton (Hull)* after an 11-year gap. John spent some of the intervening time in the Merchant Navy, while XYL Shelagh kept the home station warmed through. Now, though, they have just found a mint-condition 9R-59DS, and slung some wires out; and so a new HPX entry is enclosed. Among the changes noted, the most startling is the change to Top Band where, when John was last around, the average country score on the band was maybe 10-15 countries. Nowadays, there are lots of new countries on the band, and from a good site a full 100 countries is not impossible in a relatively short time.

P. Oliver (Paisley) is sending his receiver back for a repair under warranty to the drive cord; and he hopes to use the 'time off' to improve his aerial system somewhat—Pete doesn't say in what way.

C. H. Kirk (Leeds) queries WA6HJF/M6; this call says the WA6 was operating mobile in the sixth call area of the U.S.A., so he counts as a WA6 in the mobile list. On a different tack, Charles was listening on Two and heard G4/HB9CTA/M approaching Leeds for several days on a canal boat, and eventually hearing him say he was moored-up at Woodlesford Lock, only a few minutes away. Charles decided to go and make personal contact the next morning, but sadly when they arrived at 0900 the bird had flown—so a QSL has gone through the Bureau and the result is awaited with some interest!

Unusual to find a 'dud' one in the list from *B. Hughes*

(*Harvington*) who must have been distracted by the foxes raiding his dustbins! BY7AA is not as far as we know operational; BY1PK and BY8AA are all right, but both on CW only, unless operated for a brief spell by a visiting amateur. For the moment, we'll leave it in, but we would certainly like more details—it may have been a pirate, or it may be another Chinese station.

J. Heath (St. Ives) says he has been inactive largely due to rearrangements of domestic facilities.

P. Lincoln (Aldershot) keeps all his station records on a Sharp MZ80K computer, with dual floppy-disk unit and dot-matrix printer both from the same stable. The main receiver is the Icom R-70, with a Tandy DX-300 as back-up, aerials being a Datong active aerial, an end-fed longwire, and a five-band vertical. The RTTY reception is by way of the Tono Theta 550 into an 8-inch colour monitor. On VHF there is a Datong converter feeding 28-30 MHz to the R-70, plus a scanner receiver, the latter also giving coverage of 430 MHz. As a point of interest the programs for the Sharp machine are home-derived. But even this set-up isn't immune to Murphy's Law—Peter has had to clear the whole shack while the window-frames were all replaced; and the scaffolding is up round the house to enable the leak in the roof to be dealt with and so keep the shack dry as well! You just can't win!

Another computer type is *H. Bale (Cardiff)* who has a BBC, which also gets used for keeping station records. Harry also has an FRG-7700, CWR Telereader for CW and RTTY, and a Tono monitor.

We now come to a first entry from *A. Chadwick (Bury)* who is now studying radio and electronics at Fleetwood Nautical College; his uncle, G3AB, sparked off the interest but regrettably became a silent key back in April—a sad loss. Andrew will be parted from his RA-1 receiver for a time, but hopes to be able to get operational from the College and to take the RAE. On a different tack, Andrew queries the rule which prevents the various VP2 countries being counted as different prefixes: this is something which was built in to the rules years ago when there were many such countries, but which are disappearing with time, so we don't see any great reason to change them at this late moment. Coming back to the aerials we were amused by Andrew's description of his: "A long wire hanging out of the window—and a shorter one hanging out of the window!"

J. Goodrick (Newport, I.o.W.) bemoans the lack of courtesy prevalent these days, and instances the OK2 station who kept calling 12DMK/1A5 on frequency when the chap was having quick QSOs; when he did eventually get a reply, the OK proceeded to reel off all the full panoply of the rubber-stamp QSO, up to the colour of Grandma's eyes . . . candidate for Lid of the Year, John reckons, but we wonder if he just didn't know any better as a non-DX operator snagging a new one.

S. Burgess (Stockport) suffered a setback when the next door neighbour cut down the tree which served as the aerial mast—a major modification indeed! However, the Drake R4-C is still fetching them in.

Sad to say, *R. Everitt (Bluntisham)* managed to fluff his Morse test in London, so more and better Morse practice is called for. Richard says he's been using a Morse program on a ZX81, but we would suggest that he now spends some time listening to Morse on the bands; the ZX81 send perfect Morse, but any hand-sent stuff is less than perfect with the result that it seems to be hard to copy.

A first entry from *N. Fox (Wakefield)* indicates the use of a Trio R-600 plus a HF5V vertical and an inverted-L Marconi-type trapped for 14 MHz—obviously a twenty-metre addict, even before his letter told us so!

N. Jennings (Rye)—the other station in Rye!—managed to get his RTTY score up to 499; Norman swears by the Icom R-70 plus Datong AD370 active aerial, as indeed does Pete Lincoln. After our comments on photography last time, Norman has been hard at work, and promises to send us prints in due course.

The second letter from *T. Morris* lurked under the pile, and it contains an interesting query about C30AAN; Andorra, right enough and a new prefix, although they usually use C31.

Nice to hear again from *D. Whitaker (Harrogate)* who sends us

ANNUAL HPX LADDER

Starting date, January 1, 1983

SWL	PREFIXES		
P. Oliver (Paisley)	468	C. H. Kirk (Leeds)	353
S. J. Bedford (Wakefield)	427	J. Singleton (Hull)	234
T. Kirby (Cheltenham)	395	N. Fox (Wakefield)	219

200 prefixes to have been heard since January 1, 1983 for an entry to be made, in accordance with HPX Rules; see p. 375, September issue. At a score of 500, transfer to the All-Time listings is automatic.

details of the 1983 White Rose SWL contest. Now, we know that lots of the SWL fraternity are interested in this one, so we suggest that you write off to David at Hillcourt, 57 Green Lane, Harrogate, N. Yorks. HG2 9LN, enclosing an *s.a.e.* for the full, altered, rules sheet. The date of the battle is the weekend January 14/15, noon to noon. Incidentally, David mentioned his writing was a bit of a scrawl due to a broken arm—he must be ambidextrous because it looked quite clear and as normal to us! Hard luck, and a quick mend, from us all.

We come now to the missive from *E. B. Ward (Ruddington)* who waxes ironic about his XYL's love of gardening—but who should complain of that, when the result is there to be sat in, with long drink at elbow, in the hot days of summer? On a different line, Barry has some comments on hand-sent CW—the worst case is a station who comes up at about Mittel-Europa strength in the middle of a crowded band on 14 MHz. So far, after several hearings Barry hasn't even been able to decipher the callsign, let alone copy anything else from him. A worthy recipient of the Ward Rubber Key Trophy!

H. M. Graham (Chesham) reminds us that we forgot to answer his query about the Italian IK prefix, which is to be heard all over Italy—a bit like Papa Picollino in fact. Frankly, we don't know, save that it is a legitimate prefix—any offers?

A. Hall (Alvaston) writes to say he is getting ready for a move into a big old house with servants quarters on the third floor, so he will have room for a nice big shack and maybe a decent aerial system. We look forward to hearing more, once the move is completed, and the new spot evaluated, radio-wise.

J. Bedford (Wakefield) has quite a big update to his score, but he loses one, which was a MARS station, namely XP1AB. On the receiver front, the club FT-101ZD has gone on to another member, so Jim is back to the old FR-101.

D. P. Shapiro (Prestwich) will have received details of OE2DYL's DX Net List, thanks to the good offices of John Goodrick, and Geoff Watts of *Prefix List* fame.

Help!

We have a letter from Mr. *H. Linton* of *Coleford* about his Trio 9R-59DS. Mr. Linton has had this receiver since he became an OAP ten years ago, and it has given him much good service and pleasure; now, however, it needs valves replacing and a new bandswitch, but none of the Trio agents have the needful. Can anyone help? Letters to your scribe in the first instance, please.

Finale

That's about the lot for now; all your letters for next time to arrive by **November 17** latest, addressed as always to your scribe, "SWL," SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. Include your scores, and your comments, and if you've got any problems radio-wise, we'll try and answer those too.

Don't forget that **November 17th** is also the closing date for entries to our **SWL Home-Brew Competition**; if you need reminding of the details, look back to the July issue, page 262. Let's have lots of entries!

“KITCHEN-TABLE TECHNOLOGY”

A SERIES OF OCCASIONAL ARTICLES TO PUT THE ‘AMATEUR’ BACK INTO AMATEUR RADIO

REV. G. C. DOBBS, G3RJV

No. 3: Thanks, Good Buddy!

IN spite of the alarming new trends in our hobby — transceivers designed by a computer, built by a robot and operated by a zombie — radio amateurs are still showing their traditional ingenuity. The CB boom came and went for our American cousins long before it arrived over here. American radio amateurs were alarmed at first but then began to cash in on the amazingly inexpensive items that could be found to support the CB market. We have something of that with the increasing number of CB to 10-metre FM conversions that have been appearing in the UK; another fruitful field is in the station accessories which are equally useful to the radio amateur and the CB-er. Now that interest in CB seems to be on the wane, quite a lot of these items are even cheaper or can be had for next to nothing from ‘retiring CB-ers’.

A fair portion of these odds and ends have appeared at the radio rallies at reasonable prices. Recently I have been exploring a couple of stalls on the Birmingham Rag Market, a sort of Brum Petticoat Lane, which are full of reject, no guarantee, no questions asked, bits of Far East electronic *bric-a-brac*. So far I have found a good 12 volt 5 amp (so they say) stablized power supply for a fiver, a lovely pair of miniature stereo headphones for a quid and several examples of SWR bridges for two or three pounds. It is these latter items that I want to consider. Most of the SWR bridges (could they be SWARE meters?) are of the ‘trough’ bidirectional coupler type which are good up to about 150MHz. The nice thing is that even if they are bought ‘‘as seen’’ not much can be wrong with them. It is also possible to pick up these SWR meters from junk shops or as scrap items with damaged meters. Since very few of them come with circuitry it is useful to look at them in some detail and see what can be done with them by the radio amateur. Most of the ones I have seen appear to be more or less the same, so what follows will probably apply to almost every example of a cheap CB SWR bridge the reader can lay his hands upon. It is not only possible to use these meters as they are, doing any simple repairs necessary, but also to adapt them into reasonably sophisticated(?) double-meter bridges.

What’s In The Box?

Fig. 1 shows the typical circuit for such an SWR meter. This should apply to most examples, there is not much else it could be. . . . The basis is the trough type coupler, which is shown as the three bold lines on the circuit diagram; these lines represent three conductors which pass the length of an earthed trough. The centre conductor carries the RF from the transmitter to the antenna or antenna tuner and the outer two are sensor lines. The RF current present in these lines is measured as a voltage across two equal loads, R1 and R2. This is rectified by D1 to give the forward figure and D2 to give the reverse reading; the two readings are sampled by a switch S1, marked ‘FWD’ and ‘REF’, and metered by M. To enable a range of RF powers to be used through the bridge, a potentiometer, VR1, is used as a sensitivity control for the meter, M. This circuit probably accounts for most of the commercial

CB SWR meters. One great advantage gained by the trough type sensor head is that it is usable to around 150 MHz.

So that is what you are getting in your cheapie CB SWR meter. Many of these meters appear in junk shops, or are discarded by CB-ers when the meter is damaged. The important section is the sensor unit and thankfully these are very difficult to damage. So get hold of any giveaway or cheap SWR meters, even if they do not work, with circuits like Fig. 1; it is not going to take a genius to restore them to working order. The meters are usually in the order of 100 to 300 μ A full scale deflection and this happens to be the typical movement range found in ex-tape recorder meters that seem to be so available on the surplus market. So most of the battery-level/record or VU meters of this type can be used to replace a broken meter in the circuit. The rest of the components are very standard. The diodes D1 and D2 can be almost any germanium diode in the junk box or taken from an old transistor radio.

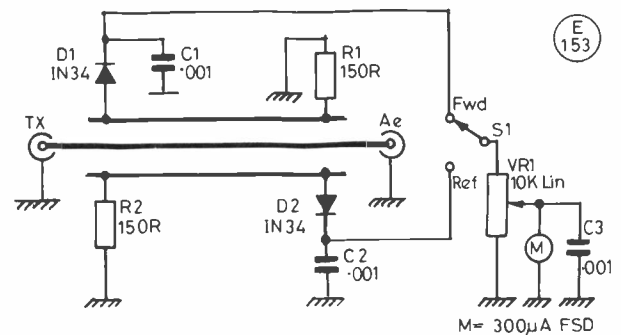
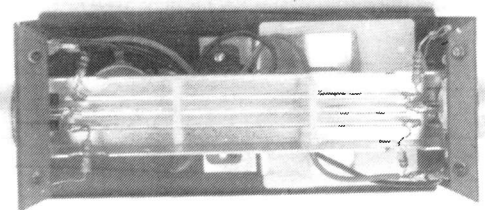


Fig.1 TYPICAL CIRCUIT THROUGH SWR

Remote Metering

It is not uncommon to have the meter remote from the sensor in SWR meters; this is very easy with this type of circuit. All of the components up to S1 should be in the sensing box and the meter and sensitivity control can be mounted in another small box and placed for convenience of display. ‘‘Nowts as funny as RF!’’ as they say in Yorkshire. Do they? It certainly does pay to take care to avoid stray RF pickup in the metering lines. When using remote metering, I would be tempted to place a decoupling capacitor, say 0.01 μ F, between the actuating arm of S1 (the point where it joins VR1 in the circuit) and ground; I would still leave C3 at the meter end. It might be worth using a screened lead for the wiring between S1 and VR1 — it’s neater anyway.

This sort of arrangement can be very convenient with the RF sensing head tucked behind the transmitter and a small box containing the meter and sensitivity control placed close to the operator’s eye in the normal operating or tuning up position.



A typical CB SWR meter showing the trough lines bidirectional coupler.

photo by Jo-Anna

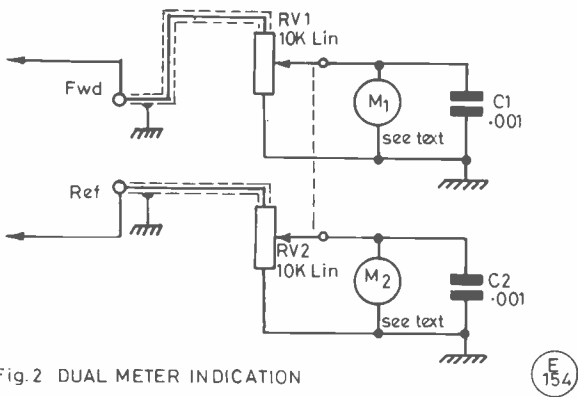


Fig.2 DUAL METER INDICATION

Dual Metering

One minor branch of amateur radio 'upmanship' is to have a dual-meter SWR bridge. This shows both the forward and reverse currents during the tuning-up operation without resort to switching. It is useful, too. Some ATUs give more than one dip in the reverse reading when tuning-up and it is important to choose the one that gives the maximum forward reading with the dip in reverse reading. Fig. 2 shows how this can be done with the CB SWR bridge. You might be lucky enough to pick up a cheap CB meter with two scales but the single meter ones are the real cheap buys.

This idea once again uses the SWR bridge as a remote sensor. Two leads are taken from the 'FWD' and 'REF' positions on the switch S1 (see Fig. 1) to a metering box. The box contains two suitable meters of the cheap tape recorder type with a ganged sensitivity control RV 1/2. It is possible to use two potentiometers for the job but the ganged control makes life easier. Double-ganged 10K linear potentiometers (two tracks on one shaft control) are not difficult to obtain. (If you have any trouble finding one, try Marco Trading Company on 0939-32763). Once again care must be taken with stray RF in the leads. Use screened leads between the sensor box and the meter box. It might also be worth moving the decoupling capacitors (C1 and C2 in Fig. 1) and placing them right onto the take off points for 'FWD' and 'REF'. Alternatively, two extra capacitors of 0.001 μ F can be placed at these positions. I have tried this method of metering with a scrap CB SWR bridge and it worked very well without any problems.

Increasing Sensitivity

Most of the CB SWR bridges of the design discussed are not very suited for genuine QRP levels of 5 watts and less. Typical full scale sensitivity seems to vary according to frequency and be in the order of 10 watts at 7 MHz and nearly 20 watts at 3.5 MHz. The sensitivity does increase quite dramatically at the higher frequencies and remember that these bridges were designed for 27 MHz operation. One solution is to find a more sensitive meter but this can be difficult or expensive; the other obvious solution is to use a small DC amplifier with the meter.

Fig. 3 shows a very simple circuit that could increase the sensitivity of the metering. It has all the sophistication of the common-garden slug, but it does work. TR1 acts as a DC amplifier and the output from VR1 is increased prior to metering.

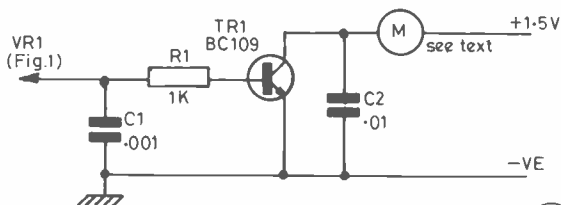
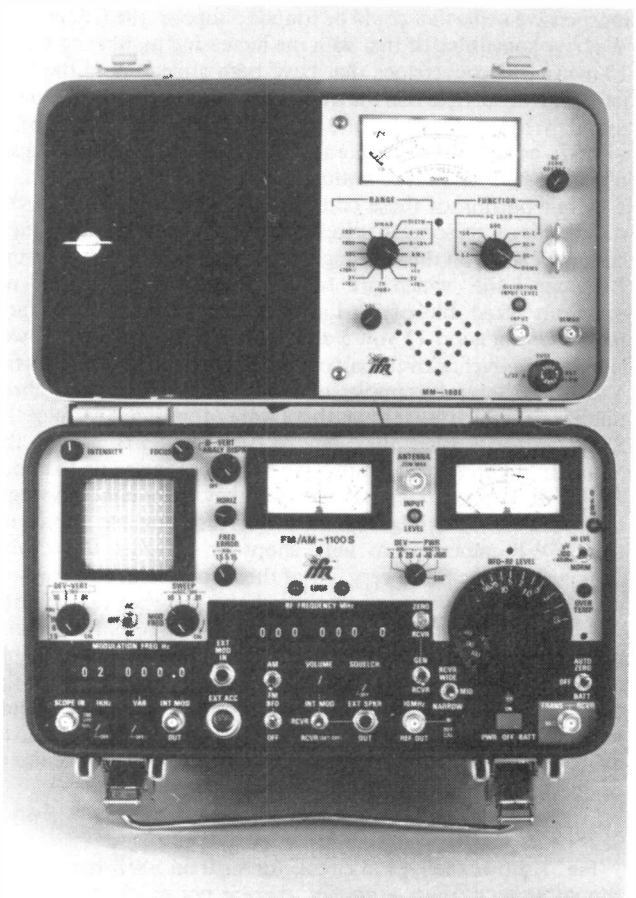


Fig.3 DC AMPLIFIER

There are problems with this system and I leave you, happy reader, to sort them out. Trying to put this little circuit into the box with the trough sensor gave all kinds of trouble from stray RF pickup. One way to solve these problems, the way I use it, is to have the meter and amplifier in a remote box. It may also be possible to mount it in a screened box or section inside the SWR meter case; however these cases seem full of RF as the trough has an open side. Any DC amplifier circuit can, and probably ought to, serve in place of Fig. 3. It may be wise to check such an arrangement with another SWR bridge in the line to see if it gives false readings due to stray RF.

These ideas might not be the biggest breakthrough since penicillin but I hope they encourage amateurs to pick up some of the crumbs from the CB table and save a little money.



Fieldtech Heathrow Ltd. claims that its newly available FM/AM1100S communications service monitor includes in one unit features and capabilities needed for most radio maintenance applications both in the workshop and in the field. The completely portable unit incorporates the following features as standard: RF signal generator, power monitor, oscilloscope, spectrum analyser, receiver/monitor, audio generator, frequency error measurement and tone frequency monitoring. A useful accessory is the MM100E multi-meter, which is neatly housed in an alternative lid for the FM/AM1100S unit. For further information contact Mike Dawson, Fieldtech Heathrow Ltd., Huntavia House, 420 Bath Road, Longford, Middlesex UB7 0LL. Tel: 01-897 6446. Telex: 23734.

EQUIPMENT REVIEW

THE BLACK STAR 'METEOR 600' DIGITAL FREQUENCY COUNTER

IN the January 1983 issue of *Short Wave Magazine* the Sabtronics Model 8610B Frequency Counter was reviewed, being a U.S.A. product at that time supplied through its British Isles agent, Messrs Black Star Limited of St. Ives in Cambridgeshire. Black Star has now produced its own range of counters and accessories under the series brand, "Meteor". Three models are currently available, the 100, 600 and 1,000, these figures denoting the guaranteed maximum operating frequencies in Megahertz. The one reviewed here is the Meteor 600.

The Manual

The A5 size, twelve page *Instruction Manual* is very neatly printed, with a glossy cover, and is a far better effort than the Sabtronics' equivalent aforementioned. A comprehensive specification of all three Meteor models is included with clear layout drawings of the front and rear panels. The operating instructions contain all the details and information to enable the user to operate the counter and are presented in a very concise way. No circuit diagram or description is included, but a comprehensive *Service Manual* is available as an optional extra, for £5.00.

Specification

The timebase operates at 10 MHz, the setability being better than ± 0.5 p.p.m. The temperature stability is better than ± 2.5 p.p.m. between 10° and 40°C , and ageing is better than ± 10 p.p.m. per year. On Input "A" the sensitivity ranges between 5 millivolts at 5 Hz through 25mV at 100 MHz, while on Input "B" it is better than 25mV from 40-600 MHz. Gate times of 0.1, 1 and 10 seconds are switchable and, using the 10s. gate time, the resolutions are 0.1Hz, 1 Hz and 10 Hz on the 10, 100 and 600 MHz ranges respectively. The power requirement is 9v. at a maximum of 600mA, from either the mains adaptor/charger supplied or from six "C" size, 1.2 Ah NiCad batteries which are optional extras.

Description

The robust, yet light, case is made from ABS plastic and has a light grey crackle effect finish. It is 219mm. wide, 88mm. high plus the feet, and 230mm. deep plus a little bit extra for the trigger level knob. A tilt bail is provided to elevate the front of the instrument. The case is a purpose designed one for these counters and consists of four basic mouldings; the top and bottom halves and a couple of side panels. The front panel, and the rear panel with battery compartment, fit into slots in the main case and the whole assembly is very rigid. An idea of the case can be seen from one of the photographs.

The electronics are accommodated on a single PCB behind the front panel, so most of the case is empty space. The display is an eight-digit, 0.5 inch, seven segment LED array with automatic decimal point and leading zero suppression. Above this are three LEDs indicating Overflow and whether the displayed count is in megahertz or kilohertz. The switch at the upper left is the On/Off/Fast Charge selector, the one at the bottom left selects the Range and the one to its right is the Gate Time selector. At the bottom right is a switch for a Low Pass Filter when making measurements below 50 kHz. The two BNC sockets are Inputs "A" and "B", the former for the 5 Hz-100 MHz range at 1

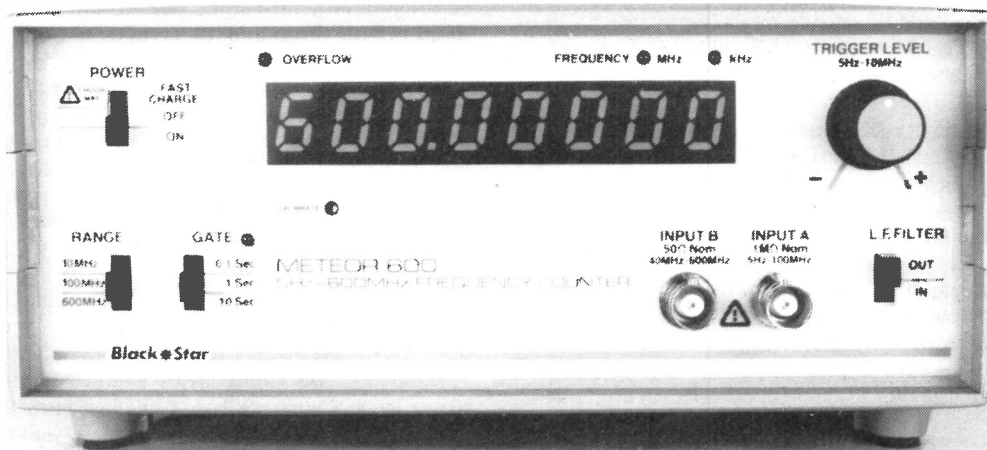


Fig. 1. Front view of the Black Star Meteor 600 Frequency Counter. The hole above the word "Meteor" gives access to the variable capacitor in the 10 MHz crystal reference oscillator. Thus the counter can be very accurately calibrated against a standard 10 MHz broadcast, such as MSF. The Low Pass Filter at the bottom right is switched in when making audio frequency measurements, to eliminate false counts due to stray RF signals.

photo: T. Traill

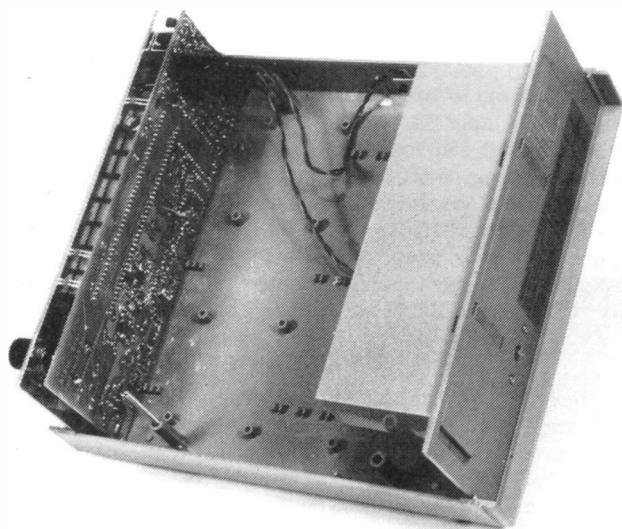


Fig. 2. Inside view of the Meteor 600 Frequency Counter. The entire circuitry is accommodated on a single PCB behind the front panel which fits into slots in the case. At the back is the compartment for six re-chargeable NiCad, "C" size batteries and which are optional extras; access to the batteries is via a sliding panel. The case and battery compartment have been designed and tooled by Black Star Limited.

photo: T. Traill

M-ohm impedance into 30pF, and the latter for the 40-600 MHz range at 50 ohms impedance.

Underneath the display is the Calibrate trimmer. The knob at the top right is the Trigger Level control which only operates on the lowest ranges. It enables the threshold of the squaring circuit to be moved to the positive or negative part of the signal waveform to overcome miscounts due to distorted waveforms, noise, ringing, etc. The counter, less batteries weighs 950 grammes.

Using the Counter

The Meteor 600 was used to measure frequencies from very low audio ones to RF ones at 432 MHz. At the LF end of the spectrum, the Low Pass Filter and Trigger Level features proved invaluable, enabling unambiguous measurements to be made with no external accessories. The instrument is very sensitive and frequencies in the HF amateur bands could be reliably measured by using a short pick-up antenna plugged into Input "A", the vertical transmitter antenna, fed with about 100 watts, being about fifteen metres away.

The time base oscillator frequency was checked against the 10 MHz Rugby transmitter MSF by sitting the counter on top of the station ATU, there being enough radiation from the time base to hear — or rather see — the beat note on the receiver's S-meter. As delivered, the time base was virtually "spot-on". It was very satisfying to use the Meteor 600 and the very accurate station counter in tandem and have them display the same frequency in the 14 MHz band down to the fourth decimal point — 100 Hz at 1s. gate time. The frequency display is bright enough in all but the strongest light but, as with all LED displays, it was necessary to shield it a bit when using the instrument outdoors in bright light.

Accessories

No accessories were supplied, but the list includes:—

- | | |
|--|--------|
| 1) A set of six "C" size NiCad rechargeable batteries, | £12.50 |
| 2) A telescopic pick-up antenna, | £8.50 |
| 3) X1 passive probe for use up to 1 MHz | £7.50 |
| 4) X10 attenuator/passive probe for use above 1 MHz, | £8.50 |
| 5) A combined X1 and X10 switchable probe, | £11.00 |
| 6) Various length BNC-to-BNC cable assemblies from | £3.05 |
| depending upon the length. | |

For those requiring the very highest accuracy, an external 10MHz reference input facility can be factory fitted for an extra £15 to enable the user to feed in his own 10 MHz signal source. Alternatively a kit costing £9 is available for the D-I-Y types.

Conclusions

The Meteor 600 is a very neat, easy-to-use and accurate frequency counter, guaranteed to count from 5 Hz to 600 MHz, but typically from 2 Hz to 700 MHz. The appearance is both smart and professional, the front panel uncluttered and the controls easy to read and operate. The case could have been only half the depth but no doubt Black Star will be bringing out a range of other instruments, some of which require more volume. In view of the high cost of tooling up for plastic mouldings, it makes sense to use a standard case for a whole range.

The Meteor 600 costs £115 ready-built and including the adaptor/charger. It is not available in optional kit form. The Meteor 100 costs £89 and the Meteor 1,000 will set you back £159. Please note that U.K. VAT of 15% has to be added to all prices quoted. This range of counters can be highly recommended and further instruments from the Company are awaited with interest. The designer and manufacturer is Messrs Black Star Limited of 9A Crown Street, St. Ives, Huntingdon, Cambs. PE17 4EB, to whom thanks for the loan of the review model. Their telephone number is St. Ives (0480) 62440.

N.A.S.F.

CATALOGUE RECEIVED

MS COMPONENTS LIMITED CATALOGUE NO. 4

MY interest in valves and things started during WW2 with the building of quality AF amplifiers using the legendary PX4 valves, and widened to the RF field by the mid-1940s. By then, Saturday afternoon bicycle rides to the numerous war surplus shops in Lisle Street and the Tottenham Court Road in London were a regular part of the week's routine. There was a tremendous variety of components on offer, as well as fairly complete items like T-1154 Tx's and R-1155 Rx's; everything from little ceramic stand-off insulators, through milliammeters and 807 valves at five bob each, to huge mains transformers. Any of those surviving shops now only sell new, mainly oriental, stuff, such as music centres, TVs, VCRs and cassette recorders. About the only components they might supply are coaxial plugs for the TV and batteries for your 'tranny'.

Those of us these days who still like to build gear for ourselves now have to rely on buying components at mobile rallies or by post from relatively few stockists of reliable, branded components. MS Components Limited is one such company whose latest Catalogue No. 4 has just been issued. Many will have seen the RS Components catalogue and this one from MS Components—no connection—is in similar format, running to 200 pages. It replaces the previous black covered one and some 2,500 new lines have been added.

This catalogue has nineteen sections. These comprise:—13 pages of batteries, including NiCad and Lithium types, as well as PSUs; a couple of pages devoted to cables, such as URM-67 coax at £5.98 per 10m. length; six pages of capacitors from professional grade electrolytics, through polycarbonate types, to little 5mm. ceramic trimmers; 23 pages of connectors such as DIN, BNC, N

and D types, edge connectors, probes and crocodile clips; four pages of fuses and circuit breakers. The biggest section is hardware and its 41 pages include everything from PCB material and accessories, through component and cable clips, nuts and bolts, a large range of cases and boxes in plastic and metal, knobs and heatsinks, to complete printers.

Next comes four pages of indicators of the filament and neon varieties and associated hardware; five pages of instruments, such as analogue and digital multimeters and a 20 MHz oscilloscope; three pages of analogue and digital meters; eleven pages of optoelectronics—LEDs, LCDs, LDRs a dotmatrix LCD, optoisolators/couplers and fibre optics components; six pages of relays from plug-in octal types to subminiature PCB jobs; five pages of resistors from ¼-watt high stability types to 17-watt wire-wound ones, cermet trimmers, but no ordinary carbon track pots.

The second largest section is the 38 pages of semiconductors embracing everything from signal diodes, Zeners, C-MOS, 74LS- and 74AL- series, triacs, thyristors, SCRs and voltage regulators, to microprocessors. No TTL 7000-series ICs are included though. Then seven pages on service aids and soldering and a page of suppressors; five pages of switches, such as mains toggles, slide, micro, rotary and thumbwheel types; twelve pages of tools of every type likely to be needed, from pliers to vices and twist drills to hand torches. The last section is four pages of transformers from 750VA mains isolating types to little 1.2VA efforts for PCB mounting.

All items have a part number and are priced on the page—no laborious looking-up in a separate price list. Prices will remain unchanged throughout the currency of the catalogue. The index at the front is in normal alphabetical order, the one at the back being in catalogue number order which tells you what page any particular component is listed. A couple of important points with **MS Components** is that there are no minimum order or postage and packing charges, and they will deal with anyone, unlike *RS Components* or *Farnell*, who only deal with firms.

I have used this company on several occasions and they have always honoured their "same day despatch" promise. I have never had any shortages or errors and everything ordered has been sent. In other words, they do carry an "in depth" stock and are very reliable. The trade counter is open from 10 to 12 in the morning and from 2 to 4 in the afternoon, and on Saturday mornings, too. **MS Components Limited** are at Zephyr House, Waring Street, West Norwood, London, SE27 9LH. The telephone number is 01-670 4466 and the Telex one is 892425.

N.A.S.F.

'WORLD COMMUNICATIONS YEAR' — A SMALL OFFERING

HAROLD HOYLE, G3MCI

BEING a radio amateur in Britain has two distinct advantages — the fact that most QSO's are conducted in English, and that the time of day or night is always referred to the time on our own clocks. The most difficult conversion factor that we are required to remember is GMT in summer time! The former, however, is one that we seem to take for granted: we *expect* our contacts to speak English, no matter where in the world the other station is located.

Now, apart from school-boy French, which has been kept up and hopefully improved, the only language in use at this QTH, is English. I have heard, and been interested in, the formalities of terminating a QSO and some of the parting remarks are known to many of us. In addition we have come across numerous of these expressions in songs, films and books. The obvious ones in this respect are French, German, Italian and Japanese.

During the past few months, few opportunities have been missed in compiling the following list of at least how to say "good-bye" in many languages. The use of the correct phrase is always received with enthusiasm and often leads to an extended over, occasionally on the assumption by the other operator that you know more of his language! When making any list it is difficult to know when to stop, because although this one covers most well-known languages, plus some not quite so well-known, there are many more yet to learn. The project will be pursued at leisure and with continued fascination, in the way that all this information was collected in the first place: by asking the other operator — in English of course — how to spell and pronounce the appropriate farewell. Any errors in either may be put down to QRM!

Prefix	Country	Expression	Pronunciation
OE	Austria	Auf wieder sehen	Owf <i>veeder</i> sayne
ON	Belgium	Au revoir, tot ziens	See France and Holland
LZ	Bulgaria	Dowijdane	<i>Dovish</i> -danay
PY	Brazil	Adios	See Portugal
OK	Czechoslovakia	Dovidenia, sbohem	<i>Dovidenia Ssboh-</i> hem (OK1 + OK2)
OZ	Denmark	Farvel	As written
UR	Estonia	Kuulemiseni	<i>Coo-oolem</i> — <i>eesenee</i>
OH	Finland	Kuulen-iin	<i>Coo-oolem-een</i>
F	France	Au revoir	<i>Oh revwahr</i>
DL/J	Germany	Auf wieder sehen	See Austria
EI	Eire	Slán leat	<i>Slawn latt</i>
SV	Greece	Adio	<i>Ah-deeoh</i>
KH6	Hawaii	Aloha	As written (emphasis on <i>ha</i>)
PA	Holland	Tot ziens	<i>Tot zeence</i>
VS6	Hong-Kong		<i>Choy kin</i>
HA	Hungary	Visont latashra	<i>Viss-ont la tashra</i>
VU/AP	India/Pakistan	Salaam	<i>Sal-ahm</i>
YB	Indonesia/Java	Selemat tinegal	<i>Selly-mat tinny-gal</i>
4X/Z	Israel	Shalom	As written (emphasis on <i>lom</i>)
I	Italy	Ciao, arrivaderci	<i>Cheew, arry-vadairchee</i>
JA/H	Japan	Sayonara	<i>Sah yon arra</i>
LX	Luxembourg	As France plus Aidie	As France plus <i>ay-dee</i>
XE	Mexico	Adios	See Spain
ZL	New Zealand	Kia ora	<i>Keeya ohra</i>
LA	Norway	Ha det bra	<i>Hah -det bra</i>
SP	Poland	Dovizenia	<i>Dovvy - zenya</i>
CT	Portugal	Adios	<i>Ah-dee-osh</i>
YO	Rumania	La revedere	<i>Lah -revedairy</i>
UA	Russia	Dah svidania	<i>Dah -svee danya</i>
EA	Spain	Adios	<i>Ah-deeoss</i>
SM	Sweden	Ha det bra	See Norway
TA	Turkey	Hoscakal	<i>Hoss-chakal</i>
YU	Yugoslavia	Dovidenia	<i>Dovvy-denia</i>
ZE	Zimbabwe	1) Shona-chisarai 2) Ndebele-lisalekule	<i>Cheess-a-rye</i> <i>leessa-tercoothla</i>

Not all cross-references, for example Brazil = Portugese are shown, as most are already known. Where emphasis in pronunciation is required, it is indicated by italicising the syllables involved, thus *radio communication*.

With acknowledgements to G3KXY

VHF BANDS

NORMAN FITCH, G3FPK

SEPTEMBER produced some nice tropo. conditions in the early and latter parts of the month, with the evening of the 28th notable for the number of EI stations on 2m. After a dearth of such events, an *Aurora* in the afternoon of Oct. 4 produced strong signals but with low activity; but more of this anon.

Awards News

Two readers have received their "125" stickers for their 2m. QTH Squares Century Club certificates this month. Martyn Jones, G4TIF, (ex-G8CXQ) from Leamington Spa is now up to 128 confirmed. His latest 27 additions comprised 19 tropo, 4 *E*'s and 4 *Ar* contacts, all on SSB before the Class A call came. The *Ar* QSOs were all southerly ones in the memorable event of Sept. 6, 1982, viz:— F1FEN/P (CF), IW3QBC (GG), YU3CAB (HG) and OE3OBC (II), Martyn's certificate is no. 17, and his sticker was dated Sept. 16.

Mick Cuckoo, G6ECM, (Kent) is now at exactly 125 confirmed, his sticker being dated Oct. 4. His list shows 18 tropo, 5 *E*'s and 2 *Ar* contacts. Mick's current total is 170 in the table, with 32 countries worked.

Congratulations to Roger Parry, G6NWF, from Crewe in Cheshire, who was awarded membership certificate no. 359 for the 2m. VHF Century Club on Sept. 24. He was licensed in October 1982 and started off with an *Icom* IC-251E and 90w PA with 15-ele. *Cue Dee Yagi* at 35ft. Another front end board, by *muTek*, has been added and the beam replaced by a 14-ele. *Parabeam*. Roger has plans for a better antenna system and to pass the morse test, although he says his main interest will be on the VHF's.

The Satellites

The latest edition of the *AMSAT-UK* satellites orbit calendar has been published, covering predictions for *Oscars* 9 and 10, and the Soviet *RS-5* through 8 series. *Oscar* 8's batteries have died as have those in *RS-3* and 4, so no predictions for these defunct objects are included. The calendar includes a reminder that Wednesdays are reserved for special experiments for the Soviet satellites and, even if the transponders are on, they should *not* be used.

The current schedule for 0-9 is:— Mon. and Thurs., whole orbit radiation scan data. Tues., checksum telemetry data. Weds., CCD camera data. Fri., bulletin preparation. Sats./Suns., bulletin, telemetry and "digitaler."

0-10 continues to be a very successful satellite and the QRP days — Monday — are proving conclusively that it is absolutely unnecessary to use high power on 70cm. to access the transponder. Indeed, as little as *twenty watts e.i.r.p.* has been enough at *apogee*. The present operating schedule for the "U" transponder is that it is normally *on* between *mean anomaly* figures from 40 to 216. Put another way, it is *off* for about two hours either side of *perigee*. The *mean anomaly* figure is given out on CW during the bulletins on the hour and half-hour on the general beacon frequency of 145.810 MHz. It denotes how far around the orbit the satellite is from *perigee*, the orbit being divided into 256 sections of approximately 164 seconds each. At present, the *perigee* is in the southern hemisphere but, since this particular orbit precesses at about 8° *per* month, in about two years it will be in the northern hemisphere — and so on.

First tests with the "L" transponder were very disheartening as stations found that, unless they used tens of kilowatts *e.i.r.p.*, they could not hear their signals on the 436 MHz downlink. Two antennas are available for the 23cm. receiver — an omni-directional one or a 14 dBi gain one. They are selected by a change over relay *via* ground control and it is suggested that this relay is not making properly when switched to the gain antenna. Consequently, the receiver signals are only being transferred across the tiny capacitance of the relay contacts. The omni-directional antenna works properly but does require much more radiated power than would have been necessary had the gain antenna system functioned properly.

0-10 is switched to "L" mode each Wednesday and Saturday for one hour either side of *apogee*. Reports on the success or lack-of-success in communicating through the 1,269/436 MHz transponder would be appreciated.

By the time this appears, the first *Region 1 IARU* satellite news bulletin should have been transmitted *via* 0-10 using the callsign, GB2AUK. This will be on special service channel H1, the frequency to listen on being 145.973 MHz on Sundays. Check with *AMSAT* or the *RSGB* for the actual times of these transmissions from the QTH of G4GPQ. After the 2m. *AMSAT* net on Oct. 9, a test transmission was planned but in the London area, reception was impossible due to a net of FM operators who refused to QSY out of the space band. It is a pity that G8EUK and his friends seem so resolutely opposed to accepting any band plan; their attitude is

certainly not in the true spirit of amateur radio.

The GB2AUK bulletins are a landmark in the annals of radio since it is the first time an amateur radio news service has ever been broadcast *via* an orbiting satellite. Reception reports are eagerly awaited, together with any reports of interference.

Adrian Chamberlain, G4ROA, (Coventry) concentrates on the "horizon-skimming" passes on 0-10 as he cannot elevate his antennas. He lists many west coast U.S. and Canadian stations worked, one after the other, on Aug. 28/29. On Oct. 2, he took his *Yaesu* FT-225 and FT-780 into the garden and fixed up crossed 6 and 12 ele. *Yagis* for 2m. and 70cm. respectively, on an 8ft. pole. With 10w. and tilting the antennas to 25°, he worked his first JA and many Europeans at good strength.

Russell Coward, G6HRI, (Blackpool) is an enthusiastic 0-10 user and makes several points in his letter. He reckons that accurate elevation control is necessary otherwise you have to use a lot more power. Those who do not have elevation control should concentrate on low angle passes, but remember that the other operator will need a good Rx preamp. Russell suggests a good low noise preamp. is better than circular polarisation and thinks — as does G4GPQ — that many reports of spin modulation are caused by stations running too much power. During good tropo. conditions, he has found it much more difficult to get his 70cm. signal out into space except above about 25° of elevation. Of his many DX QSOs, the most satisfying was one with Hawaii, KH6, at the first time that area was in range. He forgot to mention the date but reckons it could be a G/KH6 "first" *via* satellite.

For any readers thinking of starting on satellite operation, for 75p, *AMSAT-UK* will send a sample copy of its quarterly magazine *Oscar News*, plus details of all other publications and services. An *Oscar Ten Handbook* is also available at £3.00 including U.K. postage and packing. The address is:— *AMSAT-UK, LONDON, E12 5EQ.*

Contest Notes

A reminder that the 144 MHz Marconi Memorial CW Contest is on Nov. 5/6 from 1400 for 24 hours, with the *RSGB* event on the 6th from 0800 to 1400; see page 408 in the October issue. The next two legs of the 432 MHz *Cumulatives* are on Nov. 8 and 24, 1930-2200. The next leg in the 1,296 MHz *Cumulatives* is on Oct. 31, 2030-2300 with further sessions on Nov. 16, 1930-2200, and Dec. 2, 2030 to 2300.

On Nov. 27, there is the *Verulam ARC* 144 MHz contest. No details to hand but last year it was a four hour affair starting at 0900. The last 1983 event is the 144 MHz

ANNUAL VHF/UHF TABLE

January to December 1983

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		23 CENTIMETRES		TOTAL Points
	Counties	Countries	Counties	Countries	Counties	Countries	Counties	Countries	
G3UVR	59	7	89	25	66	17	9	4	263
G8FMK	—	—	62	14	51	11	38	9	185
G8TFI	—	—	58	16	60	15	23	7	179
G4FRE	39	5	42	11	56	18	15	7	171
G3BW	42	6	57	21	37	6	5	4	169
G8PNN	—	—	58	16	45	12	27	9	167
G8ORP	—	—	69	20	62	15	—	—	166
G6DER	—	—	63	16	52	12	15	4	162
G3PBV	3	1	45	24	48	16	20	7	160
GD2HDZ	42	5	51	13	36	12	4	4	159
G2AXI	34	6	58	14	38	9	6	2	159
G4MUT	30	4	51	17	29	10	—	—	141
G4ROA	—	—	50	11	41	11	19	8	140
G4ARI	28	2	85	19	1	1	—	—	136
G6HRI	—	—	69	13	40	9	—	—	131
GW3CBY	25	7	56	15	21	6	3	2	130
GW8UCQ	—	—	61	15	40	12	—	—	130
G8ULU	—	—	43	20	34	13	11	7	128
G4NBS	12	1	43	11	37	12	15	2	120
G4FRX	—	—	59	17	33	9	—	—	118
G8KAX	—	—	34	11	35	8	15	5	108
G6ECM	—	—	75	32	—	—	—	—	107
G6PFR	—	—	64	14	22	6	—	—	106
GW4TTU	—	—	74	26	1	1	—	—	102
G3FPK	—	—	81	20	—	—	—	—	101
G4STO	—	—	39	12	27	4	9	4	95
G4DEZ	—	—	66	24	—	—	—	—	90
G3FIJ	17	1	39	10	18	2	—	—	87
G6TTU	—	—	66	16	—	—	—	—	82
G8RWG	—	—	59	14	—	—	—	—	73
G6HDD	—	—	56	13	—	—	—	—	69
G8XTJ	—	—	54	13	—	—	—	—	67
G8VFE	—	—	47	15	—	—	—	—	62
G8KMT	—	—	47	12	—	—	—	—	59
G4NRG	4	1	29	12	8	4	—	—	58
GU4HUY	—	—	34	10	—	—	—	—	44
GW4HBK	36	6	—	—	—	—	—	—	42
G4FKI	7	1	20	2	1	1	—	—	32
GM4CXP	—	—	18	12	—	—	—	—	30
G2DHV	5	1	4	1	4	1	—	—	16

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

Faversham, providing a link across the North Downs.

Twenty-three Centimetres

Dave Sellars, G3PBV, (Devon) finds his 30w Tx makes a big difference. During the various September lifts, over half the QSOs were made directly on the band and he even mentions QRM at times. On the 25th, six countries were worked:— G6GN, GU8FBO who was beaming his one watt to the east, HB9AMH/P who was over S9 in the afternoon, F1DPX (ZH), F1BUU(ZE), DK8VR (DJ) and ON5GF (CK). Before going to work on the 26th, ON5SHF and DB0JO beacons were very strong, as was some pulse-type QRM with a low repetition rate at intervals of a few kilohertz across the band. It was difficult to get a heading on this. (Could it be out-of-band radar, Dave?). On the 27th, a couple of ONs were worked/heard and at 2100, there appeared a "pipe line" into DL square resulting in a 35 mins. ragchew with DL4EBB who had camped only four miles from Dave's QTH the previous year. On the 28th, G4PEC (Tyne & Wear) and G8PNN (Northumberland) in ZP square were worked, along with other northerly stations. Seven stations were worked in the contest on Oct. 1/2, best DX being G4ALE/P at 360 kms.

Denis Jones, G3UVR, (Merseyside) is now QRV on the band with a *Microwave Modules* transverter and single 23-ele. beam. First day of operation was Sept. 23 which brought several QSOs before the batteries in the *FT-290* prime mover went flat. Since then, Denis has built a 28/144 MHz transverter to drive the *MM* job and has already worked nine counties, four countries and ten squares.

John Quarmby, G3XDY, is now up to 42 squares on the band and mentions HB9AMH/P (DH), DD1GE (E1), DK0NA (FK), DK5IE (EJ), OE2s KMM and CAL (GH) and DL7ZL (GM) on the 23rd. F1DPX (ZH) was another new one on the 26th, but John's best DX was DK5AI (FL) on the 28th. Dave Robinson, G4FRE, (Suffolk) worked F1DZQ (AI) on the 25th then discovered a blown transistor in the PA resulting in just 65 milliwatts output.

Ray Cox, G8FMK, (Oxon.) also took advantage of the good conditions and had QSOs with ON4TX (CK) and GU8FBO on the 27th, for all time new countries. Dave Cox, G8OPR (Hants.) reports after a long absence and has started on the band with one watt and a 15-over-15 antenna. Gordon Emmerson, G8PNN, added Devon and YK on the 28th, thanks to G3PBV, and G4TXG (Here. & Worcs.) was another new one for the table.

Andy Renouf, GJ8SBT, is in England now till just before Christmas, but before he left Jersey, he worked a number of new French stations on the 24th and morning of the 25th in ZG, BI, AI, AG and ZE squares. F1CCH (ZG) was only using one

Fixed Contest on Dec. 4 from 0900-1700, with Single-op. and Multi-op. sections and all modes permissible. All above times are GMT.

DX-Pedition Results

Paul Broadhurst, G4NFD, has sent a comprehensive report on the *Albatross Contest Group's* MS Expedition to XJ square in August. The location was in XJ05h on a cliff top 50m. *a.s.l.* with sea path take-offs from north-east through west. In six days of operation, 63 MS QSOs were completed on 2m. and one on 70cm., plus many tropo. QSOs. Set-up day was Aug. 7 but the hired generator gave 320v. AC so was replaced the following afternoon by a 4kVA diesel unit.

On 2m. they ran two stations:— an *FT-221R* with 8877 PA and two 16-ele. rotatable *Yagis*, and an *FT-221R* with 7213 PA and eight 9-ele. *Yagis* fixed to the east. Back-up PAs were available in case of breakdown. On 70cm. they used an *FT-101*, transverter and 2 x 4CX250B PA, the antennas being four 21-ele. rotatable *Yagis*.

Of the completed MS QSOs, 14 were on SSB, the rest on CW. Eight of the 63 were random ones. presumably SSB? The 70cm. MS sked was with DK1PZ (EL) on the 12th and took four hours of effort by

G4PVM. The calls used were G4NFD, G4PVM, G8KWX and GB4ULX, the operators being G4NFD, G4PVM, G4OPC, G4NOY, G8KQP, G8KWX, GW4LXO, GW6UTP and GM8OFV. Next year they plan to operate in the *Perseids* shower from WL, VL and UL squares in the Irish Republic and they wish to thank the *University of Liverpool ARS* for the loan of some of the antenna poles. QSLs should go to G4NFD, 92 Clevedon Road, Tickenham, Clevedon, Avon, BS21 6RE with *s.a.e.* or IRC if direct reply needed.

Repeater News

Jeff Clarke, G3TIS, is the manager of the Central Kent UHF repeater GB3CK and has forwarded a copy of his report. This details all the hardware, the Tx being based on an *Ultra* "Lion" unit and the Rx a *Pye 460* with extensive additional screening and filtering. Single antenna operation — four stacked dipole array — *via* six cavity resonators is used, the subject of much frustration, but finally sorted out by G4EFO. Activity is low but picking up and to open up the relay, a toneburst and speech is necessary. RB0 is GB3CK's channel and it is designed to cover Ashford, part of the Weald, and the outskirts of Maidstone, Sittingbourne and

watt to his 70cm. antenna, yet FICPX (AH) running 150w. to 16 antennas was inaudible with Andy!

Seventy Centimetres

George Haylock, G2DHV (Kent) now has increased his power to 4w on the band, the antennas being either a 7-ele. or 4-over-4 Yagi at 15ft. Crystal controlled FM operation mostly but no CW contacts due to lack of activity. On Sept. 25, G3PBV reports strong signals all day from HB9AEN/P (DG) and HB9AMH/P (DH). QSOs with DJ6JJ (DL) and F5PL/A (BD) who was running just 10w, was a new square. Conditions were good to the south next day and F6ECI/P (AF) was worked. A local power cut till 1850 on the 28th was annoying and the first station worked when it was restored was EA1NU (XD) who, with his 10w, was working into northern England. By contrast, Dave found the *IARU Contest* an anti-climax with only 22 QSOs, best being with PE0MAR/P at 558 kms.

G3UVR added a few points to the tables with GU4LJC and GW3EOP/P (Mid Glam.) on SSB on Sept. 27 and Oct. 1 respectively. Earlier, on Sept. 23, Denis worked OE2CAL on CW, and G3XDY also lists Austrians that evening:—OE5VRL (HI), OE3RLC (HH) and OE2KMM (GH), plus DB5ML and DK2RV in FI. On the 25th, John contacted F6HLD/P (CG). G4FRE did not get on till 2100 on the 23rd but managed QSOs with Y23FG (FM), F1BBS (DI) and OE5UKL/5 (GI). On the 24th, F1EZQ (CH), and F6ETI (YH) were worked, then F1FEN (CF) on the 25th.

Nick Peckett, G4KUX, (Co. Durham) now has the foundation in for his 60ft. tower. Hitherto, he has had his 70cm. antenna only 6ft *a.g.l.* in the front garden, fixed south-east. Even so, he did work EA1NU on Sept. 28. Jon Stow, G4MCU (Essex) got four new squares to bring his score to 62. They were:—DK4MM (EK) and HB9CRQ (EH) on the 23rd, and EI9Q (WM) and EI9EH (WN) on the 28th. G4ROA mentions F1FTB/P (ZI) as a new one on the band on the 1st Oct.

Martyn Jones, G4TIF, (Warks.) is now using an *Ant Products* "Silver 70" antenna fed through 20m. of *Pope H-100* cable and is now up to 18 countries on the band. Three new squares were added on the 27th and 28th:—Y23BD (GM), GW8ELR (XL) and EI9Q (WM). G6HRI operated -/P from YO square on Oct. 1 in the contest. Russell used an *FT-101*, transverter, 50w PA combination, with a 48-ele. Multibeam antenna. Stations in AJ, AM and XK were worked and by now he should have a couple of 48-ele. antennas up at 32ft. from home.

G8OPR now runs 200w to an 84-ele. group on 70cm. from Andover and that combination provided Dave with nine new squares on the 29th August, with many QSOs over the 1,100km mark. From

Northumberland, G8PNN lists G3PBV and GU6JST worked on the 28th, the latter also contacted by Arthur Breese, GD2HDZ. From Jersey, GJ8SBT is now on the band with what Andy describes as "a little crude" equipment; *e.g.* 3 dB noise figure, only 10w output and 18-ele. *Parabeam*. Even so, some 25 squares have been worked, best DX so far being an OZ with just 2½w output. Geoff Brown, GJ4ICD, eulogised over the "fabulous conditions" over the Sept. 21-28 period in which he added GW6DDB (XN) and EA1ABY (YC) for a couple of new squares to bring the total to 110. The EA was only running 7w.

From Denmark, OZ1EKI told your scribe he now has a 180w amplifier on the band, using three 2C39 valves. Tom is now up to 116 squares and 25 countries and was active on Sept. 25 working into F, G and GW, with AI and YH being new squares.

Two Metres

As usual, the bulk of this month's mail was devoted to 2m. activity. As observed from G3FPK, there have been several occasions when the cacophony of people yelling at a rare DX station has been reminiscent of 20m. when Heard Island operation took place recently! Brian Bower, G3COJ, (Bucks.) suggests that Sept. 28 was "EI night" and reminiscent of a similar opening on Oct. 26, 1969. G3PBV did not spend too much time on 2m. but managed a couple of HB9s on the 22nd and HB0BNP for a new country the next day.

For G3UVR, an Aurora on the 19th brought SM4HFI (HU) on CW for a new square, plus some other SMs and LAs. Another *Ar* earlier on the 15th produced nothing new for Denis. On Sept. 7, G3XDY worked F1ADT/P (BE) and on the 22nd John got FIGXX (ZF) for a couple of new squares. The early evening of the 24th brought OE3XUA (HH), OE5MKM (HI) and OK1KRQ (GJ) all new on the band, with F8OP (CF) the next day.

G4KUX's letter covered some August activity, including the *Perseids* which Nick thought were "average" this year. On Sept. 19 in the *Ar* he worked SM4HFI for a new one, OY9JD (WV) again, and LA7KK (FU). In an *Ar* on the 16th, he lists QSOs with LA, GI and GM stations. On tropo, he describes the period Sept. 23-28 as "quite incredible," the log reading more like 20m. On the 23rd, the conditions favoured OE, OK, southern D, eastern F, HB9 and Y and brought many contacts over 1,000 kms., best being OE5MKM. On the 25th, things were good in a north/south direction into France with QSOs down to BF and BH. However, the 28th was quite remarkable with seven EAs and VD and XD worked, all very loud. At one point, EA1OD was S9-plus 40 dB!

For G4MCU, F1ADT/P (BE) on Sept.

7 and EA2ARD (ZD) on the 25th were worked leaving Jon only needing DD and DE squares "down south." Dave Dibley, G4RGK (Bucks.) made the most of the Sept. 23-28 tropo. lifts, the first day bringing stations in F, D, HB9, OK and Y, several in the "G" squares. The next day brought 3 HB9s in DH and F6CJG/P (BF), while on the 25th, QSOs with Fs in AD, AF, BE, CG, and ZE are mentioned, plus EA2ARD. In the Irish opening on the 28th, Dave added EI9AHB and EI5EM in WN.

Rod Burman, G4RSN, (Surrey) heard HB9CRQ calling "CQ" at 1822 on the 23rd from EH61b and worked him for a new square. After that, OK1KKH/P (HJ06c) was contacted. At 0522 on the 26th, F1BRV (BG06b) was another new one on 2m. Rod has never heard EIs as strong as they were on the 28th and EI5AVB (WM45h) at 2207 was another new square. Martyn was calling for stations by QTH square, thus controlling the pile-up quite well.

Once again Mick Cuckoo, G6EGM (Kent) seems to have been able to work some choice DX which others nearby could not hear. On the 23rd, he contacted 41 Ds in the "E" and "F" squares, 17 HB9s, 3 Ys in FK and GK, and I2FHW (EF36b), IW2BNA (EF36b) and 4 OKs in GK, HJ and HK. On the 25th, Mick worked I2FAK (EF77g), IK2CHT (EE06h), IW2BNA again, HB0BNP (EH68d) and 2 OE9s in EH to bring his 1983 countries total to 32. Phil Ingham, G6HDD, (Bolton) got two new countries, ON and GJ, and ten new squares out of the lifts, but found it very difficult to compete with more southerly stations. His 100w "linear" went decidedly non-linear emitting a very wide signal, so was switched off.

Jim Rabbitts, G8LFB, (London) mentioned over the air the *Ar* on Sept. 19 when the only station heard was GM6LXN (YS22f) and nothing on the CW end. *Via tropo.* on the 22nd, Jim worked an F in CE06b for a new square. Neil Montanana, G8RWG, (Surrey) is now up to 92 squares the latest additions being EA1RCR/P (YC) and F6GZC/P (BC) on Sept. 3, and F1ADT/P (BE) on the 7th.

Kevin Piper, G8TGM, (W. Sussex) is another reader who has missed a couple of deadlines so his six page letter goes back to some of the *E's* happenings of July, and August tropo. and MS. Suffice to report that Kevin did not miss out on much of the DX. On Sept. 7, F1ADT/P (BE) provided a new square. On the 23rd, from 1428 on, his list includes OE5s OOL and TDM (GI), LX1JX (DK), Y23NK/P (FK) and many other Germans, while other OEs and OKs were heard in the "G" and "H" squares. The 24th and 25th brought lots more Fs and HB9s, along with EAs in XD and ZD. He heard I2FAK, EA2AGZ and EB1AVV and many more Fs and HB9s. The 27th

QTH LOCATOR SQUARES TABLE

Station	23cm.	70cm.	2m.	Total
OZ1EKI	—	116	345	461
G3VYF	—	117	307	424
G3IMV	—	80	340	420
G3POI	—	—	404	404
GJ4ICD	1	110	230	341
G3JXN	64	104	160	328
DK3UZ	—	—	317	317
G4IJE	—	—	314	314
G3COJ	39	91	163	293
G3PBV	25	95	171	291
EA3LL	—	30	261	291
G8KBQ	8	94	188	290
LA8AK	25	62	200	287
G3XDY	42	98	145	285
G3UVR	10	77	193	280
SP2DX	—	—	280	280
GJ8KNV	12	76	191	279
G4IGO	—	19	246	265
G8VR	2	24	237	263
G3BW	6	36	220	262
G4ERG	—	16	243	259
G8TFI	28	104	126	258
GW3NYY	—	48	201	249
G4DEZ	—	—	240	240
G4NQC	32	61	146	239
GM4COK	—	28	204	232
G4TIF	—	75	157	232
G4MCU	—	62	169	231
G3CHN	—	—	230	230
G8PNN	41	72	115	228
G8ATK	15	81	129	225
G8RZO	—	75	148	223
G4RZP	—	76	147	223
GJ8SBT	14	25	182	221
9H1BT	—	11	210	221
G8HHI	12	70	133	215
G8FUO	23	98	88	209
G4JZF	—	68	140	208
G4KUX	—	36	172	208
G2AXI	9	76	121	206
G4OAE	—	31	174	205
GW4EAI	—	—	205	205
G8ULU	21	73	109	203
G4ERX	7	61	132	200
G4AWU	—	50	150	200
G3FPK	—	—	196	196
G4PCI	—	28	167	195
G3KEQ	—	—	194	194
GM4CXP	—	26	163	189
G3NAQ	—	58	128	186
G4NBS	14	75	94	183
G4HMF	2	35	144	181
G4STO	20	44	113	177
G8FMK	29	65	78	172
G6CMV	1	29	142	172
G4HFO	—	60	112	172
G6ADH	—	35	135	170
G6ECM	—	—	170	170
G8LFB	—	—	165	165
G8WPD	—	24	139	163
G6DER	17	53	92	162
G8KAX	22	57	82	161
G4NOX	—	47	113	160
G4MUT	—	60	99	159
G8TGM	—	—	158	158
GD2HDZ	13	50	91	154
G4FRE	23	86	42	151
G6HKT	—	60	89	149
GW8UCQ	1	45	100	146
G6DDK	2	13	127	142
G6HKS	—	—	142	142
GM4IPK	—	—	139	139
G6ADE	—	64	70	134
G8SRL	—	35	98	133
G4ROA	16	55	61	132
G4RGK	—	32	100	132
G4JTJ	—	40	87	127
G8WPL	—	44	83	127
G4MJC	—	12	110	122
G3FIJ	—	29	92	121
GW4TTU	—	2	115	117
GM8OEG	—	—	115	115
G8XIR	—	—	115	115
GW3CBY	5	24	85	114
G4MEJ	—	—	114	114
G4GHA	—	2	110	112
G6JNS	1	3	106	110
G4FRX	—	36	71	107
G4RSN	2	22	80	104
G4DOL	—	—	100	100
G8WUU	—	27	72	99
G8VYV	—	—	97	97
G14QMK	—	—	96	96
GM8YPI	—	—	94	94
G4NRG	—	19	74	93
G8RWG	—	—	92	92
GM8BDX	—	33	53	86
G6DFT	—	—	85	85
G6ABB	—	—	80	80
G6HRI	—	23	46	69
G6ELQ	—	—	69	69
G6NWF	—	—	67	67
G8XTJ	—	—	64	64
G6PFR	—	13	50	63
G4PEM	—	—	63	63
G8ZYL	—	—	54	54

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

was another German night with many Ds in DK and DL squares, the only one further afield being Y24IH/P in FL. On the 28th, EA1NU (XD) was contacted at 2154, followed by 4 EIs in WM and WN, GI4OPH (XO) and 4 GMs in XP, YP and YR.

John Fitzgerald, G8XTJ, (Bucks.) has been trying for the DX, too, and is another reader who worked F1ADT/P on Sept. 7. HB9AGG/P (DE) on the 22nd was country no. 13 for this year, while on the 23rd DF2UU/P (EI) and on the 25th F1DBI (CE) were new squares. September brought more counties for GD2HDZ, including GU3EJL (Alderney) and GU4LJC (Guernsey) on the 28th.

GJ4ICD did not add any new squares in the Sept. 21-28 period, nor did Geoff mention stations worked but did include UB5 and SP in the country list. GJ8SBT managed EA2AX (YB) and EA1EH/P (YB) in the Sept. 3 contest. On the 23rd, Andy writes that OE5GOL was S9-plus-20 dB for a short while using 10w. According to G4KUX, Stan Green, GU3EJL, reckons he was hearing 9H1BT (HV) at 1030 on Sept. 26 so it will be interesting to find out what was happening on the tropo. scene in Malta at the time.

One feature of the tropo. conditions of Sept. 23/24 reported by many operators, was that stations to the east and south-east were certainly not strongest when using the proper great circle bearing. Anything up to 40° more northwards has been mentioned. In a QSO, Mark Turner, G4PCS, recalled reading about this in a microwave feature concerning anomalous QTFs when receiving the Isle of Wight beacon. Perhaps those with sharp arrays and clear take-offs could look for this phenomenon in future openings.

Four and Six Metres

Not much news of 4m. and 6m. doings this time. On Sept. 28, G3COJ on 6m. worked EI6AS on 2m. and earlier, Brian worked EI6DT on 4m. for his first EI and heard beacon EI4RF for the first time. EI6DT reads the *IRTS* news bulletin on 4m. at 1130 local time on Sunday mornings on 70.185 MHz and would welcome U.K. stations calling in afterwards.

G8TGM has got a *Wood and Douglas* 6m. converter going and, using a 10m. dipole in his loft, has heard a few of the U.K. 6m. operators on CW and SSB. Kevin asks why cannot Class "B" licensees work the 6m. operators crossband? It does seem to your scribe that the *Home Office* has got itself into a muddle over this one. The usual answer to crossband working is that you may only work people on the bands you are licensed to operate on, so that a G1 can work crossband 2m. to 70cm. but *not* 2m. to 10m. However, what about the great

majority of Class "A" folk who are not licensed to operate on 6m? Why are we permitted to work the 6m. chaps crossband?

Miscellany

Gem of the month heard on 2m. "You are about 80% Q5 copy here, old man!" That's about as daft as the oft-heard, "You are readability 4 to 5." Reg Woolley, GW8VHI, complains about those who answer a "CQ Contest" call then refuse to give a serial number.

Concerning operating practices, G8XTJ wishes people would ask if a frequency is clear before starting a QSO. Some do, but the majority do not. One really ought always to inquire since it is possible someone could be listening to and working someone you cannot hear. It is surprising how many SSB operators only appear to be able to count in tens, or even fifties, when nominating a frequency. Why not use odd-ball ones, especially on 2m? G8XTJ also mentions that newcomers, especially ex-CB-ers, tend to copy the first stations they hear on the amateur bands, often picking up bad habits. John's pet hates include the use of the rather silly expression, "Hi," to indicate humour; use of the words, "there," and "this end," in almost every sentence; e.g. "The name this end is Reg." The terms "personal" and "handle" instead of name; the "This station G1XYX" syndrome.

Your scribe can only say, "Hear, hear," to G8XTJ's comments and would mention some other nonsense, such as "listening for any possible call" — am sorely tempted to say, "Listening for any impossible call," just to see what happens! Another gem is, "We will QSL 100%, old man." How can you QSL a guy 63%, for example?

Next postage stamps, this item being prompted by GJ4ICD who receives lots of *s.a.e.'s* from U.K. amateurs with English, Scottish, Welsh or Ulster stamps, all useless in the Channel Islands. The same applies to the Isle of Man. To clarify definitions, Great Britain means G, GM and GW only; the United Kingdom means the same *and* GI; The British Isles includes EI, G, GD, GI, GJ, GM, GU and GW, and places like Foula, Rockall, the Scilly Isles, Orkney, Shetland, the Hebrides, etc.

Deadlines

So much for September. Please send all your news and claims for the December feature by the early date of Nov. 2, and for the January issue by Dec. 7 to:—"VHF Bands," SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts., AL6 9EQ. 73 de G3FPK.

“CW” HE SAID — AND HE DIDN'T MEAN MORSE

OR: HOW OLD-FANGLER BOILED
HIMSELF A HOT POTATO

JACK HUM, G5UM

S SAID The Man at the Club: “Seems a long time since there’s been anything in *The Mag* from Old Fangler. Is he well? I do hope so. And here’s another thing: would it be possible to gather all those articles he’s written and publish them as a book?”

If Old Fangler had been forty years younger he would have blushed to the roots of his even-then-receding hair. Instead. . .

“Yes, Old Fangler *is* alive and well. . . but I must say you take him rather aback at the thought of publishing his Collected Works.”

This tickled The Man at the Club: “Ha, ha, Collected Works, a good phrase. CW without a Morse key! I like that! But I must go. It’s getting late. But I’ll tell you one thing (murmuring darkly): there’s a certain subject he has never fulminated on”. And with that he disappeared out to the clubroom’s crepuscular carpark.

Watching the swing doors slowly reach nought revs, Old Fangler found himself ruminating upon what TMC had just said. Why on earth did he want to see the Collected Works published and to experience all over again those diverse dogmatisms and battles long ago? Perhaps the man felt in need of a breath of stale air after the highly clinical fresh air of the club meeting which had just closed.

The subject for that evening had been up to date indeed even though one member had mis-translated it as “High Seas” when he heard it announced on the club net on 433.45 MHz the weekend before and had assumed it was something to do with maritime mobile.

“Not ‘High Seas’, Ethelbald you dullard” the net controller had replied: “It’s going to be all about ‘Eye Sees’, integrated circuits, you know.”

Ethelbald didn’t know. He had never seen an IC in his life and he lacked both the courage to open up his Japanese talk-box and the expertise to tinker with what he would have found inside it. It was to the credit of the speaker that night at the club that Ethelbald found himself less mystified about Eye Sees by the end of the evening than he was at the beginning. But weren’t those little rectangles with sixteen legs cold and clinical compared with the good old hot devices called valves which he had grown up with?

“Dredging Up. . . .”

Similar thoughts infused the Old Fangler’s cauliflower computer at the top of his spine as he watched the members drift one by one out into the darkness. What purpose, he mused, would be served by dredging up those *S.W.M.* articles of yesteryear — and in particular what did TMC mean when he hinted at a nameless subject which had not so far been “fulminated on”?

There was only one thing to do and that was to go home and to find out by browsing through those back copies of *The Mag* packed thickly in that upper cupboard in the hallway.

By midnight that night the job had been done, at any rate as well as it *could* be done, remembering that many an *S.W.M.* had gone missing simply because O-F hadn’t liked to ask for it back when it was lent to Ethelbald or to Herbert Mergenthwerker or to young Virginibus or to whomsoever else who constantly borrowed from his collection of the mags-of-yore.

As he browsed he was constantly deflected from his purpose by finding himself riveted by articles by A. J. Devon, the writer who did more than any other in these islands to direct people towards VHF, and by G6QB, whose high standards of DX operating were a major cause of “British being best” as others in these islands followed his example. Then there was that All-EF50 TRF Receiver by some chap called G5UM; it was designed around an ex-Wartime valve you could buy for sixpence and appears to have been constructed in some hundreds.

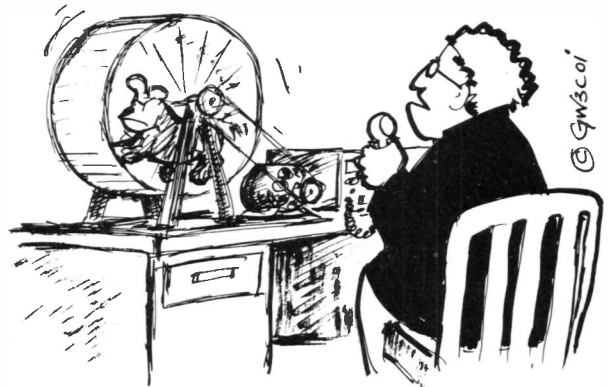
Enough of drooling. Old Fangler gathered himself together and completed his list of the hypothetical Collected Works.

“Round Table On Sunday. . . .”

Came next Sunday’s 70cm net. Always on the dot, the net controller was waiting on Channel SU18 as one after another the club members checked in.

An hour later as was customary when the Seventy Centimetric Round Table had rotated to its conclusion, the members dispersed to separate frequencies to continue their individual two-ways. It was then that Old Fangler buttonholed The Man at the Club on SU16 and was able to tell him what he had found when he turned out the contents of that cupboard in the hallway.

“H’m, that’s quite a list” remarked TMC: “But there’s something missing from it. I *knew* there was one subject you’d never gone into print on!”



“You’re one dogsbody over the nine, OM. . . .”

Ignoring the sentence-ending-with-a-preposition, Old Fangler replied: “Tell me more, TMC old chum”, wondering what was to come next. Would it be repeaters, on which O-F was known to hold firm views? Or home construction as a form of radio-therapy? It turned out to be neither.

“I will be specific” continued TMC: “You’ve never gone into battle about Class-B men getting Class-A licences. . . you hear a lot of ‘em saying they’re working up the Morse so they can ‘go HF’ as they put it. What are your views, O-F?”

Gripping his megacyclic microphone metaphorically between his teeth Old Fangler started:

"Why should they bother to go HF? Wouldn't you say they'd get a lot more satisfaction staying on VHF rather than try their luck against half a million others on those so-called DX bands?"

That was only the start. Drawing breath, Old Fangler went on:

"I'm going to be quite dogmatic with you, my dear old chum TMC: there are only two reasons why Class-B persons ever need to bother to pass the Morse. One is so they can help fill up that enormous telegraphy chunk at the bottom end of Two. The other is so they can get going on 'Four' . . . it's in need of a bit of rejuvenation by the bright boys. Over to you, TMC. . . ."

On SU16 a deathly silence ensued, broken only by the hiss of escaping steam from that autochthonous 70cm converter which O-F had long since said he would soup-up by the addition of a modern Gasfet in place of its ancient AF186.

Back came the voice of TMC, a little delayed by the pause for thought: "H'm, Old Fangler, you may have a point . . . over to you to develop it if you can . . . if you dare".

"Yes, TMC, I think I can. What d'you think of this as a dogmatic utterance: that there's not much fun in formula-QSOs with foreign bodies who have only two things to say to you. One is 'The name' — utterly pointless — and the other is 'My QSL sure'. Makes you wonder why you're wasting your time. Your turn, TMC".

Wisely, TMC waited lest others might be listening. They often are on Seventy. That is one of its many surprising charms. It was as well he waited: up came the voice of young Virginibus:

"Old Fangler, you really are an inward-looking old so and so" he piped: "What's the word I want? Insular, chauvinistic . . . yes, that it, chauvinistic!"

You could almost visualise the young lad's groping for the dictionary. No matter: his intellect was one to respect — and at least he was prepared to try "the next band up" and not be stuck all his life on 145 MHz FM. On he went again:

"Surely, Old Fangler, amateur radio is all about international friendship. Nation should speak peace unto nation". His voice produced the impression on his listeners on SU16 that Sunday morning that either his brows were creased with concern or his eyes alight with idealism. Or both. "As for what you said about formula QSOs, you hear them all the time on Two . . . all they say is 'The name' and 'See you further down the log'. What do you say to that, Old Fangler?"

Growled the O-F: "Last bit true, I'll admit, but as for the first bit, you sounded as if you were reading from a book of quotations. And I'll tell you something else. . . ."

But he didn't have the chance. As he lifted the transmit switch to hear if anybody else wished to use SU16 he was surprised to hear the voice of Mister Chairperson, he who had so effectively



" . . . a keen QRP man. . . ."

© GWScri

conducted that Eye Sees meeting a couple of nights ago and the 70cm net a couple of hours ago.

"Gents, you are verging towards the political. Don't you think you ought to leave it at that for the time being? Tell you what, though, we've got an empty slot for next month's club meeting. I suggest we fill it with a debate on 'Are the HF bands played out?' with the sub-title 'To Morse or not to Morse'. Comments please."

"Agreed" replied Old Fangler: "I'll propose the motion if I may."

"And I'll oppose it!" interjected Virginibus.

"Thanks, members, it's a date — and a very good morning all round" said Mister Chairperson.

Thought the listening TMC as the pilot light went out: "Morse . . . CW . . . CW without the Morse . . . Collected Works. That's where we came in".

A CMOS/VMOS AUDIO OSCILLATOR

G. W. Sutton, G4EVW

THIS unit will generate a useful square wave signal which can be set between 40 Hz and 16 kHz with peak-to-peak magnitude from 0 to 3 volts.

Although a fairly simple project, it demonstrates three useful techniques — a CMOS oscillator, the simple interfacing requirements of a VMOS device, and finally a circuit board technique which is very useful for amateur project work.

Circuit

The oscillator uses three gates of a 4011, quad 2-input NAND device, see Fig. 1. CMOS devices are robust, have low current consumption and work over a wide supply voltage range (3 to 15 volts).

The duty cycle will be close to 50% with the frequency of oscillation given approximately by:—

$$\text{Frequency} = \frac{1}{2C(0.4R_e + 0.7R_1)} \text{ Hz}$$

$$\text{where } R_e = \frac{R_1 R_2}{R_1 + R_2} \quad (\text{i.e. } R_1 // R_2)$$

The frequency is stable and insensitive to supply voltage variations.

A good square wave is produced at pin 4, with a transition time from high to low and *vice versa* of some 50 nano-seconds. This drives the gate of the VMOS FET directly.

The FET acts as a fast switch and impedance transformer to give a powerful signal across the output potentiometer. There is an embarrassingly large voltage available, so R4 is used to limit the peak output to 3 volts at maximum setting. C3 and R5 isolate the DC levels of any load which the oscillator may be called upon to drive, and adjust the output to ±1.5 volts about earth.

Two ranges are provided by S1 which selects either C1 or C2 to give nominally 50-900 Hz, and 1-18 kHz.

Note that the VMOS FET can be driven directly by a large positive signal on its gate. It does not conduct at zero volts. No gate bias is required in this application, the FET being switched hard on by the CMOS output. Drain current in the 'ON' state is limited only by R3 — in this case to about 3mA.

Construction

The unit was constructed in a 6 x 3 x 2-in. box. The circuit is arranged on a piece of plain, double sided copper-clad board. Fig. 2 gives the layout used, but this is not critical and 0.1-in. stripboard could be used.

The method used has proved most useful. A layout drawing is made on tracing paper over 0.1-in. graph paper. Component positions are suitably arranged on the 0.1-in. matrix, and their lead positions carefully marked. Dividing lines are then drawn such that the components will be connected as required by areas of copper; these will be produced on the lower side of the board to create the equivalent of a printed circuit.

Table of Values
Fig. 1

R1 = 4K7	C1, C4 = 0.1 μF
R2 = 120K	C2 = 4700 pF
R3 = 330R	C3 = 10 μF
R4 = 5K	IC1 = 4011B quad 2-input NAND
R5 = 100K	TR1 = VN10LM VMOS FET
RV1 = 100K	S1 = single-pole, 2-way
RV2 = 10K	S2 = single-pole, on/off

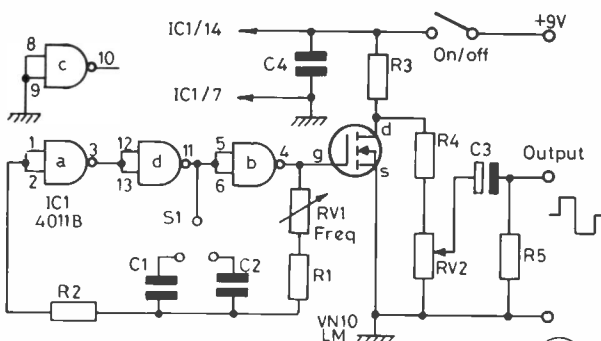


Fig.1 CIRCUIT DIAGRAM

E 014

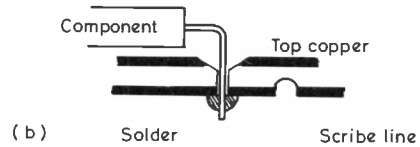
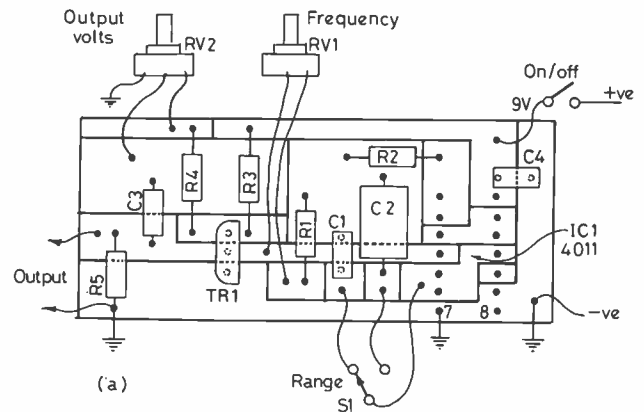


Fig.2 CIRCUIT BOARD LAYOUT

E 015

To do this, the tracing paper diagram is reversed on to the lower side of the board and the lead hole positions marked and drilled with a small drill. The copper areas are then separated by scribing through the copper using a piece of ground hacksaw blade (suitably bound with tape), and a ruler.

On the component side of the board, the copper round each lead hole is removed with a 1/8-in. drill. The upper surface copper forms a ground plane.

Check that each copper land is insulated from its neighbours. The components are then mounted as shown in Fig. 2(b), and the leads soldered to the copper areas beneath.

The technique results in a nicely finished job just as good as a printed circuit and usable up to very high frequencies.

Adjustment

The oscillator should run on switching-on; current consumption is about 13mA (or 23mA if a LED 'ON' indicator is used). Calibration is best done with a frequency counter or by feeding the output to a speaker and beating the sound against piano notes.

The use of square waves to check correct functioning of an audio amplifier will reveal high frequency loss by rounding of the square wave.

With acknowledgement to Mr J. R. Freeman at the Railway Technical Centre, Derby, who has developed the circuit board technique to a fine art on major electronics projects.

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E 014

CLUBS ROUNDUP

By "Club Secretary"

The Mail

A RETURN to the fold is indicated from **Abergavenny and Nevill Hall**, where they seem to have nudged the Hon. Sec. for not reporting! However, the gang continue to hide out on Thursday evenings at Pen-y-Fal Hospital, in the room above Male Ward 2.

Acton, Brentford & Chiswick foregather on November 15, at Chiswick Town Hall. For this session the subject will be "Members Holiday Activities".

Now to **Axe Vale**, and the "Cavalier Inn" in Axminster; this is the venue for the local club on the first Friday of each month, and in addition they also run visits and outside activities as appropriate.

Over to **GI and Bangor**; they have a big surplus sale on November 4, at the Co-Op Hall in Castle Square, Bangor. For more details contact the Hon. Sec. — see Panel for his details.

The **Bath** group has its base in the "Englishcombe Inn", Englishcombe Lane, Bath, on alternate Wednesdays; more details from the Hon. Sec. at the address in the Panel.

Over to **GI** again, to **Belfast College of Technology**; the club there is not only organising regular 'internal' meetings but also some of rather more general interest which will be open to the public. For details on all these, contact the Hon. Sec. — his name is in the Panel.

At **Biggin Hill** the next date to note is November 15, at Biggin Hill Memorial Library, for a talk on BBC Radio News.

The **Bishops Stortford** club continues to thrive in its quiet way; the group is to be found at the British Legion club near the top of Windhill on the third Monday, and there is also an informal at the "Nag's Head" on the first Thursday in each month; this is on the A120 out towards Dunmow, and has plenty of parking space.

A bit further along that same A120 to the east, and you come to **Braintree**; here the gang has a place at the Braintree Community Centre, Victoria Street, next door to the bus station. November 7 sees the Construction Contest, and on 21st there is a junk sale.

The **Brighton** club has its place at the YMCA in Marmion Road, Hove, on alternate Wednesdays; thus November 2 is a constructional contest while on 16th they have a video night. Finally, November 30 is set aside for the AGM — the most important meeting for next year!

B.A.R.T.G. is next, and is the one for RTTY buffs, whether they prefer the mechanical, the electronic, or the AMTOR variety. Details from the Hon. Sec. — see Panel for his details.

At **Bury**, we note from the newsletter one member has found out for himself about the British indifference to contesting! You can find out some more about this, and get to know the locals too, by heading for the Mosses Community Centre, Cecil Street, Bury, on any Tuesday; the 'main' meeting is the second Tuesday, November 8 is down for G3CSG's talk on 'Japanese Morse'.

Turning to **Bromsgrove**, their newsletter doesn't tell us anything about the club Hq. save a passing reference to 'Avoncroft' — so, for the details we refer you to the Hon. Sec. at the address in the Panel.

Fridays are **Cambridge** meeting-nights, at the Visual Aids Room, on the ground floor of Coleridge Community Centre, Radegund Road, off Coleridge Road, Cambridge. November 4 and 18 are informals, with Morse and operating the club station; November 11 is down for a film show, and on November 25 Ray Flavell will be giving his "Guide to Propagation".

Turning to **Cambridge Repeater Group**, your contact is the

Hon. Sec. — see Panel for his address. This keen group mentions work going on with four repeaters.

The **Cheltenham** club newsletter has in its September issue some words of wisdom from the Old Crow about the relationship between aeriels and results. Perhaps this is a run-up to the November talk, on 4th, when G3RJV will be talking about building simple equipment; this will be in Stanton Room, Charlton Kings Public Library, Cheltenham.

November 1 and 17 are the dates for **Chichester**, in the Green Room, Fernleigh Centre, 40 North Street, Chichester. The latter date should be of interest, as Ron Ham, well known for his listening work on VHF, will be talking about Sporadic-E propagation and DXTV reception.

Slow-scan colour TV is the topic on November 3, and on November 17 it is "600 Miles up the Nile", for **Colchester**. The venue is the Colchester Institute, Sheepen Road, Colchester.

Down west now, to **Cornish**, where the Hq. for the moment is at the Church Hall, Treleigh; November 3 is down for a surplus sale. This venue is just off the old Redruth by-pass.

Crawley next, and their latest newsletter doesn't go into the November programme; however we know they have one formal at Trinity Church Hall, Ifield, and an informal which is held at a member's home. More details from the Hon. Sec. — see Panel.

November 3 at **Cray Valley** is set aside for a talk on SWL-ing to be given by Bob Treacher — one for the licensed amateurs among the membership to give a careful ear to? November 17 is a natter session, and both are booked at Christ Church Centre, High Street, Eltham.

Crystal Palace membership seems to be on the rise, and so there should be a goodly number to listen to G3VA doing his talk on clandestine receivers on Saturday, November 19, at All Saints Parish Room, Upper Norwood; this is at the junction of Beulah Hill and Church Road, opposite the IBA mast — which should be fairly obvious!

Deadlines for "Clubs" for the next three months—

December issue—October 28th

January issue—November 25th

February issue—December 30th

March issue—January 27th

Please be sure to note these dates!

Derby now, which means Wednesdays at 119 Green Lane. November 2 is a junk sale, and on 9th they receive *SMC (Jack Tweedy) Ltd.* November 16 is down for technical topics, and on 23rd there is a visit from *Birkett's* of Lincoln. Finally, on November 30, there is a film show.

Derwentside are back with us, and still having every Monday evening at the R.A.F. Association Club in Consett; membership is on the rise, talks are arranged as often as possible, and the Hon. Sec. has passed the Morse Test! On a different tack the Hon. Sec. wonders, somewhat cynically, whether the increasing membership is due to a good club or a good bar; but they have always been based at the present place, so it must be a good club programme?

The **East Kent** club is in session on the first and third Thursday of each month, at The Cabin Youth Centre, Kings Road, Herne Bay.

Turning to **Edgware** now, the club foregathers at 145 Orange Hill Road, Burnt Oak, Edgware, on second and fourth Thursdays; November 2 is set down for a visit to BAe (Hatfield Club), November 10 is the informal at Hq., and November 24 was not finalised at the time they wrote.

Now **Fylde** where the group has its Hq. at the Kite Club, Blackpool Airport on the first and third Tuesday of each month.

Names and Addresses of Club Secretaries reporting in this issue:

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- YORK: K. R. Cass, G3WVO, 4 Heworth Village, York.

November 1 is down for a talk on nucleonics, and 15th is the informal and Morse class evening.

The latest **G-QRP Club** magazine, *Sprat*, is even better than usual; if you are interested in home-brew of amateur radio gear, or in low-power operating, this is the one for you.

November 24 is the date of the next gathering of the **Greater Peterborough** crowd; G4NRW will be talking about satellite working. The venue is Southfields Junior School, Stanground, Peterborough.

We come now to **Harrow** and Harrow Arts Centre, High Road Harrow Weald. November 4 and 18 are both down as practical and informal; November 11 is the Annual Dinner, and on 28th there is a film show.

The **Hastings** paid-up membership is now over 170; a far cry from the days, not so long ago, when the club all-but folded-up for want of committee members. The third Wednesday in each month is the main meeting, at West Hill Community Centre; Tuesdays, Wednesdays and Friday evenings are at Ashdown



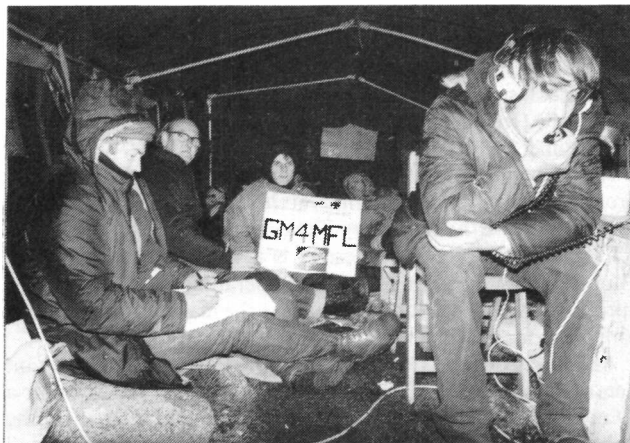
Members of Easter Ross and Kinloss radio clubs on their return to the Cairngorm car-park after their 24-hr. ordeal on the summit of Mount Summi (4084 ft.) during the RSGB 144 MHz Trophy and SWL contest over September 3/4. Using the call GM4MFL/P, best DX was F6CTT/P in AJ14j square, a distance of 859km; altogether, 131 stations were worked all over Britain and into France, covering a total distance of 26020km and scoring 1033 radial points. Left to right: Jimmy Plunkett GM6VAC, Derek Murgatroyd GM3PGX, Hamish Stuart GM4SFW, Ian Cowan GM6WQC, Robert Cameron GM4OHY, Phillip Gane GM4SUF (group organiser), and Dick Drake-Brockman GM8YLG.



Not the surface of the Moon, but the top of Mount Summi where GM4MFL/P had to contend with winds in excess of 85 m.p.h., driving rain and cloud reducing visibility to 10 feet, and a temperature only one degree above freezing. On several occasions the R.A.F. tent nearly became airborne with the occupants becoming Britain's first hang-gliding radio amateurs! *Jaybeam Ltd.* provided the pair of LW 16/2M 16-ele antennas for field trials to assess their performance at altitude and in severe weather conditions: the aerials were completely undamaged by the intense battering they received.

Farm Community Centre, the Friday evening chat night being probably the best time to make a first visit. November 16 features a demonstration of amateur TV by G3TLB.

Now **Havering**, which must mean Fairkytes Arts Centre, Billet Lane, Hornchurch, Essex. November 2 and 16 are both informals; November 9 features a talk on the G4ZU Mini-Beam



The intrepid seven inside the tent, which needed a half-ton of rocks to hold it down! The equipment used was an FDK Multimode transceiver, Tono 150-watt linear, 2½kW generator and a homebrew 20-amp power supply.

photos: Phillip Gane, GM4SUF

by G3KEW, November 23 is the Constructors Cup, and on 30th the surplus equipment and junk sale.

Turning to **Hereford** they have settled for the time being in the Three Counties Training Services building in the Cattle Market until their regular place is back in action. November 4 is "Old Hereford Photographs" by Basil Butcher, and on November 18 Rev. S. A. Evason will discuss electro-magnetic compatibility — or how to cause your neighbours problems without really trying!

Northwards now, to **Inverness**; the locals foregather at Cameron Youth Club, Planefield Road, Inverness, every Thursday evening, with all sorts of projects and activities current and planned.

For anything to do with amateur radio in Eire, you should be in contact with I.R.T.S.; they combine the function of the National Society with being one of the several Dublin clubs — details from the Hon. Sec. — see Panel.

The **Kent Repeater Group** are responsible for some five repeaters throughout Kent. Meetings are held, and speakers can be provided for local clubs, too. Details from the Hon. Sec. — see Panel for his details.

At **Lincoln** the group is based on the City Engineers' Club, Central Depot, Waterside South, Lincoln, where they are to be found on the following dates: November 2 and 16 for RAE and CW, November 9 for a talk on aerials by G8CTG, and November 23 is an activity night with the RF being radiated from Hq. Finally, congratulations to the Hon. Sec., who has just made the change to G4STO after quite a while as a G8.

Lough Erne, we are advised, is the name for the club based in the Enniskillen area of GI. They have recently moved to the Railway Hotel, Enniskillen, and they assure doubters that the meeting room is well separated from the place where the Guinness pints are pulled, even though in the same building! Therefore, everyone welcome on the third Monday in each month.

The new venue for the **Macclesfield** club is The Fenmain Club, Oxford Road, Macclesfield, in the second and fourth Tuesday of each month. More details of the programme from the Hon. Sec. — see Panel for his details.

Every Friday evening the **Maltby** lads head for the Methodist Church Hall, Blyth Road, Maltby, Rotherham, where the club have organised an interesting programme of events.

We turn now to **Medway** where they have Fridays at the Number One Hall, St. Luke's Church, King William Road, Gillingham. Informals are accompanied by the operation of the

club callsigns; November 4 is a video evening, and November 18 is a talk "A Return to Real Amateur Radio", given by the Hon. Sec. himself.

For details of the **Mexborough** club it will be necessary to contact the Hon. Sec. for the details; her name and address appear in the Panel.

Now we go to **Midland**, which means their own place at 294A Broad Street, Birmingham; this is at the City end of Broad Street, almost opposite the Repertory Theatre and in the shadow of the ATV building. Every Wednesday is a chat night with Morse, Thursday evening is the HF station operating night, and on the third Tuesday of each month they have the main, formal meeting with a lecture or whatever.

At **Mid-Sussex** the Hq. is still at Marle Place Adult Education Centre, Leylands Road, Burgess Hill; November 3 is down for a 'Q and A' session, November 10 a limited-numbers visit to the Police Hq. and Operations Room at Lewes; and on November 17 a talk on the use of computers in amateur radio.

Turning to the report from **Nene Valley**, we see they have a junk sale and auction on November 2, followed on 9th by a talk by G4ODI on "Wheatstone's Greatest Invention". November 16 is down for an HF transmitting and natter evening; and on November 23, Prof. Jones, G8TTF, will explain why radio communications sometimes perform better than expected. November 30 is down for a Buffet and Social Evening. All these meetings are at the "Dolben Arms," Finedon, near Wellingborough, except for the transmitting evening which is at the First St. Mary's Scout Hall, nearby.

Newbury have their base in the local Technical College on the second Tuesday in the month; November 8 is the evening when G3SEK will discuss facts and fallacies surrounding the topic of long Yagi aerials.

November at **Norfolk** means: G4LDG talking about 80-metre receivers on 2nd; on 9th and 23rd short meetings; an Open Evening for new members on 16th; and on 30th, an evening to which you are invited to bring along your YL/XYL. All are at Crome Centre, Telegraph Lane East, Norwich.

Penlee Secondary School is now the home of the **Plymouth** group; November 14 is down for a video or slide show from RSGB, and on November 28 there is a D/F contest.

Every Thursday evening the **Pontefract** crowd heads for Carleton Grange Community Centre, Carleton, Pontefract, where they also have Morse classes on Monday evenings. Unfortunately we don't have the November programme data, but no doubt the Hon. Sec. would help — see Panel for his details.

If you know any blind or disabled SWL or licensed amateur, or of someone who might be interested in the hobby and is in that category, then you should see that they are members of **RAIBC**; and of course there is always the need for Supporters and Representatives — and donations too, come to think of it! Details of this very worthwhile club from the Hon. Sec. — see Panel for her address.

For **Reigate** it is the third Tuesday of each month, at the Constitutional and Conservative Centre, Warwick Road, Redhill; November 15 is a talk by G3SJK on the performance and measurement of HF receivers.

The **Royal Navy** now; membership is open to serving and retired members of the Royal Navy or its reserves, MN types and those in foreign navies. Details from the Hon. Sec. — see Panel for the necessary details.

At **Sefton** the Hq. is at the Walton Prison Officers Club, Hornby Road, Walton, Liverpool, on alternate Wednesdays from October 19th. More details from the Hon. Sec. — see Panel.

A new entry comes from the **Smiths Industries** club; they are based on Smiths Industries' company club house, Newlands, Bishops Cleeve, and membership is open to the public although the Hon. Sec. and Treasurer must be members of the Sports and Social Club of the Company. Details from the Hon. Sec. — see Panel. The November 10 meeting is a fast-scan TV demonstration.

Southampton foregather every Wednesday evening at Bittern

Park School, Bittern, Southampton, where they have all sorts of activities going on: lectures, films, and more active things like constructional projects with more coming along.

We head for **Southdown** now, and here we see that on the first Monday in November, George Harding will be giving a talk, with slides, on the Isaac Newton Telescope at the Royal Observatory. The venue will be the Chaseley Home, Southcliff, Eastbourne.

The **South Essex** club meets on Wednesday evenings at The Paddocks, Long Road, Canvey Island. We don't have any details of the programme, as they had their AGM set down for a couple of days after this piece was due to be completed, so we must refer you to the Hon. Sec. — see Panel.

Over to **Spalding**, who have their Construction Contest set down for November 11, at the Maples Room, White Hart Hotel, Market Place, Spalding.

At **Spen Valley**, the change of Hq. to Old Bank Working Men's Club, Mirfield, has been a success with membership up to fifty already. While they are to be found there on any Thursday evening, November 10 should be noted for an equipment alignment evening with G4EZV, and on 24th G6WEF (ex G3OTE) will be talking about the "Madcap Fringes of Amateur Radio".

Stevenage are to be found at *TS Andromeda*, Fairlands Valley Park, Shephall View, Stevenage, Herts; November 1 is a talk by G4BWU on SS/TV; on 8th there is a constructional evening, and on 15th a talk on navigational satellites.

A change of venue is notified by **Stockton**; they are now meeting each Wednesday evening at the Billingham Community Centre. More details from the Hon. Sec. — see Panel.

Stourbridge have their meetings on the first and third Monday in each month, at "The Garibaldi" in Cross Street, Stourbridge. November 7 is an informal, and on 21st they have the Annual Surplus Sale.

November 7 at **Surrey** is a talk on advanced consumer electronics by G8EIN, with the informal on 21st; both are at the Club Hq. at *TS Terra Nova*, 34 The Waldrons, South Croydon.

Sutton & Cheam have November 4 at Sutton College of Liberal Arts for an Inter-Club Quiz with Coulsdon club, while on November 18, at Downs, they have a talk on power supplies by G3MES. This new venue is in fact the Downs Tennis Club, Holland Avenue — the Hon. Sec. will be pleased, no doubt, to let you have a copy of their map if you intend to visit; see Panel for his details.

The **Swale** crowd are still using Nina's Restaurant as their Hq.; it is at 43 High Street, Sittingbourne, and they meet every Monday evening.

Every Thursday evening the **Swindon** club get together at Park School, Marlowe Avenue. More details on their activities from the Hon. Sec. — see Panel.

Thanet have November 8 for a social evening and presentation of their Cup, and on 22nd they will hear G3LCK talking about NFD; both are at Grosvenor Club, Grosvenor Place, Margate.

We have a letter from the Hon. Sec. of the **TOPS CW Club** to say that members are invited to take part in two new nets on Eighty: 3508 kHz, with 3514 kHz as the alternative frequency, between 1400 and 1600 on Sundays and Wednesdays. Non-members are welcome to check in provided the net doesn't get too unwieldy, and the idea is to keep things together until their regular newsletter can be got back into operation which will, with luck, be fairly soon.

Now the **Tyne-Wear Repeater Group**; they have their AGM on November 23 in the Radio Room, at Great Lumley Community Centre, Great Lumley. More details from the Hon. Sec. — see Panel.

The **Vale of White Horse** don't seem to have sent us an update for some time, so we must refer you to the Hon. Sec. for all the latest details of the meetings at the Canteen and Social Club, Milton Trading Estate, Milton, near Abingdon. And give him a nudge for us when you see him!

Verulam have their place at the R.A.F. Association Hq, New Kent Road, St. Albans, on the second and fourth Tuesdays; we

don't have the latest programme details for November, for which we must refer you to the Hon. Sec. — see Panel.

Now for **WACRAL**; a group of committed Christian radio amateurs and SWLs world-wide. Details from the Hon. Sec. at the address in the Panel.

Wakefield have an evening on the air on November 1, and a film show on 15th. This leaves November 29 for a session on alignment of equipment. All meetings are at Holmfield House, Denby Dale Road, Wakefield, where they have good facilities, a bar available, and plenty of parking.

Another club which hasn't sent in details of the November meetings and dates is **West Kent**; for this we have to refer you to the Hon. Sec. — see Panel for his address.

Up to **Westmorland** where the locals foregather on the second Tuesday of each month at the "Strickland Arms", Kendal.

Yeovil have their Hq. these days at the Recreation Centre, Chilton Grove, Yeovil; November 3 is a talk on modulation, and there is a junk sale on 10th. November 17 is a Fun Radio Quiz by G3GC, and on November 24 there is a natter night.

Every Friday evening the **York** lads and lasses get together at the United Services Club, 61 Micklegate, York; they seem to enjoy all sorts of activities, mostly concerned with making excuses for special-event calls! Details from the Hon. Sec. — see Panel.

Finis

Once again we have come to the bottom of the pile. Send your reports and news to reach us by deadlines shown in the 'box', addressed as ever to your "Club Secretary", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ.

Amateur Radio Exchange Ltd.

On October 12th *Amateur Radio Exchange* moved their Northern branch from St. Helens to 38 Bridge Street, Earlestown, Newton-le-Willows, Merseyside (tel: 09252-29881). The new, larger premises, says *A.R.E.*, offers superb facilities to the radio amateur, with a fully comprehensive range of stock, ideal arrangements for the demonstration and testing of equipment and a service department which can carry out not only guarantee work but also repairs to other equipment.

W. H. Westlake

In response to many requests over the years, *W. H. Westlake* of Clawton, Holsworthy, Devon EX22 6QN, has managed to track down a source of slotted 300-ohm ribbon cable. This is Bofa GMP-6, of Swedish manufacture. *W. H. Westlake* is able to offer the cable, which is of a very high quality and unaffected by moisture, at 20p per metre (3p/metre postage) or £18 per 100m. drum (plus £2 postage). The firm also tells us that, due to bulk purchasing, they can offer by mail order Greenpar 'N' connectors at very competitive prices — for example, 50-ohm 'N' type plugs at £2.40 each (plus 40p postage per order of any quantity); jacks and panel sockets are also available. Ring them on 0409-253758 for full details.

Rally

Leeds and District A.R.S. will be holding its third annual Christmas Rally at the Civic Centre, Pudsey, Leeds, on **December 11th**. Doors open at 10.30 a.m. with free admission, and there will be all the usual attractions.

R.A.E. Q. & A.

Peter Bubb, G3UWJ, the well-known R.A.E. tutor, has produced a booklet entitled "Questions and Answers" which contains 103 self-test multiple choice questions based on the R.A.E. syllabus. The publication is available from him at 58 Greenacres, Bath BA1 4NR, and costs £2.75 including postage.

"G9BF CALLING"

SORRY no gen column for some time but this *not* due to G9BF being "guest of Her Majesty," as some malicious rumours were suggesting. Just a little brush with the fuzz following small matter of out-of-date tax disc on motorbike, all sorted out by contribution to State coffers as demanded by local beak. Much correspondence from fans conveniently mislaid by Editor, but eventually passed on by friendly mole in office.

Big 3 × PL-172 PA for 20m. Moonbounce finished in late summer, complete with modded spin drier-cum-cooling fan. Test run on fan OK but very noisy due worn bearings. Heater tranny for PA bottles posed problem as 6v. at about 25A needed. Bit of luck though, as picked up rather rusty open-frame job with three 8A windings for a couple of quid at a rally. Windings rattle a bit but it works OK. PA chassis a joy to behold with big tank coil and whopping great tuning cap. on chunky ceramic stand-offs; far cry from those silly little 100w PAs in present day, solid state rice boxes.

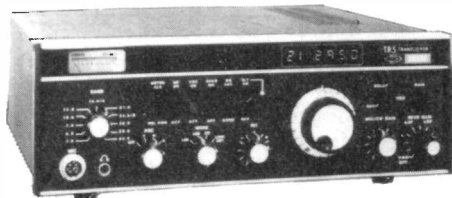
Knocked up 500v. screen, and negative bias supplies using old TV set trannies and 5U4G rectifier bottles — all good reliable stuff. This gubbins also mounted on L.N.E.R. luggage trolley. Due to need for bags of mains current, only way to feed PSUs is from storage heater circuits, OK for 60A. G9BF pad still on long-discontinued, off-peak, el cheapo juice for eight hours at night and a couple hours boost, p.m., so safe to tackle wiring jobs before lunch. Ran four lots of 13A cable from distribution board in cupboard under stairs, out to garden shed to big knife switch. Main fuse is bit of 20 gauge copper wire soldered across a couple of nails hammered into trolley.

For initial tests decided to scrap old end-fed Zepp antenna — G6XN reckons they are NBG anyway — and put up a dipole instead. This made out of nasty steel wire for strength and fed with ex-USAF RG9/U coax recently unearthed in shed. Use link coil to couple urge from tank cct. to feeder. All QRV for test firing using grid block keying. Pulled over knife switch and on came R1155 Rx, exciter and PA heaters. After a minute switched on bias supply; minus 300v, OK. Next the EHT supply. Dreadful thud from tranny and lights dimmed a bit, but otherwise OK. Lastly the screen supply. It was 0100 and 20m. was quite lively with the "Woodpecker" thirty-over-nine on bit of wire in the shed.

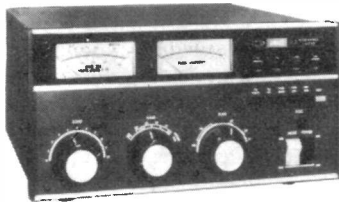
Had set up PA tuning with borrowed GDO so, with the old ticker bashing away at 100 w.p.m., threw the switch to earth centre tap of EHT tranny. PA bottles cut off, of course, but quite a bit of shot noise in Rx. Hit the key and PA current meter banged over to 5A, so quickly adjusted tuning getting sharp dip to only 1½A; not enough. Pushed link coil in a bit more with milk bottle and tried again, finally getting about 3A at resonance. Just the ticket!

Turned up the wick on the Rx but all very quiet. Funny smell from the R1155 followed by horrible realisation that RF coil probably burnt out as antenna far too near PA. Sadly switched off and hit the sack. After breakfast, disembowelled the Rx and replaced charred coil with one from gash set Dad kept for spares. Soon had it QRV again. When juice came on in afternoon, stoked up the new Tx again and put out one minute CQ call on the key. Big pile-up including Russian mate "Ivan the Terrible," UV5AC, with outstanding T5c note. Got first ever 599X report and he sent, "VY FB DR OM MOST QRO HRD FRM G. 73 ES GL." Had a few more FB QSOs, all with fab. reports but went QRT when coax got very warm. Reckon RG6/U not good for 10A of RF.

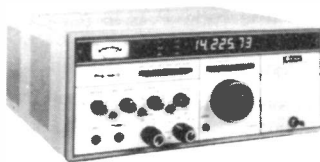
Very chuffed with first results with new Tx. Hope to get local Scout Troop over for JOTA weekend and get rhombic put up in field for the Moonbounce tests. Will keep you posted. 73 es BCNU de G9BF.



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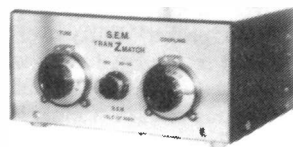
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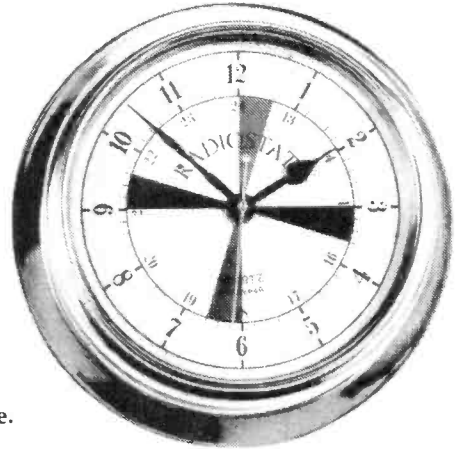
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144.4 (433.2)	b	e	b	e	e	b	c	c	e	e
144.800	e	e	e	e	e	e	e	e	e	e
144.825	e	e	e	e	e	e	e	e	e	e
144.850	e	e	e	e	e	e	e	e	e	e
145.000/ROT	a	a	c	a	a	c	b	b	b	e
145.025/R1T	a	a	c	a	a	c	b	b	b	e
145.050/R2T	a	a	c	a	a	c	b	b	b	e
145.075/R3T	a	a	c	a	a	c	b	b	b	e
145.100/R4T	a	a	c	a	a	c	b	b	b	e
145.125/R5T	a	a	c	a	a	c	b	b	b	e
145.150/R6T	a	a	c	a	a	c	b	b	b	e
145.175/R7T	a	a	c	a	a	c	b	b	b	e
145.200/R8R	e	e	e	e	e	e	b	b	a	e
145.300/S12	e	e	e	e	e	e	b	b	a	e
145.350/S14	e	e	e	e	e	e	b	b	a	e
145.400/S16	e	e	e	e	e	e	b	b	a	e
145.425/S17	e	e	e	e	e	e	b	b	a	e
145.450/S18	e	e	e	e	e	e	b	b	a	e
145.475/S19	e	e	e	e	e	e	b	b	a	e
145.500/S20	a	a	c	c	c	b	b	b	a	c
145.525/S21	a	a	c	c	c	b	b	b	a	c
145.550/S22	a	a	c	c	c	b	b	b	a	c
145.575/S23	a	a	c	c	c	b	b	b	a	c
145.600/R0R	a	a	c	c	c	b	b	b	a	c
145.625/R1R	e	e	e	e	e	e	e	e	e	e
145.650/R2R	e	e	e	e	e	e	e	e	e	e
145.675/R3R	e	e	e	e	e	e	e	e	e	e
145.700/R4R	e	e	e	e	e	e	e	e	e	e
145.725/R5R	e	e	e	e	e	e	e	e	e	e
145.750/R6R	e	e	e	e	e	e	e	e	e	e
145.775/R7R	e	e	e	e	e	e	e	e	e	e
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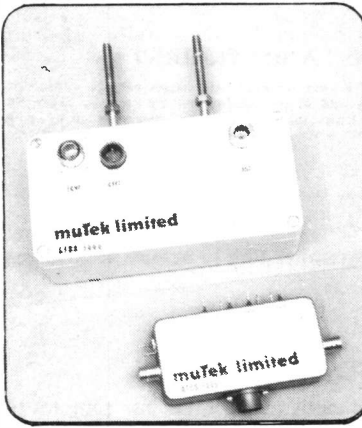
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* STOP PRESS: SSTV board to be available shortly.



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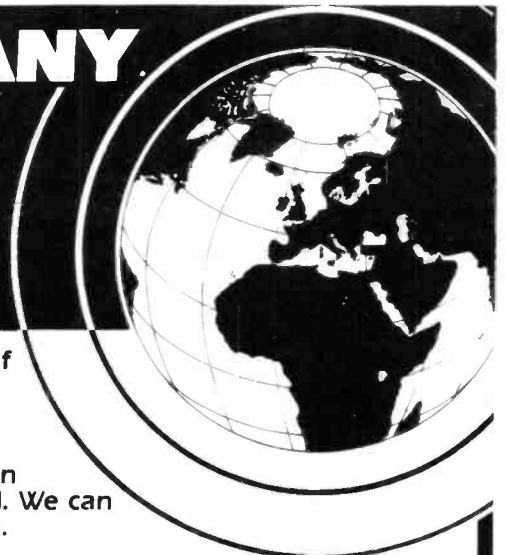
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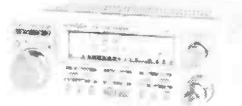


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