

# The SHORT WAVE Magazine

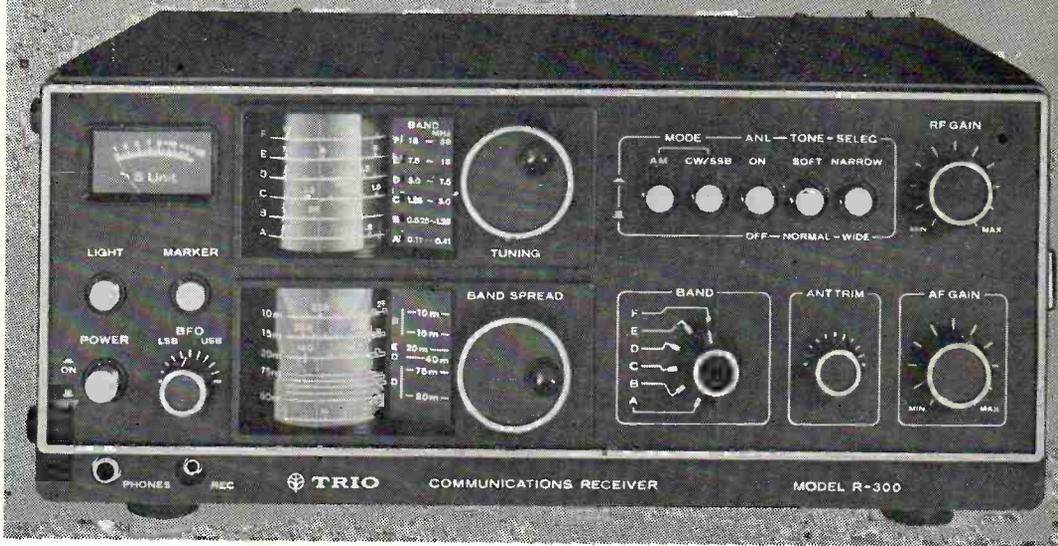
VOL. XXXV

SEPTEMBER 1977

NUMBER 7

## TRIO R-300

Eavesdrop on the world



### LISTEN TO THE WORLD

Short wave radio is by far the fastest and most convenient type of communications for spreading the news about what is going on in the world. And for this reason TRIO's R300 is the right rig for those who'd like to listen to a live report of the Indianapolis Grand Prix, to Radio Peking or to follow the progress of a Himalayan expedition. The R-300 is the invisible bridge to other countries and continents and the bridge to the home country for many journalists, engineers and technical representatives working abroad. They all want a reliable and sturdy multiband receiver for home use and travel, a receiver working from mains voltage or batteries. And just such a receiver is TRIO's new R-300.

**Six Wavebands**—LW (710-410 kHz), BC (525-1250 kHz), 4 x SW (160-10m). The four shortwave bands continuously cover the frequency range from 1.25—30 MHz with separate calibration for the commercial (75—11m.) and radio amateur bands (80—10m.) of the large drum-type main tuning and bandspread dials.

**Outstanding Input Sensitivity**—The dual-gate MOSFET front end assures excellent cross-modulation and spurious characteristics, as well as high input sensitivity. Between 18 and 30 MHz the R-300 operates as a double superhet, giving sensitivity of 1  $\mu$ V for AM and 0.5  $\mu$ V for SSB. For full details, contact the sole importers of the exciting TRIO range.



**NEW. CL22 Antenna Coupler**  
for the SWL.

Only £14 inc. VAT and postage

FULL CATALOGUE 50p from

**LOWE ELECTRONICS**  
Cavendish Road,  
Matlock,  
Derbyshire

# LOWE ELECTRONICS LTD IN LONDON

COMMUNICATIONS HOUSE, WALLINGTON SQUARE, WALLINGTON, SURREY. 01-669-6700

STOP TURNING THE PAGES, YOU HAVE JUST REACHED THE GOOD STUFF!



## TR7500 £225 inc VAT

We are delighted to announce the imminent arrival of the newest addition to the exclusive TRIO range of top quality transceivers—the TR7500 2 metre FM mobile/ fixed station. The TR7500 fits into the TRIO product line above the established favourite, the TR7200G which continues in production of course.

Following the TRIO policy of "getting it right first time," the TR7500 has been the subject of a long development study, and as a result offers features to cover all user needs. TRIO attention to detail is evident in areas such as the LED channel display which shows correct channel numbering i.e. 20 when on S20, 4 when on R4, 0 when on S0 etc.

Easy to see by day, and a positive safety feature when mobile at night, the TR7500 display removes the need to remember, "did I programme R6 into channel 15 or channel 20?"

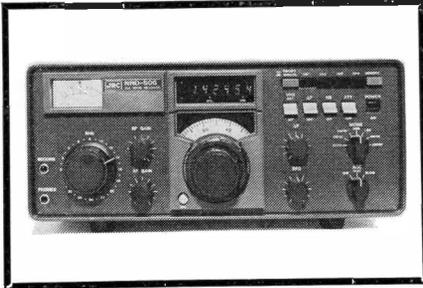
Incidentally, the photograph is of the American market version of the TR7500 and as the American channelling is different to ours, TRIO arrange the display to suit them, hence the number 94 display. Typical of the TRIO attention to detail again.

The design of the TR7500 is based on an advanced phase locked synthesiser which is ready programmed to provide all 40 channels from 145–146 MHz with no further hand wiring required. Channel selection is by a single knob and simplex, repeater and full reverse repeater operation are fitted as standard, together with automatic tone burst and high/low power switching.

The TR7500 is a little larger than the TR2200 and should therefore fit into most mobile situations. The usual TRIO accessories such as the mobile mount, microphone, power leads etc. are of course provided with the rig.

The transmitter power will be well in excess of 10 watts and if the reports from Japan are correct, the receiver section should set new standards for this type of equipment.

I was asked in a recent open advertisement "could you do better than ???". In view of the TR7500, my answer must be "yes I can!"



## NRD 505 A NEW DIMENSION

Let me begin by stating that the NRD505 is not a receiver for the amateur—at around £1,600, how could it be. For the professional or those of you who can dig deep for the best receiver you ever laid hands on, the NRD505 is the one for you. What does it do? Read on:—

The NRD505 covers the range 100 kHz to 30 MHz in thirty bands each 1 MHz wide using a high performance up conversion system incorporating a significant advance on previous drift cancelling techniques. All modes of operation are provided, with appropriate filters for each mode and corresponding detectors. A unique feature of the NRD505 is the provision of four random access memories into which any frequency to which the receiver is tuned can be placed by simply depressing a front panel button. At any subsequent time, regardless of the frequency to which the receiver may be tuned, any of the four stored frequencies can be instantly selected for monitoring. The store contents are held even when the receiver is switched off and disconnected from any supply.

The NRD505 uses very advanced techniques for providing exceptional strong signal handling characteristics, the input to the receiver first passing through a 35 MHz roofing filter to a bank of automatically selected band pass filters (thereby removing the requirement for a preselector control) to a further 35 MHz low pass filter. AGC control is then applied using a PIN diode attenuator before the signal is passed to a fully balanced RF amplifier. Up conversion to the first IF of 70 MHz is carried out in a balanced mixer followed by a 70 MHz crystal filter. The first oscillator signal is derived from a phase locked drift cancelling loop system incorporating the signal from the PTO VFO, to allow tuning over any 1 MHz range. The use of a phase locked oscillator system generates a clean, noise free injection signal free from mixer products and the strong unwanted signals every 1 MHz which occur in receivers such as the FRG7 and Barlow-Wadley. Typical of the advanced design is the use of automatic amplitude levelling of the oscillator injection to the mixer.

Second conversion is then carried out to an IF of 455 kHz at which final IF bandwidth is determined.

A high performance noise blanker is included in the IF system and active audio filtering matches the AF bandwidth to the signal characteristics, a 600 ohm line feed and a 75 ohm 455 kHz IF output are provided for remote operation or diversity use. For CW use, the BFO is tunable over a 5 kHz range and ▲f control allows receiver tuning over a similar range even when locked to one of the stored frequencies.

A separate high performance PLL system generates an output signal locked to the VFO, which will drive an associated transmitter or transceiver. Frequency ranges available (on ordering) will suit most Japanese or American transmitters and transceivers.

It goes without saying that the construction of the NRD505 is to the very highest standards and full use is made of the latest high speed Schottky and CMOS devices, together with printed wiring looms for flexible connections.

The NRD505 delighted our jaded senses when we used it for the first time and we are of the opinion that it is significantly better than any receiver which we have used before including such exotica as the Collins S1-S1 and the latest Racal receivers.

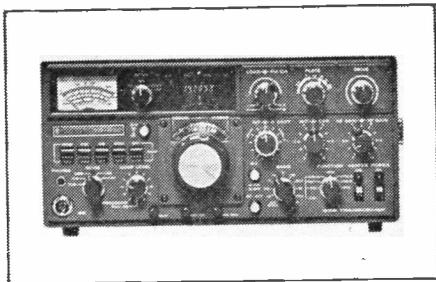
If you want to see the NRD505, it is now on show at Matlock but you'll have to fight your way through the crowd. It will of course be prominently displayed at this year's Leicester show. See it soon.

# LOWE ELECTRONICS LTD IN LEEDS

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# LOWE ELECTRONICS LTD IN BIRMINGHAM

SOHO HOUSE, 362-4 SOHO ROAD, HANDSWORTH. 021-554-0708



The ultimate transceiver... TRIO's TS-820. No matter what you own now, a move to the TS-820 is your best move. It offers a degree of quality and dependability second to none, and as the owner of this superb unit, you will have at your fingertips the combination of controls and features that, even under the toughest operating conditions, make the TS-820 the leader that it is.

Unprecedented demand plus the painstaking care TRIO lavishes on each TS820 created an initial backlog of orders but happily we can now supply the TS820 from stock. Once you have operated the TS820, you will not be satisfied with anything else.

## Features

Following are a few of the TS-820's many exciting features.

**SPEECH PROCESSOR** ● An HF circuit provides quick time constant compression using a true RF compressor as opposed to an IF clipper. Amount of compression is adjustable to the desired level by a convenient front panel control.

**IF SHIFT** ● The IF SHIFT control varies the IF passband without changing the receive frequency. Enables the operator to eliminate unwanted signals by moving them out of the passband of the receiver. This feature alone makes the TS-820 the pacesetter that it is.

**PLL** ● The TS-820 employs the latest phase lock loop circuitry. The single conversion receiver section performance offers superb protection against unwanted cross-modulation. And now, PLL allows the frequency to remain the same when switching sidebands (USB, LSB, CW) and eliminates having to recalibrate each time.

TS-820 ... .. £625 inc. VAT

DG-1 ... .. £126 inc. VAT

## Specifications

FREQUENCY RANGE : 1.8-30 MHz  
(160-10 metres)  
MODES : USB, LSB, CW, FSK  
INPUT POWER : 200W PEP on SSB  
160W DC on CW  
100W DC on FSK

ANTENNA IMPEDANCE : 50-75 ohms, unbalanced  
CARRIER SUPPRESSION : Better than 40dB  
SIDE BAND SUPPRESSION : Better than 50dB  
SPURIOUS RADIATION : Greater than -60dB (Harmonics more than -40dB)  
RECEIVER SENSITIVITY : Better than 0.25µV  
RECEIVER SELECTIVITY :  
SSB 2.4 kHz (-6dB)  
4.4 kHz (-60dB)  
CW 0.5 kHz (-6dB)  
1.8 kHz (-60dB)

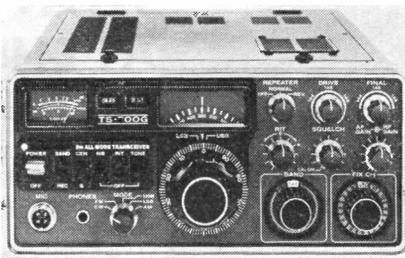
\*With optional CW filter installed.  
IMAGE RATIO :  
160-15 metres : Better than 60dB  
10 metres : Better than 50dB  
IF REJECTION : Better than 80dB  
POWER REQUIREMENTS : 120/240 VAC, 50/60Hz, 13.8 Vdc. (with optional DS-1A DC-DC converter)  
POWER CONSUMPTION :  
Transmit : 280W.  
Receive : 26W (heaters off)  
DIMENSIONS : 13½" w. x 6" h x 13½" d  
WEIGHT : 35.2lb (16kg)  
DG-1, digital readout optional



### NR562 METRE TUNABLE FM MONITOR

Only £54 inc. VAT

This remarkable little receiver gives the 2m. FM listener everything he wants at a very reasonable price. Excellent sensitivity, stability and selectivity coupled with a built-in VFO and very effective squelch make it the ideal receiver for both beginner and keen listener. Although the built-in VFO more than covers the entire 2m. band, crystal control of FM channels offers many advantages (particularly in mobile operation), so crystals, which are ex-stock, may be fitted for the popular channels and repeaters. It requires 12v. DC for operation and is thus an excellent mobile receiver for mounting in the car, boat or caravan as well as for home use.



### TS700G + VOX 3

£392 inc. VAT

Say what you will, the TS700G set the standard for all other 2 metre all mode transceivers. Very high standard which has yet to be surpassed. Full 2 metre coverage, VFO or 22 crystal channels, all mode operation AM, FM, USB, LSB and CW. Mains or battery supply. Normal and reverse repeater facilities at the turn of a switch. Trio exclusive tuning fork access tone generator with fully auto tone burst. Best quality signal on the band thanks to TRIO design excellence in low intermod amplifiers. It's simply the best rig that you can buy, and it's backed by the combined reputations of TRIO and Lowe Electronics.

15 Watts output ; 0.25 microvolt sensitivity ; first class strong signal handling receiver ! European standard selectivity. If you haven't yet handled the TS700G, rush to one of our branches and be prepared to be impressed. Send for full details now.



### TD224 VIDEO CONVERTER

Displays RTTY signals on TV screen in deathly silence. £209

This amazing little box replaces that clanking old teleprinter that was needed to copy RTTY signals. The TD224 accepts mark/space inputs from your terminal unit (normally TTL but 80-80 can be provided as an option) and converts them into a composite 625 line video signal for display on a TV monitor. A UHF modulator is available as a low cost option to enable use of any 625 line domestic TV set as a monitor. From jingle bells to displayed text —it's easy and silent with the TD224 and a terminal unit DM170.

## HEAD OFFICE AGENTS

119 Cavendish Road, Matlock, Derbyshire. 0629-2817 or 2430 TELEX 377482

Alan GW3YSA, 35 Pen-Y-Waun, Efail-Isal, Nr. Pontypridd. Tel. Newton Llantwit 3809

John G3JYG, 16 Harvard Road, Ringmer, Lewes, Sussex. Tel. Ringmer 812071

Sim GM3SAN, 19 Ellismuir Road, Baillieston, Nr. Glasgow. Tel. 041-771 0364

FULL CATALOGUE AND ANTENNA BOOK FOR 50p IN STAMPS TO MATLOCK



# Western

## FREE PACKET OF CORNFLAKES WITH EVERY PLASTIC MODEL !

—well, not quite, as both are a little out of our line — HOWEVER . . . If you don't like cornflakes, how about a

## FREE FT101E?

(That's right—THE original and genuine YAESU MUSEN, world-renowned all-band HF transceiver to full specification).

### PM 2000 FEATURES—

Accurate Measurement of—

- ★ PEAK ENVELOPE POWER ON SSB
  - ★ RMS WATTS ON CW
  - ★ SWR
- PRICE £48.60 (WITHOUT FT101E !)

BUT, you may say :  
"What's the catch?"

Us : "Funny you should say that! We did have a condition or two in mind."

"Oh!—What's to do then to qualify?"

Us : "Fork out £399 plus VAT (£448.87) for a PM2000 (see below left) and we'll send you that and a brand new, fully guaranteed FT101E as well!"

"Well, why not just say 'FREE PM2000 with every FT101E?'"

Us : "OK—if you insist. Here goes."

## FREE Western PEAK READING WATTMETER WITH EACH FT101E

AT £448.87 inc. VAT (£399 exc) Limited period  
No part exchange

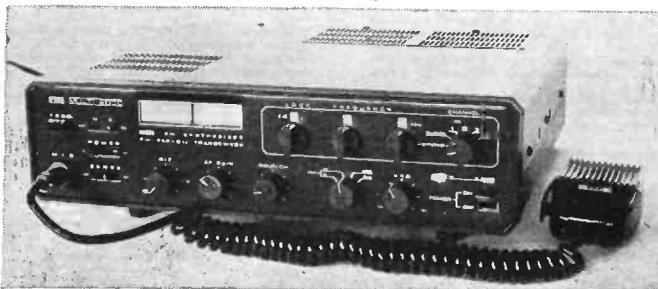


### 5-WAY ANTENNA SWITCH MODEL ASW-1

- ★ Handles 1.2 kW.
  - ★ Earths antennas not in use.
  - ★ Fitted YAESU style knob.
  - ★ Mounting holes for wall or equipment.
- £8.85 (incl. VAT/P. & P.)



. . . AND HERE'S ANOTHER OFFER YOU CANNOT MISS . . .



## THE FDK MULTI-2000

2m. SSB/FM, CW 200 Ch. SYNTHESISED AC/DC TRANSCEIVER

- \* Full cover 144-6 MHz.
- \* VXO gives full coverage between 10 kHz spacing.
- \* Rapid change of frequency and mode is possible.
- \* RIT (Receiver Incremental Tuning) allows receiver to be tuned without moving the transmit frequency.
- \* 600kHz Repeater shift works on all frequencies.
- \* Tone access built-in. \* Fitted narrow FM filter.

OFFER PRICE ONLY £299 inc. VAT!

★ LOUTH HOLIDAY CLOSURE — 23 JULY to 7 AUGUST INCLUSIVE ★

# Electronics (UK) Ltd

**Elevate** with the ... **Westower** "the STRONGER ONE" ...

- ★ STANDARD TYPES, RATED AT 75 MPH WITH FULL LOAD QUOTED
- ★ HEAVY DUTY TYPES, RATED AT 100 MPH
- ★ MODELS FROM 25-119'. ALL TELESCOPE DOWN AND TILT OVER
- ★ MODELS FOR ALL SOIL CONDITIONS, WITH/WITHOUT CONCRETE
- ★ DESIGNED BY CHARTERED ENGINEERS TO BRITISH STANDARDS
- ★ CONSTRUCTED OF HIGH QUALITY SPECIAL ALLOY STEEL
- ★ STANDARD MODEL 40% STRONGER THAN SIMILAR TYPES

A **Heavy Duty** is well worth the extra ... **Compare** ....

Size	Head Load at 75 mph	Price (inc. VAT)
3S (58ft.)	125 lbs.	£322.92
3HD (58ft.)	250 lbs.	£383.40
4S (75ft.)	35 lbs.	£410.40
4HD (75ft.)	66 lbs.	£452.52

Head Loads are for unguyed towers. Prices are for framed-post models (FP) and are carriage paid except to Scotland, Devon and Cornwall. Over-water deliveries also extra.

**Heavy Duty** is up to **100%** stronger than **Standard**

Other WESTERN Products . . .

(Prices inc. post and VAT)

<b>DX-33</b> 3-band (10, 15, 20m.) 3-element beam, 2kW PEP ... ..	£84.37
<b>BA-1</b> 1 : 1 Balun, 1kW rated, SO239 socket ... ..	£5.91
<b>AT-40</b> 40m. dipole traps, 1kW rated ... .. (per pair)	£5.91

Connectors :

<b>WE-587</b> (PL259) UHF coax plug ... ..	51p
<b>WE-588</b> (SO239) UHF coax socket (single-hole) ... ..	27p
<b>WE-592</b> L-Adaptor for UHF connector ... ..	86p
<b>WE-596</b> UHF-to-Phono Adaptor ... ..	27p

} Plus 32p post up to 10 items.  
50p over 10. Over 50 items post free

**STOP PRESS !! PM2001 VHF PEP meter coming—WATCH THIS SPACE**

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SHOWROOMS at:

LOUTH : Open 9-12, 1-5 p.m. Mon.-Fri. Sat. by appointment.  
SOUTHAMPTON : 1 WEST PARK ROAD, Tel. 0703 27464. Open  
Tues.-Fri. 9.30-1, 2-5.30 p.m. Sat. 9-4 p.m. Due to staff shortage,  
Southampton is liable to be closed at other times. Please phone to  
check before calling.  
LEICESTER : MAY'S HI-FI, CHURCHGATE. Tel. 58662. Open  
Mon.-Sat. 9-6 p.m. Closed Thurs.



**PAUL  
G3VJF**



**IT'S MUCH CHEAPER TO BUY AN IC-240 THAN  
A SET FITTED WITH 54 QUARTZ CRYSTALS!**



**£198  
INC VAT**

**DIMENSIONS**  
6.14" wide  
2.28" high  
8.58" deep

**THINK HARD BEFORE YOU BUY**

Buying yourself a 2 Metre mobile is quite an expensive exercise and it is well worth taking time off to think and jot down a few figures before you buy. In addition to the popular channels you will find that you want others for private natter channels, local nets, Raynet, continental repeaters and, of course, crystals to listen on the repeater input channels. All this can add up to a tidy sum, not to mention the waiting time because the very crystal you want is out of stock.

Compare the advantages of the synthesised IC-240 with its crystal set competitors:—

- \* Has a built in synthesizer which can be programmed for any frequency in 25kHz steps in the 2 Metre band.
- \* Comes ready programmed for 15 channels including the most popular UK simplex and repeater channels.

- \* Programmable for up to 22 Channels at no extra cost.
- \* Single switch channel selection.
- \* Instant listening on the input of repeaters at the flick of a switch.
- \* Further channels to cover the whole band easily available.
- \* Lends itself to experimentation in digital logic—scanners, touch pads etc are fairly easy to add.
- \* Plus, of course, a very good receiver and transmitter built to the very high standards for which ICOM are so famous.

The IC-240 is the OBVIOUS choice!

You can get your 240, carriage free, by mail order or personal visit direct from our shop in HERNE BAY, or collect at one of the following UK Thanet Outlets:—

**Shops—open during normal hours:**

**THANET NORTHERN** 64 High Street  
WOMBWELL, Barnsley, Yorkshire  
(0226) 756229

**Sound Service** Standish Stree  
Burnley, Lancs.  
(0282) 38481

**NORFOLK AGENT** (Available daytime and evenings by telephoned appointment)  
**TED G3FEW** at Rockland St. Mary. Telephone Surlingham 632

**OTHER AGENTS** (By telephoned appointment evenings and weekends only)

**LONDON**—Terry G8BAM (01-556 9366)

**MIDLANDS**—Tony G8AVH (021 329 2305)

**SCOTLAND**—Ian GM8DOX (078683 3223)

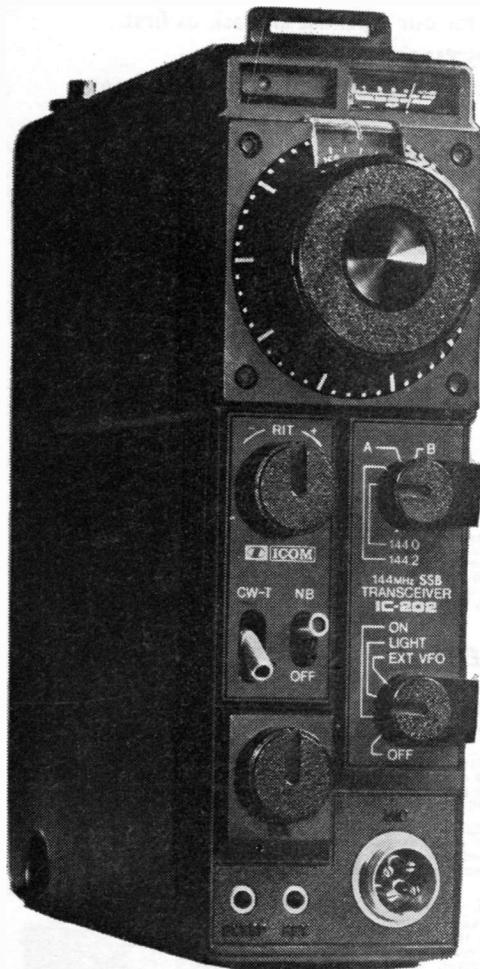
**NORTH WEST**—Gordon G3LEQ (Knutsford (0565) 4040)

**WALES**—Tony GW3FKO (0222 702982)



**DAVE  
G4ELP**

## THE MOST POPULAR LITTLE SSB RIG ON THE MARKET



**ICOM**

**IC-202 £172.00  
INCL. VAT (£35 deposit)**

The IC-202 is a 2 metre SSB/CW transceiver designed to be operable anywhere, like most portables, but with big station features such as a very effective noise blanker, RIT, S & RF meter, and a full 3 watts output. Two built-in crystals in the stable VXO allows operation between 144.0 and 144.4 MHz. If you wish to expand the range of the IC-202, Icom have also provided 2 spare crystal sockets for your convenience. With a slight retuning of the IC-202, and installation of a special crystal, you may also work through Oscar.

The aluminium diecast frame provides a very strong yet light housing for the 2 circuit boards and the aluminium sides snap off easily if service is ever necessary or to change the batteries.

The IC-202 operates on 9 inexpensive C cell batteries, or an external 13.8v. DC source. We recommend the IC-3PS which not only provides power for the IC-202, but also doubles as a stand and holder for the IC-20L 10 watt linear amplifier.

You can use the built-in whip antenna for portable use or another antenna connects to the external antenna connector on the back of the IC-202.

We feel sure that you will have years of lasting enjoyment from an IC-202, manufactured by the leader in communication equipment: Inoue Communication Equipment Corporation. The signal is as clean as you would expect from ICOM equipment—it won't get you into repeaters unintentionally!

### FEATURES :

- ★ Power Indicator LED
- ★ S and RF meter
- ★ Dial calibrated on 10 kHz increments with a total coverage of 200 kHz. The operating frequency is read by adding the frequency shown on the dial to that shown on the crystal switch.
- ★ RIT. Independently swings the receiver frequency by  $\pm 3$  kHz.
- ★ CW or SSB
- ★ Noise Blanker
- ★ 4 position crystal switch
- ★ Built-in speaker with socket for external speaker if required
- ★ External VFO socket
- ★ Whip antenna and socket, for external antenna
- ★ External 13.6V DC input or internal batteries

### ACCESSORIES SUPPLIED :

- Microphone
- Microphone Case
- Shoulder Strap
- Power Supply Plug
- Earphone
- 9 Dry Cells type C
- Comprehensive English Handbook.

### OPTIONAL EXTRAS :

- 9 x Ni-Cad Batteries £22.0 + £1 p & p.
- Charger, £12.00 + 50p p & p.

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# South Midlands

ESTABLISHED 1958 19 YEARS

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Many may make this claim, but we invite you to write for our stocklist and ask us first.

### SERVICE-REPAIRS, MAINTENANCE AND TESTING

We have a comprehensively stocked, equipped, and staffed workshop to test equipment before despatch and handle warranty work.

### SATISFACTION—YOURS (AND OURS) OUR AIM

We consider that both parties should be contented with any transaction.

### STABLE AND RESPONSIBLE DISTRIBUTION

We believe that it is in the best long-term interests of our customers, our dealers, and for the hobby, to provide the right equipment and maintain our services at a sensible price.

*We do, however, in the present difficult circumstances, reserve the right not to be undersold.*

## STUDY OUR LITERATURE STOP HERE FOR A COFFEE SHOP AT OUR SINGLE STOP SOURCE—SMC

### The FT221R complete 2m. station ex-stock

The FT221R. The multimode USB, LSB, AM, FM, CW (with semi-break in and side tone), 2m. transceiver offering the choice of phase locked VFO or 44 crystal channels, simplex or repeater (600Hz up and down shifts), with unique "double push" auto tone burst, mains or 12v. (3A) operation, excellent selectivity SSB 2.4 kHz (1.7 : S.F.) or FM 12 kHz. Front panel adjustable VOX and mic gain, a calibrator (1 MHz  $\pm$  10), 1 kHz readout and linearity, sensitive squelch, clarifier with IRT and IRT with ITT (makes F.S.K. easy), switchable "S" and centre zero tuning meter, noise blanker, serviceable plug in boards all contained in 11½" (14") x 5" x 11½", 22 lb. rigid package. 600 kHz and 1.6 MHz shifts over 4 MHz.



FT221R

### Now the YC221 digital readout unit for about £75



### THE FRG7, GENERAL COVERAGE RECEIVER Ex-Stock UNPARALLELED IN ITS CLASS AND ONLY £145 (VAT 12½%)

The FRG7 is a general coverage solid state receiver with specifications unparalleled in its price range. It uses a Barlow Wadley triple mix drift cancelling loop for continuous, spin tuned, inclusive coverage of 0.5 to 30 MHz with calibration accuracy better than 5 kHz. Frequency selection is accomplished by setting the RF (pre-selector and range switch), dialling up the required number of megahertz, then tuning the VFO Knob as normal.

The receiver is sensitive (0.5uV for 10dB, S + NN (SSB)) and stable (within 500Hz for any 30 minutes after warm up) with AM, SSB and CW modes catered for, A 3 position audio filter, RF attenuator, dial lamp conservation switch, recorder and phone sockets are fitted. It is mains powered but should the supply fail, or portable operation be required, 8 dry cells are automatically switched in.

### The FT101E complete HF station —ex stock.

The FT-101E a complete mains or 12v. DC station contained in a compact 30 lb. package, 260W, P.I.P. of SSB (with in-built R.F. speech processor) 180W., CW and 80W. of AM 10 to 160m. (incl. 10 MHz RX). The sensitive and selective (permeability tuned RF stages and 8 pole crystal filter) receiver offers: threshold adjustable noise blanker, switchable 25 and 100 kHz calibrator,  $\pm$  5 kHz clarifier (with separate on/off switch), etc., etc.

The VFO is stable and linear (readout to 1 kHz) external VFO or crystal control can be selected with LED indicators illuminated accordingly. Carrier level is adjustable for: tune up, AM and for CW operation, whose performance with the semi break in keying, with side tone, and the optional filter installed is of a high order. Linear and transmitter provisions are made with sockets for: relay contacts, ALC output, all internal HT supplies, low level RF heater links and switches, etc., etc.

### New service manual for the '101 series £12.00



FT101E

## SOUTH MIDLANDS COMMUNICATIONS LTD.

OSBORNE ROAD, TOTTEN  
SOUTHAMPTON SO4 4DN  
Hours of business: 9-5.30; 9-12.30 Saturday



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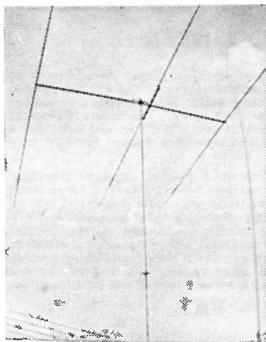
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# Communications Ltd

OF PROFESSIONAL EXPERIENCE

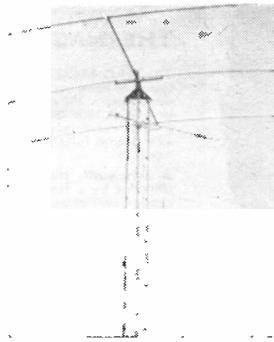


**TELOMAST WITH TA33 TELESCOPIC GALVANISED**



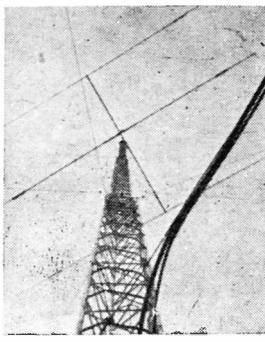
10' telescopic heavily galvanised steel mast supplied with guy rings etc. or c/w full rigging kit. Carriage £2-£7 ex-stock VAT 8%  
 30' £25-00 or £43-85 c/w rigging  
 40' £32-50 or £56-85 c/w rigging  
 50' £42-00 or £74-50 c/w rigging

**HAMTOWER with TH3 Jnr. SELF SUPPORTING**



Galvanised lattice 10' sections. Free standing with climbing steps. Carriage £3-£20 ex-stock 8% VAT  
 30' c/w base grillage £192-35  
 40' c/w base grillage. ... P.O.A

**TELETOWER with TH3 Mk. III TELESCOPIC GALVANISED**



Carriage and rigging (RK) extra  
 42' ... £121-00 (RK £28)  
 57' ... £174-00 (RK £28)  
 79' ... £224-50 (RK £49)  
 101' ... £303-50 (RK £76)

**VERSATOWERS TELESCOPIC SEE FAR TILTING**

THE MAJORITY OF DELIVERIES ARE NOW MADE BY OUR OWN TRANSPORT

Telescopic (20' sections) with full tilting facility allowing for easy antenna maintenance and alterations. The relatively low unit weight and superior design of ground post allows easy and cheap installation often without resorting to concrete. Large scale efficient production offers you a wide range of towers at minimum cost (+VAT, EX WORKS) e.g.:

Standard P40 ... £212-00  
 Standard P60 ... £252-00  
 Heavy Duty P40 ... £286-00  
 Heavy Duty P60 ... £333-00

**G WHIP HF MOBILE (Carriage 90p) VAT 12½%**

Tribander 10-20m. (+LF) £16-10 LF40, 80 or 160 ... £4-87  
 Multimobile 10/20 +MM £19-00 MM40, 80 or 160 ... £4-87  
 Flexiwhip 10m. (+FF) ... £12-42 FF15, 20, 40, 80 or 160 ... £5-04  
 Base mount ½" hole mount £2-65 Telescopic whip for coils £1-85

**TAVASU HF MOBILE (Carriage 90p) VAT 12½%**

Whip Chrome 2 sect. 60" £3-88 Base heavy duty ... £5-18  
 Base section chrome 16" £1-94 Complete monobander ... £14-95  
 Resonators 160-15m. ... £3-88 Complete 5 bander ... £25-92  
 Adaptor 24 to 20 thread... 55p

**GEM QUAD FIBREGLASS (Carriage £2-£9) VAT 12½%**

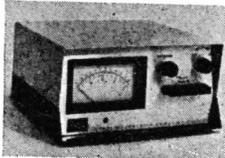
GQ2E 2 element ... £119-00 GQ4E 4 element ... £238-00  
 GQ3E 3 element ... £178-00 CKIQ 1 ele. Conv. kit ... £66-00

**AERIAL WIRE (Carriage Extra) VAT 8%**

14SWG hard drawn Cu... yd. 11p 7/036 cad cu standard ... yd. 14p  
 Cu terylene braid ... yd. 13p 7/044 cad cu standard ... yd. 20p

**CABLES RF FEEDERS (Carriage Extra) VAT 8%**

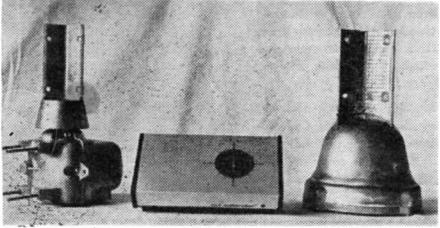
UR67 50 ohm Heavy ... yd. 36p UR39 75 ohm Medium ... yd. 24p  
 UR57 75 ohm Heavy ... yd. 42p T3278 ohm Distribution ... yd. 20p  
 75 ohms Flat twin ... yd. 10p UR4350 ohm Solid Cent. yd. 16p  
 300 ohm Ribbon ... yd. 12p UR76,50 ohm Strand Cent. yd. 16p



CD44/HAM II



CDE[AR33]



AR20/30

AR30/40

AR22/40/33

**HY GAIN HF RANGE (Carr. extra) VAT 12½%**

BN86 1:1 ferrite Balun £12-00 TH2MKIII 10-20m. 2 ele... £94-00  
 103BA 10m. 3 element ... £43-50 TH3JNR 10-20m. 3 ele. ... £96-00  
 153BA 15m. 3 element ... £54-50 TH3MKIII 10-20m. 3 ele. £137-00  
 203BA 20m. 3 element ... £103-40 TH6DXX 10-20m. 6 ele. £164-50  
 402BA 40m. 2 element ... £146-00 HY QUAD 10-20m. 2 ele. £151-80  
 18V 10-80 Load Vert. ... £24-50 DB1015A 10-15m. 3 ele... £99-00  
 12AVQ 10-20, Trap Vert. £33-50 18AVT/WR 10-80m. Vert. £64-50  
 14AVQ 10-40m. Trap Vert. £47-50 HY TOWER Vert. £162-80

**SMC TRAPPED DIPOLES (Post 45p) VAT 12½%**

S 500W P.I.P. 14 SWG ... £19-60 P500W. P.I.P. Cu/Terylene  
 HP IK P.I.P. 14 SWG ... £21-75 braid c/w 75' feeder, etc. £21-75

**MOSLEY TRI-BAND BEAMS (Carriage £2-50) VAT 12½%**

TA33 3 ele. 200W R.M.S. £85-00 TA32 2 ele. 300W. A.M. ... £58-00  
 MUSTANG 3 ele. £108-00 MUSTANG 2 ele. 1kW ... £87-00

**ROPES (Carriage Extra) VAT 8%**

3mm. HT steel ... yd. 15p X150 Rustproof 150m. ... £10-85  
 5mm. HT steel ... yd. 22p 7 x 18g. Galvanised 100' ... £2-90

**AERIAL INSULATORS (Post Extra) VAT 12½%**

2½ Polyprop ribbed ... 17p SMCPI 3" carbon polyprop £1-15  
 NT1 4½" polyprop ribbed 45p 3" porcelain ribbed 38p

**ROTATORS Ex-Stock for fast delivery VAT—Rotators 12½%**

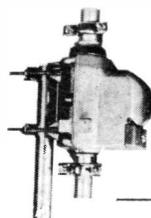
Carriage (BR5 or post) FREE. Secured delivery £1-25 cable and delivery 8% All rotators supplied complete with appropriate control box and instructions.

**CDE ROTORS**

AR20 Light VHF/UHF ... £32-00  
 AR30 Light VHF/UHF ... £39-50  
 AR22 VHF Light HF ... £40-00  
 AR40 VHF Light HF ... £46-00  
 AR33 Deluxe control 40 ... £57-00  
 BT1 Medium duty ... £79-50  
 CD44 Medium duty ... £95-00  
 HAM 11 Heavy duty ... £129-00



STOLLE ROTOR



RZ100 BEARING

**STOLLE ROTORS**

2010/220 Automatic ... £41-25  
 2030 Memomatic ... £45-50

**BEARINGS**

CD562 CDE (up to 2" and 1½") £4-50  
 RZ100 Stolle (ballrace)... £10-00

**MOUNTING KIT**

AK121 CDE to Versatower ... £3-60

**CABLE**

5 core AR30/40/33/2010 per yd. £0-22  
 8 core CD44/Ham II per yd. £0-35



2010/220 and Cont. Box STOLLE

**SMC NORTHERN BRANCH**  
 The Chambers, No. 3, The Parade,  
 North Lane, Headingley, Leeds.  
 Tel: Leeds (0532) 78232  
 9-5 Tuesday-Saturday, 9-8 Thursday

**AMATEUR RADIO**  
 170-172 Corporation Street,  
 Birmingham, B4 6UD.  
 Tel: Birmingham (021) 2361633  
 9-3.30 Monday-Saturday.

**SMC (JACK TWEEDY) LTD.**  
 Roger Baines, G3YBO  
 79 Chatsworth Road,  
 Chesterfield, Derby  
 Tel: Chesterfield (0246) 34982  
 9-5 Tuesday-Saturday

**SMC (JACK TWEEDY) LTD**  
 Jack Tweedy, G3ZY  
 Ham Shack, Roughton Lane,  
 Woodhall Spa, Lincs.  
 Tel. Woodhall Spa (0526) 52793  
 9-5 Tuesday-Saturday (+ appoint.)



# South Midlands

TOTTON, HANTS, (HQ) LEEDS, DERBYSHIRE

SMC THE NAME FOUNDED ON SERVICE



## THE NAG 144XL LINEAR

The NAG 144XL-2200 is the finest 2m. Linear Amplifier of its type we have yet seen. Identical in size to the FT-221, it produces about 250W RMS of clean stable output from a grounded grid 4CX 350F for a nominal 10W drive. The mains PSU using a large cut-core power transformer is built in and provides a 12V 3 amp fully protected and stabilised output for 12V only exciters.

A switchable, 10dB gain, low noise Mosfet, receiver amplifier (filtered by a large three section helical filter), a large coil change over relay, RF sensing (with adjustable delay) and manual control, an excellent directional coupler (for the inbuilt SWR bridge), thermal delay on switch on (anode current meter illuminated red for first 60 seconds), a thermal cut out situated in the valve exhaust stream (optional timer available to leave blower on for 90 seconds after switch off), a grid current sensing ALC output socket, are but a few of the star features.

EX-STOCK £355 + VAT

## DIGITAL II from KYOKUTO SCANNER AND CRYSTAL T.B. OPTIONS

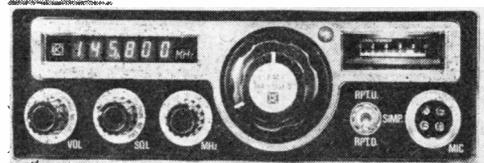
The Digital II offers complete 5 kHz step coverage across 2 metres and now with the Scanner 33, 25 kHz channels from 145 MHz upwards covered in around 10 seconds. It offers full lock and lockout on all channels. The scanner stops on a required channel for 7 seconds, then unless locked moves on. The bright digital readout comes from 6 seven segment LEDs. Selectable 10 or 1 watt output for simplex or duplex (up and down shifts), across 144-146 (rx to 149 MHz) from a tiny 6½" x 2" x 7½". Easily underdash mounted with the supplied mounting bracket, or slipped in place of the broadcast wireless.

For strong handling, and low noise the R.F. mixer, first IF (16.9 MHz) second mixer (and LO) are all FET's. The front end is tuned by varicaps by the DC output of the P.L.L. with superb selectivity provided by a 15 pole  $\pm 8$  kHz at -6dB  $\pm 15$  kHz at -70 dB Ceramic filter. LED lamps indicate if the serviceability and screening). Selective calling socket.

## Boom Microphone "Headset"

600 ohms magnetic lightweight boom mic.  
Ideal for mobile or contests, etc.  
(Post free but VAT + 12½%)

MD35 complete ... ..	£14.75
Microphone only ... ..	£9.75
Footswitch only ... ..	£5.95



DIGITAL II £235; CRYSTAL T.B. £10.00; SCANNER £49.50  
All prices exclude VAT at 12½%

RF SPEECH  
PROCESSOR 60  
Audio to audio, via 10-17  
MHz, mains powered, illu-  
minated meter, FT-101  
FT2 plugs suitable all  
phone modes superb on FM  
Ex Stock in Totton  
£41.35 (+12½% VAT)  
(P.P. FREE) NEW!!



## Solid State Mobile Linears (UHF and VHF) from KLM and Ampere



2 metre, SSB/CW/FM, RF sensing with manual override, "microstripline" 12v. D.C. 10W drive. 2" x 6.5" x 10" (11")  
(Over 15 different models—S.A.E. details)  
(+VAT 12½%).  
PA10/160/BL 145 MHz 160W. out. £160.00



2 or 70. Superb RF sensing and DC bias arrangements for all modes. C/w mounting bracket (2v. DC 10W. drive 2.5" x 5.2" x 7.5" (8.5") (+ VAT at 12½%).  
APB82A 145 MHz 80W out. ... £99.00  
APB57A 432 MHz 45W out. ... £99.00  
APB87A 432 MHz 80W out. ... £214.00

## VHF HANDHELD

KEN KP202 TRANSCIVER (+VAT Price)  
144 MHz, FM, 2W of RF and ½W of audio.  
Immunity to image and IF breakthrough and performance to rival all walkie-talkies and many a mobile set.  
C/w F plug, leather handle/whip case and telescopic whip.  
Fitted 6 channels S20 & S21 + choice of S (21, 23, 24, 0) R (3, 4, 5, 6, 7) ... £109.50  
R-channel only crystal tone burst ... £10.00  
Flexible stubby ant. £5.80 Case £4.90  
F to UHF adaptor £1.65 N Cads £8.50  
Base charger KCP2 ... .. (£11.75  
(ALL + VAT)

## VHF Monitor Receiver

SEIWA MR2 AND MS2 (+ VAT prices)  
Ideal for the SWL, the YL or even the XYL as the monitor receiver to keep you in touch. Tiny (2½" x 1½" x 4½") and light (8 ozs.) slip into your pocket or onto your belt with the optional case. Sensitive double conversion superhet with 12 kHz band width, auto squelch, and generous audio output c/w Nicads, Mains Charger, Earpiece, Antenna.  
MR2(4) 70 MHz 12 switched channels £53.00  
MRS 144 MHz 12 switched channels £53.00  
MS2 144 MHz 4 scanning channels £62.00  
Leather Case £1.90 Crystals each £2.00



ALL SMC BRANCHES HAVE ON LOCATION SERVICING AND CAN OFFER SECURICOR DELIVERY FACILITIES

## SOUTH MIDLANDS COMMUNICATIONS LTD.

OSBORNE ROAD, TOTTON  
SOUTHAMPTON SO4 4DN  
Hours of business: 9—5.30; 9—12.30 Saturday

Head Office, Showrooms  
Cables: Aerial Southampton  
Telex: 477351 SMCMM G  
Tel: Totton (04216) 733  
(3 lines)

EVENINGS — AGENTS — QTHR

G3ZUL Stourbridge (034843) 5917 Brian Kennedy  
GM8DOX B. of Allan (078683) 3223 Ian McKechnie  
GW3TMP Pontybodkin (035267) 846 Howarth Jones  
G13WVY Tandraeg (0763) 840656 Mervyn Anderson

# Communications Ltd

LINCS. BIRMINGHAM. Agents : N.I., SCOTLAND, WALES



## MICROWAVE MODULES — SPECIAL OFFER

PRICES:—WORLD WIDE POST FREE! (+ VAT U.K. ONLY A, C, T 12½%, D 8%)

(personal cheques, money orders, Master Charge, Visa etc. are all accepted.)

MMA70	4M Pre Amp. Two isolated outputs ...	£13.00
MMC70	4M Converter. 4, 14, 18, 28 MHz IF ...	£18.00
MMA144	4M Conv. 28, 50 MHz IF with LO out ...	£20.00
MMC144	2M Pre Amp. Two isolated outputs ...	£13.00
MMC144	2M Converter. 12, 14, 18, 24 MHz IF ...	£18.00
MMC144	2M Converter. 2 or 4 MHz IF Dble conv. ...	£18.00
MMC144/LO	2M Conv. 28 or 50 MHz IF mW LO out ...	£20.00
MMT144	2M Converter. 28 or 50 MHz 10W out ...	£79.00

MMC432	70 cm. Converter. 14, 18, 28, 144 MHz IF ...	£22.00
MMC435/51	70 cm. Converter. 51 MHz IF for TV ...	£23.00
MMT432	70 cm. Transverter. 28 or 50 MHz 10W ...	£97.00
MMT432/144	70 cm. Transverter Dble convsn. 10W ...	£133.00
MMC1296	23 cm. Converter. 28 or 50 or 144 MHz ...	£25.00
MMV1296	23 cm. Tripler transactor. 30W input ...	£30.00
MMD050	Freq. counter miniature 50 MHz 12V ...	£62.00
MMD050/500	As the 050 but to 500 MHz ...	£79.00
MMD500P	Divide by 10. 12V. 2.5V pp output 500 MHz ...	£25.00

### Coax Slide Switches



Up to: 1kW, 1.5 GHz, 0.3dB loss, 1:2 : 1 VSWR, 50dB isolation, 50 ohm "N" or "PL" fittings. Ex-Stock P. & P 30p (VAT + 8%) EX STOCK

TWS120	1 in 2 out nickel	SO239	£5.40
TWS150	1 in 5 out nickel	SO239	£11.50
TWS220	2 in 4 out nickel	SO239	£11.50

### Coax Relays



12v. DC 50 ohm, Silver plated. P. and P. 30p (VAT + 8%) Power crosstalk (at 500 MHz)

CX120	50W 35dB Cable entry	£9.50
CX230	300W 40dB BNC sockets	£17.90
CX600N	600W 40dB N sockets	£21.50

### JAYBEAM 70 (4m), 144 (2m), 432 (70) (Carr. £1) VAT 12½%

DS5/2m	5 over 5 slot feed	£11.00	PBM10/2m 10 ele. Para ...	£20.50
DB8/2m	over 8 slot feed	£14.75	PBM14/2m 14 ele. Para ...	£25.20
5XY1/2m	5 ele. crossed	£12.90	DB/70 8 over 8 slot feed	£12.50
5XY2/2m	8 element crossed	£16.10	PBM18/70 18 ele. Para ...	£15.00
10XY1/2m	10 ele. crossed	£21.50	PBM48/70 46 ele. Multi	£17.50
5Y2/2m	5 ele. yagi	£6.20	PBM98/70 88 ele. Multi	£23.00
8Y2/2m	8 ele. yagi	£8.10	12XY/70 12 ele. crossed	£24.00
10Y2/2m	10 ele. long yagi	£17.20	4Y/4m element yagi	£10.20
14Y2/2m	14 ele. long yagi	£22.00	PMH/702 way harness	£4.75
Q4/2m	4 ele. yagi	£13.20	PMH2/C Circ. phasing	£4.10
Q6/2m	6 ele. quad	£17.60	PMH2/2m 2 way harness	£5.50

### BANTEX VHF WHIPS (Carriage 90p VAT 12½%)

BGA FG 2m. fibreglass ...	£8.75	BSU £ 432 MHz ...	£5.00
70% ± 70 MHz fibreglass ...	£4.00	UCL Mid loaded ...	£8.00
144 ± 145 FG or SS ...	£3.50	TLM Trunk lip mount ...	£5.75
BS ± 145 MHz FG ...	£6.35	MB Magnetic base ...	£8.50
BGA SS 2m. s/less steel ...	£8.50	Unwanted base deduct	£0.50

### Crystal Filters and Crystals (F.M. only £3.75 a pair !! (£2 singles)) (p. p. 20p VAT 12½%)

YAESU	OTHERS
FT2F, FT2FB, FT2 AUTO, FT224, FT223 (6, 12, 18 MHz Tx, 14, 44, 52 MHz Rx).	TR2200(GX), C146A, C826MB, MS2, MR2 (12 MHz Tx and inc. 44 MHz Rx).
SIMPLEX S (0, 12, 16, 19, 20-24).	SIMPLEX S (0, 20-24)
DUPLEX R (0-9) and IR (0-9) T & R.	DUPLEX R(3-7) at least. A large selection of inverse receive crystals.
FT200B, FT301(S), FT221(R), FT101(E), FT75(B), FR101(S) all £2.20 each.	CONVERTER CRYSTALS £2.20 38-666(2m.), 42(4m.), 50.5 (70cm.).



### SMC-HS VHF Antennas

(VAT 12½% Carr. 95p)

250 29 or 145 MHz ... only	£11.75
±4, effective DC short snap mount matching transformer shock spring, tapered whip, c/w 12ft. cable and PL259 plug.	
260 70 or 145 MHz ...	£17.15
High gain, gutter mount. Tapered coil and whip, 90° spring fold over joint. GD X1 80 to 480 MHz ...	£37.50
Omnidirectional disc 3dB±.	
25 Trunk lip mount for snap bases ...	£2.95
265 Gutter clip adj. angle ...	£3.95
111 Gutter clip base c/w shock spring. 10ft. cable, PL259, etc. ...	£4.95



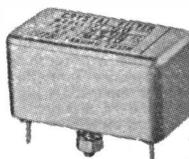
### CUSHCRAFT VHF OMNI (Carriage 95p) VAT 12½%

RINGO RANGER ARX 6dB gain (over 3) ultra low angle radiation, excellent 50 ohm match uses 3 x ¼ in phase and ¼ stub. 145 MHz version approx. 9' 6" (8 ½ lbs.) 432 MHz approx. 3' 6" (illustrated). ARX2 Ringo Ranger ARX450 Ringo Ranger

145 MHz ...	£21.50	432 MHz ...	£21.50
AR2 3 dB Ringo Vert. ...	£12.75	ABW144 2m. Big Wheel ...	£14.50
AR25 QRO AR2 ...	£15.00	ABW125 ABW harness ...	£7.30
CX1000 29 MHz Ringo ...	£25.75	ASQ22m. Squalo ...	£11.75

### COAX PLUGS (Post and Packing extra) VAT 8%

PL259 Standard UHF plug	£0.48	SO239 4 hole socket	£0.40
PLG175 Reducer UR43/76	£0.12	258 Back to back female	£0.80
UG176 Reducer UR70	£0.12	Back to back male	£1.20
PL259R Fix reducer plug	£0.55	"T" Adapt (2FIM)	£1.20
PL259S "Solderless" UR76	£0.51	"T" Adapt (3F)	£1.48
PL259S "Solderless" UR67	£0.51	Angle 90°(1M + 1F)	£0.90
PL259P Push fit UHF	£0.69	239 Socket to Phone/car	£0.60



### A Post Script

As you may have seen on television, radio, in the newspapers or in last month's ad, we suffered a severe fire which destroyed the majority of our stocks of antennas and fittings here in Totton.

We are glad to report that we have succeeded in replacing the bulk of our goods lost in the fire and that staff have now returned to their normal duties.

We apologise for any inconvenience this disruption may have caused and would like to thank our customers and friends who arrived with boiler suits and gum boots to help, and for the messages of sympathy and offers of assistance from suppliers and our direct trade competitors alike.

**S M C NORTHERN BRANCH**  
The Chambers, No. 3, The Parade,  
North Lane, Headingley, Leeds.  
Tel.: Leeds (0532) 78232  
9-5 Tuesday-Saturday, 9-8 Thursday

**AMATEUR RADIO**  
170-172 Corporation Street,  
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Tel: Birmingham (021) 2361635  
9-5.30 Monday-Saturday.

**S M C (JACK TWEEDEY) LTD.**  
Roger Baines, G3YBO  
79 Chatsworth Road,  
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Jack Tweedy, G3ZY  
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9-5 Tuesday-Saturday (+ appoint.)

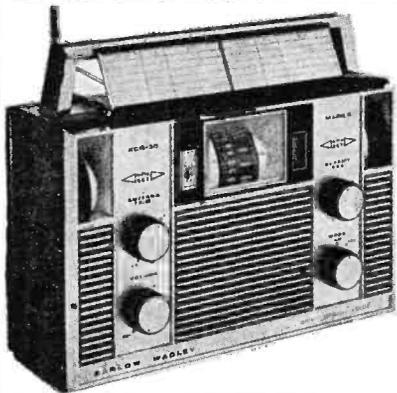
**G3MCN**

# STEPHENS-JAMES LTD.

## 47 WARRINGTON ROAD, LEIGH, LANCS. WN7 3EA

Please note new telephone number  
**TEL. 0942 - 676790**

The North West's leading supplier for all your requirements. EASY ACCESS FROM THE M61-62.63—we're 5m. from M6, turn at the Greyhound Motel on the A580 (East Lancs. Road). OPEN 9.30 to 5.30, MONDAY TO SATURDAY.

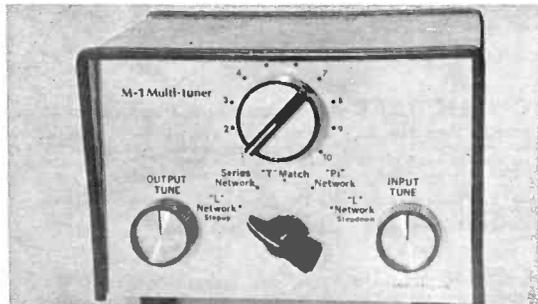


Midland and North West distributors for the XCR30 unique crystal controlled receiver. This receiver is designed to provide precision frequency tuning over the full short wave spectrum up to 30 MHz with exceptional frequency stability for both AM and SSB. Separate tuned whip antenna.

£145.00 inc. VAT  
XCR-30 FM Receiver with FM band 87-5 to 101 MHz.  
£170.00 inc. VAT



**UNIDEN 2030.** 144-146 MHz FM Transceiver. 12 channels. 12v. DC operation. 10 watt or 1 watt output. Antenna impedance 50 ohm. Complete with microphone and mounting bracket. Price £178.74



**Mk. 1 MULTI TUNER.** Designed and manufactured by us. 50 tunable switched positions for antenna lengths over 5 metres in the 2-30 MHz range. Five different circuits to give an excellent match between your receiver and antenna. Now in use in over 35 countries. Price £17.50. Including VAT and Postage.

**Mk. 2 VERSION, £23.00.** Covering 550 kHz to 30 MHz. Send S.A.E. for full information and Test Report.



**YAESU FRG-7 RECEIVER.** Mains and battery operated receiver 0.5 to 30 MHz. Solid state. Advance circuitry offers excellent performance for the DX listener at a moderate price.

### CALLETTI

Introducing a new range of VHF mobile and static antennas. All these were exhibited at the Leicestershire Exhibition.

5/8" Gutter mounted whip ... £12.00  
1/2 wave standard mount ... £11.50  
5/8" Standard mobile base mount ... £12.00  
Base station ground plane 4 radials ... £13.59  
Professional antennas at an Amateur Price

### Accessories

Morse Keys ... £8.50  
Auto-Cq-Sender ... (post free) £41.11  
Drake Low Pass Filter (post 50p) £18.00  
Omega TE-701 Antenna Noise Bridge (post 25p) £21.00  
Omega TE-702 Antenna Noise Bridge (post 25p) £24.00  
Whip antenna gutter bracket (post 25p) £2.81  
UR43 Co-ax 18p metre; UR76 45p metre, post 2p metre; 75 and 300 ohm twin feeder 10p metre, post 1p metre; Heavy duty 75 ohm twin feeder 26p metre. PL269 50p SO239 46p, Cable reducers 16p

We carry a substantial stock of equipment and probably a larger variety of models than most dealers. Having established ourselves as the North Wests leading supplier of Amateur Radio equipment for over 11 years. We are a totally independent company and have no retail outlets through any agents or any other establishment in the North West. We can supply and mostly from stock, equipment from the worlds leading manufacturers. We import some items direct, and we export and manufacture equipment of our own design.

DRAKE-YAESU-UNIDEN-S.T.E.-CALLETTI-JAYBEAM - MICROWAVE MODULES - G-WHIPS - TECHNICAL ASSOCIATES - SWAN - ATLAS - BARLOW WADLEY - C.D.E. - BELCOM - SPACEMARK - DECCA

Send us a large S.A.E. or 20p in stamps and we will forward you all the latest details and prices. All our prices include VAT at the current rate at the time of going to press.

S.A.E. with all general enquiries please. H.P. and Credit facilities. Barclaycard and Access facilities. Trade-ins always welcome. We would be pleased to sell your unwanted equipment on a commission basis.

**WANTED—GOOD CLEAN EQUIPMENT**  
SPOT CASH PAID

For the caller we have wide range of cabinets (up to 200 sizes available) chassis, valves, plugs, sockets, cable, test equipment, etc.

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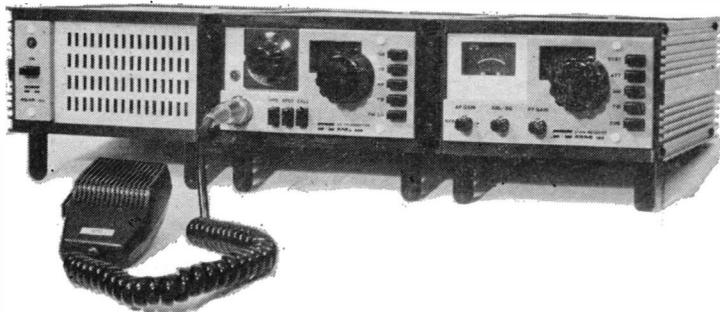
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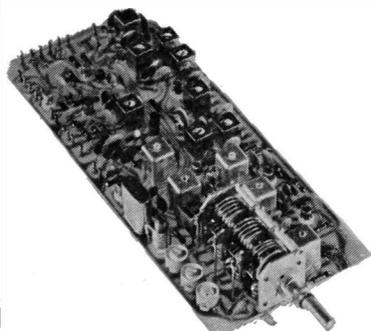
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with Microphone

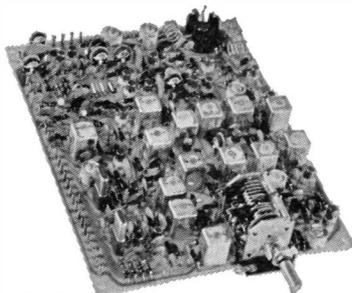
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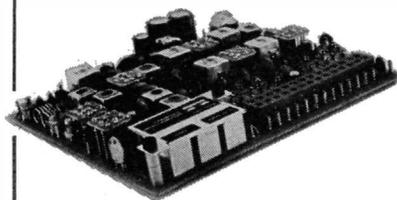
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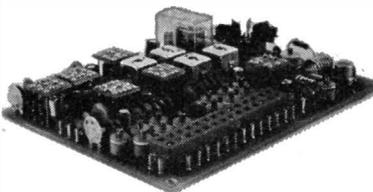
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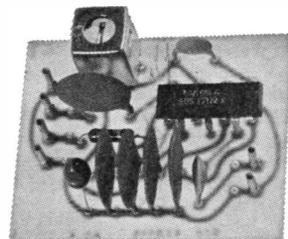
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FOR 2M FM  
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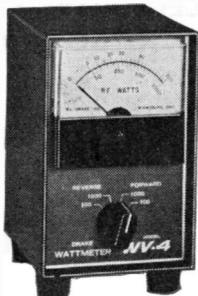
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Editor: PAUL ESSERY, G3KFE/G3SWM

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# The SHORT-WAVE Magazine

EDITORIAL

## **Economics**

For the last two years—one of the most cost-inflationary periods of recent history, as we all know—we have been able to maintain the cover price of the *Magazine* at its present level; we are tempted to think this may be something of a record . . .

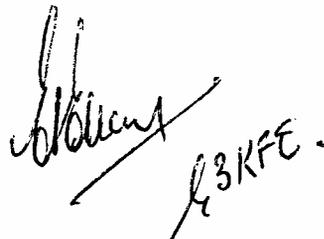
In addition to two-years'-worth of increases in our heaviest overheads (printing, paper, postage, plus all the other costs which affect any business) we have during the last six months twice raised our rate of payment to contributors which will, we hope, have the effect of making our pages even more valuable to our readers—be they licensed amateurs or SWL's.

All of which leads to the punch line which is that, with effect from the next (October) issue, cover price will be 40p and the direct-subscriber rate £5.50. Readers who have been direct subscribers for any length of time will recall that when such occasions have occurred in the past, their subscription rate did not change until it fell due for renewal: this again will be the case. For those non-direct subscribers who regularly find their copy coming to hand late, we strongly recommend a yearly subscription which will ensure that our given word—that we publish on time—will at worst be frustrated by no more than the normal delays in the postal system.

---

We have received notification of the following Special Event stations: The *Sutton and Cheam Radio Society* will be operating at "Walton Firs," National Scout Camp, Cobham, Surrey, from 1000 to 1700 hours local time on September 10th, 1977; callsigns G3DCZ/A, G4ADM/A and G4BOX/A will be used to cover the 80, 20, 15 and 2-metre bands; over 1500 Cub Scouts will be taking part and contacts will be welcomed with all stations—particularly those with Scouting connections. The *British Railways Amateur Radio Society* will operate Bulmers Railway Centre, Hereford, on September 25th, 1977, on the last of the Open Days at the Steam Depot, Whitecross Road, using the callsign G3SCW/A. Also to be held in September, on the 25th, is the Welsh Amateur Radio Convention at Oakdale Community College, Oakdale, Blackwood, Gwent; among many attractions there will be an exhibition of early amateur radio equipment and an illustrated lecture on *Ariel 5* by G3VPW of the Appleton Laboratory.

The "Worked All Britain" (WAB) Organisation has introduced, for Silver Jubilee Year, the "WAB British Counties Award"; profits from this Organisation go to the Radio Amateur Invalid and Bedford Club (RAIBC) and details of the new Award may be obtained from Alec Brennend, G4AVA, QTHR.



A handwritten signature, possibly 'Alec Brennend', is written in dark ink. Below the signature, the call sign 'G3KFE' is written in a similar style.

# VHF BANDS

NORMAN FITCH, G3FPK

## Satellite News

THE Russians are coming! Although the first *Sputnik* was launched nearly 20 years ago, only just recently have the Russians announced any amateur satellite programme. Via AMSAT in Washington has come the news that three or four "RS-OSCARs" are planned. These will be in circular orbits at an altitude of 950 km. The period will be 102 minutes and the inclination 82° giving a maximum communication distance of about 6,000 km.

The transponder in the first one will be a 2m. up/10m. down device like *Oscar 7* mode "A" with 1½ watts peak output power to a half wave aerial, circularly polarised. The downlink passband will be 29.3-29.4 MHz. The uplink band will be 145.8-145.9 MHz. The receiving aerial is to be a quarter wave, circularly polarised one and 10-15 watts to a 10-12 dB aerial is the suggested ground station transmitter requirement. The transponder's receiver noise temperature is quoted as 3,000°K which equates to a noise figure of 10.55 dB. This means that the 100 kHz bandwidth receiver will have a "noise floor" of -83.5 dBm so, for a 5 dB S/N ratio, an input of about 53 microvolts would be needed.

The Soviet *Radio Sport* organisation is responsible for this programme for 1977-78. AMSAT suggests a possible "launch window" for the first RS-OSCAR between October 1 and 17 next. It would be a piggy-back launch on a *Meteor* weather satellite on a 1½ length *Vostok* vehicle from the site at Plesetsk.

The AMSAT Board has agreed that, subject to ARRL approval, the University of Surrey Telecommand Station can command *Oscar 8* when necessary. However, only very occasional, short command signals

would be likely and not the continuous ones as for 0-6 which have caused such annoyance to operators near Guildford. The most likely launch date for *A-O-D* seems to be February 23, 1978, when another *LANDSAT* satellite is due for launch. The Phase III satellite is going according to plan. This highly elliptical orbit satellite will have an inclination of 57° so that the apogee, initially over the northern hemisphere, will gradually rotate over a 4-5 year period to favour the southern hemisphere.

*Oscar 7* is now the only working amateur satellite. Latest information can be gleaned from the Sunday nets on 3,780 kHz at 1015 local time and on 144-280 MHz at 1930 local time. DX stations recently worked include CT3AB, mode A on CW, 29-494 MHz; 5T5CW on 29-485 MHz with just 10 watts to a ground plane at present, and 5V7JC, mode B SSB on 145-955 MHz. From South America, PZ1AP is looking for European QSO's on CW, mode A, on 29-485-29-490 MHz. Orbits crossing the equator between 207 and 228 degrees west in the mornings and 25-36° in the evenings, at the very end and very beginning respectively, are the ones to try.

## Beacons

GB3ALD (YJ30h) has been operating from Alderney since July 13 on a nominal frequency of 10-120 GHz. Output is 80 mW to an 11 dBi aerial. The aerial's -3 dB beam width is 115° giving coverage from Beachy Head to Start Point. Reception reports should go to G3JHM (QTHR).

On 2m., G8ACN (Essex) mentioned a good signal from ON4VHF. This beacon is on about 145-999 MHz from CK23e and runs 2½ watts to a "Big Wheel" aerial. FSK is used. On numerous occasions recently when the Angus 2m. beacon has been quite copiable at G3FPK, the Durham beacon, GB3NEE, has not been detectable. It was switched off whilst the mast was being painted but several correspondents have suggested it has appeared to be on low power or off altogether. A usually well informed source did suggest that this apparent irregular operation might have something to do with GB3TW whose aerials are on the same mast. Unless a beacon is reliable and radiating constant

power, there seems little point in operating it since one never knows if conditions are up or down if the *e.r.p.* is varying—or nil!

## Contests

*Result:* The adjudicators did not have a very hard task in dealing with the entries for the June 18/19 Microwave Contest. There were only four, a very disappointing entry. The winners on 3-5, 5-7 and 10 GHz were G8AGN/P, GW8ADP/P and G3KSU/P respectively.

*Forthcoming events:* The weekend of September 3/4 sees the 144 MHz Open Contest from 1600-1600 GMT, coinciding with the IARU Region 1 event. This time it will *not* be necessary to log QTH information, *only* the QTH locator. It is to be hoped that this trial decision will become permanent.

The final leg of the 10 GHz Cumulative Contest takes place on September 18 from 1100-2000 GMT.

For RTTY enthusiasts, the ninth VHF RTTY Contest organised by the BARTG occurs in September. The first session on the 10th, from 1800-2300 GMT, the second on the 18th from 0700-1200 GMT, using the 144 and 432 MHz bands. Full details from Ted Double, G8CDW (QTHR).

## European DX Records

From IARU's *Region 1 News* for May, 1977, the following information has been taken. It was the *confirmed* QSO situation at January 1, 1977, compiled by SM5AGM, who coordinates this information:—

144 MHz tropo;	
F5JC (ZG11a)/SM5AGM (JT42j)	1930 km.
144 MHz aurora;	
SM6FBQ (GS30h)/UA3TCF (WQ14a)	1830 km.
144 MHz Sporadic E;	
9H1CD (HV03e)/SM7BYU (GP05g)	2250 km.
144 MHz meteor scatter;	
SM5LE (JT51j)/UA9GL (CR02e)	2200 km.
432 MHz tropo;	
F8MM (AI10e)/SM5LE (JT51j)	1560 km.
432 MHz aurora;	
SM5CUI (IT09b)/UA3ACY (SP28j)	1260 km.
1296 MHz tropo;	
G3LQR (AM58f)/SM5CCY (HS36f)	1100 km.

These are confirmed QSO's but some unconfirmed at the time contacts of greater distances were listed. If any readers can better the above, please *do* write in so that your claims can be lodged with the Coordinator.

### Rumour Corner

It has been reported that PY2OB in Santos, Brazil, heard a CW transmission from TU2EF in Abidjan, Ivory Coast, West Africa on 145.5 MHz. Hugh Ryland has written to confirm he has carried out tests with Ruby, PY2OB on 2m. whilst communicating with him in the 15m. band *simultaneously*. During one such test, TU2EF heard nothing at all from PY2OB. When TU2EF transmitted to the PY on 2m., he says he put his 15m. microphone near his keyer's audio so that Ruby could hear what he was sending. PY2OB said he reckons he could hear TU2EF's 2m. signal, ". . . very softly . . ." but Hugh just does not believe it. PY2OB never showed up for any later skeds. More next month?

### Television

Not too much news is received from those who experiment with A/TV. However, the call G6NOX/T is a very well-known one, now superseded by G8ACN, Jeremy Royle. He uses CCIR 625 line, high definition, negative modulation and has worked five countries on 70 cm. from his rural Essex location. Contrary to earlier fears, he finds that TV signals in the top part of the 70 cm. band can coexist with the FM repeaters without mutual interference. Jeremy hopes that those who "gave up" when the UHF repeaters began to proliferate will return to the fold.

In a recent 2m. QSO with G3FPK, Syd Smith, GJ8EZA, mentioned his and GJ8AAZ's continuing pursuit of A/TV contacts with French stations. It is hoped that other readers operating TV systems will contribute to this feature from time to time.

### Meteor Scatter

Over the weekend August 6/7, Ian White, G3SEK, and Chris Bartram, G4DGU, operated portable from The Lizard in Cornwall (XJ05h) from 0800 GMT on the Saturday to 1200 GMT on the Sunday. They had

### THREE BAND ANNUAL VHF TABLE

January to December 1977

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		TOTAL Points
	Counties	Countries	Counties	Countries	Counties	Countries	
G3OHC	46	6	59	14	29	8	162
G2AXI	42	6	49	19	36	7	159
GD2HDZ	32	5	51	13	39	9	149
G8GML	—	—	63	13	48	12	136
G8LEF	—	—	66	17	36	11	130
G4ECQ	44	4	65	15	—	—	128
G4FCD	35	2	67	18	3	1	126
G4BYP	25	5	51	10	26	7	124
G3XCS	36	4	50	17	8	4	119
G8HHI	—	—	56	14	36	10	116
G3FIJ	30	2	48	10	19	4	113
G8HQJ	—	—	58	17	28	10	113
G8BKR	—	—	65	16	26	4	111
GM4CXP	17	2	49	20	13	7	108
G8IFT	—	—	59	11	27	5	102
G3BW	—	—	49	12	30	7	98
G4CMV	—	—	69	15	7	2	93
G3FPK	—	—	70	20	—	—	90
G4DWZ	15	2	45	12	12	4	90
G4FOR	—	—	62	16	7	2	87
G4FBK	—	—	58	14	12	1	85
G4DKX	7	1	37	11	19	6	81
G8JHX	—	—	61	18	—	—	79
G4DEZ	—	—	60	18	—	—	78
G8ITS	—	—	45	10	21	2	78
G8LHT	—	—	58	14	1	1	74
G8GIJ	—	—	31	5	28	6	70
G8KSS	—	—	54	16	—	—	70
G4AEZ	2	1	32	11	16	4	66
G4ERX	—	—	49	13	1	1	64
G8JJR	—	—	51	10	—	—	61
G8MKW	—	—	46	10	—	—	56
G4GCQ	—	—	45	9	—	—	54
G4GET	—	—	40	7	—	—	47
G8IZY	—	—	38	7	—	—	45
G4FKI	—	—	21	5	4	1	31

arranged 12 schedules but, so successful was the operation, with all QSO's completed in under one hour, that they seemed to be running out of customers. Accordingly, they telephoned G4DEZ back in Didcot to ask Bryn to ring Claus Neie, DL7QY, in Berlin, to arrange some more skeds. They finally concluded 17 QSO's out of an original 12 and were so pleased with the results that a further trip is almost certain.

Best DX was probably SMØFFS in JS02a at 1539 km. In a subsequent 2m. QSO, Roger Thorn, G3CHN (S. Devon), mentioned the superbly clean signal from G3SEK's equipment, comprising an amplifier with two 4CX250B valves and a 14-ele. *Parabeam*. To insure against breakdowns, G4DGU took his complete station as well but there was no trouble.

On August 6, Clive Penna, G3POI (Kent), managed to arrange an MS sked with C31OX in Andorra. The C3 station was a short expedition by two Belgian amateurs and the QSO was concluded in about 1½ hours to give Clive his 36th country on 2m., bringing his QTH square count to 189. The reliable *Perseids* shower is coming up as this is being edited and more and more readers seem to be experimenting in this fascinating communication mode. Don't be modest, please write and let us know how you fared!

#### DX-Peditions

The Swedish group's trip to the Faroe Islands got underway as planned and SK6JF/OY has been worked already by GM3ZBE (Inverurie) and GM8BJF (Edinburgh) *via* tropo. They have concluded a number of MS skeds. Likewise, the DB5NA/OHØ affair started up from Aaland Is. Another interesting one was mentioned to your scribe by G3SEK concerning a trip to Italian islands—either the Pantelleria or Pelagian group—ending on September 7. It is thought that MS specialist 14BXN may be behind this one. All that was definite was the QRG of 144.375 MHz, plus/minus 5 kHz and the fact that 70 cm. and 23 cm. gear was to be taken.

Keith Naylor, G8FUF, writes: "I am seriously considering operating from Morocco or Algeria for a long period next summer but this depends on how many other people I can get

involved in the trip." Quite an undertaking sorting out licensing, transport and customs matters.

#### Luxembourg

At the beginning of July, Graham Nicholls, G4DLB, operated on 2m. from Luxembourg during which G4DLB/LX/P worked 25 British stations from a site near Clervaux. The gear comprised an *FT-101B*, *Europa* transverter and a 7-ele. *Yagi*. Graham was just about detectable at G3FPK on the evening of the 7th when he did work some G's. However, on the morning of the 9th, he heard Tom Douglas, G3BA, calling "CQ" from the West Midlands and so worked Tom who has operated from LX in the past. After that, GW8CFQ in Clwyd and another ten G's were worked.

#### The Lizard

David Butler, G4ASR, will be operating again from rare XJ square in Cornwall from September 5 to October 2 on 4m., 2m., 70 cm. and 23 cm. His proposed schedule is: Sept. 5-8 G4ASR/A on 2m.; Sept. 10-11 G4ASR/P on 4m. and 2m.; Sept. 12-15 G4ASR/A on 2m.; Sept. 17-18 G4ASR/P on 2m. and 70 cm.; Sept. 19-22 G4ASR/A on 2m.; Sept. 24-25 G4ASR/P on 4m. and 2m.; Sept. 26-29 G4ASR/A on 2m.; Oct. 1-2 G4ASR/P on 23 cm. and 70 cm. contest. The -/A times are 1900-2230 and the -/P ones 1000-2100 GMT and he has found a better -/A location now. The QRG's are 70-21, 144-26 and 432-26 MHz. Some long haul 4m. skeds to GM have been arranged and hopefully with ZB2, *via* MS. On 2m. MS, several skeds have been fixed.

#### More on VHF NFD

John Quarmbly, G3XDY, has sent in a detailed account of the Martlesham RS and Ipswich RC combined NFD operation. They found conditions generally good with good weather. On 70 MHz, 105 stations were worked in all U.K. countries except GJ, the last few hours being rather tedious trying to find new stations. 144 MHz was by far the best band with 699 scoring QSO's in 14 countries, best DX being SM6FYJ in GR41b at 915 km. 55 QTH squares were worked and they seemed to have a duct open to Europe for most of the time which few other contestants enjoyed.

432 MHz only produced 180 scoring contacts in 10 countries, best DX being HB9AOF/P in DG13b during a short "lift" from 2230-2245 GMT. On 1296 MHz fewer QSO's were made than last year. Of the 45, 11 were with PA stations, one each with DC, GW and ON, the rest G's. On this band, John says CW was invaluable, nearly half the QSO's being on A1, often from direct "CQ" calls. On a comical note, G3XDY writes: "Heard on 144 MHz during contest. Belgian station, when asked for his serial number, read it off the back of his *TS-700!*" Lid of the year?"

#### Gigahertz Bands

Roger Taylor, G4BEL (Cambridge) has written to update his

#### TWENTY-THREE CENTIMETRE

##### ALL-TIME TABLE

Station	Counties	Countries	Total
G4BEL	44	12	56
G3JXN	35	9	44
G3DAH	28	8	36
G4BYV	20	8	36
G3NHE	24	5	29
G3COJ	19	8	27
G6NB	20	5	25
G4ALN	20	5	25
G3JVL	21	4	25
G3OBD	20	3	23
G8ARM	20	2	22
GD2HDZ	12	5	17
G8EOP	11	5	16
G8GML	12	3	15
G5DF	13	1	14
G8AOD	11	2	13
G8FMK	12	1	13
G8AII	7	2	9
G4DKX	7	2	9
G3OHC	8	1	9
G8ABH	7	1	8
G8FJG	7	1	8
G8GNZ	4	2	6
G2AXI	4	1	5
G8IFT	3	1	4

top-of-the-table 23 cm. score to 12 countries and 44 counties. He is building a new shack which has eaten into the available spare time. He is now QRV on 13 cm. with 20 watts of SSB into a five foot dish with log periodic feed, at 35 feet. For Arthur Breese, GD2HDZ, the most satisfying result in July was a 23 cm. QSO with G3JXN (London) overheard by BRS 34348 in Chatham, Kent, of whom Arthur remarks: "Harold never misses anything!"

**Seventy Centimetres**

G4BEL says that on the weekend of September 3-4, G3PMH/P will be operating from the rather rare AN square and on 2m. as well. Syd Harden, G2AXI (Hants.), worked GD8EXI on July 2 for a new QTH square and was in on the good tropo. conditions on the 10th and 11th adding DM2CPA to the 1977 countries total and FN and GO squares. John Woodham, G8BKR (Bristol), also worked GD8EXI, plus G8AGU (Devon) and G8IXN (Cornwall) on July 15. He could not raise G13VPK/P, GM3HAM/P or GM4DMZ/P on NFD though.

G8FUF (Essex) added ZR square when the CUWS chaps were in GM3 with GM4CDF/P and also added ZP with the same station. John Pilags, G8HHI (Hants.), has improved his aerial system, the 18-ele. *Parabeam* now being 46ft. *a.g.l.* He is running 10 watts from a *Modular Electronics* transverter and, during the July 10-11 opening, worked GM8FFX (YR80j), SK6AB (FR30c), OZ1AAH (FP56j), DM2CPA (GO61f), DK1GJ (FO46e) and GD8EXI. GD2HDZ contacted his 9th country this year with DB4EX on the 10th.

**Two Metres**

Mike Allmark from Leeds is a welcome new *s.w.l.* reader and has been hearing most of the summer's E's. He was listening to a QSO between GW8CFQ and G18KIA at 1407 on July 12 when YO2IS in KF17e broke in. After that Mike logged HG8KCP (KG22j), HG8PR (JH59j), OE3JHC and YU1NPW (KE13j). For G2AXI, the highlight of the month was his CW contact with UC2AAB (NN18c) at 1218 GMT on July 8. Other choice ones from Syd's list include SM7AED

(GQ56b) on the 10th; G4DLB/LX/P on the 11th and DM3ZBA (GO79c) on the 12th.

Bob Short, G3GNR, and Ken Vickers, G3YKI, spent some time in the north of Scotland from mid-July and also visited Orkney, indulging in a little portable operation from the 27th. They worked GM3OLK/P in Shetland each evening, the latter looking for OY! Colin Squires, G3XCS (Cornwall), was in on the July 12 E's and worked HG5KQD (JH35c), HG7PR (JH55j), YU10IA (KE02a) and YU1NPW, all on SSB in 13 minutes. Writing about the July 8 E's Dennis Boniface, G4DSC (N. Yorks.) reckons he "... truly landed on it!" Prior to the affair, he had been monitoring Band I TV and Band II FM so was

G4FBK	—	5	66	71
G8KLN	—	1	62	63
G8LHT	—	1	60	61
G4ERX	—	1	52	53
G8LLG	—	1	38	39
G8JAH	—	1	35	36
G3POI	—	—	189	189
G3CHN	—	—	143	143
G3FPK	—	—	138	138
G4CDF	—	—	109	109
9H1BT	—	—	94	94
G6UW	—	—	85	85
9H1C	—	—	83	83
G4AWU	—	—	77	77
G4DEZ	—	—	75	75
G8JHX	—	—	74	74
G8JJR	—	—	71	71
G4GET	—	—	69	69
G4CIK	—	—	62	62
G3KPU	—	—	60	60
G4GCQ	—	—	60	60
G8KSP	—	—	60	60
G8JEF	—	—	58	58
GW4FJK	—	—	57	57
OZ9IY	—	—	53	53
G8KSS	—	—	47	47
G4EYL	—	—	41	41
GM8NCM	—	—	29	29
G8JAJ	—	—	24	24
G8JKA	—	—	21	21

**QTH LOCATOR SQUARES TABLE**

Station	23 cm.	70 cm.	2 m.	Total
G8FUF	1	79	180	260
G3JXN	25	60	79	164
G3COJ	16	52	68	136
G8GML	8	45	84	137
G2AXI	1	43	68	112
G8LEF	4	37	79	120
G8EOP	8	36	38	82
G8HVY	—	33	93	126
G4BAH	—	32	92	124
G3OHC	4	30	98	132
G4DKX	5	30	68	103
GM4CXP	—	25	122	147
G4BWG	—	25	110	135
GD2HDZ	10	25	53	88
G3FIJ	—	25	57	82
G4FCD	—	22	85	107
G8GII	—	22	63	85
G4AEZ	2	22	50	74
G8HHI	—	21	78	99
G3BW	—	21	47	68
G3XCS	—	18	100	118
G8IFT	7	18	45	70
G8IWA	—	17	74	91
GJ8AAZ	—	15	56	71
G8BKR	1	12	89	102
GD3YEO	—	8	59	67
G8ITS	—	8	48	56
G8KUC	—	7	34	41
9H1CD	—	6	120	126

Starting Date January 1, 1975. No satellite or repeater QSO's. "Band of the Month" 70 cm.

prepared. The event had two distinct phases, the first 1020-1051, the second 1119-1141 GMT, after which it was just as if the opening had been suddenly switched off. Some 9 QSO's were completed in the first phase and 8 in the second with four lost, due to QSB. In addition to several Hungarians, Dennis worked husband and wife team YO2IS and YO2DM plus the local club station in Timisoara, YO2KAB (all in KF17e), OE1HGW (II21f), OE1HNA (II53f), OK3KTR (II48d) and OK3TBY (II58). All that lot on SSB using a *TS-700* to an 80 watts PA and 10-ele. crossed *Yagi* circularly polarised.

Ray Elliott, G4ERX (Essex), missed the E's but did net some DL,

OZ and SM stations in the July 10-11 tropo. which produced 8 more squares. G8BKR worked DM2DTN and DM4PSN via E's on July 8. VL square was provided by EI7BA/P on Mount Gabriel, Co. Cork, on July 26 and 28. John mentions EI2VLK/P (GW4BJE) active from various parts of EI from July 18 to 29 but only making a few QSO's into G.

Brian Jenkins, G3KLE, took a trip over to Lundy Island with an IC-202 and a small beam on July 28. He worked five stations in about 1½ hours and anyone thinking about taking gear over should appreciate that they would have to hump everything off the boat by hand as the boat stops 200 yards from the beach.

Ken Osborne, G8KSS (Bristol), managed to work GU5CBE/P on Sark in the period July 1-2 and GU2FZC. NFD weekend brought QSO's with G, GD, GM, EI, F, ON and PA and Ken got his AM to FN and FO squares on July 11. Ian

Harwood, G8LHT, is holidaying in GM till early September and is currently operating as GM8LHT/P from the rarer squares. YS and ZR will be visited with forays into XR and XS.

At G3FPK, SM6EDG/MM, using a "barefoot" IC202 to a 12-ele. Yagi, gave your conductor and several others a couple of new "wet" squares as he sailed from the Humber to Rotterdam, viz. BM and BN. George does the trip from Goteborg to England to Holland fairly regularly so may probably dispense some more "wet" squares in due course. He said he would be using an amplifier on future trips. The band was open to north Germany on July 30 and on August 3, an unexpected QSO with G8GXP/P on the Scillies in WJ09e, produced a new 1977 county. Quite often, the FX3THF and FXØTHF beacons have been well received but activity from France seems to be very sparse.

Conditions during the July 31 QRP Contest were quite good accord-

ing to Steve Lowe, G8FEO, who operated as GW8FEO/P from an excellent site near Colwyn Bay (YN52e). He made 118 contacts, best DX being GM8FFX in Aberdeen. The weather was nice but windy and the aerial blew down a couple of times but was not damaged. The aerial was a 6-ele. Quad. Ian Gordon, G8IFT, and Martin Fulda, G8IQL, operated G8KUC from Canterbury during the QRP event making 148 QSO's, including 31 PA's, 21 ON's, various DA, F, GU, GW and GD4AFN/P for the best DX.

### Deadlines

That's it for another month. For the October issue make sure your copy reaches Welwyn by September 8 and by October 6 for the next edition. Everything to: "VHF Bands," SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts. AL6 9EQ. 73 de G3FPK.

## A VERSATILE SEND/RECEIVE CONTROL BOX AND INTER-CONNECTING LEAD SYSTEM

R. G. MARDEN, G3MWF

THE purpose of this article is to describe a standardised system of supplying power to the various equipments around an amateur transmitting station. A send/receive control box is also discussed suitable for fitting into such a system.

### Supplying the Power

To start at the beginning, the power supply. At G3MWF there is a station power supply unit capable of giving several HT outputs and a 6.3 and 12.6 or 12v. LT output. There are also several small mains PSU's for various ancillary pieces of equipment, and for portable work vibrator and transistorised PSU's. The outputs from all of these power packs terminate at 8-way socket outlets, each wired in exactly the same way, relative to the voltages or function. The heater outputs are left "floating" at the PSU's, the earthing arrangements for these are dealt with within the equipment to be powered.

On the equipment itself if this is without its own built-in power supply, whether it is a transmitter, amplifier, receiver or whatever, the power is fed in via 8-way male inlets. These are wired in a manner to correspond with the sockets at the various power supplies

mentioned above. If commercial or ex-service equipment is used, it is either fitted with new input sockets or, if modification is unwise, a suitable adaptor is made so that it fits into the station supply and control system.

The PSU is connected to the equipment via power leads; these are based on an eight-wire cable form terminating at one end with an eight-way plug, and at the other with an eight-way socket. One exception is for quite small equipment, where the input is via a miniature 6-way male inlet. In this case the cable form is terminated at its latter end by a miniature 6-way socket. The make-up of such a cable form is indicated in Fig. 1.

This system of standardisation has been strictly adhered to since the station was established in 1958. The method has paid off on more than one occasion, when equipment with 6.3v. heaters has been plugged in to a 12v. supply. Owing to the voltage appearing at the "wrong" pin, as it were, on the equipment, no harm was done. The same argument applies, in some cases, for HT voltages.

### Send/Receive Control

On earlier "home brew" equipment, send/receive switching was carried out at the transmitter itself. This was found not to be so convenient when a VHF transmitter was installed, together with the introduction of a VHF converter, with its own in-built power supply.

The existing two-metre transmitter is a crystal controlled job, which means that the HT only has to be switched on or off and the aerial changed over. However, there have always been plans for a VFO controlled two-metre transmitter (this is on the stocks now) and this

necessarily involves the need for a netting facility. Further, it was decided from the start of VHF transmitting that send/receive switching would not take place at the transmitter or power pack. The alternative is a control box which fits into the standardised system already described. The ultimate aim being for one master send/receive knob no matter which transmitter is being used, VHF or otherwise.

The first control box built was complicated, comprising a low loss wafer switch which changed over the aerial, switched the netting function and switched the relay on and off. This latter applied full power to the transmitter and switched the HT line in the converter.

This unnecessary circuitry was replaced by the circuit shown in Fig. 2 (ignore the broken lines for the time being). The relay and its associated DC supply is missing; the only component, apart from switches, is a power diode and a warning lamp. Though the operation of the control box will be clear by studying the circuit, a description would not be amiss:

Power is fed from a PSU via a cable form, already described, to the control box, where it is switched; the control box is then connected to the transmitter via a further cable form. On "receive," S.1a. completes the HT line on the converter; S.1b. is neutral and S.1c. switches the aerial to the converter. When on "net," the HT line on the converter remains completed via S.1a. S.1b. switches HT onto the oscillators and mixer in the transmitter; the HT at this stage can't get through to the amplifier and PA stages because the diode, being reverse biased, prevents this. Meanwhile the aerial remains connected to the converter via S.1c. Finally, on "transmit," S.1a. breaks the HT line in the converter. S.1b. switches HT directly onto the final stages of the transmitter, and onto the exciter stages via the diode which is now forward biased and therefore conducts; the aerial is now switched onto the transmitter via S.1c.

The feature of this control box is the diode which cuts out a switch function and therefore extra wiring. Another feature is that by duplicating the basic control box as indicated by the broken lines, see Fig. 2, another transmitter can be controlled by the same knob. S.1. in the original circuit is one wafer of a rotary switch; S.3. is another wafer on the same spindle and, as indicated, controls the Top Band transmitter. It will be noticed, however, that because the receiver muting arrangements are different for the Top Band set-up, the wiring is slightly

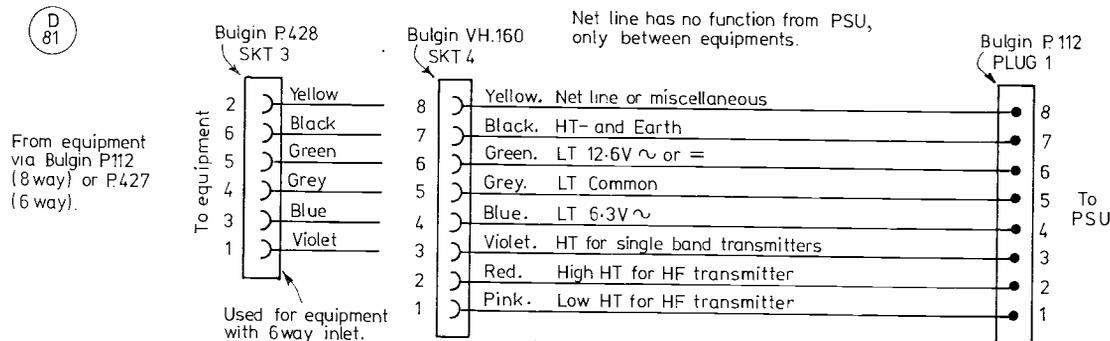


Fig. 1 MAKE-UP OF CABLEFORM

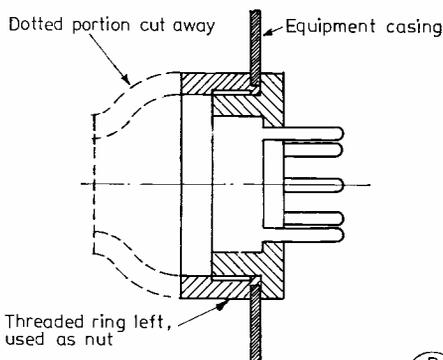


Fig.3a BULGIN P112 PLUG-MODIFIED

D 83a

re-arranged at S.3a. which has a similar function to S.1a. Since, by the terms of our licence, we may not transmit simultaneously on more than one band, S.2. and S.4. have been included. Their purpose? To ensure that the heater and HT voltages are "killed" on the transmitter/s not actually in use. The warning lamp indicates which transmitter is "live."

**A Four Way Control Box**

At the moment only the two-metre and Top Band transmitters are controlled in this way at this QTH, but a control box for four transmitters is under construction now. In Fig. 3 will be seen the punching and drilling details that have already been worked out.

The views shown should make the whole thing clear. At the dimensions indicated the metal-work will have to be specially bent up, but it would be possible to utilise a manufactured chassis nearest to these measurements. It must be pointed out that the hole sizes and spacing suit the components specified. For instance the wafer switch around which this "box" is designed is one that is made up from a switch kit of unknown origin, each wafer of which are 3-pole, 3-ways. Two of the poles are on one side of the wafer and the remaining pole on the other: therefore if any other switch is used the dimensions between holes must be adjusted accordingly, particularly the aerial co-ax sockets.

As far as the writer knows, Bulgin don't make a panel mounting version of their P.112 plug (i.e. pins pointing out from the panel of the equipment). The

Net line has no function from PSU, only between equipments.

Note: The smaller equipment with 6 way power entry, never requires the 'HF' HT.

plug therefore needs to be modified as shown in Fig. 3a. This modified version is used for power inputs on all equipment at G3MWF including the control box; on the cable forms it is, of course, used as designed.

The control box shown has been "handed" to suit the lay-out at G3MWF. There is no reason why the whole thing couldn't be re-handed to suit other stations, but the aerial co-ax sockets would have to be carefully re-sited. No wiring details are shown because this is anyway determined by the switch and socket positions. If other layouts are tried it would be advisable to arrange for the aerial co-ax socket spigots to solder directly onto the switch wafer tags, as on this design. These sockets and their switching should be screened off from the rest, as indicated in Fig. 3.

Since, in some cases, the same receiver will be used with different transmitters, it is only necessary to bring out one muting circuit from the most convenient wafer on the switch. The same applies to aerials. Where, say, a multi-band one is in use the aerial input sockets could be paralleled between the appropriate control circuits.

This method of change over has worked out quite well, and the proposed four-way system is looked forward to. It is possible to adapt this method to suit transistorised equipment, with suitable PSU's.

**Table of Values — Fig. 2**

Plug 1 =	Bulgin P.112	D1, D2 =	5Y2, 8GY or similar diode
Sockets 1 & 2 =	I.O. valve holders	Wiring =	Ripault 28/0.3 mm. for LT leads, see (c) below; "Radio-spares" 14/0.0076" for the rest
Socket 3 =	Bulgin P.428, see (a) below		
Socket 4 =	Bulgin VH.160		
Co-ax sockets =	Belling flush and proud type		
S1 and S3, see	text		
S2 and S4 =	Bulgin S.277		
ILP1, ILP2 =	Bulgin D.675/1 see (b) below		
(a) On the equipment use	Bulgin P.427		
(b) Bezel colours available:	Red, Yellow, Green, Blue and White		
(c) From most auto electrics suppliers			

*Note: No quantities have been specified as this depends on how big a "box" is built, and how many cable forms are made.*

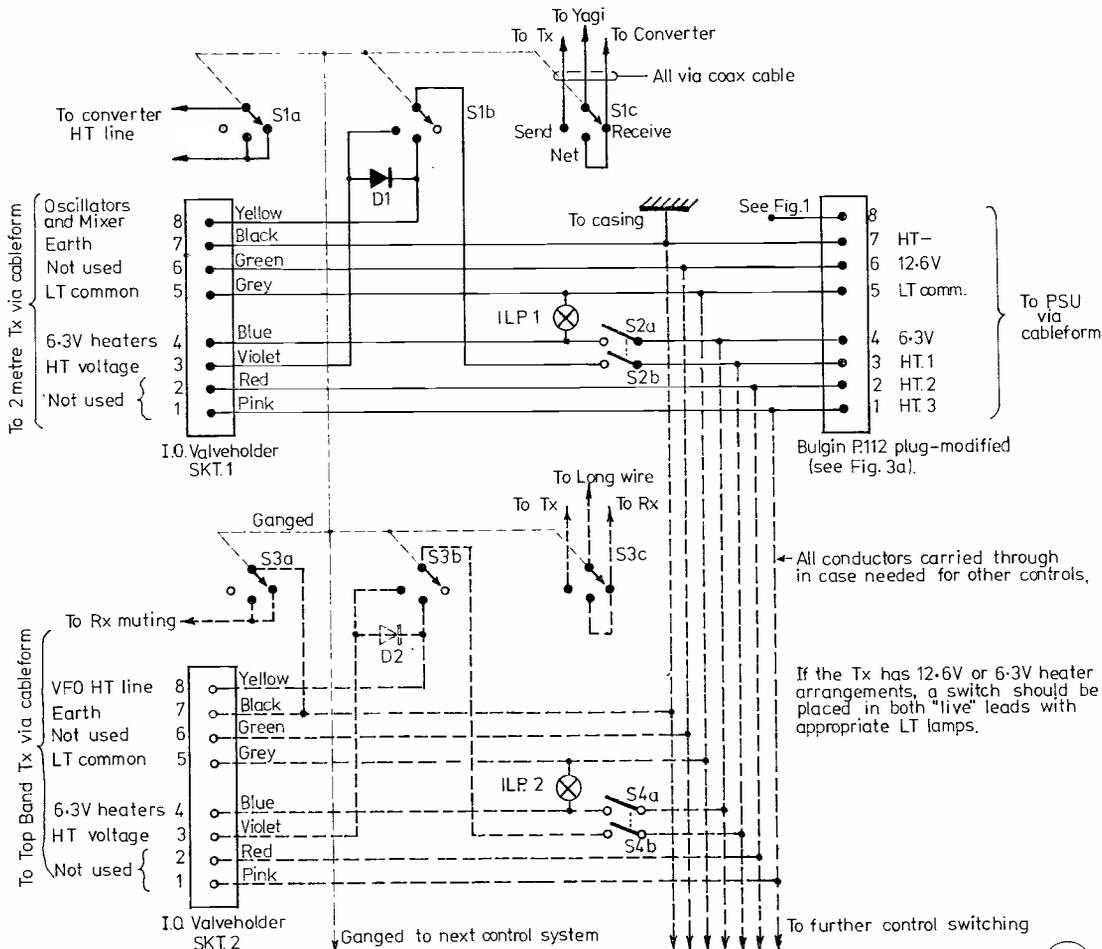


Fig.2 CIRCUIT DIAGRAM OF CONTROL BOX



## BOOK REVIEW

**“SOLID STATE DESIGN FOR  
THE RADIO AMATEUR”**

**T**HE writer's interest in things electronic started back in the 1940's long before the discovery of the transistor. Our "Bibles" in those days were F. Langford Smith's *Radio Designer's Handbook* (price 10s. 6d.), and the near thousand page tome called *Radio Engineering*, third edition, by F. E. Terman.

*Solid State Design for the Radio Amateur* is a brand new publication from the American Radio Relay League written by Wes Hayward, W7ZOI, and Doug DeMaw, W1FB, in the usual clear and concise ARRL style. The basic philosophy of this book is to encourage the solid state user to *design* his circuits instead of just copying somebody else's project.

In the first chapter, the authors plunge straight into the basics of bipolar and field effect transistors, zener diodes and operational amplifiers using "models" to explain why they work the way they do.

Chapter 2, "Basics of Transmitter Design," leads logically from the discussion and design of crystal oscillators, buffers and PA stages, to the design of a universal, QRP CW Tx of the simplest possible type. In spite of their deceptive simplicity, transistorised amplifiers invariably need de-bugging and the methods of doing this are described step by step.

"More Transmitter Topics" are covered in Chapter 3 including the choice of components for VFO's. Circuit diagrams for Colpitts and Clapp VFO's give the reactance values for critical coils and capacitors, allowing the designer to derive his own component values for particular frequencies. This avoids the need for any tables of specific values. Several low power transmitter designs are presented along with a discussion of heterodyne VFO's and the pros and cons of synthesisers.

Chapter 4 is devoted to "Power Amplifiers and Matching Networks" and includes a lot on heat sinking, gain compensation and broadband amplifiers. The 300 watts, 1-8 to 30 MHz broadband linear amplifier using *Motorola* MRF-428A's is featured.

The receiver section of this book starts with Chapter 5, a 42-page part dealing very thoroughly with the basic designs of superhet and synchrodyne receivers, containing detailed discussions of the merits of various bipolar, J-FET and MOSFET devices, the use of numerous IC's for IF amplifiers, filter information and the like. This is followed by an absorbing section entitled, "Advanced Receiver Concepts," dealing rigorously with dynamic range, RF amplifier, mixer and oscillator design and including practical realisation of high performance receivers.

Chapter 7 is devoted to "Test Equipment and Accessories" including FET and Op-Amp. voltmeters, RF power meters, RF bridges, regulated power supplies, aerial matching networks, noise generators and an electronic keyer based on three NE555 timer IC's.

The following section is called "Modulation Methods" and covers SSB and DSB meticulously but with only a brief mention of AM, FM being omitted entirely. Bi-directional transceiver circuitry, diode switching of

circuits and components common to transmit and receive functions, and control circuits are featured.

The final chapter concerns field operation and portable gear with advice on equipment and aeriels for DX-pedition use, and more Tx, Rx and transceiver circuits. The five appendices deal briefly with the phasing method of SSB generation, band pass filters, the distortion properties of amplifiers and receivers, transistor "models" and amplifier analysis, and the inductance of toroidal coils. An extensive bibliography and comprehensive index conclude the book.

The overall impression is of a very well written publication, full of "gen stuff" with an absence of padding. The diagrams are numerous and exceptionally well drawn although, as with all first editions, there are a few minor errors. Some of the illustrations are rather small and could have been better lit when photographed.

*Solid State Design for the Radio Amateur* is published by the ARRL and runs to 256 pages in 10 $\frac{1}{2}$ in. x 8 $\frac{1}{4}$ in. format. This reviewer has no hesitation in highly recommending it. It will be available shortly (advanced orders accepted) at £5.35 post free from the Publications Dept., Short Wave Magazine, 34 High St., Welwyn, Herts. AL6 9EQ.

N.A.S.F.

**FURTHER R.A.E. COURSES—1977/78**

**T**HE first List under this heading appeared on p.351 of the August issue, the courses shown below having been notified to us since.

**Bangor (Co. Down):** At the Technical College, Bangor, Monday and Thursday evenings, commencing Sept. 20, enrolment from Sept. 7. Further details from GI3WSS, QTHR. (Tel: Holywood 4277.)

**Birkenhead:** At the Birkenhead College of Technology, starting Sept. 15 at 6.45 p.m., enrolments Sept. 5-9.

**Birmingham:** Course location not given. Contact G. V. Farrance, G3KPT, 51 Amberley Green, Birmingham B43 5TJ, for details.

**Borehamwood:** At the Borehamwood College of Further Education, Elstree Way, Borehamwood, Herts., Tuesdays and Thursdays at 7 p.m., commencing Sept. 20 (this course is aimed at the December exam.); enrolment Sept. 7-8, 4-8 p.m. Course lecturer G. L. Benbow, G3HB.

**Bridgnorth:** At the Bridgnorth College of Further Education, Wednesday evenings at 7 p.m., starting Sept. 14, enrolment Sept. 7-8, 6.30-8.30 p.m., at College Main Building, Stourbridge Road, Bridgnorth. Course fees £10, or £5 (under 18). Class tutor P. Edwards, G3DKJ.

**Crawley:** At the Adult Evening Centre, Sarah Robinson School, Ifield, Crawley, West Sussex, Monday evenings at 7 p.m., starting Sept. 26, enrolment Sept. 14, 7-9 p.m. Further details from course tutor R. Scrivens, G3LNM, QTHR. (Tel: Crawley 22540.)

**Dudley:** At the Dudley Technical College, Dudley, Tuesday evenings at 6.30 p.m., starting Sept. 13.

**Hemel Hempstead:** At the Dacorum College, Marlowes, Tuesday evenings at 6 p.m., starting Sept. 13, enrolment Sept. 5-6. Course organiser C. Burke, G3VOZ. (Tel: Hemel Hempstead 833300.)

**London (Chingford):** At Hill House, Simmons Lane, E.4, first night and enrolment Sept. 19. Course fee £8. Instructor Alan Foss, G8EAY (Tel: 01-500 6034), to whom all enquiries should be made.

**London (Croydon):** At the Central and South Croydon Adult Education Centre, Technical College Annexe, Scarbrook Road, Croydon, Wednesday evenings at 7.30 p.m., starting Sept. 28, enrolment Sept. 17.

**London (Harrow):** At the Hatch End High School, Wednesdays at 7 p.m., enrolment at Nower High School Sept. 17, course commences Sept. 28. For further information contact D. T. Busby, G8ELB (Tel: 01-864 4411 ext. 39).

**London (Holloway):** Organised by the Grafton Radio Society on behalf of the Holloway Institute, commences Sept. 19 at 7 p.m., enrolment ILEA areas Sept. 8-9, outer London Sept. 12-14. Full details from the course lecturer B. C. Bond, G3ZKE, QTHR. (Tel: 01-485 7065.)

**London (Paddington):** At the Amberley Street Evening Institute (off Harrow Road), commencing Sept. 29, enrolment Sept. 8 or 12. Full details from D. T. Busby, G8ELB. (Tel: 01-864 4411 ext. 39.)

**Loughborough:** At the Loughborough Technical College, Radmoor, Loughborough, Tuesday evenings at 6 p.m. for Morse and 7 p.m. for Theory, starting Sept. 20, enrolment Sept. 12-14, 6-8 p.m. Course fee £8.05. Lecturer D. R. Doughty, G3FLS.

**Newcastle-upon-Tyne:** At the Gosforth Adult Association, Gosforth High School, Gosforth, Tuesdays and Thursdays at 7 p.m. Further information from tutor D. R. Loveday, G3FPE. (Tel: Newcastle-upon-Tyne 668439.)

**Newport (Gwent):** Organised by the Newport Amateur Radio Society, at Brynglas House, Brynglas Hill, Newport, Mondays at 6 p.m., starting Sept. 19. Course fee about £7. Tutor L. A. Groucott, GW3YTI.

**Princes Risborough:** At the Adult Education Centre, Merton Road, Mondays and Thursdays at 7 p.m., enrolment Sept. 12 and 13 at 7-9 p.m. Lecturers N. Lilley, G3INN, and S. Ford, G4ACV.

**St. Austell:** At the Mid-Cornwall College of Further Education, Palace Road, St. Austell, Tuesday evenings at 7 p.m., commencing Sept. 27, enrolment Sept. 21-22, 5-7.30 p.m. Contact J. S. Kennedy, G4DND, QTHR for further information. (Tel: St. Columb 479.)

**Wakefield:** At the Knottingley High School, Tuesdays at 7 p.m., enrolment Sept. 19. Lecturer A. E. Ashby, G3HCW.

**Wigan:** At the Wigan Adult Education Centre, Parsons Walk, Wigan, enrolment Sept. 12-15 or on evening of first class on Sept. 19. Tutor T. Austin, G3RCA.

## THE WESTERN ELECTRONICS PM-2000 POWER METER

### A TEST REPORT

THE Western Electronics (UK) Ltd. Power Meter PM-2000 was originally offered to the SHORT WAVE MAGAZINE towards the latter end of 1976, but because of the sad death of G6FO the unit was not unpacked until a few weeks ago. It was then found that somewhere along the way it had managed to catch a fair wallop, sufficient to knock the zero-setting adjustment on the meter out of action and also to put a sizeable bend in one corner of the cover. Although it appeared to be still working electrically, it was in no fit condition to be tested because of this damage. We therefore rang Western's at Louth and their reaction was to organise another unit forthwith, and to tell us that they had had some troubles in transit as a result of which the pack size had been increased; it consists of an inner packing of "air-bubble" polythene around the unit itself, after which it is placed in its box in which it no doubt lives for the rest of its life while at Western, along with its Instructions. This inner pack is taken and fitted for carriage into a larger outer pack into which go lots of shavings material and a thorough outer covering before addressing and despatch, the latter in the case of the replacement unit being by parcel post. All in all, we don't think any current buyer of a PM-2000 need fear that his unit will be damaged in transit save by *very* exceptional circumstances!

That being over, we move to consider the looks of the

unit. Summing up, we like it; no frills, just a plain black case and front panel with its markings in silver lettering, and the meter a white face with black indications. When one switches on to take an SSB power reading a little indicator lights up in the top right-hand corner very discreetly, telling you that you are able to read SSB power (p.e.p.) because you have the mains plugged in. In normal wattmeter use looking at carrier level forward and backward there is no need for the mains supply, which in fact is only used to provide the odd milliamp for the peak-reading circuitry op-amp. On the rear, just a pair of ordinary type UHF SO-239 sockets, clearly marked "To Aerial" and "To Transmitter".

There are four power ranges marked on the meter scale and obtained by switching the front panel control suitably, the meter scales being, as one would expect from this type of circuit, somewhat non-linear but nonetheless clearly marked. No doubt it could be used on Top Band, if one is prepared to read only SSB p.e.p. watts output. In addition, it is possible to measure the SWR on the feeder into which the PM-2000 has been fitted, by use of the standard formula given in the instruction book. The readings are shown as "RMS" which is the condition where it is reading the power output into the load under CW conditions; or, by flipping the switch to "SSB" when the rectified output from the sensor is connected to an op-amp. slugged to give a scale reading which represents the true peak envelope power being delivered to the load with the switch in the "FWD" position, and being reflected from the load when the switch is in the "REF" position.

One may imagine a detractor asking just what the use

of such a box could possibly be, since one would hardly expect the Home Office people accepting that the p.e.p. reading of the meter is the same as the oscilloscope method laid down in the licence conditions. Within reason, fair enough; but in the testing out phase we showed beyond all shadow of doubt that the PA of our HX-50 was getting a little tired—we usually run it at a low level on CW—and for the purposes of this test we wanted to run it at maximum CW and SSB power output barefoot and then with a linear bucking on, driven at over the kilowatt output to get a reading on the upper scale. No doubt about it, the linear valves were OK but the exciter PA was due for replacement; conversely the Trio TS-520 showed its PA to be in fine fettle, but the KW linear it feeds has a tired valve. Apart from merely indicating that the valve is getting a little bit “empty” it also says that you could, if you don’t take care to allow for the state of the bottles, find yourself “flat-topping” at an output lower than it ought to be. A ‘scope would show it up instantly, provided it had an adequate “Y” amplifier for the band in question, but in this case the oscilloscope had not been used for some time and the slow deterioration had gone un-noticed. Once the PM-2000 had given us the hint, we dragged out the ‘scope from its dusty lair and confirmed the Power Meter’s story.

Having dragged out the ‘scope, it was recalibrated and used as part of the test set-up to check that the claimed power-meter accuracy was in fact being met; for this the TS-520 was run barefoot into the dummy load through the Power Meter, and the voltage across the dummy load measured with the oscilloscope—having an RF ammeter to put in the line gave us a double check that we were not measuring something daft, and replacing the ‘scope with an RF valve voltmeter of known accuracy gave a third figure. Looking at the CW case, and applying  $E^2/R = W$  or  $I^2R = W$  as met the case, we got a series of readings on which the question-mark lay with the dummy load resistor; however its characteristics between DC and 30 MHz were already known and plotted before it was put in service (and the curve we had made confirmed the data originally obtained from the manufacturer of the resistor), and so we could simply measure the resistance of the resistor by noting the temperature it achieved. The CW results met the specified tolerance quite nicely. As for SSB, we felt that the only fair way to check this was by a method using the oscilloscope and a two-tone test: setting the output from the rig to a given CW output, noting the deflection on the ‘scope trace, then going to SSB, setting in enough two-tone test audio to cause the ‘scope deflection to just double its amplitude, and then switching the power meter to “SSB” and reading off the power on the meter scale giving us a reading of p.e.p. output which we could compare with the given CW output meter reading. This method gave satisfactory answers, so we then did a similar test using speech waveforms: with unprocessed speech using the TS-520, then the same rig but with the “DX Pull On” switched in to give some compression, and finally with the TS-520 fed with clipped speech from a *Datong* clipper; the ‘scope being kept in circuit all the time these tests were being run. The results, bearing in mind the simple nature of the test set-up, were remarkably consistent with the different audio inputs, and between range and range insofar as the upper ranges could be covered with the equipment at the

station—we can’t generate 2 kilowatts of SSB RF output! As far as could reasonably be seen, the equipment met its quoted tolerances.



The Western Electronics PM-2000 Power Meter.

Turning to the Instruction Manual, on page 1, there is a picture of the box—just like the picture with this piece—and beneath it a specification. However, the picture shows a switch position labelled “SSB” and the instructions give it as “PEP”; we don’t honestly know whether that was a mistake or a clarification. Another thing we don’t like is the use of the “REF” label for reflected power; we would prefer “Reverse” as REF is so often used to mean “Reference” when measuring SWR with a rather similar instrument. Page 2 tells you how to drive it, page 3 is a circuit with values, and page 4 is a graph from which, by noting forward and reflected power you can, instead of doing a sum, look up your SWR. By doing things this way, the need to have a variable front panel control to set forward current to FSD and another scale on the meter reading in SWR is eliminated. Some people may crib a bit about this, but your scribe is one of those who reckons that most of these “multi-purpose tools” don’t stack up all that well in *any* of their functions. No one can accuse the PM-2000 of not doing its work within its given limitations.

The concept of the “throughline” wattmeter is, and has been for years, something used fairly often by the professional engineer, usually by way of the famous Bird “Thru-line” equipments and their interchangeable heads; at our sort of level measuring power has been a matter of feeding the RF into a load, and measuring the current and voltage across the load—in other words not at all an easy way of measuring power under *operational* conditions which, when all is said and done, is the only sort of useful measurement. The old pre-war method of feeding the RF into a bulb on one side and AC through a variac to a similar bulb in a form of grease-spot photometer was even further isolated from reality, as the impedance of the bulb varied as the power into it changed and this should not happen in any reasonable aerial system. So—for the chap who wants to be able to measure power anywhere in the range 3.5 to 30 MHz while doing his normal operating, and/or measure power through the output line in an experimental lash-up—while tuning it all up into alignment—this Western Electronics PM-2000 is a first-class buy.

# A TUNABLE CONVERTER FOR SEVENTY CENTIMETRES

C. J. DAVIS, G3VMU

WITH the new repeaters going into operation on 70 cm. in preference to 2 metres and the possibility of one being licensed for operation in Northampton it was decided to build something to "have a listen" on that band before building a transceiver.

Already having FM gear for 2 metres, a TR2200G transceiver, it was decided to use this as the IF/detector unit with the converter tuning over the 70 cm. band or at least the FM portion. This at once brings into mind the difficulty of getting an oscillator stable at the required injection frequency of approximately 288 MHz. There have been circuits published for oscillators at 135 MHz for converting 2 metres down to 10.7 MHz; one of these could have been modified to give a signal that can be doubled to 288 MHz. This however means that the oscillator is tuning through the IF—not to be recommended. The next possible frequency is 96 MHz trebling to the injection frequency, by changing this up to 101 MHz and quadrupling to 404 MHz; thus it would be possible to use a standard communications receiver on 28 MHz as the IF. This has not been tried out as no receiver for this band is available but some circuit values (untried) are given. As 96 MHz is about the lowest that can be used without too high a multiplication factor this was the one chosen for the job.

### Circuit Description

Referring to Fig. 1 it can be seen that the oscillator is a Hartley using a junction FET and is quite straightforward. The oscillator is set to the required frequency by the trimmer capacitor VC1, the main tuning being carried out by means of a varactor diode D1 and VR1. The supply voltage to the tuning potentiometer is taken from the second stabiliser which also provides the drain voltage for the oscillator transistor.

The tap on the coil was adjusted for ease of starting and a drive level of 2 to 3mA to the tripler, without the use of an intermediate buffer stage. A more elegant solution would be to have separate taps for output and the source of TR1, but the simple solution adopted is quite satisfactory. There is a drift of about 15 kHz higher in frequency during the first ten to fifteen minutes after switching on, after this a signal will stay in the pass-band of the TR2200G indefinitely. This initial drift could no doubt be lowered; as the oscillator is driven quite hard, to get enough drive to the following stage, the drift is possibly due to warm-up of the 2N3819 as once warmed up the oscillator is reasonably stable. A cure might be effected by putting in a buffer at 96 MHz and adjusting the drive to the gate of the 2N3819 by reducing the capacitor from the coil to its gate. As most operation is by the "switch it on and make a cup of coffee" mode it was not thought worth the extra complication involved.

The tripler is quite simple using an UHF television transistor; the tuned circuit is shunt fed so that the coil can have one end soldered straight to earth. This provides more than enough injection—in fact there is so much that the level is reduced at the mixer by a capacitor divider network.

Table of Values — Fig. 1

R1 = 1K	C1 = 10 pF, silver mica
R2 = 4.7K	C2, C8 = 1000 pF ceramic
R3 = 680K	C9, C10 = 1000 pF ceramic
R4 = 390 ohm	C3 = 10 pF, silver mica
R5 = 470K	C4 = 4.7 pF ceramic
R6 = 6.8K	C5 = 56 pF, silver mica
R7 = 180 ohm	C6 = 10 µF elec-trolytic
R8 = 100 ohm	C7 = 22 pF ceramic
VR1 = 10K linear	VC1 = 3-30 pF beehive trimmer
TR1 = 2N3819	VC2 = 2.10 pF RS Components miniature polypropylene trimmer
TR2 = BF224	
ZD1 = 5.6v. 3-watt	
D1 = BA110 variable capacity diode	

RFC = 11 turns 23 s.w.g. enam'dled copper wire, 3 mm. i.d.  
 L1 = 3 turns 16 s.w.g. copper wire, 1/8" i.d., 1/2" long, tapped 1 1/2 turns up from earth  
 L2 = 2 turns 20 s.w.g. copper wire, 1/4" i.d., 1/2" long, tapped 1/2-turn up from earth

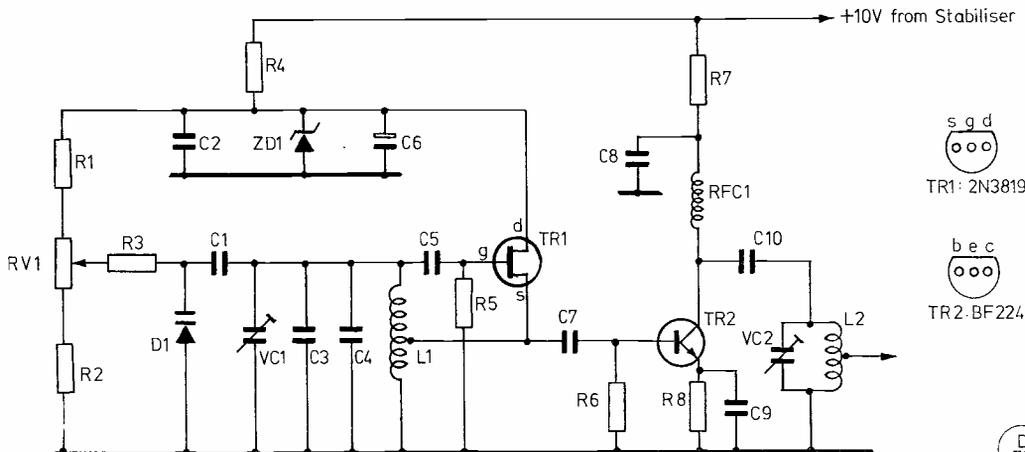


Fig. 1

No RF amplifier is used in this design, as assuming a sensitivity of 1 microvolt for 20 dB quieting in the transceiver, a mixer providing 10 dB gain (at a conservative estimate) pushes the sensitivity down to about 0.4 microvolt for the same quieting on 70 cm. Which, neglecting any mixer noise, appears on paper at least to be more than adequate for local listening.

The mixer is a simple one, with base injection of the local oscillator and the input signal. The signal frequency is coupled to the base by means of a band pass circuit which provides some discrimination against the image frequencies. Breakthrough from 144 MHz can be heard from strong local signals but switching to another channel and retuning is very quickly done. It is possible by use of the simplex and repeater receive channels to step-tune through the band, *i.e.* if you are listening to RB2 on S20 switching to S22 puts you on to RB4; or similarly if repeater channels are used, R4 to RB2 going to R6 gives you RB4. The circuit for the mixer is given in Fig. 2.

### Construction

The converter is built up on two printed circuit boards made from double-sided glassfibre board, using the unetched top surface as an earth plane. These are mounted in a 6 x 4 x 2½-inch chassis, the base covered with a piece of paper circuit board (unetched). The oscillator board is screened from the mixer and the input and output screened from each other. Both boards are mounted on 1in. stand-off pillars as rigidly as possible; apart from this no other special precautions were taken. The 10-volt stabiliser is built on a piece of tag board bolted to the chassis. A diagram of the chassis lay-out is shown in Fig. 3.

The dimensions of the strip-lines used for the mixer input are shown in Fig. 4—the earthy end is soldered to both the upper surface of the board and to a small pad left on the underside. Where L3 passes to the conductor below the hole is countersunk as are all component holes that feed live ends through the boards, all earth connections being soldered directly to the upper surface. The track lay-out for the boards are shown from the track side in Fig. 5a and 5b the component values are given in Tables of Values.

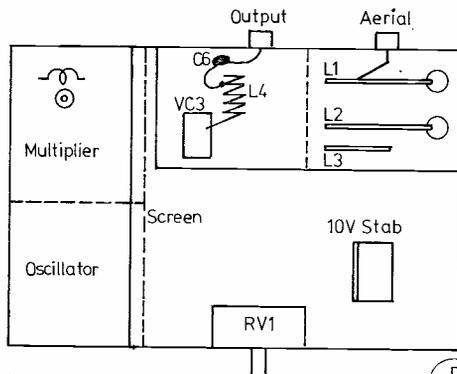


Fig. 3

D 77

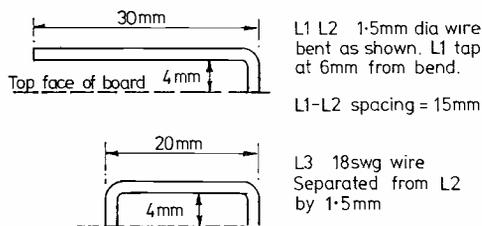


Fig. 4 Construction of L1, L2 and L3 on Mixer board.

D 78

### Table of Values — Fig. 2

R1 = 22K	VC3 = 3-12 pF ceramic trimmer
R2 = 5.6K	C1, C6, C7 = 470 pF ceramic
R3 = 1.2K	C2, C5 = 1000 pF ceramic
R4 = 100 ohm	C3 = 20 pF ceramic
ZD1 = 10v, ¼-watt	C4 = 15 pF ceramic
TR1 = BF224	
TR2 = BC108	
VC1, VC2 = 2-8 pF beehive trimmer	

L1, L2, L3 see Fig. 4 (note the phasing of L3)  
L4 = 6 turns 20 s.w.g. copper wire, ½" i.d., ¾" long, tapped at 1½ turns from the cold end to feed the input to the TR-2200G

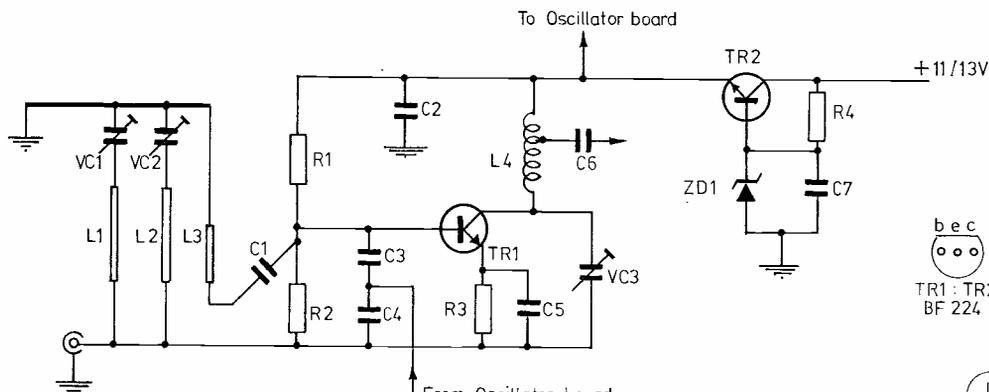


Fig. 2

D 76

b e c  
○ ○ ○  
TR1 : TR2  
BF 224

**Setting-up and Results**

First the difficult part: getting the converter set onto frequency. After checking for obvious short circuits it should take 12.5mA with 11 volts on the supply line. The oscillator can be checked by either measuring the voltage across the emitter resistor of the multiplier transistor to see if there is voltage present, about 0.5 volt is required. The other check is to hold a Band Two receiver near to the oscillator and tune until you hear it. If both these tests fail adjust the tap towards the gate of TR1 until the oscillator starts. Using the Rx it can be set to approximately 96 MHz by means of the trimmer.

A volt-meter on its 3-volt scale should then be connected across R3 in the mixer—it will read about 0.75 volts; tune VC2 of the multiplier for a maximum (it is very sharp so go slowly), the voltage should rise to 1.0 volt. VC1, 2 and 3 can then be tuned for a noise peak by ear or on the receiver S-meter; the one on the TR2200G goes from 0.5 to 2 when the converter is set up. Now comes the hardest part, setting up the final tuning. The simplest is to get a local to provide a signal on 70 cm. or use the third harmonic of a two-metre transmitter. As the two-metre rig is being used as the IF (a draw-back of the 'black box'), a surplus 72 MHz crystal was jury rigged in a simple oscillator and the sixth harmonic used to

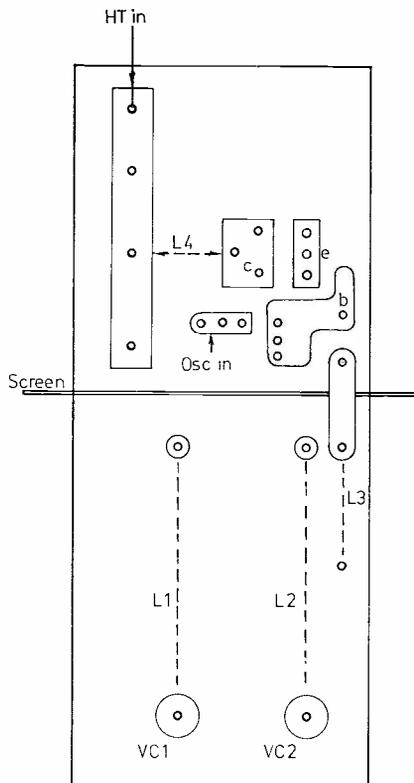


Fig. 5b MIXER BOARD

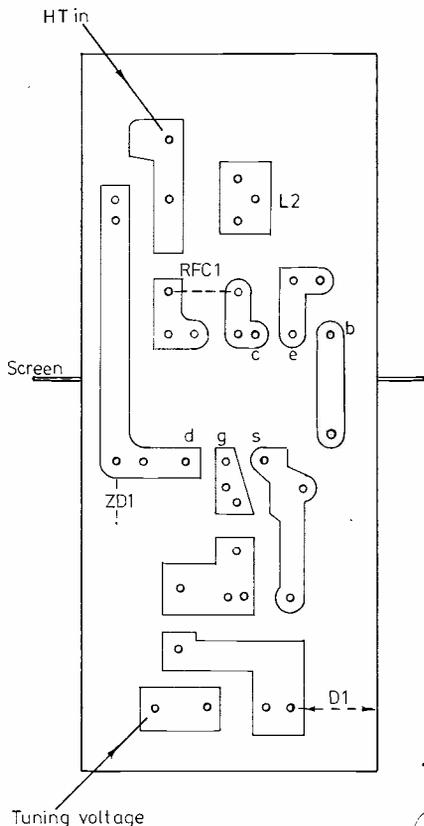


Fig. 5a. OSCILLATOR MULTIPLIER BOARD



align the converter. It was very fortuitous that this was on 433.2 MHz (SU8) which was the area in which most interest lay. This was set to the centre of the tuning resistor, and then started the "ear bashing" after a final tweak for maximum noise.

The results so far have been very encouraging with a very poor aerial (a quarter-wave at 15 feet), GB3CI on RB2 at a distance of 18 miles as the crow flies is received at full quieting and the test signals from Northampton on RB14 are off the scale of the meter. Short bursts of other signals have also been received but no firm identification could be made—they could possibly have been Rugby on RB6 and Bedford on RB4. (The next thing to be built must be an RF amplifier to see what those weak carriers really are!) The stability after the warm-up is very good, once set to GB3CI it can be left there for the rest of the day. For those who wish to try 29 MHz as the tunable IF, the multiplier coil should be changed to one similar to L1 of the mixer but 40 mm. long tapped at 10 mm. up for injection to the mixer. The mixer collector coil can be changed to 16 turns of 26 swg enamelled copper wire on a 1/4-inch slug-tuned former with a 22 pF ceramic capacitor in parallel and a two-turn link to feed the receiver. As mentioned earlier, this has not been tried but should be about right.

# • • • SWL • • •

## SHORT WAVE LISTENER FEATURE

By Justin Cooper

*R. E. THOMAS (Corwen)* writes to ask some more about the HPX Rules, despite their being printed last month; and we may as well kick off this time by answering him in the piece for the benefit of any other SWL having difficulties in the interpretation of the Rules. The "starting score" is the lower limit below which we will not accept an entry for publication. Once you have heard your first 200, and put in an entry, your subsequent updates must each contain different prefixes: in other words an entry of 1,000 prefixes in the Table clearly implies 1,000 different prefixes, each prefix only counting once. This means that W1, W4, W7 are three prefixes as defined in the Rules. Suffixes are covered by Rule 3 where we are dealing with a suffix giving location; the suffixes which define one's operating conditions as being different to the main station—mobile, maritime mobile, aeronautical mobile—generate new prefixes, so G3SWM, G3SWM/M, G3SWM/MM, G13SWM, G13SWM/M, G13SWM/MM are each prefixes in their own right. However the /A or /P suffixes do not alter the status of the prefix; G3SWM and G3SWM/A are the same, but if G3SWM/A goes over the border and signs GM3SWM/A he can then be counted as GM3, if you haven't already got a GM3 in the bag.

Incidentally, we occasionally have the situation in which for one reason or another a list goes astray; most often the envelope complete with contents just fails to arrive (wonders J.C. "Was it posted or forgotten?"), but *all* the incoming mail is routed initially to Welwyn these days, whereas before the "editorial stuff" which takes in letters to SWL, or CDXN, or Clubs or whatever, was already (by the sender) pre-sorted by the act of posting to what was then the Editorial-only address, Buckingham. Thus, we can now have the possibilities of error increased by an extra stage of sorting at this end—and if at this point your letter and your list become separated by the accident of, say, catching under someone else's paper-clip, they are not very likely to be noted, especially if they are not headed by a name, and the magic letters "SWL" at the top of each sheet. The best way to keep the pages together is to staple them—avoid paper-clips if you can; if the result of this requirement means the sheets are loose, then, in addition to heading them with name, "SWL" and "HPX List" you could total up the pages into an inclusive letter-plus-list numbering, heading each sheet with the number of the individual page and the total, e.g. Sheet 1 of 3. If you do this, we are immediately aware of the separation, either in the office or in the J.C. shack filing-system and, what is more, we know what to look for which is a great help.

### Aerials

Often enough we get comments in your letters about this facet of the station, revealing some considerable misunderstanding of the essentials of practice, let alone the excusable lack of theory. At any station there is a *unique* situation, compounded on the one hand by the

interests of the listener, and on the other considerations of the location and the depth of pocket to meet the needs of the location. If one were to be asked to place an order of merit on to aerials one would probably say, in order: beam, vertical (ground-plane), dipole, end-fed wire through an ATU. A subdivision of beams into vertical and horizontally-polarised types might also be admissible. However, this order of merit is based on the following assumptions: that the listener is out for stations as far distant as possible, that any of these aerials will be supported at the optimum height, and that neither space nor depth of pocket cause artificial constraints; and we might add that the efficacy of the vertical or the end-fed wire are both very much dependent on the quality of the ground-plane or the earth connection. On the other hand, given a vertical and a dipole, say, and the facility to switch from one to the other, generally the vertical will be better, but occasionally the dipole; but the vertical is much more prone to pick up noise, both man-made but rain static being more or less vertically polarised.

### Goings-on

Firstly, we have *J. W. Grice (Castleford)* who has come up with a novel method of teaching himself Morse: he puts his cassette recorder on to listen to the CW end of the chosen band, and then he puts it on to replay *with a low value of potentiometer* connected as a variable resistor plugged into the "remote" socket of the recorder to act as a "speed" control. Sounds a great idea, as there is quite a shock in store for anyone who learns Morse and gets through the test before buying a receiver! However, J.C. would prefer to fit a separate jack for the resistor, so wired as to leave full battery volts on the electronics the while reducing the motor volts. As to whether or not prefixes so heard are legitimate for HPX Claims, that is a matter for the conscience of the individual; a reasonable guideline would be to say that a claim is valid only if one realised there was a new prefix in there but could not get 100% copy of it due to a combination of, say, speed and QRM before it disappeared.

*K. Piper (Bognor Regis)* makes a first entry in the Ladder, and he is also the first new-boy for a long time to come in with a homebrew receiver. His is a dual-conversion beast using Mosfets in the front-end and an ATU, and a dipole cut for Twenty, but on occasion used for listening on Eighty.

For some long time now, *R. Carter (Blackburn)* has been threatening to give up chasing the Prefixes when he reaches his self-determined target figure. This Ben has now done, but, as he says, this listening lark is compulsive and so he won't give up entirely. Why not either start from the bottom again or even start in on RAE and get yourself a licence—your scribe knows of at least one chap who did just that many years after retirement; like Ben he had the constructional skills, so he built himself a transmitter to match his (homebrew) receiver, and started

in on a new hobby. One only wishes SWL Carter and G2BJY were living close to each other from this point of view, but there is an RAE class in Blackburn (see August issue, p.351).

M. Shaw (Huddersfield) lost a couple of Prefixes to our nice new red pencil—he claimed 326 plus six queries, and only four of the latter were to our knowledge good. However, in a case like this it probably pays to record them in a “doubtfuls” book, and if it is reported that someone has a card from a station in this list, then take it out of the query list and put it in the main list. After all if you hear it, it’s a pretty sure bet someone has worked it and is hoping for a card.

J. R. Exton (Peterborough) recently bought a BC-221 frequency meter, and wanted to know about how to power it. The letter fell into the hands of the Editor who answered direct; but just in case anyone else wants to know, you need about 135 volts HT and a 6.3 volt heater line. If you have the “field use” version, you can lose the PSU in the battery compartment or the headphone drawer but in the bench models doubtless it would be necessary to make the PSU into a separate little box.

Although his is a new entry to the Table and to this piece, I. Wilkinson (Llandudno Junction) has had an interest in the game for years. Originally it was wedding bells that put him out of business, and then four youngsters. The return was initiated with an old Eddystone marine receiver which yielded some 307 prefixes before literally “going up in smoke” and causing the purchase of a Heathkit SW-717 which is used with a dipole. Among his interests are learning Morse, and brewing up a valve circuit book of transmitters and receivers—for which one could do worse than try and lay hands on a copy of the first or the second edition of the RSGB Handbook—the second edition was used during the last war as a standard text, and well over 100,000 were printed so it shouldn’t be too hard to come by.

D. L. Mallet (Maidenhead) wrote with some questions on the QSL’ing business, which we replied to direct. In essence, to gain access to a QSL Bureau, one needs to join ISWL or RSGB, and to keep a stock of *s.a.e.’s*. at the appropriate address. The main thing to recall is that the lads and lasses who run the Bureaux of the world shouldn’t be blamed if cards fail to return like lightning—they can only handle what they receive, and with post costs as they are, they naturally organise themselves so cards are shifted as cheaply as may be. If QSL’ing direct, one has to send an *s.a.e.* bearing an appropriate stamp of the country where the envelope is going to start its return journey. No good at all putting British stamps on an *s.a.e.* to, say, a Russian DX-pedition! In such a case, we need a stamp-collector’s shop near home, or we go to International Reply Coupons (IRCs) which are exchangeable for a stamp of a surface mail value in just about any country in the world, and which are obtainable from the Post Office. They don’t sell all that many, so you may find a blank expression on the counter-clerk’s face—but he can always “look up” his guide and find the price.

Another letter which needed a direct reply came in from W. T. Stephenson in Keswick; it referred to the possibilities of a major conversion of a BC-348, and we advised that before anything was thought of too deeply, it would be a good idea to go over the “change all the

paper capacitors” routine which seasoned surplus-receiver users will well recall. Those old paper capacitors would show up perfectly well on the “ohms” range of a multimeter, but would leak just as soon as they saw anything near their rated voltage. Indeed, a high voltage capacitor tester used to be an essential tool, simply made from a neon bulb, two terminals and a couple of clip leads the whole issue being wired up in series, one clip lead to one end of the neon, the other end of the neon to one terminal, and the other terminal to the other clip lead. To use it, you put one clip to chassis of a bit of valved equipment (many older receivers had an “accessory” socket whence one could steal the volts), and the other clip to an HT line of, say, 150 to 250 volts. Nothing happens. Now, take a good capacitor and bridge it across the two terminals: just one flash. An open-circuit capacitor won’t cause a flash at all, and a leaky one will flash intermittently, the faster the flash the leakier the capacitor, so a short-circuit will cause the lamp to be on continuously.

G. A. Passmore (Stackpole) has obtained permission for a 35-foot mast, and now wants to brew up a 14 MHz beam. Five elements on a 14 MHz beam is “coming it a bit strong” in mechanical terms; the extra gain over, say, a three element array isn’t worth the extra windage and the general beefing-up of the structure. For general knowledge we swear by the ARRL *Antenna Book*, while for detailed “gen” on beam-aerial construction projects, the *Beam Antenna Handbook* by W6SAI, William I. Orr, is very good. Thanks to the relationship between the dollar and the pound, American books are expensive in UK, but these two are well worth having if you intend to build beam aerials.

We had a couple of letters this time from P. Ramsay (Stevenston), the first one to bewail the fact that he was on a course and away from the receiver, and the second to say he was not only back home but also had taken delivery of a Yaesu FR-400SDX. In his second list he had a query in the form of “EJ”—at least we think that is

**HPX LADDER**

(All-Time Post War)

SWL	PREFIXES	SWL	PREFIXES
	PHONE ONLY		PHONE ONLY
K. Kyezor (Irechester)	1781	B. T. Mackness (Dagenham)	849
S. Foster (Lincoln)	1640	S. Budd (Worthing)	848
R. Shilvoek (Kingswinford)	1561	L. Gibson	
R. Carter (Blackburn)	1510	(Barrow-in-Furness)	828
B. Hughes (Worcester)	1481	J. Aspinall (Leeds)	807
J. Fitzgerald		D. Taylor (Harborne)	769
(Gt. Missenden)	1447	P. Rooney (Liverpool 4)	737
M. J. Quintin		M. Gibson	
(Wotton-under-Edge)	1358	(Barrow-in-Furness)	666
K. A. Whiteley (Castleford)	1358	S. T. Bowen (Kippax)	615
P. C. Jane (East Looe)	1331	P. L. Shakespeare	
A. W. Nielson (Glasgow)	1245	(Foulness)	585
H. A. Londesborough		S. M. Phillips (Dukinfield)	541
(Swanland)	1188	I. Wilkinson	
E. W. Robinson		(Llandudno Junction)	512
(Bury St. Edmunds)	1137	CW ONLY	
J. H. Sparkes (Trowbridge)	1116	N. A. Phelps (Devizes)	1341
M. C. P. Bennett (Datchet)	1117	A. Glass (Plymouth)	1290
G. Ridgway (Ardleigh)	1105	H. A. Londesborough	
Mrs. J. B. Jane (East Looe)	1053	(Swanland)	1019
H. M. Graham (Harefield)	981	A. F. Roberts	
P. Barker (Sunderland)	954	(Kidderminster)	465
M. Rodgers (Harwood)	911	J. H. Rosling (Bakewell)	369
W. H. Smyth (Hartlepool)	861	P. L. Shakespeare	
		(Foulness)	350

Minimum starting score, 200 heard for CW, 500 heard for Phone. Listings in accordance with HPX Rules, and only include recent claims.

what was meant, as Peter's spider-in-the-ink made it look almost like ET; but we think he was hearing the Aran Is. DX-pedition by the EI gang.

*B. Shepherd (Staines)* got his mention last time but his list got separated somewhere along the line in your conductor's somewhat weed-infested filing system, and didn't show up until Briant had sent in a replacement list. They were heard on an FRG-7 receiver, which is fed from either a 14 MHz dipole, an end-fed thirty-five footer, or a Joystick, both the two last named being tuned with a Joymatch 111B.

Someone else with two letters is *K. Linge (Willington)* who raises the question of four call signs AE1, APK, AGG, and AYY, heard on May 9 at 1840 in QSO with each other. Dunno, Ken, except that for sure they weren't amateurs!

A third pair of letters come in from *G. Brazil in Dublin*—the first EI contribution for many a day—the last was Des Walsh in Carrick-on-Suir who has been E15CD for many years now. Gerard thought the amateur radio bug had died 25 years ago, but he has picked it up again, an FRG-7, and “a lousy aerial” which is a bit of a limitation. Gerard is thoroughly confused by the Egyptian Sinai situation, having heard K4SQT/P/SU and W7SPX/P who are both in the same spot and indeed use the same rig. It would seem that they must count separately, and also that the W7SPX/P sign is not complete, which puts him in a mild breach of the rules, though he does at least always say where he is. Another difficulty is the /MMs—they are a new series as far as HPX is concerned; the majority are probably W/K call holders although there are a fair sprinkling of other nationalities who have /MM permission.

*L. Stockwell (Grays)* has an NR-56 receiver which he feeds with a half-wave whip (shouldn't that read 1/4 or 5/8, OM?) and he seems to have been well organised for a VHF opening or so between July second and tenth, some ten countries being logged. Reader Stockwell noted that K. M. Rogers of Lutterworth has an NR-56 in his car and wants to know what Ken thinks of it, in the mobile mode.

*S. Budd (Worthing)* took a spell off from examination revision to chase the GE stations, but was disappointed at not snagging GE5 and GE6; on the other hand he managed to hear the Kingman Reef expedition while they were there, but not from Palmyra.

Quite an eventful period since his last letter, opines *K. Whiteley (Castleford)*; he has found Twenty open on occasions right through the night, and as a result has reverted to the FR-50B and long-wire, so he can have a listen if he wakes during the night. Ken noticed that Jim Grice is in his neck of the woods and wonders if Jim would get in touch—the phone number is 556922.

That “W6 in Nevada” last time touched off several nostalgic letters. Ted Rowley, G6TC, has a 1936 Call Book, which gives the W6 call area as California, Utah, and Arizona, while K6 represented Guam, Midway, Hawaii and Samoa. Geoff Hutson, G6GH, has a 1939 Call Book and in that one the sixth call area is Utah, Arizona, Nevada, and California. *J. W. Cave (Poole)* reminds us also that in those days there were only nine districts; no WØ. The tenth call area was a post-war reorganisation, and most of the pre-war call areas were to some degree affected. Of interest to this writer is that

## ANNUAL HPX LADDER

Starting date, January 1, 1977

SWL	PREFIXES	SWL	PREFIXES
D. W. Waddell (Herne Bay)	499	G. M. Parker (Peaslake)	331
S. Hammond (Solihull)	499	R. E. Thomas (Corwen)	304
J. G. Ollis (Solihull)	444	K. Piper (Bognor Regis)	304
P. Sharpe (London W2)	426	J. W. Grice (Castleford)	278
M. Shaw (Huddersfield)	419	Mrs. S. Waterfall	277
Dr. H. Sqaunce		(Chacewater)	277
(Bangor, Co. Down)	406	K. A. Burch (Plymouth)	233
G. A. Passmore (Pembroke)	393	S. W. Allsopp (Banbury)	224
P. Ramsay (Stevenston)	345	M. Law (Chesterfield)	224
K. M. Rogers (Lutterworth)	345	B. Shepherd (Staines)	207
K. Linge (Willington)	344	G. Brazil (Dublin)	202
A. R. Darby (London SE16)	341		

Starting score 200 prefixes heard; in accordance with HPX Rules. All Prefixes to have been heard in 1977.

all these three OT's have been readers since those pre-war days when SHORT WAVE MAGAZINE first started.

*N. A. Phelps (Devizes)* mentions such calls as DL6GU/EL/MM, which was recently queried, and suggests that it is really saying that the operator is a DL, operating from a ship registered in Liberia. It sounds like a fair argument, although most EL maritime mobiles carry an ELØ callsign complete. Maybe it is a question of the ease or otherwise of getting the /MM permission under one's own call.

*M. Law (Chesterfield)* made his last entry back in January 1976, at 587. Since then he has spent five months in hospital as a result of a motor accident, got married, and moved his home. He has this time started from scratch to reach 224, which will be duly entered; but he wants to know whether, when he gets to 500 he can add the unduplicated calls from his earlier list. Certainly, since he is still in the same town, the lists can go straight on in the All-Time without further ado—so long as he has the original lists, because the J.C. ones are long gone—we have to be pretty prompt in the matter of ditching old stuff, or otherwise we just can't get near the rig or shut the door!

*J. Ollis (Solihull)* was another of the “unlucky gang” on whom Bro. Murphy vents his spleen. First it was a misbehaving receiver we recorded, and this time, while John was away at University the aerial fell down, and now any more activity requires the courage to go up that tree again.

Lots of things seem to have been happening for *P. Barker (Sunderland)*; first there was the March SS/TV contest in which Paul was placed third, and G3WW ran 6th among the transmitters. Then there was the White Rose Rally, at which the Sommerkamp FR-DX500 was replaced by a Trio JR-599. As if all that were not enough, the 18AVT/WB is now erected, sitting atop some 2 cwt. of concrete which should be enough to keep it stable. In addition, Paul is in for the December RAE if all goes well, studying having started back in April.

*M. Gibson (Barrow-in-Furness)* would like to see a 144 MHz ladder which he reckons would bring up a great deal of interest. One has one's doubts, in that you could hardly count contacts heard through repeaters which would not be audible otherwise—and that rules out most of the activity!

Your conductor is glad, always, when he hears a keen SWL say that radio is taking a back seat, voluntarily, until the O and A level examinations are past (and, we

hoped, passed!). Such a one is *G. Parker (Peaslake)*. On a different tack, Guy wonders about the "N" prefixes—these are normal U.S.A. callsigns.

A very brief note from *Bert Glass (Plymouth)* notes that he missed out last time round, but he is back in business now. He, like the rest of us, congratulates N. A. Phelps on taking the top spot on the CW Table.

On May 24 *H. M. Graham (Harefield)* retired and, so he thought, would have more time for the receiver. But, like so many of us, he finds a list as long as his arm of household chores to be done, so he has hardly had a moment's peace! Be that as it may, Maurice still seems to rake 'em in, although one suspects he has a pretty stringent set of personal rules which a station has to observe before he puts it in the list.

*S. Hammond (Solihull)* writes to sort out a mistake in our interpretation of the HPX score, and to remark on the wonderfully useful nature of Geoff Watts' Prefix List. Your scribe would add that UK readers could do worse than to subscribe to his *DX News-sheet*, in which all the new prefixes are marked with a star or something of the sort as a note that the Prefix List should be up-dated accordingly.

*S. M. Phillips (Dukinfield)* sends in an entry for the All-Time, and comments that as a sideline he is dabbling with the CW, some 161 prefixes having been picked up that way towards an entry in that section of the Table.

*S. W. Allsopp (Banbury)* is getting ready for a move of house—only a few hundred yards but still quite a bar to serious listening for some months. In addition, it seems we have given him the benefit of someone else's score up-date last time round, which probably accounts for that someone else being a bit short!

*E. W. Robinson (Bury St. Edmunds)* has a younger son who is also a keen SWL and constructor, so the station is now sporting a two-metre converter. On a different theme, SWL Robinson has a good description of the clowns who seem to appear in every DX pile-up—"open-circuit between the ears." We must remember that for some future occasion!

Normally we just get a simple list from *H. A. Londeborough (Swanland)*, but this time he has a query; WÖPRY/CG giving his state as Iowa and name as Newt. So—what did the /CG signify? A Good Question, that—anyone any idea?

Yet another odd query comes in from *P. L. Shakespeare (Foulness)* who heard a UALBC/AM working several UA3 and UB5 stations. It could be an amateur aboard the aircraft using the aircraft callsign, or it could have been some sort of experimental activity—but it cannot be regarded as acceptable for HPX purposes.

The rising sunspot count has vastly improved the state of the bands in the view of *H. Squance (Bangor, Co. Down)*, despite the fact that his FT-200 was QRT for three weeks with a touch of the non-oscillating oscillator. A further complication arose when Dr. Squance's daughter used the home-station prefix list for scrap paper—so

we have a fine re-write to work on this time! One of the minor snags is the absence of Asians—this could be due to the orientation of the aerial, or it could be just a matter of choosing a time to listen.

*P. Scott (Leeds 17)* has been with us in spirit for 16 months but has finally written in; he is up to some 430 prefixes and reckons on putting his first entry into the All-Time. He has an Eddystone 840A which he prefers to his previous 9R-59DS. Accompanying his letter is a list of queer ones, the only phoney among them being M2RKV claiming to be in Argentina.

An SMC-73 receiver is in the shack of *M. Shaw (Huddersfield)* and is mainly used on 14 and 21 MHz; at the time of writing, SWL Shaw has been experimenting with the use of the metal frames of his double-glazing as an aerial (it is quite amazing what can be done with improvised aeriels, particularly when a versatile ATU is available, to get the maximum signal out of the aerial and into the receiver). SWL Shaw wants to know if anyone has data on the Hallicrafters S38B receiver; his address is 163 Rawthorpe Lane, Dalton, Huddersfield. About all this writer can bring to mind is that it was at the low-priced end of the Hallicrafters range, had an IF of 455 kHz, and lacked an RF stage. By 1953, it had already got as far as being called S38C.

*K. A. Burch (Plymouth)* offers his first list, all in due form, and he threatens to put a list in for CW ere long. On the aeriels front there is a major problem in that he is badly screened to the South and East by buildings above the maximum aerial height—but on the other hand there are two routes to any country in the world—namely the short path and the long path. Those buildings could be a godsend in reducing European QRM while listening for real DX!

The arrival of a second harmonic meant a spot of SWL activity around 0300 most nights for *S. Foster (Metheringham)* which should have some effect in getting Stew back to the top spot which he held for so long.

That little note last time out about *H. J. Bailey of Penzance* and his search for a receiver worked—he was offered a receiver by a gentleman from Plymouth, and was rather surprised about it all, particularly as he hadn't seen his copy of the *Magazine* at the time. We are glad to see such things happen in 1977, and we'd love to know who the Plymouth gentleman was!

This is where we acknowledge entries from *M. Rodgers, Harwood; B. T. Mackness, Dagenham; L. Gibson, Barrow-in-Furness; D. Taylor, Harborne; M. J. Quintin, Wotton-under-Edge; B. F. Hughes, Worcester; K. Kyezor, Irchester; K. M. Rogers, Lutterworth; and J. H. Rosling, Bakewell*. Thanks for them all, and keep up the good work till next time, the deadline for which is September 25 to arrive, addressed as ever to your scribe, "SWL," SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ.

## THE MONTH WITH THE CLUBS

By "Club Secretary"

OUR very first thing this time is to mention the date of MCC; and those with long memories will recall that as a result of all the beefs last time, we gave the date last February. So—it is *November 5 and 6*, the Rules being essentially the same as last year, and published next month. So—now is the time for you to start making the preparations for the event. If you've not tried it before, perhaps we should say that this is a contest in which many clubs train their operators for the Big Stuff, which means that if you are a little afraid that you are not quite "up to it" you can safely play, knowing that the chap at the other end will realise he is working a novice contester—and the novice will find his Morse quite a bit better after several hours of "chasing" the dits and dahs. The time has been carefully chosen so as to balance the scales of chance, and the county designation to be used will not be standardised—if you have a designation which has wit as well as difference we'll give you an extra point!

### The Mail

Here we might as well make our start with the Royal Navy crowd, the members of which group come from both Royal and Merchant Navy people past and present, and a sizeable contingent from the navies of other countries.

Another group to have no local affiliations is the **G-QRP Club**, whose membership is concerned with low-power operation on both the transmitting and receiving side. The Newsletter comes out pretty regularly and every one the writer has seen has had something to cull for his file of possible future projects.

### North & Scotland

Starting north of the Border we have a letter from **West of Scotland**, the first for some long time. They still foregather weekly, Fridays at 22 Robertson Street being the form, with every other session being an informal natter evening. Thus, on September 2, GM8DOX will present "A Review of Commercial Equipment." The subject on 16th will be R5GB—the speaker is not named—while on 30th GM3SZP will be talking about RTTY.

**East Lancs** are next in the pile, and the Hon Sec is quite determined we shan't miss the vital data—he wrote it on the front cover of the Newsletter! The Hq address is the YMCA in Blackburn, the date September 1, and the requirement money and big pockets as the programme calls for a Junk Sale.

Now we head on to **York** where they are having quite a season of "exhibition" stations; the one on September 10 is at Snowball Plantation, Stockton-on-Forest (hope we've got it right!) set up for the York Scout Council, for whom they will also be running a JOTA station. Meetings on Fridays (except the third in each month) at United Services Club, Micklegate, York.

Now we come to **Northern Heights** and we have to admit the Newsletter is no substitute for those chatty letters we used to get from the Hon. Sec., G3MDW—

which is not to say we don't like the Newsletter. However, either way we get it that the group Hq is at the Peat Pitts Inn, Ogden, Halifax on Wednesday evenings. An interesting and serious note indicates that the canned laughter which has plagued the Barnsley Repeater transferred its attentions to the local police channels—within three hours the culprit was located and caught. Perhaps we should do something of the same nature!

The club activities in the **Sheffield** area are to some degree co-ordinated; the Sheffield group proper have the third Monday in each month at the Sheaf House Hotel, and the **Workshop** group can be found every Thursday at the Anchor Inn; the University and the Technical College (sorry, Polytechnic) will come forth again in October from their summer hibernation. However for anyone going to the Polytechnic this coming season, please make yourselves known and join the group, as it is liable to lose the support of the Students' Union if it doesn't show some increase in activity. Whether SWL, A licence or B, TV or RTTY, get in there and *join!* Details on all the groups can be obtained from the address shown in the Panel.

### Deadlines for "Clubs" for the next three months—

(For October issue—August 26th)

For November issue—September 30th

For December issue—October 28th

For January issue—November 25th

*Please be sure to note these dates!*

### Midlands

Here we start at **Wolverhampton**, where it looks as if they are "at home" on every Monday evening at Neachells Cottage, Danescourt Road, Stockwell End. We note that on September 5, G3USF will be giving a talk on *Sporadic E* propagation, both at HF and UHF; Professor Harrison is known for his support of Ten during the dying phases of the last sunspot cycle.

At **South Manchester** they have every Friday evening at Sale Moor Community Centre, Norris Road, Sale, plus Monday evenings at the club shack "Greeba," Shady Lane, Baguley, Manchester, which last are informal and operating efforts, while the Community Centre is used for the "main" meetings: September 2 is a Mini D/F Hunt, which will end up at a local pub. "DX on Top Band" is G3SVW's topic on September 9, largely sparked off by the recent G3XAP piece in the *Magazine* and on 16th an evening will be devoted to home-brew test gear brought along, discussed and demonstrated by various members. On 23rd, G3WFT will be talking about D/F techniques and reviewing the National Final event which is being run by South Manchester this time. The month ends on 30th with a Surplus Equipment Sale—and we are to stress that they really do welcome visitors and prospective new members.

Things are afoot at **Cheltenham**, where the idea of an amalgamation between the Club and the **RSGB Group** is being mooted; however, the September 1 date for the RSGB Group stands, at which time they have the RSGB President as speaker, the venue being the Old Bakery, Chester Walk. For anything further in the future, we feel it would be wise to contact the Hon Sec—

see Panel—if you are not a local and wish to visit the club or group.

Now to **Walsall** where the revived group have Hq at the “Hame-Maker Inn” in Blue Lane; the “proper” meetings are on alternate Tuesdays, but the Morse class runs every week, so you can in fact make contact by going to Hq on any Tuesday. September 6 is down for an “on the air night,” while on September 20 (subject to confirmation) there is to be a talk on RAEN and how it operates.

September’s programme at **Derby** is all at the Hq in 119 Green Lane, Derby: on 7th a Bring and Buy Sale—note that this one *isn't* a Junk Sale, then on 14th a Surprise Night. September 21 sees a talk on “Interference to Hi-Fi, the Curse of the Seventies”; and the month rounds out with a Film or Video Show.

At **Stourbridge** they cut the August meeting, but for the rest they have the third Monday in each month at Longlands School, Brook Street, Stourbridge. In addition there is an informal at the “Shrubbery Cottage” in Heath Lane, Oldswinford. The September formal will be addressed by G3BA, who will recount some of the radio activities in the war-time prison camps. When the younger hearers realise that one had to start from scratch to build something to be “lost” several times a day, to use a non-existent aerial, with not a single component available in the ready-made form (transistors as yet not invented), then they can begin to realise about one tenth of the problems! But, they were overcome, in just about every camp.

We have wondered for some time what had happened to that superb Newsletter put out at **Spalding**, but we find that the Spring number “went west” as the result of the final demise of the old typewriter and the search for another. They are to be found at the Teachers’ Centre, Knight Street, Pinchbeck on September 9, with an introduction to Amateur Television of the fast-scan type. In addition to these, there is a northern section, who are based on Stickney although more details are not included; so, why not pay the main group a visit at Pinchbeck and get the address then?

Not so far away is **Peterborough**, where the Radio and Electronics society have their base at the Scout Hut in Occupation Road, where they will be on Friday, September 16: it will be a briefing for the Mobile Rally on Sunday, 18th, at Walton Secondary School in Mount-steven Avenue. The talk-in for the Rally by the way is G3DQW, on 144 MHz.

### West-Country

Our first stop is at **Swindon**, who have Hq about five miles out of the town to the north along the A419, where lies the Coldharbour pub. G3NPM has the task on September 7 of talking about Power Supplies, and on 21st G6XM discusses the construction of the Z-Match.

Luckily we are due to be out early this month, so we will be giving adequate notice that **Cornish** have their date as September 1, at the SWEB Clubroom, Pool, Camborne, for G4CVY to give his talk on RTTY. We might comment, from our own experience, that the clubroom will for certain be *filled*, and the welcome will be great.

Building 101 at Houndstone Camp, Yeovil is the Hq



A scene at the first-ever Mobile Rally held by the **Hornsea and District Amateur Radio Club**; left to right, Roy Cutts, G3RJM, and Mary Adams, G4GAJ, who were helping at the Bring and Buy stall, with potential customers Peter Gilson, G3WSZ, and Peter Jackson, G3WQ.

of the **Yeovil** gang; every Thursday there is a meeting, with at least once a month some sort of talk—on September 8, G3MYM talks about the Smith Chart.

The next two are both from **Bristol**; the first being **Shirehampton**, who have every Friday at Twyford House, Shirehampton High Street. And it should be noted, the address and phone number in the panel is also the one to use if you want to get in on the RAE class locally; it is an unusual one in that it also covers Morse.

**Bristol (RSGB)** is the other local crew, and they are based on Queen’s Building, University Walk, Clifton, on Monday evening, September 26; there is also a visit to Portishead Radio on the cards for September, but for later details on that one, you will have to ask the Hon Sec at the address in the Panel. Incidentally, the Hon Sec sent us a copy of the group newsletter—the sort of simple thing that can be kept running with little or no trouble, just one page well typed (electric machine?) carrying all the essential details.

**Torbay** seem to have had a lot of overseas visits this summer, some indeed for a second time; their main meeting is on September 24, but on September 17 they are going to Exeter to set up an exhibition station in aid of the Spastics—the call G3NJA/A. The Hq address is Bath Lane, Torquay.

### South & East

Our first port of call here is to **Chiltern**; and they recently had a talk on Citizens’ Band; the Newsletter Editor predicts it will come, and most likely within two years! It must be admitted that a spate of denials by politicians is as good a sign as any that the denials are false. On a different tack, the group get together on the fourth Wednesday in each month (which isn’t always the last, be it noted) which gives us September 28, the venue being 42 Castle Street. It is also possible that by the time this reaches print they may have instituted a series of informals with a change of venue every couple of months or so—for details, if any, contact the Hon Sec at the address in the Panel.

The **Shelburne** group are now, we understand, back in business at Shelburne Youth Centre, Hornsey Road,

Holloway, London N.7; they run an Electronics for Beginners class on Wednesday evenings with the club-night proper on Thursdays.

Possibly our most regular contributor to this piece, at least in the umpteenth years that the writer has been doing it, is the scribe of **Acton, Brentford & Chiswick**. On September 20, G3CCD will be telling the gang all about his recent activity as FØUT; the Hq address is Chiswick Trades and Social Club, 66 High Road, Chiswick, London W.4.

**Bishop's Stortford** have their place at the British Legion Club, Windhill, where they can be found on the third Monday in each month; nothing known about the programme as yet.

**Stevenage** are based on the canteen at Hawker Siddeley Dynamics, Gunnels Wood Road. September 1 is a talk on UHF repeaters by G4ENS, and on 15th they will be hearing G3RWL talking about AMSAT and amateur satellites.

Further south now, to **Southdown**, who are based on the Chaseley Home, South Cliff, Eastbourne. There will be someone—as yet not known by name—to talk about RSGB on September 5, and on September 24/25 they are off to France to pay a visit to Radio Club de Normandie, Rouen.

Now to **Milton Keynes** for whom September is AGM-time; but that doesn't mean they haven't already got things lined up for October and November—a good move by the existing committee. Anyway, their policies come to the test on September 12, at Lovat Hall, Silver Street,

Newport Pagnell—and we guess on form they will be re-elected *en bloc*!

A nice letter from the Hon Sec at **West Kent** tells us that they have Fridays, September 2, 16 and 30, for formals at the Adult Education Centre in Monson Road; they ask us to lay special stress on the September 30 date which will be an Open Evening at which they will try and show a little of the hobby to the outside world in the hope of some newcomers to the fold—that sounds like an idea which could well be pursued by every club in the country. Reverting to West Kent, they have informals on the Tuesdays after the regular meetings at the Drill Hall, Victoria Road, behind Marks and Spencers' store. This group have an award for the member who can show evidence of the QSO which gives most miles per watt, and they ask does any other club have such a thing to compare their rules against. The only thing your scribe can see problems with is that the Rules don't say clearly whether you must initiate the QSO at low power or can make the QSO normally and reduce power after contact is established.

**Thames Valley** are to be found on September 6 at Giggs Hill Green Library, Giggs Hill Green Road, Thames Ditton, when a member of the UK FM Group will be talking about 144 MHz repeaters and their control.

**Mid-Sussex** are based on Marle Place Further Education Centre, Burgess Hill, where they are to be found on alternate Thursdays. We would like to say to you that the Hon Sec can give you the current details but as it is

### Names and Addresses of Club Secretaries reporting in this issue:

ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London W3 8LB.  
 BISHOP'S STORTFORD: H. Allison, G3XSE, 89 Birchanger Lane, Birchanger, Bishop's Stortford, Herts.  
 BRISTOL (RSGB): B. L. Goddard, G4FRG, 2 Greenfield Park, Portishead BS20 8NQ. (Bristol 848140.)  
 BRISTOL (Shirehampton): R. Andrews, G4BWB, 82 Wellington Hill West, Westbury-on-Trym, Bristol (426486) BS9 4SN.  
 BRIGHTON: N. V. Hewitt, G8JFT, 53 Cleveland Road, Brighton, Sussex.  
 CHELTENHAM (RSGB): G. D. Lively, G3KII, 26 Priors Road, Cheltenham (34785), Glos.  
 CHILTERN: N. C. Ambridge, G4FRL, 53 The Avenue, Chinnor, Oxon. OX9 4PE.  
 CORNISH: H. F. Adcock, 1 Bowglas Close, Castle Road, Penzance TR20 8HD. (Cockwells 562.)  
 CRYSTAL PALACE: G. Cluer, G4AVV, 24 Patterson Road, Upper Norwood, London SE19 2LD. (01-653 4340.)  
 DARTFORD HEATH D/F: Miss J. Maggs, 25 Leybridge Court, Eltham Road, Lee, London SE12.  
 DERBY: Mrs. J. Shardlow, G4EYM, 19 Portreath Drive, Darley Abbey, Derby DE3 2BJ.  
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 HARROW: M. A. Kipp, G4FBK, 43 Southdown Crescent, South Harrow, Middx. HA20 0QT. (01-864 1412.)  
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 MILTON KEYNES: D. Stimson, G3THC, 108 Cambridge Street, Wolverton, Milton Keynes (316730) MK12 5AH.  
 NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogdan, Halifax.  
 PETERBOROUGH: L. Critchley, G3EEL, 36 Waterloo Road, Peterborough, Cambs.  
 REIGATE: F. H. Mundy, G3XSZ, 2 Conifer Close, Reigate (43130). Surrey.

ROYAL NAVY: FCRS M. Matthews, G3JFF, c/o Royal Navy ARS, HMS Mercury, Leydene, Hants.  
 SHELburnE: Mrs. F. M. Bettany, 5 Old Well House, The Grove, London N6 6LD.  
 SHEFFIELD (Association of Clubs): E. Chambers, G4CUW, 236 Westwick Road, Sheffield (363927) S8 7BY.  
 SOUTHDOWN: B. Chuter, G8CVV, 15 Coopers Hill, Willington, Eastbourne, East Sussex BN20 9JG.  
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 SUTTON & CHEAM: J. Jorndorffer, G2DMR, 19 Park Road, Banstead, Surrey.  
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 THAMES VALLEY: R. J. Bladell, G3ZNV, 92 Bridge Road, Chessington, Surrey KT9 2ET.  
 TORBAY: M. Yates, G3UIQ, Top Flat, 23 Waverley Road, Newton Abbot (3025), Devon.  
 VERULAM: B. Pickford, G4DUS, "Netherwood," 130 The Drive, Rickmansworth, Herts.  
 WALSALL: K. Boucher, G8KML, 22 Emery Close, Walsall.  
 WESSFX (Bournemouth): G. D. Cole, G4EMN, 6 St. Anthony's Road, Bournemouth BH2 6PD. (0202-20027.)  
 WEST KENT: B. P. Castle, G4DYF, 6 Pinewood Avenue, Sevenoaks, Kent. (0732-56708.)  
 WEST OF SCOTLAND: T. G. Wylie, GM4FDM, 38 Rosedale Avenue, Gleniffer Estate, Paisley PA2 0RR.  
 WOLVERHAMPTON: J. Cook, G8EDG, 75 Windmill Lane, Castlecroft, Wolverhampton WV3 8HN.  
 YEOVIL: D. L. McLean, G3NOF, 9 Cedar Grove, Yeovil, Somerset.  
 YORK: K. R. Cass, G3WVO, 4 Heworth Village, York.

understood that he is unwell, we refer you to G3RXJ, at the address in the Panel. Let us hope G3ZYE is soon back to full health and activity—he certainly made things hum in the club context while he was Hon Sec.

A new formation is **Brighton**, of which we heard by way of the Mid-Sussex gang; they seem to be fore-gathering on alternate Wednesdays, but for more details we must refer you to the Hon Sec—see Panel.

A new club magazine makes its bow at **Surrey**, and from it we learn that the move into the present Hq at TS *Terra Nova*, 34 The Waldrons, has paid off in membership numbers. They will be there on September 7, for a Surplus Equipment Sale, and again on 21st when the club station will be on, and there will be a general discussion.

**Southgate** are based on the Scout Hut, Wilson Street, which is near Winchmore Hill Green; the date is always the second Thursday of each month—all newcomers welcome. This arrangement gives September 8 for the current month.

On to **Maidenhead** where the Hq is the Red Cross Hall, The Crescent, Maidenhead, and where the routine is to get together on the first Thursday and the third Tuesday of each month; nothing specific is mentioned for September, but there will be something organised, if past experience is anything to go by.

At **Echelford** the Newsletter gives us the definition of the month in referring to a giraffe as “a perambulating aerial mast!” The group Hq is at the Hall, St. Martin’s Court, Kingston Crescent, Ashford, Middlesex, on the second Monday and the last Thursday in each month.

A short and snappy newsletter comes in from **Crystal Palace** this time, and from it we gather that they will be entertaining Pat Hawker on September 17. The gang are also starting a series of Natter evenings at members’ homes—if you want to attend one of these (first Tuesday) events it would be courteous to contact the Hon Sec first. To revert to the main session, the venue is Emmanuel Church Hall, Barry Road, East Dulwich.

All the meetings of the **Wessex (Bournemouth)** group are at the Dolphin Hotel, Holdenhurst Road, Bournemouth; Friday, September 2, is down for a talk on RAIBC by G3LWY and G3HRJ—how nice to hear that Frances is still around, after all the years of hard work she used to do for the membership of RAIBC. September 16 is a dual programme; G2HCG on the VHF aspect of our hobby, and G3RGJ to talk about HF band operating on his trip to and from the Canary Islands in 1975—both talks slanted so that the overall title is “Working Maritime Mobile.” In addition, this newsletter mentions the RAIBC Rally at Broadlands, Romsey, which we hope will be blessed with the very best of weather, as for many of the RAIBC people who make the trip it will be a very rare and treasured outing.

There are two places where you may find the **Sutton & Cheam** group: Ray’s Social Club, London Road, North Cheam; or Sutton College of Liberal Arts, Cheam Road, Sutton. The former is the venue on September 14, for a Junk Sale; the latter—often referred to as SCOLA in the Newsletter—on September 22 when G8SM will be

talking about the “Stereo Code Method of Reading Morse”—and it sounds interesting.

**Reigate** formals are at the upstairs meeting room at the Constitutional Centre, Warwick Road, Redhill, and at The Marquis of Granby, the latter being for the natter sessions. Thus September 6 is at “The Marquis,” and September 20 at the Constitutional Centre—provisionally for a quiz against the Dorking crowd, the start being set for 2000 hours.

**Verulam** have September 22 booked at the Market Hall, St. Albans, when they will have a talk from G3KFE. The informals are usually on the second Thursday in each month, at Salisbury Hall, the home of the first Mosquito aircraft; and we are specially asked to mention the fact that they have a special welcome for visitors—they want ‘em!

It seems quite a time since we last heard from **Dartford Heath D/F** club, but the Hon Sec tells us they are as strong and active as ever. The normal D/F activities being outdoor, there is a need for some balancing indoor activity, which is provided on the second Friday of each month at the Scout House, Broomhill Road, Dartford.

Every Friday the **Harrow** chaps home-in to Roxeth Community Centre, Scott Crescent, West Harrow; on 2nd an informal, on 9th a Junk Sale, and on 16th a session with the title of “Circuit Ideas Unlimited.” The Construction Contest is down for September 23, and on 30th there will be a talk about Citizens’ Band.

One of those who asked for the date of MCC was the Hon Sec at **Edgware**—thanks for the reminder! The group are based on Watling Community Centre, 145 Orange Hill Road, Burnt Oak, where they book the second and fourth Thursdays. For September the first date is an informal, and the second one features G3FKI talking about Electrical Installation for the Amateur. Looking forward, on October 13, members of all clubs within striking distance are invited to listen to G5XB giving his talk on the Intruder Watch—that vital but little heard-of activity which endeavours to get rid of unauthorised signals in our exclusive bands. If you want more ‘gen’ you can either contact the Hon Sec—see Panel—or listen around 2145 local time on 1875 kHz nominal, to the club net.

### Finale

Which is where we close the book for another month; you should have already sent in your news for October by August 26—but look in the “box” for the dates; what is important is to remember that the issue for a particular month will contain the news and events of the month concerned; *i.e.* the October issue will have “Clubs” programmes for the October dates, *not* the September or the November ones. If as so often happens, it is not possible to tell what’s what that far ahead then give us the dates, Hq address and at least some indication as to whether you are still trying for a lecture-or-whatever, or are just having a natter. This is so that we can give a reader some idea at least of what a particular group will be doing. Address it to Club Secretary, SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ.

# COMMUNICATION and DX NEWS

*E. P. Essery, G3KFE*

AS usual, when your scribe opens his mouth he puts his foot in it! More so than usual in commenting on the upward trend last time, in that hot and close weather has made his shack less inviting than usual and brought up the static level on the LF bands; although as of the exact moment of writing Top Band, despite the "closeness" and feeling of thundery weather about, still seems to be tolerably quiet which it certainly wasn't earlier in the day. All this is having at least some effect in masking the sunspot level; but in hard fact the sunspot count is rising at a pretty smart clip, so that the prediction for December is a smoothed sunspot number of 30, whereas this time last year the predicted *SSN* for December 1976 was about 4. So—things can't be all that bad!

## Vale

It is with deep regret that we have to record the passing of G. L. V. Butler, G2BUL; one of that group of people who put far more into their hobby than they take out. Len was for a long time one of the RSGB Sub-Managers, dealing with a group among which your conductor's own call was numbered, and we had occasional correspondence in the course of moving cards at odd times. Whether we as individuals are members of RSGB or not, whether we approve of the QSL Bureau or not, whether we approve indeed of the QSL idea at all or not, it makes little difference to the fact that in looking after his section of the RSGB QSL Bureau with such quiet efficiency, he gave a very large number an increased pleasure in their hobby through the contents of the envelopes he posted; we have a shrewd suspicion that the work was not entirely without cost to himself, quite apart from the hours Len put into it. G3IRM, who has taken over the work will agree, we are sure, that he has been set a high standard to emulate in following in the footsteps of the late Len Butler, G2BUL. Vale.

## The Bands

As we hinted in our preamble, the sunspot number is quite definitely on the upsurge and as a result things are much more active than they were, say, a year ago. Once having said that, it has to be admitted that this time last year things were *happening* more than now—the Bill Rindone expedition was in full blast, D6A was just over, WG1JFK was being operated from Runnymede, and good old reliable Guy, FR7ZL was making noises about Europa. This year, while there are various expeditions promised, and various RF noises from mildly rare places, there hasn't been anything to set the pulses racing; if a new country turned up one day next week, with a skilled team of operators and good gear, we would most definitely see a vast change in conditions—last year's comment of "never even heard 'em!" would just not appear in the mail. So—that being said, where do we go from here?

## DXNS

It will be recalled that for an extended period during the winter Geoff Watts' *DX News Sheet* was completely off the air; and when Geoff was given the OK from his doctor, he had to reduce the workload by shedding all his overseas readership. It would appear that there has been a report going the rounds that Geoff could again take overseas subscriptions, and as a result Geoff has had to turn away many enquirers. The only way in which an overseas operator can obtain a subscription is by his coming to some sort of an arrangement with a G station, so that Geoff sends the G an extra copy, which is then forwarded by the G to the DX. This saves Geoff the problem of different currencies, which caused the extra hours of work which in their turn knocked Geoff out of the ring. Please, DX-ers who want *DXNS*, come to some arrangement with a G station, but don't write to Geoff for a sub. However if you have any DX

news, by all means pass it on to Geoff for the benefit of all!

Still with Geoff Watts, but on a different line, if you don't already have one, a copy of Geoff's Prefix List, which is well worth the price, will give you quite the most useful bit of paper in the station—see his advertisement each month in *S.W.M.*: it spells out what you are buying better than we could ourselves.

## Top Band

We have some mail discussing the band again this time. GM3YOR (Kirkcaldy) still addresses his letter "Dear Sir" after all this time of being a contributor; Drew and Dave, GM3OLK will be off on their travels again, to Shetland this time. However, there are indications that if all goes well their next year's DX-pedition will be out of the UK. As he says, from the home station, the chaps with the beams and the linears make it hard for his FT-101B and trap dipole plus Top-Band dipole—but the old keyer still managed W1HGT, YU2OB and YU3TJA.

G4FJU (Bloxwich) sends in his first entry to the Table, as indeed did GM3YOR; Ben mentions the activities of G3YTW/LX/P on Top Band, and managed a QSO with them on CW, even though his AM signal wasn't big enough to raise them through the SSB. G4FJU managed to gain the Bromsgrove Silver Jubilee award with his AM, and he wonders if anyone else succeeded in doing so. However the site is plagued with an S8 local noise level from a nearby factory.

All bands have received a daily visitation from OT G2BY, including Top Band, but although he had a listen round Bert didn't actually fire up the machinery.

G2HKU (Sheppey) has just finished an HW-8 and finds it to be quite some job as far as results go. On Top Band, Ted used SSB to PAØINA and PAØPN, plus CW with OK2BQL and OK2PGF.

On to G4AEJ (Birmingham 25) who apologises for the neglect of

the Ladder by the troops—but his is a third entry this time so we can at least run it and hope to see some more entries. Len has been somewhat inactive due to the persistent strong winds, which have kept his sixty-foot vertical telescoped down.

As to your conductor, it rather seems as though his end-fed wire has been detected at last, so by the time this piece reaches print we will have had to think of something different—no bad thing in a way as it ran *East-West* and so had a complete null on signals from most of the real DX. It will probably be replaced by a shortened, loaded, vertical and counterpoise arrangement, at least until something better comes to mind. However, that 28 s.w.g. wire has done very well to remain undetected for so long despite the odd occasion when it has had to be re-erected without drawing attention to it.

### Eighty

As always it seems that the users divide into three general types: the rag-chewers, both SSB and CW, the DX CW types who quietly mop up whatever there is going on, and the SSB chaps battling their way through QRM and swear-words.

G2HKU went on the band to try his HW-8 out, and settled for a QSO with UA2FBO.

G2BY (I.o.W.) stuck mainly to CW on the band having, like so many others, been appalled at the mouthings of some of the SSB types on the band—as he says, they will if not careful lose us all of our band privileges.

G4FJU is down to eight watts of CW on Eighty, but still has his fun; UA1ARX in Leningrad had below ten watts at his end, and LA2QP was running two watts only—real QRP-to-QRP stuff.

G4EVO (Broadstairs) next; some months ago we remarked on his method of getting the feel of the band with his QRP rig and Joystick, before migrating onto another band, the while keeping up at least the odd contacts on the older stamping-grounds. This process has been pursued over the months to the point where G4EVO now has all but deserted Eighty. In five pages of log copies there is scarce a double-hand count, scattered round England and the nearer Continentals—but look

at the loggings on the HF bands!

G3CED/G3VFA is also in Broadstairs; George also uses a QRP rig and Joystick. For all but a month he was QRT due to business commitments, and the loggings show one day in June and one in July as the sum of the activity. The connection between the two was that the second session was conducted entirely on the band on which the rig had been left a month before—very labour-saving!

F9UO next; he of the parti-coloured log, which one has to admit saves your scribe much close scrutiny of logs to sort out by band. In this one, black ink is all you need to look for—and in black ink we find various G contacts, both GE and common-or-garden, one of which was a five-way all-FOC members affair which lasted nearly three-quarters of an hour. However, F9UO spent more time elsewhere owing to the consistently high noise level of the band.

#### “CDXN” deadlines for the next three monthss—

October issue—September 1st

November issue—October 6th

December issue—

November 3rd

Please be sure to note these dates!

G2NJ (Peterborough) only mentions three contacts: LA9ZL/MM was aboard *MV Arica*, LCMQ, bound for Karlshamn in Sweden; another a QRP contact with E13CY in Dublin; and the third was with G2FI (Wadhurst) having his first week back on the air after thirty years, and sending *good* Morse with his left hand to disprove the imputations of QLF!

G4DMN (Wirral) found the static level bad at times, but he did stick to the band long enough to work CJ1EJ, CT3BM, HI8LC, LU1DFO, LU4EGE, LU1HDT, LU3AX, LU9DLY, PY, LU9VAJ, VP8ML, VP9IB, TF2ST, ZD8EW, ZP5AO, ZP5KP, 7X2HM, 7X2KAR, and 7XØBI.

### Odds and Ends

This item concerns many people who don't read this piece, so it is to be hoped that readers will pass it on by word of mouth and over the air.

“Worked All Britain” record books and information sheets are now available from Mrs. Joyce E. Lacey, Oak Tree Bungalow, Lambourn Woodlands, Newbury, Berks RG16 7TR. The awards applications should go to Alec Brennand, G4AVA, 76 Dinely Avenue, Todmorden, Lancs, with an s.a.e. Mrs. Lacey received quite a packet of letters which were originally addressed to Roy Kirk, G3ULH, who has discontinued his connection with WAB some while back. It should be noted that applications for the record book must be accompanied by the remittance—no stamps accepted, only cheque or postal order made payable to “Worked All Britain Award Account.” It is understood that a newsletter will shortly be published, on the first of each month—send s.a.e. plus 20p to Mrs. Lacey at the address above.

Completely off the radio theme in any form, to ESP; G2HKU reckons that our remarks about his mower back in the July column were a forecast—having come home one evening to find the mower in the form of wreckage and the XYL in tears, she having decided to help but not knowing just where the buried-pipe type mast support lay in the undergrowth. Ted ought to make a map of his garden with all the problem spots clearly marked!

The early noises about the SEANET convention in Bangkok have now expanded into a fully-printed broadsheet with all the data and booking form. It shows the Convention proper as being over the period November 18-20. For details, get in touch with RAST Hon Sec, P.O. Box 2008, Bangkok, Thailand.

Nice to hear from GM4CXM (Glasgow) who was *GW* when he last wrote in. Ray is in Central Hotel with a dipole at 170 feet and no TVI on Twenty, having slowly jacked the power input up on CW from 25 watts to 150 watts, the while investigating the nearby TV sets for trouble. Despite the aerial being where it is, Ray says he wants to get it up higher still, or turn it into a fixed beam!

After his sudden rash of activity, mentioned recently, G4EAN (Nottingham) finds he has a large job in front of him, as his beam has developed a high SWR, while the header unit at the top of the tower has

been binding on the mast, so that a full weekend's work is called for before much can be done.

Ex-G2XC (Horndean) says he's heard nothing to get excited about this time, but he then goes on to discuss in detail the hypothesis set out in GW4DCA's recently-published piece (August issue, p.354). In essence Ted is pointing out that the reflection of a signal or its refraction are dependent on the difference in the refractive indices of the two materials forming the interface. For glass to air the critical angle is about 39°—any light hitting at a greater angle will be totally reflected. The same situation applies to the GW4DCA argument, but in the case of the refractive indices of the one air mass and the other the difference is, even in the case of a marked temperature inversion, in the order of 1:001, and at that the boundary is much more diffuse. Thus, Ted concludes, if there is evidence of one-way propagation, it means GW4DCA must look elsewhere for an explanation.

#### Now 7 MHz

G4CCQ (Lamberhurst) found conditions on the bands to be quite odd, and indeed so much so that he turned to VHF just in time to catch a *Sporadic-E* lift. As far as 7 MHz went, the short-skip conditions resulted in one new country, worked by way of GJ3YHU.

G4DMN didn't give much attention to the band at all, his only contacts of significance being with HP1YV, LU4HCU/TI2, and some YV's.

F9UO spent quite a while on the band being, as we have mentioned before, high up in a block of flats and using QRP and a Joystick; among the contacts noted there are odd G and GE contacts and one with VK3MR; on 7012 kHz this contact predictably "went West" due to F9UO not being able to get his final "R" back through the European QRM, which immediately seems to latch on to anyone else's DX contact! But, reports were exchanged, and the F9UO signals were R5 in VK even if VK3MR was only 339 in Europe.

7 MHz for G2HKU was all a matter of trying the HW-8 out on the band; HA3KMK, HA0DU/9. LZ3KIM, UA1AEA, and UB5RN were all worked with the little box.

As compared with the last two years, the band has been well down, considers G2BY. Bert raised VK3MR, VK3XB, VK3CP, VK3VJ, VK2OI, VK3KF, VK3CZ, VK2BFJ, VK4DO, VK3FC, XE11Y, to bring the quota of VK's worked on the band up to 104—but no other DX was heard, let alone worked.

#### Twenty

G2BY found conditions quite good during the earlier part of the period, and mentions especially these as giving him most pleasure: TR8CQ, 6W8EX, CJ1EJ, KH6JG, EP2NT, KH6AKX, KH6IJ, KH6HC, KH6HAX, EL0N/MM, FG0DDV/FS7, and VP2LDH/MM; this last is ex-G8IH, aboard his yacht *Lista Light* and running fifteen watts; some forty years ago he and G2BY worked together, after which Bert had nothing heard until the call from VP2LDH/MM. Another pleasurable QSO was with ZK1DR (Cook Is.) who was raised after fifty years of trying! A "doubtful" was ZL0AB, who kept on saying he was "in New Zealand" but wouldn't go into more detail when pressed; and there aren't any ZL0 calls in the "DX Listings" section of the World Call Book.

For G2HKU the band divided into two distinct and separate activities, namely the contacts with the KW-2000 and those made with the QRP rig. Taking the former first, CW was used to work FM0BZK, TU4FOC, UF60AA, UI8ACH, UK0BAA, VE3AHB, VK6WT, W6IVT, WA7UUF, and YV1AD. On the HW-8 it was still all CW, to HA5KFN/5, OK1MWN, SM6DUA, KV4AA, UC2CQ, YU1ELM, YV1AO, and UK2PAF.

F9UO found his QRP and Joystick could make it to LA2QP, EJ0A, UK4CAW, VP9IO, W2BA, UA3PBN, YU3TEA, C31NN, W6VD; not to mention the others who are not reported in the F9UO letter except in remarking them not worthy of mention! The way that F9UO manages to get out of a high-rise block so well—which is almost certainly largely made of steel and pre-stressed concrete—is quite amazing.

"Good at times," says G4DMN, who spoke to AP5HQ, EL3A, CO2FRC, CE0AE, HC1EE, K9PNT/DU2, J28AC(FL8), KL7HCN,

KL7HJD, KL7FCH/P, KL7IUN, KH6GQW, KX6DC, KA6ML, OA4BZ, HK0BKX, TI2CF, TG9HF, TG9GI, TU2EG, UK0AAO, VC9UM(?), VE8YE, VE8CFS, VE5XV, VP2MBB, all W call areas, XE1VV, OX3VO, OX5AP, ZS3HF, YB0ACS/YB6, TT8SM, ZD8RP, ZD8PA, ZF1SV, ZK1BA, 4T4AKL(?), 9D5A, 5N2NAS, and 9M8HG. The two calls against which we have a question mark are quoted as we read them; if we have them wrong it is entirely our fault in not being able to decipher G4DMN's usually very readable script.

Having looked at a keen SSB man's list, what about some CW? G4CCQ offers VK8HA, JR2IEG, JA6GU, JA3KM, JA4DZ, JA5AJQ, JR5FPB, JH3SQM, YV5CKR, YV5ANT, WA5UKR/YV5, PY6VQ, PP2JJ, PY2SI, 9Y4TR, HK3ASM, LU9ABB, LU3HAZ, ZS6ME, OX3RA, OX3OA, CE0AE (Easter Is.), 8P6DW, A9XBC, PJ2VD, UA0SFN, UA0ACJ, LA1GO/MM in the Indian Ocean, ZL4JD, ZL4AC, OF8AA, W6EJ, W6GC, KL7HCN, U60A, U60NKW, U60RST, plus an assortment of about three dozen Asian Russian (UA9, UL7 and such).

GM3YOR (Kirkcaldy) stuck to his keyer, which helped him to swap reports with CN8CF, FG7AN, FY7AN, JA2IU, KV4AA, UA9UUP, UA0SAJ, UI8ABP, UI8CQ, UK9WBD, and VESYA.

G4AEJ has fitted a filter in his TS-510 since when CW has been a real pleasure; nothing special in the DX range, but lots of UA9's, JA, W's, PY, VE's, LU, XT2 and the C31 DX-pedition—and we wouldn't describe the last two as not being DX!

GW4BLE (Newport Gwent) has been missing a while which, we gather, was caused by his becoming engaged; the YL in question has already been coerced into looking after the QSL chore for Steve and the GW4ENT contest group, not to mention being shotgunned into the coming autumn's RAE class. Congratulations to both of them. The GW4BLE log on 14 MHz SSB includes A9XV, AP2AC, CE4EM, CP8BS/5, EP2US, FG7XL, FM7WE, FO8EX, HC2EPL, HK0QA, KG4AN, LU7HAN, S79DF, TG9DF, VP2VJ, VU2DK, VU2YK,

XE1JOF, XE1LCH, XE2AX, YN5JAR, ZL1HY, 6Y5AB, 9G1FF, 9V1SA, and 9V1TA.

G3NOF (Yeovil) found conditions to be quite odd this last month around 0600, *W6*'s at around S3 working the N. Europeans who were giving them S9 reports. On some days, around 0800, the Pacific stations were quite strong, but on other days nothing could be heard of them save Europeans giving them S9 reports. East Coast *W*'s as early as 1000, but seemed to fade as daylight arrived over there. Don missed out on VR6TC, ZM7AT and ZM7MM thanks to the pile-ups, but he did connect with AP5HQ, EP2HE, EP2LI, F08EX, G3FWB/MM, GW4DWN/VE8, HZ1SH, I1DFS/IA5, I7EX, and 7ONU (St. Paul Is.), J28AC, JA7AKH, JH3DPB, K1DRN/C6, K6BR, KØWIK/DU2, KH6BTD, KH6GDR, KH6IIV, KH6JCV,

contact, namely the one with ZM7MM; but the SSB list is as long as the G4DJY list and similarly has had to be pruned a little to keep within our bounds of space: 5W1AU, KS6DV, 3V8BZ, JX3P, 5W1BE and 'BF, who were KS6DV and his XYL respectively, J28AO, TU2MM. K1DRN/C6A, TU2GE, KX6BU, WB6IJI/VQ9, W4YHK/VQ9, VP2MBB, HCØMM, CO2FR, CO2FRC, ZD8RR, C5AAD, 8R1Q, VU's, 9G1FF, VP8ML, ZD8SD, VP5MA, VS6BE, 9M2EF, 3B8BL, TU2EL, A4XVL, C31A, UD6, 9M8HG, LZ1CY/D2, XT2AS, TA1MB, and many others as well.

Twenty for G4EVO seems to have not been a very lucky band; plenty of contacts in Europe, but not much outside, save for N4BP, UK8AAA and IT9LPG.

On now to GM4CVM with his twenty-metre dipole; Ray is CW-only for the moment; at the 25-watt level

nuisance.

21 MHz

The observant reader of this column cannot fail to notice signs of the lift in conditions insofar as this month we have had to admit to some pruning of lists all round, which is something we haven't had to do for a long time.

Ex-G2XC was not greatly impressed with conditions as we have already commented, but one interesting station heard YB2SV at the late hour of 1825z.

G2BY comes next, having worked "sundry *JA* and *W* stations but not much else." The next bit is about the Poltava Pestilence and is quite unprintable!

F9UO has just two entries on his sheet in green, one of which indicates *YU3* and *YU2*'s audible around lunchtime and comments "Not much doing on this band"—which seems

TOP BAND/TEN METRES COUNTY/COUNTRY LADDER

Starting date, January 1, 1977

Call	TOP BAND			TEN METRES		
	AM	CW	Total	AM	CW	Total
G4FJU ... ..	30	68	179	—	—	—
GM3YOR... ..	—	74	88	—	—	10
G4AEJ ... ..	50	30	98	—	—	10

Scoring is on the following basis: one point per county worked on SSB, two per county on CW, three per county worked on AM; two points for county AM/SSB QSO's, each end to score two points in the appropriate column for the mode used. No other cross-mode working permissible. Countries score one point each regardless of mode.

KL7CYH, KM6FC, OX3VO, TG9DF, TG9HZ, TI8CF, TT8SM, TU2EZ, U6ØKLN, VE3HYU/SU, VE6BCY/4X4, VE6DC, VE8DC, VP1WS, VP2MBB, VP2MH, VU2HI, W6NHY, W6TSQ, W7ISX, W7JYW, WA6BJS, WA6YZC, XE1DE, XE1VOZ, XE2IW, XF3B, ZS1SV, ZS6APO, ZS6BNX, ZS6BNZ, ZS6BOD, ZS6BQ, 8P6IM, 9M8HG, 9D6A, and 9Y4SF.

G4DJY (Blackpool) is a CW hound with around the 100 watts into a Joystick. During the period there was intense work pressure before and after two weeks holiday; however, all *W* call areas with the exception of *W6* were worked, plus *VP9*, *SMØFLK/4U*, *LU*, *PY*, *C31NN*, *CN8CC*, *OY1R/A*, *YV*, *DJ9NX/HBØ*, *4U9ITU*, *FG7XA*, *VEI-3*, *VE5*, *8P6*, *H18*, *ØX4*, *ZS6WW*, *PJ2VD*, and all the Asian Russian call areas.

G3RCA (Wigan) made one CW

he worked XE1EH, W5HJ, K5ZK, K7GGY, YV5DEK, N5BJ, 4U1ITU, LX1BL, VK3AMC, VK3MR, LU8NQ, LU3EX, PY2BW, H18MOG, KØV4AA, and KØV4CI; the absence of TVI at this level being proven, power went up to 150 watts, when Ray worked CO2FR, CX4LO, H13PC, KP4EEX, KZ5DE, HK3AHM, LU3MC, N5DD, PJ7VL, PY1NBP, *UL7*'s, *UA1-9*, *UH8HBR*, *UK8AAA*, *UJ8AB*, *UJ8JCJ*, *VP2EEM* (Anguilla), *VP91R*, *VK3VF*, *VE7AFJ*, *YS1Ø*, *W5*'s *W7LLC* in Arizona, several other of the rare variety of *W*'s, *VE6UM*, *8P6GQ*, and *KZ5HO*.

We have already mentioned G4EAN's problems; suffice it to say that at least LZ1CJ and UB5WCA were booked in before the problem put paid to operations. We suspect that the SWR is most likely just an O/C coaxial cable connection up aloft—but whatever it is, it's a

pretty fair comment!

Another one to follow these lines is G4CCQ; Mervyn didn't even fire up the transmitter, but he did manage to log CW from K1XA/1, KP4DX, and UK7GAA.

No *JA*'s heard, laments G4DMN; but he did manage to find and work EP2TY, KV4IF, A4XGY, CY1UNB, CX4CR, EL2T, EL2ES, LU2A, *PY*. PZ5AA, TR8MG, VP2MBB, ZD8PA, ZS6BNH, ZS6BNU, 4Z1ØTC, 5Z4NH, 5Z4QD, 5N2NAS, 9L1NP, and 9X5TM.

The CW from GM3YOR found its way off the trap dipole to CN8CF, KP4CKY, KZ5FR, PJ2VD, PY2BMX, SMØFHY/4U in Sinai, UK9ADT, and 3B8DT.

G4EVO seems to have had the "luck" to grip on to most of the short-skip openings, but he did make it to 4X4GD, our old friend GM3CFS, and lots of Europeans and *G*'s.

G3CED/G3VFA at Broadstairs had, as we have already remarked, only two operating sessions; in the first one, 21 MHz netted a few Europeans, CT4AH and ZE1NFD/P. The second effort "coincided with a contest I barged into!" The comments on contest operators all sending 5NN were amusing, the more so when in the middle of it all he just stopped for "a casual, feet-up ragchew" with YU2BST before turning over the log page and recommencing his "bug-beltling" again with LU8DQ, PJ2VD, and W2IB all booked in within a few minutes along with some Europeans, before the shout of "Dishing up!" put a stop to his capers.

Conditions on 21 MHz have been poor, says G3NOF, who mentions just three QSO's on the band, with K1BVL, VP2MBB, and WB2KFH. For most of the time there has been nothing much but the short-skip.

GW4BLE brings up the rear with his offering; SSB netted him A2CBW, CE5BFZ, HI8EPS, HI8GMN, HP1GD, STØRK, TU2FW, TU2HE, VP8ML, VP8PC, VP9ID, ZP5EF, ZS5ZY (he is *ex*-GW3ZTH), 9G1KK, and 9Y4R.

### Ten Metres

Has been nothing like as good as it was a few short weeks ago; mainly short-skip and one-hop North/South contacts.

G3NOF reports no contacts made, and only Europeans heard; G4DMN concurs, saving for one stray RH8EAA who was snapped up quickly.

G2BY has kept a fairly regular watch on the band, but the only DX signals to be heard were 9H1CH, W2GD and K4PJ on CW, with plenty of Europeans and out to U18 thrown in for good measure.

Finally, GM3YOR who found a whole daffy of EU's, but again no DX.

### Contests and Things

On the contest front, the first two weekends in October are showing the *VK/ZL/Oceania* contest, the first go-round being CW and the second SSB. Outside *Oceania* counts one point for anywhere in *Oceania* worked, but two points for a *VK* or a *ZL*; the usual RS(T) plus serial number starting at 001. Logs are to be in the hands of the committee by January 31, 1978; the address is: WIA, Contest Manager, G.P.O. Box 1002, Perth 6001, Western Australia.

A little further on, the CQ WW DX Phone contest comes over the last weekend of October; there are several changes in the Rules to clarify various minor hang-ups; perhaps the most important one is that three points will be deducted for each duplicate deleted by the committee—so in making the log up, you'd better be sure you haven't missed any dupes. On the operating side, the *JA*'s are restricted to 3793 to 3802 kHz, which will make it very difficult for them; thus it is proposed that the DX-Window technique will be used with the *JA* station indicating the frequency on which he is listening which implies a fully split-frequency job on that band.

It is indicated that there will be some action from Cameroun, with one of the US Embassy types taking a rig and beam; he will be well established, if all goes well, by the time you read this.

The *ZL* operation on Kermadec is running up against a minor hang-up in that they can't find a carrier prepared to carry the fuel for the generator; anyone with knowledge of a good method of getting the petrol to Kermadec could do worse than drop a line to ZL1AMN.

Those who read the ads. in the American amateur radio magazines will have seen the Henry Radio spreads. W6UOU from the Los Angeles branch, and his *XYL* are off on a round-the-world trip which will have started by now in the Caro-

lines; Ted and his *XYL* are both knowledgeable operators and work as a team. Furthermore, they have previously operated from some DX areas in the South Pacific and should be well able to cope with the pile-ups. Our latest news is that they will also be operating from 9M8 and maybe a full-blown S8 Transkei operation with the help of some *ZS* types, and by October they should be on from Melilla. The frequency to monitor seems to be 14180 kHz.

We sometimes beef a bit about our regulations; but the FCC mill grinds exceeding fine—someone in Texas recently received a citation for operating at 7024-996 kHz.

On a different tack, who are we to beef about ZK1BA leaving for *ZL*—the lad's been promoted! However we have a little word that there might be something from Manihiki around December-time.

Watch out for the *W* callsigns; the Extras asking for two-letter calls have cleaned out *W*, *K*, and *N* in some parts of the country, and it is now understood that FCC are now going to open up the block of AA1AA to AAØZZ.

Most of us, faced with a station signing UFØOL, would accept he was a pirate; what about the local ten-metre net in *W2* who had a station signing *LB9* check in. A pirate? No way—a Norwegian novice who QSL-ed!

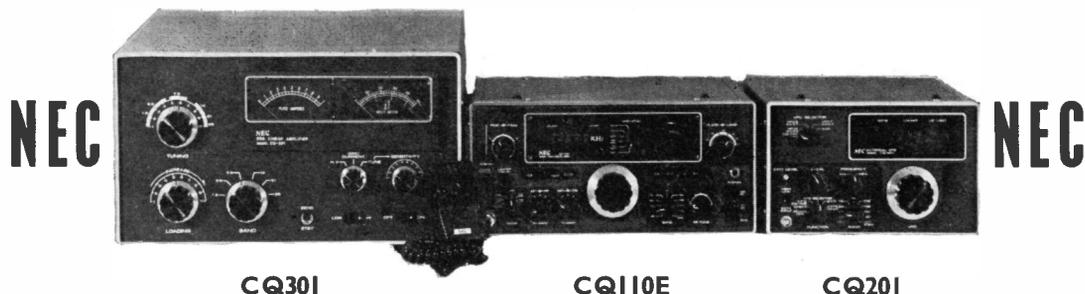
Still with piracy; we have it that the *9U5* chaps are, and have been since 1972; what is more to the point they don't know anything of the *9U5CA* operation which is currently trying to fill people's logs.

### Sign-Off

That's it for another month; you will find the deadline dates in the bold face box, and you should address it all to your scribe, CDXN, SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. And—when you send it in, *don't forget your table entry!*

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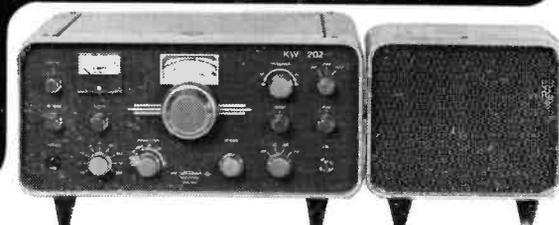
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KW EQUIPMENT: (Don't forget your FREE mic. with every Tx. and Txcr. 1) KW202, £210.00 (£2.50); KW204, £250.00 (£3.00); KW1000 Linear, £220.00 (£4.00); KW107, £85.00 (£1.50); KW E-Z MATCH, £29.00 (80p); KW109, £105.00 (£1.50); KW108 Monitor Scope, £85.00 (£3.00); Speaker for KW202, £18.00 (50p) KW103, £17.00 (50p); KW Antenna Switch, £8.00 (25p), etc.

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## THE EUROCAT 2 METRE SYNTHESIZER

The world's first Universal Frequency Synthesizer designed to function with different transceivers is being introduced by Catronics Ltd.

Due to the increase in activity on the 2m FM band, the popular channels are now quite often occupied at peak periods. To alleviate this congestion and interference problem, use could be made of the other channels available. However, the extra cost of crystals and inability of some transceivers to accept the extra channels will preclude this approach to many operators.

But **NOW** there is a better way—the Catronics EUROCAT Frequency Synthesizer has been designed to satisfy all requirements of both U.K. and continental FM operating.

**Better than crystal control**—All channels are instantly available at the flip of a switch, avoiding lost contacts by not having the required channel available.

**Better than a VFO**—This synthesizer offers the convenience of selection of any 25 kHz spaced channel between 144 MHz and 146 MHz by thumb wheel-switches, combined with the unique feature of a fine tune control.

**Repeater Operation**—Single switch control for all repeater functions.

1. Simplex—transmit and receive on the same channel.
2. Repeater—receive 600 kHz above selected channel.
3. Reverse Repeater—transmit 600 kHz above selected channel.

**Crystal Controlled Automatic Tone Burst**—is provided when the repeater mode is selected.

This 2m. frequency synthesizer has been designed for use with the Trio TR2200 and TR7200 range of transceivers. But it may be used with any transceiver which will operate with 12 MHz transmit drive and 14 MHz or 44 MHz (synthesizer output is 22 MHz) for receive, only two screened leads being necessary for the interconnection.

As it is possible to frequency modulate the phase lock loop by applying a small amount of audio, the synthesizer may be used with A.M. transmitters and the existing speech amplifier used to obtain the required FM.

Front panel controls are provided for:  
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Fine Tune  
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Model ES80/TR is housed in an attractive cabinet approximately 7" x 2½" x 5". Power supply requirement is +12 volt at 400mA (this is obtained via the single connection lead).

**SPECIAL INTRODUCTORY PRICE: £88.80**  
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		0-370 to	0-730	100ppm											£10.00
		0-731 to	1-499	100ppm											£9.75
		1-500 to	1-999	30ppm											£3.45
		2-000 to	3-999	30ppm											£3.00
		4-000 to	20-999	30ppm											£2.85
		21-000 to	24-000	30ppm											£3.25
3rd Overtones		23-000 to	54-999	30ppm											£2.85
5th Overtones		55-000 to	104-999	30ppm											£2.95
		105-000 to	119-999	30ppm											£8.25
		120-000 to	130-000	10ppm											£8.50
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144-030 ...	a	b	a	b	a	b	a	b	a	b	a	b	a	b
144-4/433-2 ...	a	b	a	b	a	b	a	b	a	b	a	b	a	b
144-480 ...	a	b	a	b	a	b	a	b	a	b	a	b	a	b
144-900 ...	a	b	a	b	a	b	a	b	a	b	a	b	a	b
144-850 ...	a	b	a	b	a	b	a	b	a	b	a	b	a	b
145-000/SO ...	a	a	a	a	a	a	a	a	a	a	a	a	a	a
145-050/R2T ...	a	a	a	a	a	a	a	a	a	a	a	a	a	a
145-075/R3T ...	a	a	a	a	a	a	a	a	a	a	a	a	a	a
145-100/R4T ...	a	a	a	a	a	a	a	a	a	a	a	a	a	a
145-125/R5T ...	a	a	a	a	a	a	a	a	a	a	a	a	a	a
145-150/R6T ...	a	a	a	a	a	a	a	a	a	a	a	a	a	a
145-175/R7T ...	a	a	a	a	a	a	a	a	a	a	a	a	a	a
145-200/R8T ...	a	a	a	a	a	a	a	a	a	a	a	a	a	a
145-300/S12 ...	a	a	a	a	a	a	a	a	a	a	a	a	a	a
145-350/S14 ...	a	a	a	a	a	a	a	a	a	a	a	a	a	a
145-400/S16 ...	a	a	a	a	a	a	a	a	a	a	a	a	a	a
145-500/S20 ...	a	a	a	a	a	a	a	a	a	a	a	a	a	a
145-525/S21 ...	a	a	a	a	a	a	a	a	a	a	a	a	a	a
145-550/S22 ...	a	a	a	a	a	a	a	a	a	a	a	a	a	a
145-575/S23 ...	a	a	a	a	a	a	a	a	a	a	a	a	a	a
145-600/S24 ...	a	a	a	a	a	a	a	a	a	a	a	a	a	a
145-650/R2R ...	b	b	b	b	b	b	b	b	b	b	b	b	b	b
145-675/R3R ...	b	b	b	b	b	b	b	b	b	b	b	b	b	b
145-700/R4R ...	b	b	b	b	b	b	b	b	b	b	b	b	b	b
145-725/R5R ...	b	b	b	b	b	b	b	b	b	b	b	b	b	b
145-750/R6R ...	b	b	b	b	b	b	b	b	b	b	b	b	b	b
145-775/R7R ...	a	a	a	a	a	a	a	a	a	a	a	a	a	a
145-800/R8R ...	a	a	a	a	a	a	a	a	a	a	a	a	a	a
145-950/S38 ...	a	a	a	a	a	a	a	a	a	a	a	a	a	a

**PRICES:** (a) £2.36 (b) and (c) £2.90 + VAT (H).  
**AVAILABILITY:** (a) and (c) Stock items, normally available by return (we have over 4,000 items in stock). (b) Four weeks normally but it is quite possible we could be able to supply from stock.  
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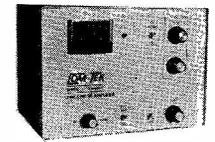
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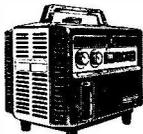
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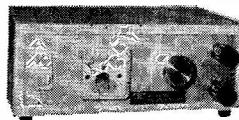
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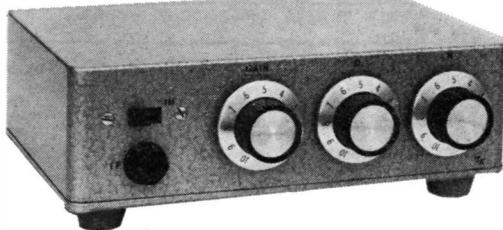
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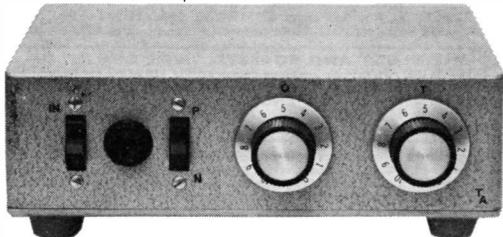
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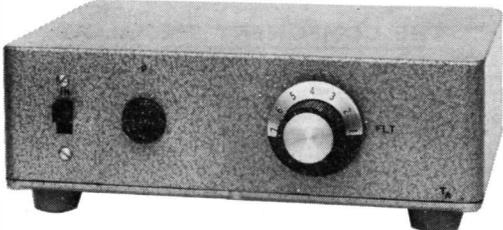
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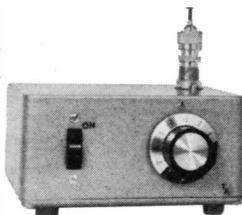
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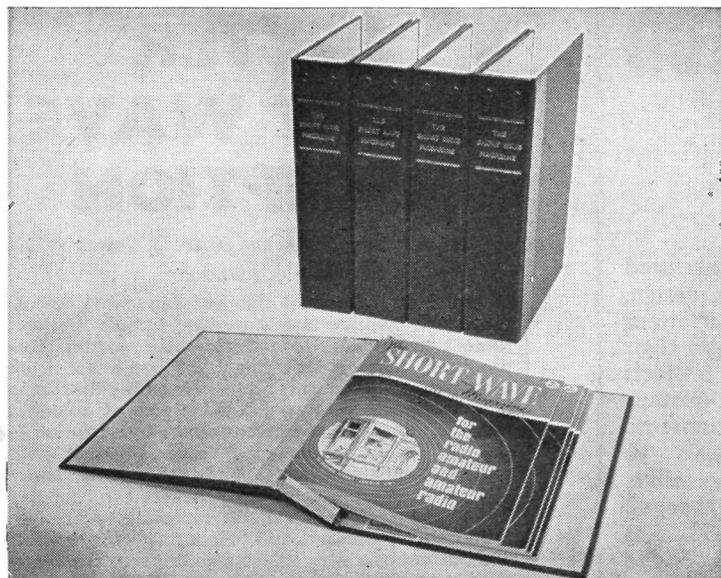
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