radio communication

November 1975

A 70 to 432MHz transmitter converter

by C. S. GARE, G3WOS

The 6W linear amplifier

SEE PAGE 838

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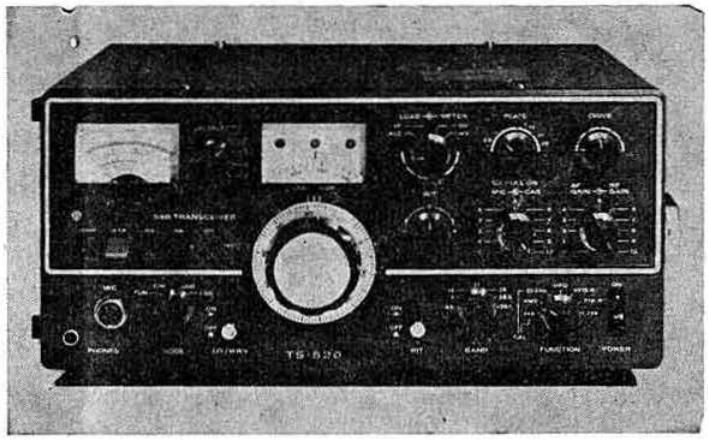
LOWE ELECTRONICS

TRIO
TS520



The TS520—latest in the new TRIO line of superior amateur radio equipment. Its styling and finish put all other rigs in the shade; and it is not just pretty—the front panel is a die casting giving unheard of strength and stability.

All semiconductor except for driver and PA, the TS520 is at home mobile, portable or fixed station thanks to built-in AC power supply and 12V inverter. Blower cooled 6146's for long life and exceptional linearity.

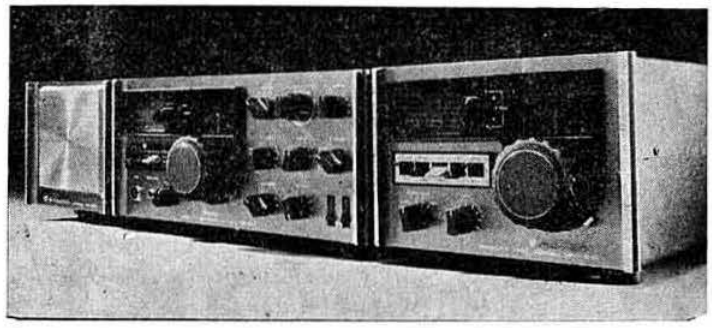
*TRIO exclusive. Built-in speech compression for that extra DX punch—without distortion, due to amplified ALC system.

FEATURES

R.I.T. ★ NOISE BLANKER ★ AMPLIFIED 2 SPEED AGC ★ 25kHz CALIBRATOR ★ BLOWER COOLED PA ★ FIXED CHANNEL OPERATION ★ 4 FUNCTION METERING ★ AMPLIFIED ALC ★ BUILT IN SPEECH COMPRESSION ★ LED INDICATORS FOR FIX, VFO, RIT ★ LOW POWER TUNE UP FOR LONG PA LIFE ★ TRANSVERTER OUTPUTS (MATCHING TRANSVERTER IN STOCK) ★ 12V dc/240V ac OPERATION ★ MATCHING SPEAKER AND VFO AVAILABLE ★

£290.00 (VAT EXCL.)

TRIO
TS900



This is probably the finest amateur transceiver ever made. Professional design and construction make the TS900 a joy to own and use.

As QST (July 1973) said "This device hast o be the pace-setter for the 1970's".

Full coverage 80-10; superb stability and selectivity; all mode operations including RTTY (crystal controlled RTTY shift built-in); all solid state except driver and PA; DC power supply and external VFO both available.

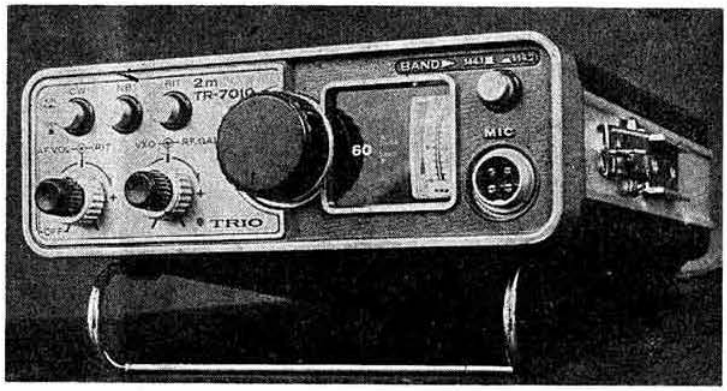
300W pep ★ All Modes ★ Separate USB/LSB Filters ★ 500Hz cw Filter Option ★ Four Function Metering ★ Two speed AGC ★ Noise Blanker ★ 0·1 Micro Volt Sensitivity (ARRL Measurements) ★ Blower cooled pa ★ Crystal controlled rtty generation ★ VOX ★ Break in cw ★ ac psu ★ dc psu ★

Write or phone for full specification and the reasons why the TS900 is the ultimate transceiver.

£480.00 (VAT EXCL.)

LOWE ELECTRONICS

TRIO
TR7010



Following the worldwide success of the TS700, Trio have taken the TS700 basic design and packaged it for 2 metre SSB mobile use.

The TR7010 sets new standards in receiver sensitivity and low spurious emission on transmit. Operating CW and SSB from 144·1-144·3MHz, the TR7010 covers all CW, SSB and beacon activity. 40 5kHz channels plus VXO and RIT provide continuous coverage. 8 extra channels can be used, without retuning, in the range 144-145MHz by fitting auxiliary crystals.

Single conversion using an IF of 10·7MHz with a superb crystal filter provides outstanding selectivity. Wide range amplified AGC and newly developed FET devices in RF amplifier and mixer stages allow maximum sensitivity to be used with freedom from overload due to adjacent signals.

Single conversion transmitter with new fully balanced mixer system generates a beautifully clean signal with crisp audio quality.

The first lucky owners are on two metres right now. Listen to the signal and make up your own mind. Why not send for full details of the all new TR7010 right now. **£165.00 (VAT EXCL.)**

TRIO
TR2200G

The world's most popular 2 metre handy transceiver now comes complete with tuning fork controlled repeater access tone and facilities for 12 channels. With the advent of repeater operation in this country, it is now possible to work long distances with low power equipment and the sudden popularity of portable 2 metre equipment testifies to this fact. The TRIO TR2200G is a high performance transceiver with features not found in other rigs. Supplied with 3 channels fitted:—

145.50 Simplex
145·55 Simplex
145·175/775 Duplex

Most other I.A.R.U. channels available.

SPECIFICATION

TRANSMITTER	
Frequency range	144-146MHz
Emission	*F3*
Output power	*1W*
Freq mult	*X12*
Antenna impedance	*50 Ω*
RECEIVER	
Sensitivity	*Less than 1 μV for 20dB S/N*
Intermediate frequencies	*10·7MHz and 455kHz*
AF output	*0·5W*
Power source	*10·4-15·2Vdc negative earth (8 × UM3 batteries or optional NiCad pack)*
Power consumption	*450mA TX 55mA RX*

Supplied complete with 3 channels, charger for NiCads, exter nal dc lead, carrying case, shoulder strap, microphone, two battery carriers. **£80.00 VAT EXCL.)**

SAD NEWS You can all guess what's coming—that's right, a price increase. Since we were appointed Trio distributors in July, 1974, we have maintained our prices at the same level ever since. This must be something of a record over a period of fourteen months but in the meantime, inflation and a weakening of sterling, have both taken their toll.

Those of you who follow the currency exchange rates of the past year will have seen the pound slide from 760 yen to 620 and from 2.42 US dollars to 2.01. Since we pay our bills in dollars and yen, this means an effective price increase to us of around 20%. Regrettably, therefore, the price of all imported items will rise by something close to this amount.

Take heart—all current stocks will be sold at existing prices, (whilst they last).

LOWE ELECTRONICS

TRIO

TS700

SPECIFICATION

FREQUENCY RANGE	*144-146MHz*
MODES	*usb, lsb, cw, am, fm*
VFO COVERAGE	*144-145 and 145-146MHz*
CRYSTAL CONTROL	*22 Channel capability*
POWER OUTPUT	*10W minimum*
ANTENNA IMPEDANCE	*50 ohms*
CARRIER SUPPRESSION	*50dB*
SIDEBAND SUPPRESSION	*Greater than 40dB*
SPURIOUS RADIATION	*Better than −60dB down in all modes*
DEVIATION	*± 10kHz or ± 3kHz*
REPEATER TONE	*1750Hz Tuning Fork Oscillator*
IF	*10·7MHz for ssb, am, cw, single Conversion.* *10·7MHz and 455kHz for fm, double Conversion*
SENSITIVITY	*0·5µ for 10dB S + N/N*
IMAGE REJECTION	*Greater than 60dB*
IF REJECTION	*Greater than 60dB*
IF SHAPE FACTOR	*Better than 2·1 all modes*
AF OUTPUT	*Greater than 2W into 8 ohms*
STABILITY	*Better than 200Hz in any 30 min. period after warm-up*
REPEATER SHIFT	*Standard 600kHz transmit downshift provided*
CALIBRATOR	*Built-in 1MHz Calibration points*
DIAL READOUT	*To better than 1kHz all modes*
R.I.T.	*4kHz shift of receiver with respect to transmit frequency*
NOISE BLANKER	*Advanced circuitry noise blanker for noise free mobile or fixed operation*
ALC INPUT	*Socket provided for ALC input from linear*
AUX RELAY	*Socket provided for switching external linear*
POWER REQUIREMENTS	*120/240V 50/60Hz ac* *12-16V dc negative earth*
CONSUMPTION	*Receive 45 watts ac* *800 ma dc* *Transmit 95 watts ac* *4A dc*
DIMENSIONS (mm)	*278 wide × 124 high × 320 deep*
WEIGHT	*11kg 24·2 lb*

From the specification, it is obvious that the TS700 is an entirely new concept in two metre equipment. What is not obvious is the attention to detail which makes the TS700 such an outstanding performer. Take the fact that the driver and Pa transistors run from a 20V supply to give very linear operation and low intermod products. This supply comes from a patented TRIO inverter which runs even when on a 12V dc supply. Take the fact that you can peak all the 144MHz receive and transmit tuned circuits by a single knob on the front panel thus giving optimum gain on receive and very low spurious outputs on transmit; no broadband compromises in TRIO equipment.

There is so much more to say about the TS700. Why not call or send for details to find out why you must not consider any other two metre equipment until you have seen the TRIO TS700.

£300.00 (VAT EXCL.)

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NEC CQ-110

- Operating modes:
  AM–SSB–CW–FSK–RTTY
  with all built-in X-tal filters included
- Frequency stability:
  better than 100Hz after 30 minutes
- Readout accuracy:
  100Hz through built-in frequency counter
- Transmitter input power:
  300 Watt PEP
- Antenna impedance:
  50–100 ohms

- Carrier suppression:
  50 dB
- Transmitter output power:
  between 180 and 110 watts according to frequency
- Digital semiconductor–
  frequency counter
- High sensitivity
  with very good cross modulation stability
- Power supply:
  with built-in power supply for 110/220/235 volt AC
  or 13.5 volt DC
- Receiver sensitivity:
  0.3μV for 10dB S/N
- Modern 2 stage AGC prevents cross modulation
- Selectivity: 2.4kHz at 6dB (SSB)
  4.2kHz at 60dB (SSB)
  0.5kHz at 6dB (CW)
  1.1kHz at 60dB (CW)

DF 2 GX ©

CAMPIONE ELECTRONICA

NEC CQ-110

- Frequency ranges: 1.5– 2.0MHz–160m
  3.5– 4.0MHz– 80m
  7.0– 7.5MHz– 40m
  14.0–14.5MHz– 20m
  21.0–21.5MHz– 15m
  27.0–27.5MHz– 11m
  28.0–28.5MHz– 10m A
  28.5–29.0MHz– 10m B
  29.0–30.0MHz– 10m C
  15.0–15.5MHz WWV/JJY (receive only)
- Weight: 18kg (39½ lb)
- Dimensions: 330 × 153 × 322 mm
  (13″ × 6″ × 12½″)

Developed by one of the largest specialists in microwave techniques: The CQ-110 from NEC. It is obvious that only one of the largest firms of its kind in the world could develop a piece of equipment so technically perfect. The CQ-110 has a superheterodyne receiver utilizing mixing frequency of 9MHz, which gives exceptional resistance to cross modulation. Everything has been thought of in this transceiver, even a fan which cools the entire piece of equipment, including the operating components. A built-in DC supply allows portable/mobile operation. A microphone is included as well as a complete instruction manual. The CQ-110 is guaranteed unconditionally for 6 months.

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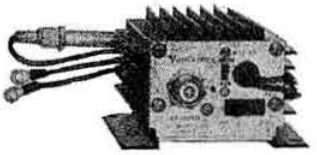

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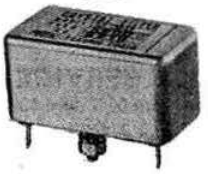

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DUPLEX (Normal repeater)
R (0, 1, 2, 3, 4, 5, 6, 7, 8, 9,)
INVERSE REPEATER
IR (0, 1, 2, 3, 4, 5, 6, 7, 8, 9,) Rx
IR (0, 1, 2, 3, 4, 5, 6, 7, 8, 9,) Tx

FT2F (52MHz Rx, 6MHz Tx)
144 (·15, ·25, ·36R, ·48, ·60R, ·70, ·80)
145 (·08, ·09, ·68, ·84, ·90)
SIMPLEX (normal repeater)
S (0, 12, 16, 20, 21, 22, 23, 24)
DUPLEX
R (0, 1, 2, 3, 4, 5, 6, 7, 8, 9,)
INVERSE REPEATER
IR (0, 1, 2, 3, 4, 5, 6, 7, 8, 9,) Rx
IR (0, 1, 2, 3, 4, 5, 6, 7, 8, 9,) Tx

TR2200 (44MHz Rx, 12MHz Tx)
Simplex
S (20, 21, 22, 23, 24,)
DUPLEX
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C146A & C826MB
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S (20, 21, 22, 23, 24,)
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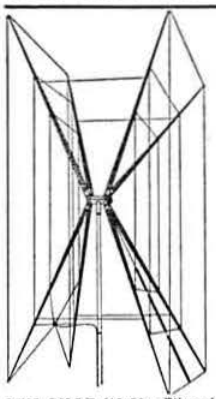

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Control Cable: 5 core for AR30/40 at	**18p/m**
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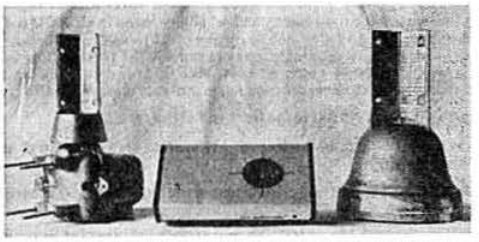

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JAYBEAM (Carriage extra) FOR 70, 144 or 432MHz (25% VAT)

FOUR METRES		TWO METRES		TWO METRES		70 CENTIMETRES	
4Y/4M 4 element Yagi ..	**£6.80**	D5/2M 5 over 5 slot ..	**£7.92**	5Y/2M 5 element Yagi ..	**£4.30**	D8/70 8 over 8 slot ..	**£9.00**
PMH2/4 2 way harness ..	**£5.30**	D8/2M 8 over 8 slot ..	**£10.50**	8Y/2M 8 element Yagi ..	**£5.60**	PBM18/70 18 ele Parabeam	**£10.50**
PM4/4M 4 way harness	**T.B.A.**	5XY/2M 5 ele crossed ..	**£8.20**	10Y/2M 10 ele Long Yagi	**£11.00**	MBM46/70 46 ele Multibeam	**£13.90**
BEARINGS		8XY/2M 8 ele crossed ..	**£10.20**	14Y/2M 14 ele Long Yagi	**£14.20**	MBM68/70 68 ele Multibeam	**£16.10**
562 (C.D.E. Manufacture)	**£3.50**	10XY/2M 10 ele crossed	**£14.10**	Q4 4 ele quad	**£9.60**	MBM88/70 88 ele Multibeam	**£18.50**
RZ 100 ..	**£7·98**	PMH/2C Circular phasing	**£2.85**	Q6 6 ele quad	**£12.80**	12XY/70 12 ele crossed ..	**£19.00**
COUPLERS		PMH2/2M 2 way harness	**£3.95**	PBM10/2M 10 ele Parabeam	**£14.95**	PMH2/70 2 way Harness..	**£3.30**
JBL15/592" Jointing sleeve	**£2.50**	PMH4/2M 4 way harness	t.b.a.	PBM14/24 14 ele Parabeam	**£16.90**	PMH4/70 4 way Harness	**£7.80**

HY GAIN, THE BIGGEST RANGE FROM THE USA (Carriage paid) (25% VAT)

HY TOWER 10-80m. vert rad	**£132.00**	TH2 MK111 10-20m 3 ele.	**£69.00**	103BA 10m. 3 ele	**£35,00**	DB1015A 10-15m. 3 ele ..	**£76.00**
18V 10-80m. Load vert ..	**£18.00**	TH3 JNR 10-20m. 3 ele	**£74.00**	153BA 15m. 3 ele	**£44.00**	DB24 B 20m/3e, 40m/2e ..	**£142,00**
12AVQ 10-20m. Trap vert	**£25.00**	TH3 MK111 10-20m. 3 ele.	**£99.00**	203BA 20m. 3 ele	**£80.00**	LA1 Lightning protect ..	**£17.50**
14AVQ 10-40m. Trap vert	**£36.00**	TH6DXX 10-20m. 6 ele. ..	**£109.00**	204BA 20m. 4 ele	**£96.00**	LA2 Lightning protect ..	**£3.00**
18AVT/WB 10-80m. Trap vert	**£52.00**	HY QUAD 10-20m. 2 ele.	**£99.60**	402BA 40m. 2 ele	**£121.00**	BN86 1-1 Balun	**£9.50**

MOSLEY TRI BAND (10-15-20m) BEAMS (carriage £1.75) (+ 25% VAT)
TA33 Jnr E 3 ele 200W RMS **£53.00** TA32 Jnr E 2 ele 300W AM **£37.00** Mustang 3 ele 2kW PIP **£70.00** Mustang 2 ele 1kW AM **£56.00**

GWHIPS. The British Mobile HF Antennas (Carriage 75p) (+ 25% VAT)
Tribander 10, 15, 20 **£13.53** LF40, 80 or 160m **£4.51** Flexiwhip, 10m with base **£10.45** F15, 20, 40, or 160 **£4.67**
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BANTEX FIBREGLASS/STAINLESS STEEL VHF/UHF MOBILE ANTENNAS (Carriage 75p) (+ 25% VAT)
B5 ⅝Wave 144MHz, **£6.30** **B5U** ⅝Wave 432MHz **£5.00** Magnetic Base Mounts **£7.95** Note: deduct 50p from price of
BGA ¼Wave 2m s/s £7.35, t/g £7.95 **70**½ ½Wave 70MHz **£4.00** Trunk Lip Mount **£5.25** aerial if standard base not required

R.F. CABLES (Carriage up to 20m, 40p; over, 50p; less for lighter cables) (NB VAT 8% ONLY)
50 ohm RG8U .. 33p/m 75 ohm UR39 .. .. 25p/m 75 ohm Flat twin .. 6p/m T3278 75ohm 22/m
75 ohm UR57 .. .. 33p/m 75 ohm Economy .. 10p/m 300 ohm flat Ribbon .. 6p/m UR43/76 50ohm 15/m

COAX PLUGS (p and p extra) (plus VAT)
PL259 **48p**; PL259A **56p**; UHF Angle **90p**; S0239 **35p**; UHF back to back.....**75p**; BNC plugs **44p**; N plugs **83p**

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SOUTHAMPTON SO4 4DN
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PAUL
G3VJF

THANET

ICOM®

IC-22A

The high quality mobile! it's a pleasure to own

£125 + VAT

Fitted with £43 of crystals

THE MOBILE WITH THE MOST USEFUL CHANNELS FITTED

The IC-22A offers you the high quality and reliability found in all ICOM products in a compact, robust and attractive mobile rig at a price to suit your pocket. This FM transceiver employs up to date techniques to provide the ideal system for mobile use. Consider these points which all contribute to providing optimum contacts either direct or through the ever growing number of repeaters in the UK:

★ Low noise dual-gate mosfet in the front end of the receiver

★ 5 section helical filter after the front end to provide high rejection of unwanted out of band signals.

★ A trimmer for each crystal for accurate tuning which is necessary to keep ignition noise to a minimum.

★ Dual conversion with IFs of 10·7MHz and 455kHz for excellent image rejection and selectivity, with filters at each IF frequency.

★ Narrow filter giving high rejection of adjacent channel signals 25kHz away.

★ Hard IF limiting using an IC.

★ A sensitive, temperature compensated, adjustable squelch circuit with front panel indicator to show when the squelch is open should the gain control be turned back to please the XYL.

★ 1·5 watts of audio from its built-in 3½" speaker giving ample volume for copy on the move.

★ Line voltages are filtered and regulated for reduction of interference from the dynamo or alternator.

★ Excellent clipping and speech tailoring to suit FM requirements.

★ A full 10watts output from a sturdy PA transistor—swtichable to about ½ watt for local working.

★ A fully automatic tone burst giving an access tone, for operating repeaters, at the beginning of transmissions WHEN SWITCHED TO A REPEATER CHANNEL ONLY. Thus there are no extra buttons to press when driving. Simply switch to the repeater channel you want and the rig does the rest.

★ An additional call button which can be wired as a manual tone switch for providing the very long (≏5 secs) tones required to initially open some continental repeaters.

The accessories include a microphone, dc power cord, spare fuses and the popular ICOM versatile quick release mobile mounting bracket. This makes it a simple job to remove the rig from the car for base station use.

After deciding that this is THE choice in mobile rigs the problem arises as to which channels to fit to give you optimum use, bearing in mind that crystals cost over £4 per channel with VAT at 25 per cent. We put some thought into this, stirred in a little generosity, took a look at the UK bandplan and the frequencies used for FM mobile around the country and decided that with the following channels FITTED you will be unlikely to have to buy more crystals other than for private natter channels and local nets. You will note that we have included ALL the UK repeater channels—it would be silly not to as a mobile is intended to be moved about!

UK Channel	IC-22A Dial No	Use
R3	3	Repeaters in SUFFOLK and YORKSHIRE
R4	4	Repeaters in Central Scotland, Derbyshire, Cornwall and Kent.
R5	5	Repeaters in HAMPSHIRE and Birmingham
R6	6	Repeaters in CAMBRIDGE and S. WALES,
R7	7	Repeaters in LONDON,WORCS, Aberdeen, Lancashire and West Wales
SO(145MHz)	9	A widely used mobile calling channel still used by many mobiles in the UK who only have this frequency
S20	10	THE OFFICIAL mobile CALLING channel
S21	11	A simplex channel to QSY to when others are full
S22	12	A widely used simplex channel
S23	13	Another alternative simplex channel often used.

NOTE: Repeaters shown in capitals are in operation NOW, others hope to be on the air before too long. Be ready now and avoid having to wait for crystals when they come into operation.

Thus your IC-22A will arrive nearly half full of crystals when you get it—but there are still spaces for a further 12 channels.

All this for £125 + VAT—with free delivery by Securicor and the full backing of THANET warranty and service.

Subject to availability we intend to stock crystals for the following frequencies: S10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24 and R1, 2, 3, 4, 5, 6, 7, 8 and 9 together with reverse repeater crystals for the UK channels. Other frequencies will be obtained to order PROVIDING THEY ARE IN PORTIONS OF THE BAND DESIGNATED TO FM. Price £3.50 per channel + VAT. Single crystals £2.00 + VAT.

NOTE: THE CRYSTALS WE SUPPLY ARE OF THE CORRECT LOADING CAPACITANCE FOR ICOM EQUIPMENT: OTHER TYPES MAY NOT BE AND MAY RESULT IN YOU BEING A FEW kHz OFF CHANNEL: THIS RESULTS IN IGNITION NOISE PROBLEMS:

FREE SECURICOR DELIVERY ON ALL TRANSCEIVERS

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Tel. (02273) 63846

Access

ELECTRONICS

DAVE G4ELP

ICOM®

IC-201

The multi-mode rig that sets the pace in luxury and quality

£300 + VAT

REVERSE REPEATER AVAILABLE AT THE FLICK OF A SWITCH WITHOUT RETUNING

ICOM products are renowned for their sheer quality and reliability and the long waited for IC-201 is no exception. It is difficult to point out all the advantages and qualities in such a well engineered piece of electronics by just writing about it. It needs to be seen and handled to be fully appreciated. Those of you who saw at Leicester will have had the opportunity already, but for those who haven't been so lucky then we invite you to visit us or one of our agents for a demonstration. If you are thinking of a multi-mode then make sure to consider the IC-201 before you choose. If you have any questions please phone us for a chat.

Compare these features with other multi-mode rigs:

- **Centre-Zero** meter on FM
- **Narrow filter** on FM for 25kHz channel spacing
- Good, well-limited FM
- 600kHz shift of either Tx or Rx on the 145MHz range for **repeater** and **reverse repeater** operation.
- **Automatic** tone-burst introduced on **Duplex**
- 4 Crystal positions for net and repeater frequencies
- **Two-speed gearbox** giving easy rapid tuning
- **Vox.** Fully adjustable (works on FM if you really want it)
- **CW** side-tone
- Full **break-in** on CW (separate VOX delay controls for CW and SSB)
- **RF gain control** by adjusting the coupling of two helical filters
- **Excellent noise blanker**
- **R.I.T.**
- **Mic gain** control on front panel
- **Dial-readout to 1kHz**—accurate to 2kHz or better
- **Crystal Calibrator**—500kHz

ACCESSORIES: microphone, DC power cord with plug, spare fuses, plug for CW key.

Specification

Transistors	53
FET	16
IC	10
Diodes	66
Frequency Range	144-146MHz
Weight	5·4kg

Transmitter

Power Output	A3J 10W pep A1, F3 10W
Carrier Suppression (SSB)	> 40dB
Unwanted sideband suppn.	> 40dB
Spurious radiation	−60dB
Deviation FM set to	4·5kHz
Mic. Impedance	500ohm
Operation	PTT or VOX

Dial accuracy	(−10°C to 60°C) ± 2kHz
Modes SSB (usb or lsb), CW and FM	
Ant. Impedance	50ohms
Operating Voltage	DC 13·8v ± 15% AC 230v
Size 111mm × 230mm × 260mm deep	

Receiver

I.F. Frequencies A3J, A1	10·7MHz
F3	10·7MHz and 455kHz
Sensitivity A3J, A1	0·5μV for 10dB S + N/N
	FM 0·4 μV for 20dB quieting
Squelch sensitivity (FM)	−8dB (μV) or less
Bandwidth SSB, CW	±1·2kHz −6dB points ±2·4kHz −60dB points
FM	±8kHz −6dB ±16kHz −60dB
Audio output	2W
Speaker	8ohms

These details are accurate to the best of our knowledge at the time of going to press, but there could be variations.

THANET AGENTS

THANET Agents are placed in strategic parts of the country to give you an easier chance of examining the excellent range of ICOM products. We are pleased to introduce a new one to you. He is TONY BLACKMORE who lives on the Penarth peninsular overlooking CARDIFF Bay. As with other agents Tony is available evenings and weekends BY TELEPHONED APPOINTMENT ONLY—this should be handy for our many GW customers as well as those who live in the South West.

(by telephoned appointment, evenings and weekends only)

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LONDON
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7 Cochrane Court,
Leyton Grange,
LONDON E10 Tel: 01-556 9366

Tony Blackmore GW3FKO,
2 Joseph Parry Close, Llandough,
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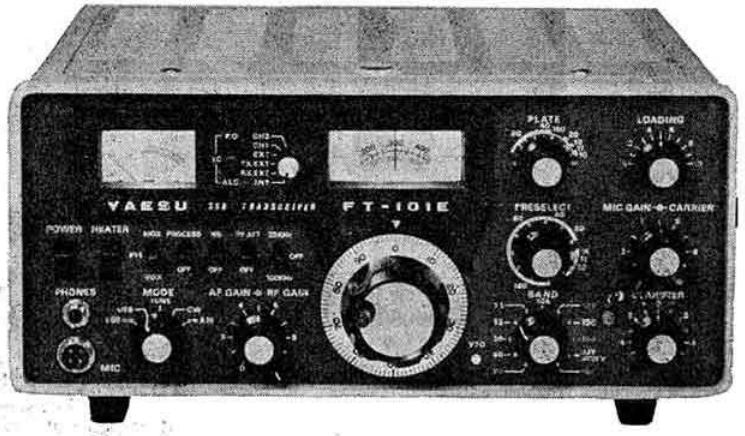
Crayford Electronics
32 Iron Mill Lane,
CRAYFORD, Kent.
Crayford (03225) 24625

Western

NOW! MORE RADIO
FROM THE RADIO COMPANY

YAESU



Now, the best is even better! The finest all round transceiver in the world is even better. The new FT-101E includes a potent RF speech processor plus improved, easy-to-use lever switches. A more refined clarifier control for push button, independent clarifier operation.

All the other features that have made the FT-101 series of transceivers the world's most popular, are still here: 260w ssb. Globe circling power on cw and am. 160 to 10m range. 0·3 μV receiving sensitivity.

If you are a serious amateur, you are always looking for more radio. At **£525.00** that is exactly what the FT-101E is. Also available is the FT-101EE at **£493.75.** (This is the 101E, but less the RF Processor).
DELIVERY OF 101E's IS EX-STOCK.

NEW YAESU FT-221 2m. AM/SSB/FM transceiver ex-stock. Price **£425.00.**

YAESU PRICES (Carriage free by Securicor) including VAT.

HF TRANSCEIVERS

FT-75B 10-80m. 120w. ..	£222.50
DC-75B DC PSU for FT-75B	£62.50
FP-75B AC PSU for FT-75B	£62.50
FT-101B 10-160m. 260w. ..	£437.50
FT-101EE latest model ..	£493.75
FT-101E '101EE' + Rf processor	£525.00
FT/FP-200 10-80m. AC only	£331.25
FT-201 10-80m. AC/DC ..	£412.50
FT-401B 10-80m. 500w. ..	£431.25
FT-501 10-80m. Digital ..	£550.00

LINEAR AMPLIFIERS

FL-2000B 1200w. 10-80w.	£293.75
FL-2100B 1200w. for 101B/E	£293.75

HF RECEIVERS

FR-101S 10-160m.	£343.75
FR-101S Dig. 10-160m. Digital	£450.00
FR-101D 2m-160m. + SW Bands	£450.00
FR-101D Dig. Digital "101D"	£550.00

VHF TRANSCEIVERS

FT-2AUTO 8CH. FM scanning	£287.50
FT-221 2m. SSB/AM/FM ..	£425.00
FT-224 24Ch. FM	£187.50
SIG 80R 80Ch. FM	£300.00
FT-620B 6m. AM/SSB/CW	£300.00
FP-2AC AC PSU for FT-224	£55.00
FP-2AC + B as above + battery	£97.50

HF TRANSMITTER

FL-101 10-160m.	£368.75
FL-101RF 10-160m. + Rf processor	£400.00

SPEAKERS

SP-101B for FR/FT-101B/E	£18.75
SP-101PB Phone patch/Spr.	£58.75
SP-401 for FT-401B	£18.75

TEST EQUIPMENT

YC-355 35MHz AC only ..	£81.00
YC-355D 200MHz AC/DC ..	£156.60
YO-100 Monitor Scope ..	£124.20
YC601 Dig. unit for FT101/401	£113.40
YP150 50W 200MHz Power-meter	£49.68

REMOTE VFO'S

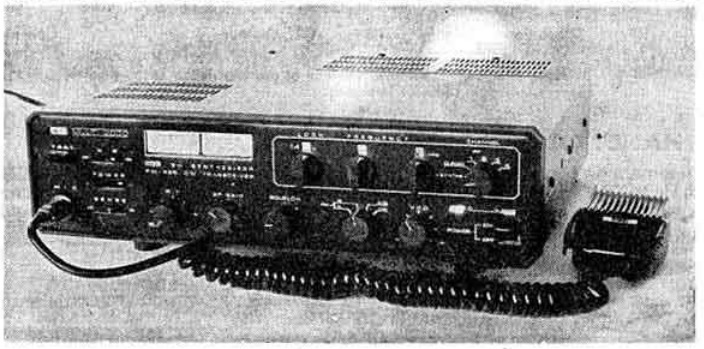
FV-50C for FT-75B ..	£50.00
FV-101B for FT-101B ..	£65.00
FV-200 for FT-200	£65.00
FV-401 for FT-401B ..	£65.00

ACCESSORIES

YD-844 Table Microphone	£22.50
YD-846 Hand Microphone	£8.75
FF-50DX low pass filter ..	£18.75

YAESU AND WESTERN – SYNONYMOUS FOR SERVICE

NOW AVAILABLE EX-STOCK! THE FDK MULTI-2000



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

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

SUPERB VALUE AT £362.50 inc. carriage (Securicor) and VAT

Electronics (UK) ltd

WESTERN FOR TEST EQUIPMENT

GRID DIPMETER TE-15

Operates as a grid dip oscillator, absorption wave meter and oscillating detector.
Versatile portable applications.
Frequency range: 440kHz-280MHz in 6 coils:
Factory calibratedand tested.
Dual output RF terminals.
Separate variable audio output.

RF SIGNAL GENERATOR TE-20D

SPECIFICATION
Frequency range: 120kHz-500MHz (7 bands)
Frequency accuracy: ±2%
Audio output: to 8V
Internal modulattion: 400cps approx
1 Employs a Xtal socket and can be used as a. Self-calibration; b. Marker generator

AUDIO GENERATOR TE-22D

Frequency range: Sine: 20Hz-200kHz; Square: 20Hz-25kHz
Output voltage: Sine: 7V; Square: 7Vp-p
Output impedance: 1,000 ohm
Power source: 105-125, 220-240V AC, 50/60Hz, 19W
2 With attenuation range, 4 ranges —1/1, 1/10, 1/100, 1/1k

AC MILLIVOLTMETER TE-40

SPECIFICATION
AC V: 1mV-300V RMS (10 ranges)
Accuracy: 5Hz-1·2MHz±2dB; (dB scale—+2 ~ —25dB); 10Hz-1MHz ±1dB; 20Hz-250kHz±0·2dB.
dB scale: —40, —30, —20, —10, 0, 10, 20, 30, 40, 50dBm
Power source: 105-125, 220-240V AC, 50/60Hz

VALVE VOLTMETER TE-65

DC V: 0-1·5-5-15-50-150-500-1,500V
AC V: 0-1·5-5-15-50-150-500-1,500V RMS.
0-1·4-4-14-40-140-400-140-1,400-4,000 P-P.
Resistance: RX 10-100-1K-10K-100K-1M-10M (0·2Ω-1,000MΩ)
Decibel: —10dB to +65dB
Power source: 105-125, 220-240V

INSULATION TESTER TE-68

Insulation range: 1,000V 500MΩ; 500V 250MΩ; 250V 125MΩ; 100V 50MΩ
Centre scale: Approx 1/100 Fs MΩ
Voltage proof: AC 1,200V
Accuracy: Approx ±5% at centre scale
Power source: 105-125, 220-240V AC, 50/60Hz

75m/m OSCILLOSCOPE TO-3

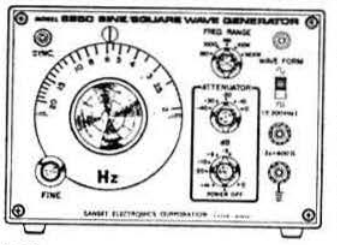
SPECIFICATION
Deflection sensitivity: Vertical axis: 0·1Vp-p/cm (at 1Kc); Horizontal axis: 1 Vp-p/cm
Frequency characteristics: Vertical axis: 1·5cps-1.2Mc 1·5Hz-1·2MHz; Horizontal axis: 1·5Hz-350kHz
Calibration voltage: Vertical axis: 1Vp-p/cm;
Sweep oscillator: 5 ranges:
1 10-100Hz
2 100-1kHz
3 1-10kHz
4 10-80Hz
5 50-300Hz
Synchronization devices: internal (positive and negative); external power source(± line)
Power source: 105-125V, 220-240V AC, 50/60cps

SIGNAL INJECTOR SE250-B

Usable for checking of TV, radio, amplifier, tape recorder, intercom communication equipment and many other electrical and electronic devices.
Frequency range: 700 to 1,000Hz and its harmonics (continuous up to VHF)

SIGNAL TRACER SE-350A TRACER INJECTOR SE-360 SINE/SQUARE GENERATOR 6850

Models SE-350A and SE-360 are designed to receive audio frequency and indicate existence or non-existence of a signal through speaker or meter are compact, light weight and ruggedly constructed and offer high stability in performance due to an IC-applied circuit. The built-in amplifier having a high gain of 60dB enables the units to trace minute signals accurately. Model SE-360, incorporating signal generator, can be also used as signal injector



Covers 20Hz to 2MHz in 5 bands. Provides sync input. 10dB-step attenuator plus continuously variable output control. Excellent calibration accuracy.
Maximum output level: +10dBm ±1dBm (sine wave); 8Vp-p±1Vp-p (square wave)
Attenuator: 0dB~—40dB (10dB steps); 0dB~—12dB (continuously)
Power source: 100-117 VAC or 220-240V AC 50/60Hz (approx 3·6VA)
Dimensions: 140 × 200 × 130mm

TEST EQUIPMENT PRICES (including P & P and VAT)

DRAKE TR4 plus AC/DC	£250.00	new, private sale, (no VAT)	£30.00	SE-360 tracer/injector	£19.17	YC-355 35MHz frequency counter	£81.00
EDDYSTONE EA-12A like new	£175.00	**KW-77**, good	£88.50	SE-6850 generator	£46.44	YC-355D 220MHz frequency counter	£156.06
FDK Multi-8 AC/DC built in Pair	£170.00	**SEIDENSHA**, 80W 12VDC FM Amp.	£45.00	TE-15 G.D.O.	£27.00	TC-530F 470MHz frequency counter	£270.00
FDK 24 Ch. VOX		**STANDARD** SY-200, as new	£69.00	TE-20D RF generator	£27.00	SWR-203 Osker power meter	£24.84
HEATHKIT SB-630 Consol private sale, (no VAT)	£40.00	SE-250B injector	£3.24	TE-22D AF generator	£35.64	YP-150 150W 200MHz ditto	£48.60
HEATHKIT SW-717, as		SE-350A tracer	£16.96	TE-40 AC millivoltmeter	£37.80		
				TE-65 V.T.V.M.	£37.80		
				TE-68 insulator tester	£48.60		
				TO-3 oscilloscope	£91.80		

SECONDHAND EQUIPMENT LIST NO: P/X 12 Prices exclude carriage (£4.50 and VAT (25%)

DRAKE TR4 plus AC/DC £250
FDK Multi 8 AC/DC built in pair £170
FDC 24ch. vox

EDDYSTONE EA-12A like new £175
HEATHKIT SB-630 Consol, private sale £40

HEATHKIT SW-717 as new £30
KW77 good £88.50

SEIDENSHA 80W 12V VOC FM Amp £45
STANDARD SY200 as new £69

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There are two transceivers in this picture. The one you can't see is protecting the one you can.

Top shelf, ninth book from the left. The Heathkit GD-39 ultrasonic burglar alarm.

It works by transmitting a silent ultrasonic signal throughout the room. And continuously receiving and monitoring it.

Any movement made by an intruder will then automatically produce a change in the signal. Which can trigger off a lamp, and, thirty seconds later, a remote buzzer (that only you hear—so you can call the police). Or a loud bell, guaranteed to scare the living daylights out of a burglar.

The GD-39 comes to you as a complete kit that can be assembled in only a few hours, with the help of a very easy to follow instruction manual.

And with all that valuable equipment around, it makes a lot of sense.

After all £38.00 is not much to pay for peace of mind.

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Or, if you're in London or Gloucester, call in and see us. The London Heathkit Centre is at 233 Tottenham Court Road. The Gloucester showroom is next to our factory in Bristol Road, Gloucester.

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Bristol Road, Gloucester, GL2 6EE. Tel: (0452) 29451.

Buzzer and alarm bell are optional extras.

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I enclose a 10p stamp for postage.

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RADIO SOCIETY OF GREAT BRITAIN

35 Doughty Street, London WC1N 2AE

Telephone 01-837 8688

Founded 1913
Incorporated 1926

Member society, International Amateur Radio Union

PATRON: HRH The Prince Philip, Duke of Edinburgh, KG

The national society representing all UK radio amateurs

Membership is open to all those with an active interest in radio experimentation and communication as a hobby.

Annual membership rates: UK—£5.50 (including VAT); (Unlicensed members under 18 years of age, £2). Overseas—£5 (USA, $12).

Applications for membership should be made to the general manager, from whom full details of Society services may also be obtained.

GENERAL MANAGER AND SECRETARY
G. R. Jessop, CEng, MIERE, G6JP

EDITOR
A. W. Hutchinson

CURRENT COMMENT

INCREASE IN SUBSCRIPTIONS

New rates from 1 January 1976

FOLLOWING on from the "Current Comment" on subscriptions and financial problems in last month's issue of this journal, Council has decided that the following new subscription rates will apply from 1 January 1976, subject to the passing of the Special Resolution at the Annual General Meeting in December:

Corporate member (UK)	**£8.00**
Corporate member (Overseas)	**£7.50**
Corporate member (Student)	**£4.50**
Corporate member (Family)	**£3.00**
Associate member	**£3.00**

All the UK rates are VAT inclusive. The Channel Islands and Eire are regarded as Overseas for VAT purposes.

The Special Resolution to be put to the AGM appears on page ii of the Report and Accounts which form the centre portion of this issue.

If the Special Resolution is not passed

In the event of the Special Resolution not being passed, the new rates cannot be introduced. This is straightforward. What is not so clear is the effect upon the Society. To continue at the current subscription rates will lead to bankruptcy, and immediate drastic economies would have to be made. The size of *Radio Communication* would have to be reduced and it may only be possible to publish it at two- or three-monthly intervals. If that did not work then we would have to sell headquarters and cut our losses.

See you at the AGM?

J. O. Brown, G3DVV
Honorary Treasurer

QTC AMATEUR RADIO NEWS

Scouts' support at WRAC

Delegates from 86 countries, representing the 14-million-strong World Scout Organization, have unanimously voted to support radio amateurs in their efforts to retain and extend their present frequency allocations at the World Radio Administrative Conference.

The 25th World Scout Conference delegates, meeting in Copenhagen on 8-15 August 1975, were conscious of the debt owed to radio amateurs all over the world for the latter's support of the annual Jamboree on the Air since 1958. This event, they were told, is now the largest one of its kind, involving each year some 6,000 amateur radio stations in over 70 countries, and bringing over 100,000 members of the Scout and Guide movements in contact with each other. The loss of even some of the frequencies used would seriously endanger its future success.

The text of the resolution, which was proposed by New Zealand and seconded by Jordan and many other delegations, is as follows:

"Co-operation with amateur radio service

The 25th World Scout Conference requests all member organizations:

(i) to urge their governments to resist any attempt to reduce the number and size of frequencies presently allocated to the amateur radio service, and

(ii) to co-operate with their national amateur radio organizations in any actions designed to this end."

Facts and figures

The Home Office advises that the following numbers of amateur licences were in force at 31 August 1975:

Class A	15,590	Class B/M	1,911
Class B	5,518	Television	288
Class A/M	3,778		

The callsign record received from the Home Office dated 26 September 1975 gives the latest callsigns issued in the G4 and G8 series as G4EJU and G8KTZ respectively.

At the end of August 1975 RSGB membership totalled 18,640, made up of 15,676 UK corporate, 1,092 UK associate and 1,872 overseas members.

160m ssb transmitter

The author of the article "A 160m ssb transmitter using active and passive phasing techniques" advises us of the following corrections to the diagrams:

Fig 2, IC1 output is from pin 6;

Fig 8, IC6 pin 6 is emitter, pin 7 is collector.

Bristol VHF Activity Group

This group was formed recently to promote vhf, uhf and microwave activity in the Bristol area. Meetings take place at various venues each week when talks and discussions take place and test equipment is made available. There are no regular meeting places, and times are flexible, but full details are available from G8GLQ and G8BXJ.

Presidential Installation 1976

Dr E. J. Allaway, MB, ChB, MRCS, LRCP, G3FKM, will be installed as President of the Radio Society of Great Britain for 1976 at a social occasion in the

Executive Suite

Warwickshire CC Ground

Edgbaston

on

Friday 23 January 1976

Further details later

BATC

Enquiries and applications for membership of the British Amateur Television Club should be sent c/o Mr B. Summers, 13 Church Street, Gainsborough, Lincs.

North Devon RAE course

An attempt is being made by the North Devon Radio Club to start an RAE course at Barnstaple after Christmas 1975. Anyone interested in joining such a course is asked to contact Mr H. S. Hughes, G4CG, "Crinnis," High Wall, Barnstaple, Devon EX31 2DP, as soon as possible.

GD3GMH QSLs

Mr R. C. Holt, GW3NWV, Ling Crag, Llaneilian, Amlwch, Anglesey, advises us that he has the logs of his late brother Geoff, GD3GMH, and can supply any QSLs required.

Stolen equipment

An FT224 vhf transceiver, serial No 5E303409, was stolen from a car in the Plessey works car park, Swindon, during office hours on 8 October. The equipment had crystals for 144·48, 144·60 and 145·00MHz, and channels R6, R7 and S20. Any information should go to G8BAS, QTHR, or the Swindon police.

M. G. Scroggie, BSc, CEng, FIEE, being presented with a specially-bound copy of his famous book "Foundations of Wireless and Electronics", to celebrate the 250,000th copy sold. Left to right: R. Creffield (Newnes-Butterworth), M. G. Scroggie and F. C. Judd, G2BCX

RSGB Zone G Meeting

Station Hotel, Stirling

10am Saturday 15 November 1975

Members who cannot attend but wish to have matters raised at the meeting are asked to advise their area or regional representative accordingly.

OBITUARIES

The Society records with regret the deaths of the following radio amateurs:

Mr L. A. Kippin, G8PL
"Kip" Kippin died on 5 October. He was well known in dx circles as a cw operator, and had just resumed activity after a few years' break.

Mr R. Lunt, G3LEL
Ron Lunt died on 27 August. He had been active some years ago on 160m and 80m in the Worcester and Wirral areas, but he had not been on the air recently.

Capt J. H. Onions, G3YHW
Capt Onions died on 1 September, aged 77. Originally licensed as G3DJO in the immediate post-war years, he had been very active on all bands since 1969.

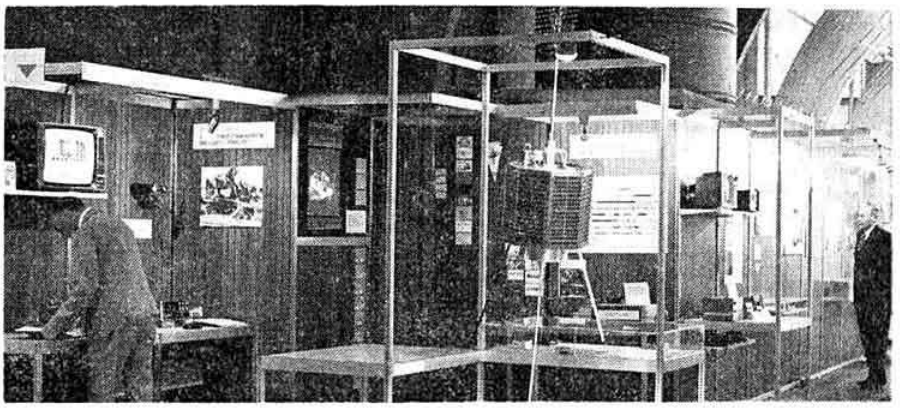
We have also been advised of the deaths of:
Mr W. H. Andrews, G2YG
Mr A. M. Jones, G3LJB
Mr R. H. Pulford, ZL3TGN

Special event stations

GB2PVU, 18-19 October
The 1st Perthshire (Pitlochry) Scout Group will run this station with help of local amateurs from the Scout Hall, Athol Road, Pitlochry, in connection with the Scout Jamboree on the Air. Activity will be on 80-10m, and on 4m and 2m (a.m. and ssb).

GB2CTC, 8-13 December
The Coventry Technical College ARS will operate this station to celebrate the 40th anniversary of the college. Operation will be on 20 and 2m, and possibly on 160, 80 and 70cm. Special QSL card.

Telecom 75



A view of the amateur radio stand at Telecom 75. On the left is the 70cm tv receiver taking live pictures from 4U2ITU, while in the foreground is the excellent model of Oscar 7 constructed by F6DBG and F1DRG. The rtty and sstv exhibits were placed along the side of the stand. Behind the Oscar model is a chart of frequency allocations showing present and proposed new amateur bands

The second world telecommunications exhibition, Telecom 75, was held at Geneva between 2 and 8 October at the Palais des Expositions in the centre of the city. Amateur radio participation in the exhibition consisted of a stand showing activities such as Oscar, sstv (DL2RZ), rtty with visual-display readout (DJ8BT), 10GHz transmitting and receiving equipment (G3RPE) and df equipment in kit form designed for construction by Scouts (LA5CH). A live television link between 4U2ITU at ITU HQ and the exhibition operated in the 70cm band, and there was continuous activity from 4U2ITU on the hf bands. This operation was manned by a group of West German operators led by DJ8BT, DL3NO and DC6EU.

The construction of the stand and the displays was undertaken by the CERN (European Nuclear Research Organization) Radio Club under the guidance of Jaap den Horder, PA0YJ/F0KS. The stand was manned during the exhibition by members of the IARC, the CERN club and IARU Region 1. The stand space was donated by the ITU, through the intervention of M Mili, the Secretary-General. IARU Region 1 provided a modest financial backing for the occasion. The stand is considered to have been one of the best ever seen and attracted a great deal of favourable comment from professional exhibitors.

At a technical forum held during the exhibition a paper was presented by Dick Baldwin, W1RU, general manager of the ARRL, (see p 843 of this issue) and this, together with the stand, presented amateur radio not only to the general public and visiting amateurs but, more importantly, to the hundreds of engineers and members of national administrations present in Geneva.

All possible credit is due to the CERN Radio Club for their efforts on behalf of the amateur radio service. A full report on the exhibition and accompanying events is being prepared by the secretary of Region 1 and will be distributed to all national societies and interested persons.

A 70 to 432MHz transmitter converter

by C. S. GARE, G3WOS*

THE circuitry to be described can be used to convert either 70 or 28MHz ssb to the 432MHz amateur band, although only a 70MHz unit has been built. The converter consists of three main sections: mixer, 300mW amplifier and 6W transistor linear amplifier, so all or any one can be built as desired. The final transistor linear can be replaced by a 2C39A valve amplifier if the expense of buying the output transistor cannot be justified. As the transverter only takes a current of 2A from a 12V supply it is very convenient for portable operation.

The circuits are straightforward and have hopefully been designed so that they can be reproduced without too much trouble being encountered. If experience has been obtained in building a 432MHz receiver converter then no unusual problems should be met. With the prototype unit the out-of-band mixer products are at a maximum level of −50dB with respect to the required ssb output.

Circuit description

Oscillator multiplier chain (Fig 1)

The oscillator multiplier chain is of standard design and is similar to that used in a 432MHz receiver converter. The main difference is that a higher output power is required to drive the low input impedance of the balanced mixer. The base frequency of the chain is generated by the use of a HC18/U 45·25MHz third-overtone crystal, pulled onto the correct frequency by a series trimming capacitor. As the power supply to the transverter (a car battery) is unstabilized the local oscillator chain power supply is well regulated to prevent possible frequency modulation occurring.

If 28MHz is used as the exciting frequency then an output is taken from this point to act as the local oscillator in the receiver. The multiplier stages should also be retuned to accommodate the different base frequency of 67·3333MHz. The final output frequency is, of course, 404MHz instead of 362MHz.

Mixer and buffer amplifier (Fig 2)

As a balanced mixer is used in the converter it is possible to cancel out either one of the two input frequencies. It was decided to follow common practice and balance out the local oscillator signal, which is nearest in frequency to the required output of 432MHz. There is something to be said for cancelling out the 70MHz input, as its sixth harmonic falls within the 432MHz band, but no problem with this has occurred in the author's prototype.

The balanced mixer is formed by two transistors, the local oscillator signal being fed in-phase to both emitters and thus cancelling out in the balanced collector lines. The 70MHz ssb signal is applied, via the drive control RV1, to a tuned amplifier/phase splitter used to generate two anti-phase ssb signals which are fed to the bases of the mixer transistors. The two $\lambda/4$ collector lines are tuned to 432MHz by means of two trimming capacitors which in the original unit were Oxley trimmers. It would, however, be better to replace these with a split-stator capacitor similar to that described by G3SEK in the January 1975 issue of *Radio Communication*. The output of the mixer is link coupled to a high-Q buffer stage tuned by two $\lambda/4$ lines.

If there is any doubt about the spectral purity of the exciting ssb signal then bandpass filtering should be placed before the phase splitter to prevent unwanted signals reaching the mixer. If the mixer is carefully and symmetrically built then 20 to 30dB attenuation of the local oscillator should be attained without the use of a balancing control.

20mW amplifier (Fig 3)

The output of the high-Q buffer stage is connected to the input of the two-stage 20mW amplifier which consists of two Class A biased BFY90 transistors. These are matched by the use of L-networks (as are all the later stages [1, 2]), tuned by two trimming capacitors. To resonate the amplifier on 432MHz it is only necessary to peak these for maximum output. As their precise values are interdependent the exact setting of each must be found by experiment.

The gain of each stage is increased by a significant amount by the inclusion of rf chokes in the base circuits, which isolate the base bias network from the signal path.

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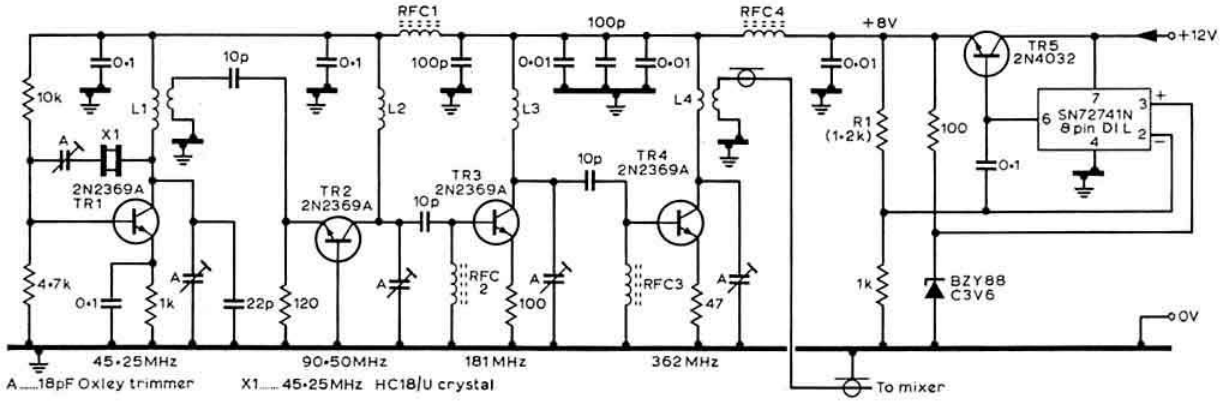


Fig 1. Oscillator chain

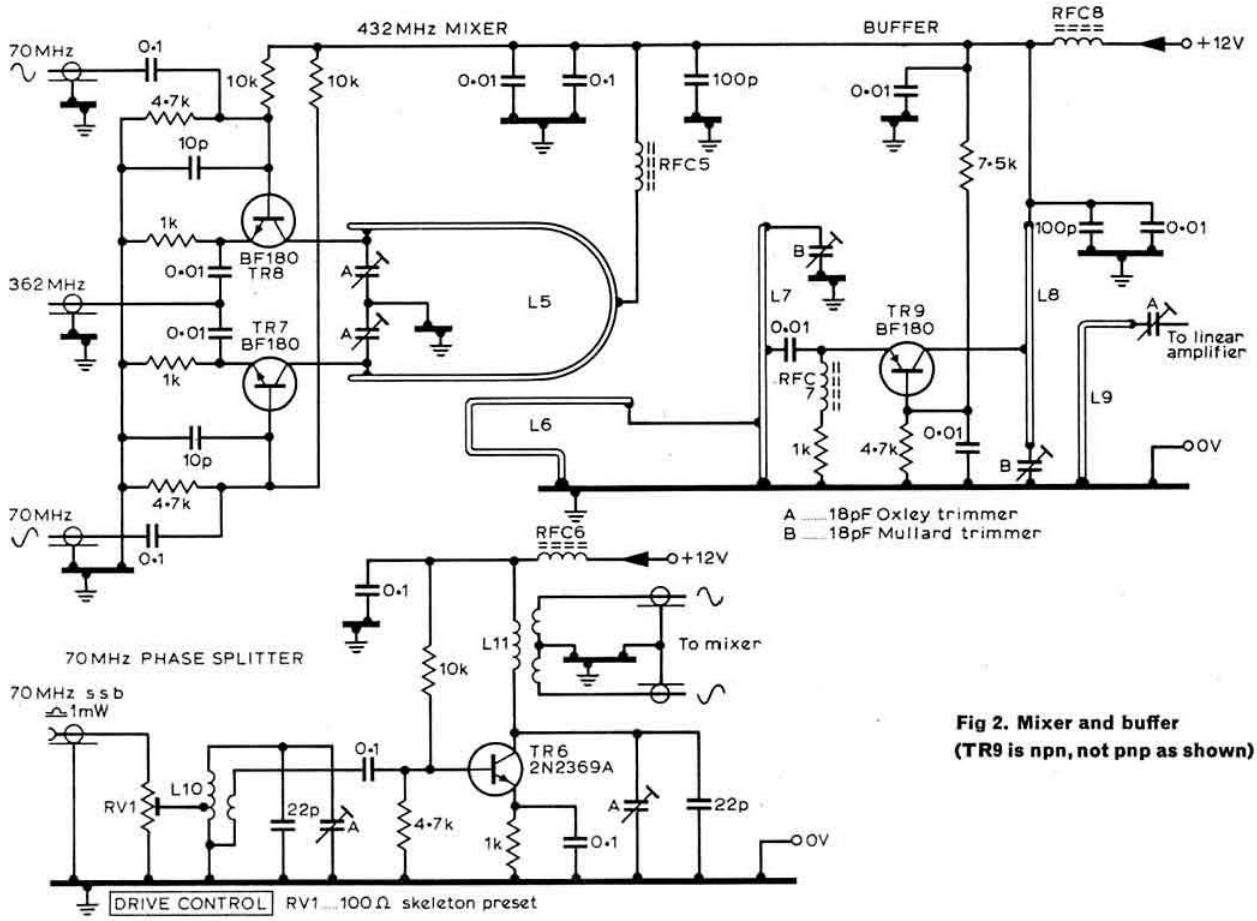


Fig 2. Mixer and buffer (TR9 is npn, not pnp as shown)

The output from this amplifier drives the 300mW linear via a short length of 50Ω coaxial cable. If this is kept reasonably short (less than 12in) then a matching network need not be placed on the input of the following stage.

Looking at the diagrams, one is struck by the number of amplifier stages needed after the mixer to obtain a reasonable power gain, but this is a fact of life when using semiconductor amplifiers at this order of frequency. The reader should not be daunted by this, for no trouble should be met if all stages are well screened and decoupled. At least it all operates from 12V!

300mW amplifier (Fig 4)

The 300mW amplifier is built into a separate die-cast box to ensure adequate isolation from the low-power mixer stages. It is basically similar to the previous amplifier except that it handles a higher power level. The first two transistors operate in Class A, as before, but the final pair are operated in Class B with standing currents of 20mA. This can be increased to

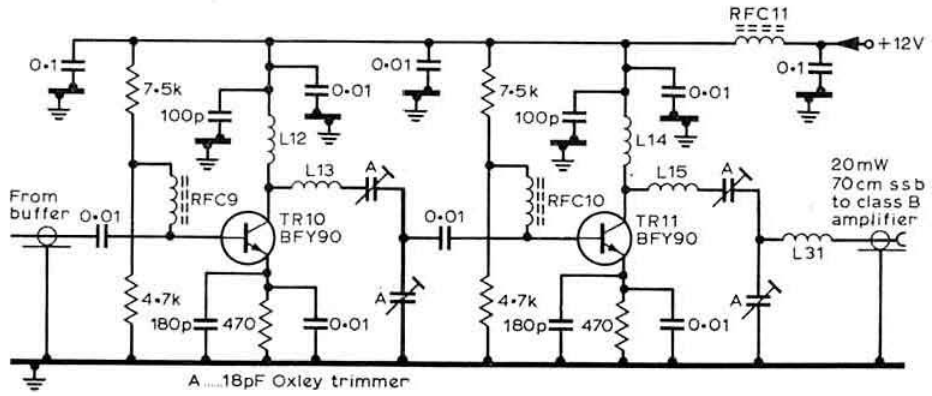
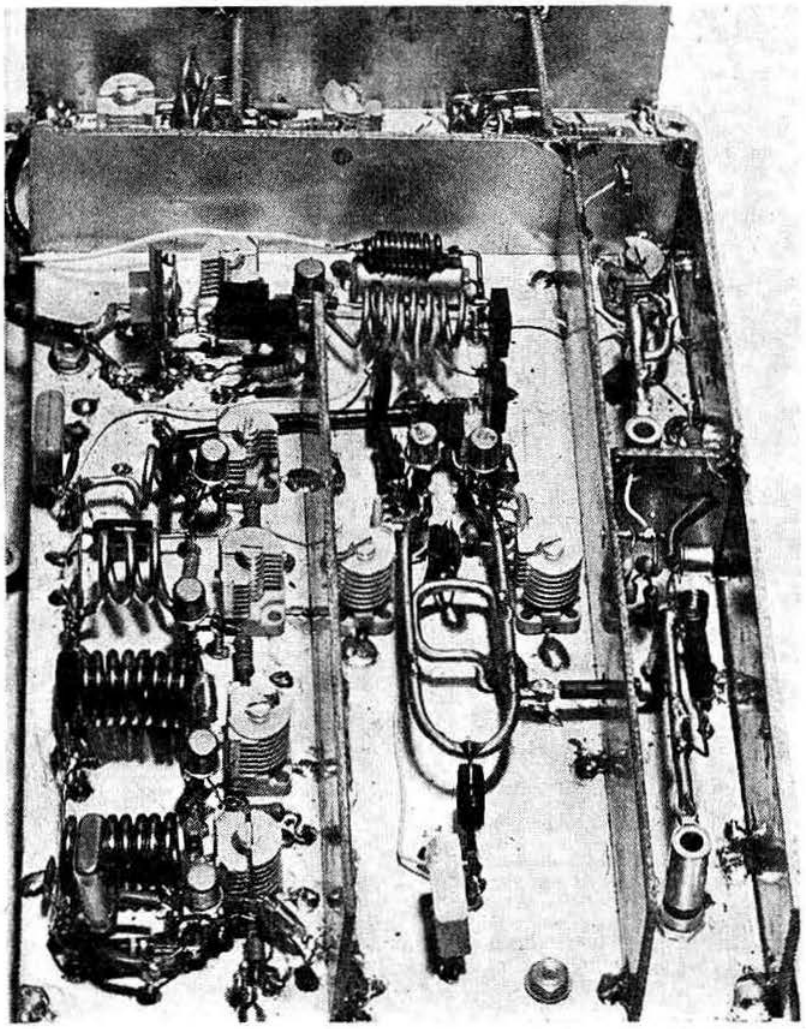


Fig 3. 20mW Class A amplifier



Components

L1 8t close wound 18swg enam ⅛in dia. 2t secondary half enmeshed with primary
L2 As L1 but no secondary
L3 3t 18swg tinned ⅛in dia, spaced wire dia
L4 1t 18swg ⅛in dia, secondary as primary
L10 6t 20swg tinned ⅛in dia ¼in long. 3t secondary half enmeshed with primary. 2t tap on primary
L11 As L10 but with 2t plus 2t secondary
L12, 13, 14, 15, 22, 23, 24, 25, 26, 27, 28, 31 1t 18swg tinned ⅛in dia ¼in long leads
L16, 18, 29
L17, 19, 20, 21 6t 20swg enam close wound 2t 18swg tinned ⅛in dia, spaced wire dia, ¼in long leads

Details of **L5, L6, L7, L8, L9** and **L30** are shown on facing page

RFC1, 4, 5, 6, 8, 11 100μH choke or 10t on ¼W carbon resistor
RFC2, 3, 7, 9, 10 2t on Mullard FX1115 ferrite bead
RFC12, 13, 14, 15, 17, 18 6t 20swg ¼in dia close wound
RFC16, 19 4t on ¼in dia ferrite ring

TR12 to TR18 These are available from REL Components Ltd, Croft House, Bancroft, Hitchin, Herts

Capacitors All capacitors in the picofarad range are polystyrene. All 0·01μF capacitors are Erie Monolithic Ceramic. Other values are not critical

Oscillator chain, mixer, buffer and 20mW amplifier

40mA if extra gain is required but one must be careful not to overheat the transistors. With this order of collector current, heat sinks are obviously required for all four transistors. The author used small press-fit types available from many sources.

The transistor types are not critical and were chosen for their power handling capability at 432MHz and also for their cheapness. The 2N5913 is capable of delivering 1W at 432MHz so there is no danger of running into non-linearity.

As ferrite beads tend to saturate at high powers they were replaced by air-cored chokes in the base networks. In all stages the lead length between the transistor and the emitter decoupling capacitor should not be greater than $\frac{1}{16}$in, and full screening is essential. As the trimming capacitors in the

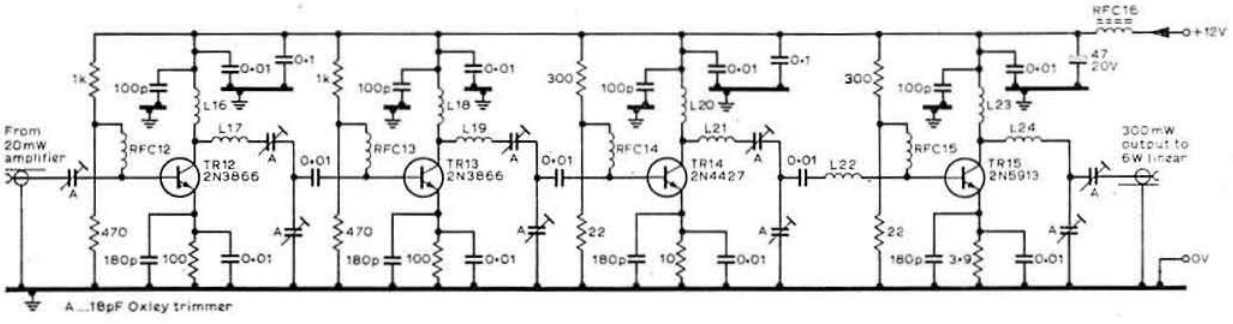
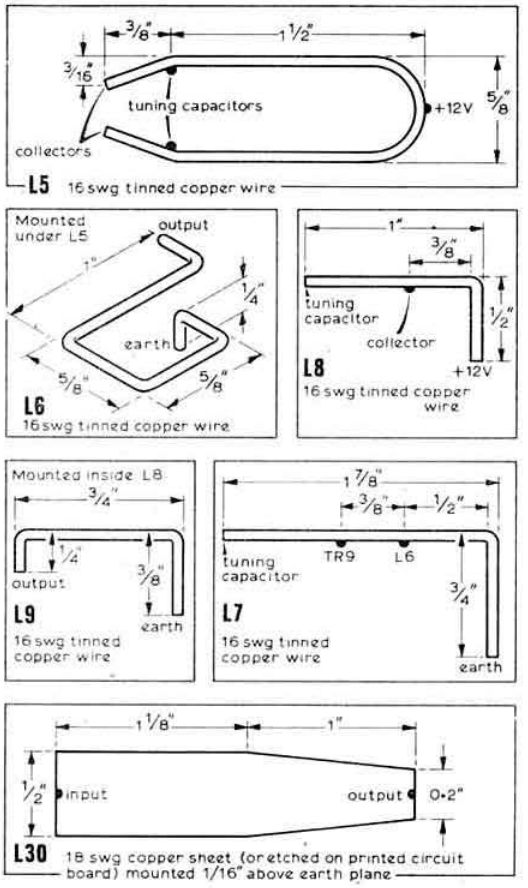
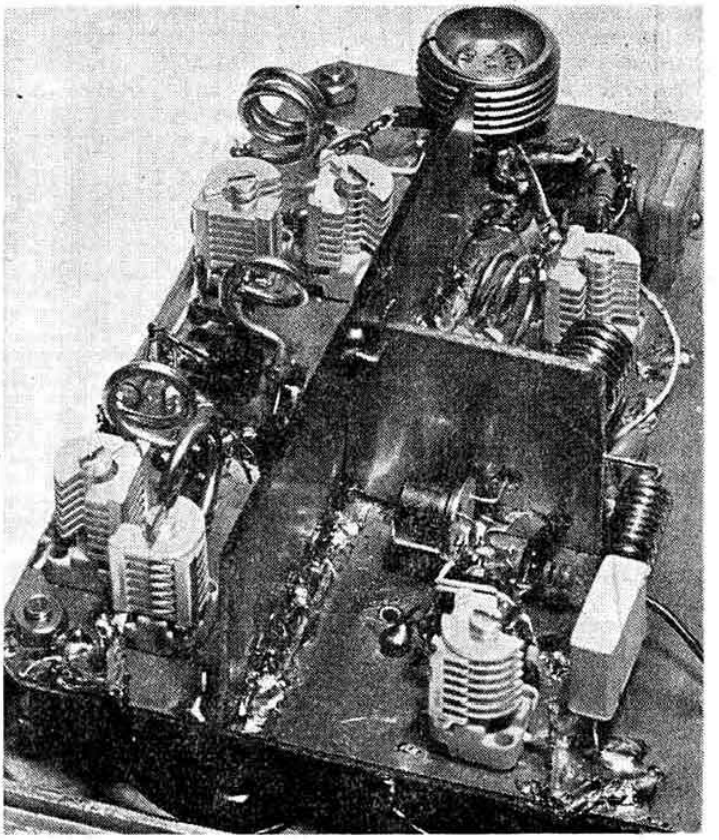


Fig 4. 300mW amplifier





300mW amplifier

matching networks are of air-spaced construction it is possible to short them out accidentally while tuning, thus destroying the following transistor by placing 12V on its base. To prevent this happening, 0·01μF capacitors are placed in series with all the bases.

6W linear amplifier (Fig 5)

The 6W linear amplifier uses three stages of amplification to obtain the required amount of power gain. The first stage is similar in design to the last stage of the 300mW amplifier and a press-fit heatsink should be used to maintain a working temperature within the rating of the device. The driver and pa transistors, which are stud-mounted types, use the lid of the die-cast box as a heat sink and are protected from accidental reversal of the supply (or supply voltage spikes) by a fuse and a 15V zener diode connected to the +12V line.

The output of the pa is matched to the 50Ω (or 75Ω) aerial by a tapered line tuned by two trimming capacitors. When

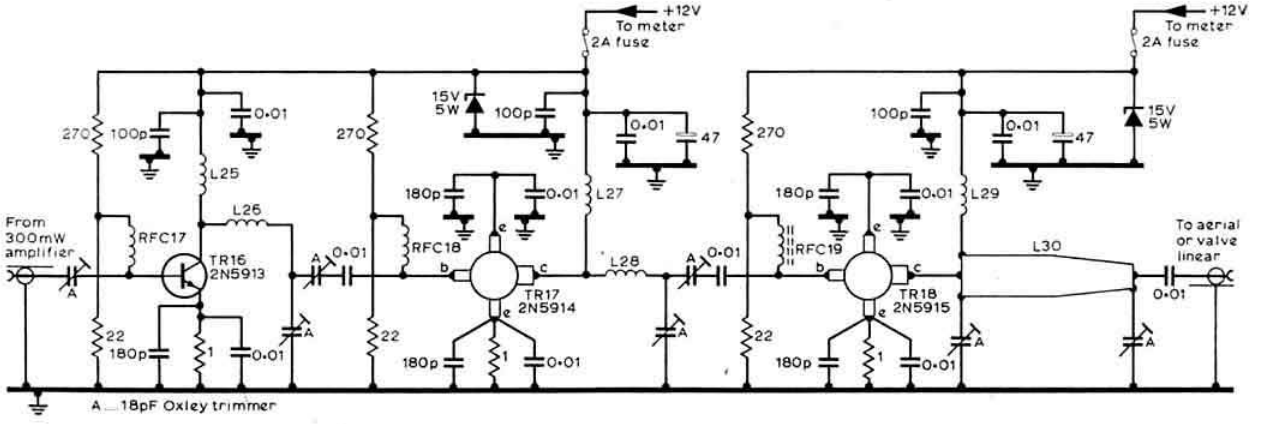


Fig 5. 6W linear

the pa is correctly aligned the collector current should peak up to about 600mA. It is possible to replace the driver and pa transistors by cheaper 28V types although the biasing may have to be changed to suit. No damage should occur when driving an open circuit with the pa transistor specified. In the prototype the author tested this (accidentally of course!) but it is not recommended that this be repeated.

Construction and alignment procedure

General

All stages should be fully screened from each other with double-sided copper-clad board. All leads must be kept extremely short, especially the emitter wiring and decoupling. Oscillation is mainly due to layout problems so component positioning should be considered carefully before construction.

One stage at a time should be built, aligned and checked for stability before proceeding onto the next, as this prevents problems building up. Collector currents in the higher-power stages should be monitored while tuning, and if they become excessive (usually due to instability) the equipment should be switched off. A fully-insulated screwdriver should be used for tuning—one with the least amount of metal in it.

Oscillator chain

1. Build the 8V regulator and trim R1 (nominally 1·2kΩ) for 8V output.
2. Build the oscillator and the first doubler stage. Tune the oscillator capacitor until the oscillator starts, and check that it is on the correct harmonic. Align the first doubler stage to 90MHz.
3. Build the 180MHz doubler and peak the tuning for maximum output on 180MHz. Repeak the 90MHz stage.
4. Build the 360MHz doubler and tune for maximum output on 360MHz. Repeak the 180MHz doubler.
5. Check that the oscillator always starts on the application of the supply.
6. Adjust L1 secondary for maximum power out at 360MHz with the least coupling between the oscillator and the first doubler.

Mixer and buffer

1. Build the 70MHz phase splitter. Apply suitable drive and tune the base/collector coils to the required frequency.
2. Build the mixer stage and, after connecting the local oscillator output to it, retune the 360MHz stage. Apply ssb drive and monitor the mixer output on the station receiver. Tune L5 for maximum 432MHz output. If it does not resonate, adjust the length of the collector lines until it does.
3. Build the buffer stage and tune the input and output lines for maximum output. If the stage oscillates, place a ferrite bead on the emitter lead immediately next to the transistor.
4. Check that the ssb signal is "clean" and that all the circuitry is unconditionally stable. If they are not, correct before moving onto the construction of the amplifier stages.

20mW amplifier

Build the 20mW amplifier. Place a dummy load on the output and tune all four coupling capacitors for maximum output. Remember that the settings of both capacitors in each network are interdependent.

300mW amplifier

1. Build the first two stages and tune as in the 20mW amplifier, one stage at a time.
2. Build the two Class B stages and adjust the two base pull-up resistors to achieve standing collector currents of about 20mA.
3. Tune the amplifiers for maximum output into a 50Ω dummy load using an swr bridge or other suitable equipment. Check that the pa transistor is not overheating.
4. At this point it is advisable to retune all the previous stages for maximum output to check that they are still aligned.

6W linear amplifier (*See front cover photograph*)

1. By now the knack of tuning the matching networks should have been acquired and no new difficulties should be met. Remember that these transistors are expensive so more care must be taken. Be sure to switch off immediately if instability is encountered.
2. The base resistors should be adjusted for standing collector currents of about 40mA.

References

[1] *RCA Power Handbook.*
[2] *RCA RF Data Book.* □

NEW PRODUCTS

Transistor tester

This instrument permits the testing of the normal npn/pnp germanium/silicon variations of transistors at both low signal and power levels. In- and out-of-circuit testing is possible and the result is shown on a scale with a "good-bad" indication also showing leakage and β. Power is derived from two internal type HP7 batteries. The price, complete with carrying case and leads and including VAT, is £25.70. Further information can be obtained from A. Coniglio, Chinaglia, 19 Mulberry Walk, London SW3 6DZ (tel 01-352 1897).

Electroplan

A new range of nickel-cadmium battery chargers is announced by Electroplan. These provide constant current operation and output ranges between 10 and 400mA. Up to 10 cells in series may be charged simultaneously. Input mains voltage can be selected to either 240 or 110V operation. Prices range from £9 for a 10mA unit to £12.25 for a 400mA charger. These prices exclude VAT.

A range of three encapsulated power supplies manufactured by Davian Electronics is now available. These provide 5V at up to 1A (D5-1A), dual polarity 12V at up to 250mA/channel (D12-250) and dual 15V outputs at 200mA/channel (D15-200). Low ripple and noise with a minimal warm-up drift are claimed for these units. Prices (excluding VAT) for the three units are: D5-1A £19.50; D12-250 £23.60 and the D15-200 £23.60.

Further information on both the chargers and the power supplies can be obtained from Electroplan Ltd, PO Box 19, Orchard Road, Royston, Herts SG8 5HH (tel Royston 41171).

Amateur radio

A paper given by G. Jacobs, W3ASK, and R. L. Baldwin, W1RU, at the technical symposium of the World Telecommunication Forum at Geneva on 8 October 1975

BROADLY defined, telecommunications is big business. Industry and commerce depend upon it. Transportation would be utterly lost without it, and the world's masses are entertained by it. Profits are measured in big numbers and success in terms of increased volume of traffic for greater numbers of listeners.

But to the half million radio amateurs scattered around the globe, radio is something different. It is an exciting technique to be used to communicate with one's fellow man, to overcome the barriers of distance and boundary, and to achieve lasting friendships with other enthusiasts around the world, without any pecuniary interest involved. Perhaps only those who have had the experience can truly understand the thrill of assembling a small radio station and then using that equipment to talk with another radio amateur who may be in the next town, or the next continent. It is a form of self-expression and of world friendship that is without equal.

Indeed, many of today's leading telecommunications officials and engineers can trace their first interest in their profession to participation in amateur radio, and they credit amateur radio with getting them started on their lifelong careers. If the experience of some countries is any criterion, the enthusiasm of amateur radio operators which leads them to professions in the radio communication or radio engineering fields is invaluable. What better way is there to learn about radio communication than by participating in it? Many of the young radio amateurs of today are certain to be the professional engineers and scientists of tomorrow.

The beginning of amateur radio

How did amateur radio begin? In the latter years of the 19th century there already existed a keen interest in a new marvel —electricity. Amateur experimenters, mainly in Europe and North America, were making small electromagnets, motors, dry cells and static machines, erecting neighbourhood telegraph lines and building numerous other experimental electrical devices.

It was not until the very end of 1901, however, that an event took place that fired the imagination of these experimenters still further—Marconi's bridging of the Atlantic with radio signals. The press of the world was filled with jubilation, disbelief and triumph at this accomplishment. "Wireless" was on everyone's tongue. Large numbers of amateur electrical experimenters turned away from their electromagnets, motors and dry cells and began to explore the realm of radio communication. Amateur radio was born!

During the first decade of this century, amateur experimentation with radio was a difficult task, since technical and constructional material were scarce. A typical amateur station of those days consisted of an induction coil, a capacitor and a spark gap for transmitting, and a simple coherer-decoherer or galena crystal and a single headtelephone for receiving. It was not unusual for early radio amateurs to communicate with each other, using such equipment, over distances of 80 to 160km.

International regulations were non-existent at the time, since there was no radio law. Everyone had an equal right to the air, and during the first decade of this century the number of amateur radio stations on the air greatly exceeded the number of coastal and ship stations—a fact that should qualify amateur radio as the "dean" of the radio services.

Radio amateurs have been pioneers

From the very beginning, the radio amateur has been a pioneer. He tinkers and experiments, he "tries this" and then "tries that", always with the purpose of extending the range of communication or increasing operator efficiency.

Space limitations will not permit a detailed review of all the contributions made by the amateur radio service to the field of radio communications. Radio amateurs were, however, the first to demonstrate the enormous usefulness of short waves, and they also pioneered the use of the vhf and uhf regions of the radio spectrum. They were among the first to devise practical transmitting and receiving equipment using vacuum tubes, and they have contributed much to radio propagation research, as, for example, transequatorial scatter. Amateur radio was the first service to completely outlaw spark transmissions and among the first to utilize cw. Amateurs have also led the field in devising techniques to reduce interference so that greater use can be made of the radio spectrum. Likewise, the use of parametric amplifiers was pioneered in the amateur bands. Suffice to say that since its birth, amateur radio has been a clearing-house for ideas, and a proving ground for almost every major technical and operational development in the field of radio communication.

From the early days, amateur radio has earned an outstanding reputation for providing communication during emergencies, when other means of communication fail or are overloaded. The annals of radio contain an impressive record of countless emergencies, natural catastrophes, epidemics, etc, in which radio amateurs, with skill and devotion, and frequently at personal sacrifice, have served their communities and brought speedy relief to victims of suffering and need. Many thousands of lives, an untold amount of human misery and millions of dollars in property have been saved by their efforts. Radio amateurs consider such assistance not a duty but an opportunity to serve humanity.

The exploration of space

Space exploration opened a new era for amateur radio, as indeed it did for all communication services. Amateur radio entered the space age on 12 December 1961 with the successful launching of the Oscar 1 satellite (Orbiting Satellite Carrying Amateur Radio). Built entirely by radio amateurs, and containing a beacon transmitter operating in the amateur 144MHz band, the satellite was tracked by observers in 30 countries as it orbited for a three-week period. Since that time there have been a number of other successful amateur satellites, and at the present time two Oscars are in space and operating, providing reliable intercontinental communications for hundreds of amateurs utilizing frequencies in the amateur allocations at 28 and 144MHz.

In passing, it is appropriate to note that in many countries the first two-way space communication was made by amateur satellite, rather than via those satellites that have been established commercially—sometimes several years before the commercial satellites were available.

A recent study of the growth of the amateur service throughout the world indicates that the present population of amateurs will grow to one million by 1982, and to about two million by the year 2000. This growth alone will increase the already severe crowding that exists in the amateur frequency bands. No matter how we estimate how many amateurs use what frequencies during what hours to communicate with what areas of the world, the fact remains that amateur radio has outgrown much of the hf spectrum first allocated to it in 1927.

Radio amateurs have been progressive

How have radio amateurs been able to survive such an increase in their numbers without this growth being self-destructive? Only by the progressive adoption of the most modern technical and operating advances. Spark was the earliest form of radio transmission, but when continuous wave radiotelegraphy was developed, radio amateurs seized upon it immediately as a way not only of obtaining greater distances but also of reducing interference. In the same way radio amateurs adopted single sideband reduced carrier radiotelephony as a replacement for double sideband radiotelephony, because the signal was more efficient in spanning great distances and because it permitted more stations to work within the limited frequency allocations. Amateurs did this voluntarily, without the advice of an international panel of experts and without prodding from regulatory bodies (as was necessary in other services) because they recognized the spectrum-saving potential of these new modes as a means of survival. Similarly, amateurs early adopted many other techniques which enabled them to absorb the ever-increasing number of amateurs.

In an attempt to maximize the use of the amateur allocations, receivers were radically improved by means of quartz and mechanical filters, which reduced the bandwidth, improved the signal-to-noise ratios and thus made more effective use of the amateur frequency bands by reducing interference. It is worthy of note that the first so-called "single-signal" receiver was developed by a radio amateur, and was immediately accepted as the standard in the field of communications.

Improved reception and more efficient transmission are frequently attained by the use of highly-directive aerials at one or both ends of the circuit, eliminating interference to and from undesired points of the compass, and enabling more reliable communications.

Since amateurs work with the bands of frequencies allocated by international treaty, the use of stable but variable frequency oscillators permitted the users of a given amateur band to conveniently adjust their transmitting frequencies in order to avoid interference being caused by or to another amateur station.

It was thus that the technical inquisitiveness of radio amateurs, and their ready adoption of new techniques, relieved much of the pressure that came from an ever-growing population of radio amateurs.

Problems facing radio amateurs

Nevertheless, the amateur population is growing. The allocated spectrum space has remained substantially unchanged since 1927. Under these conditions the amateur service faces ever-increasing limitations resulting from three principal problems:

(a) increasing congestion due to the growing amateur population;

(b) impractical sharing arrangements with other services in some of the bands;

(c) the lack of suitable orders of frequency bands to support communications over the most heavily used paths during the normal daily and yearly variations in ionospheric propagation.

In many countries of the world there are sizeable populations of amateur radio operators, and without exception these individuals are banded together in amateur radio associations. A central staff of each such organization serves the functions of providing monthly bulletins for the members, co-ordinating operating activities, providing education and guidance for the members, and exercising liaison with other amateur societies.

The IARU

Just as it is essential that there be an International Telecommunication Union to co-ordinate the activities of telecommunications on a world scale, so must there be an amateur radio organization to represent the interests of the amateur radio service internationally. That amateur radio organization is the International Amateur Radio Union, founded 50 years ago in Paris and now representing 88 healthy, progressive amateur radio societies around the globe. At the conference of Region 1 of the International Amateur Radio Union held this spring in Warsaw, the delegates were honoured to be addressed by M Mili, Secretary-General of the ITU. Later, in an editorial published in the *Telecommunications Journal*, M Mili made the following statement, which is appropriate to quote at this time:

"The International Amateur Radio Union has just celebrated in brilliant fashion in Warsaw the first 50 years of its existence. This anniversary marks a decisive stage in the youthful, dynamic life of the IARU and is an appropriate moment to reflect on its future activities. So far as the past is concerned, the record is impressive considering the means at its disposal.

"The IARU now looks back on half a century of intense activity which, thanks to disinterested research and sound scientific studies embracing the entire radio frequency spectrum, has made an appreciable contribution to the progress of radio communication.

"They have also been 50 years of international co-operation which has forged a chain of human brotherhood between all those who, by taste or through dedication, have devoted or are devoting the greater part of their leisure time to seeking human contacts over continents and seas, beyond differences of language, nationality, religion and political systems.

"Finally, they have been 50 years of chance contacts which have been instrumental in saving many lives, thus making the International Amateur Radio Union one of the most useful and dynamic organizations when it comes to helping save individual lives or the lives of many in natural disasters and catastrophes.

"I am glad to seize this opportunity of paying tribute and offering my best wishes to the International Amateur Radio Union . . ."

As we have endeavoured to point out in this paper, the amateur radio service is a vigorous, vibrant radio service

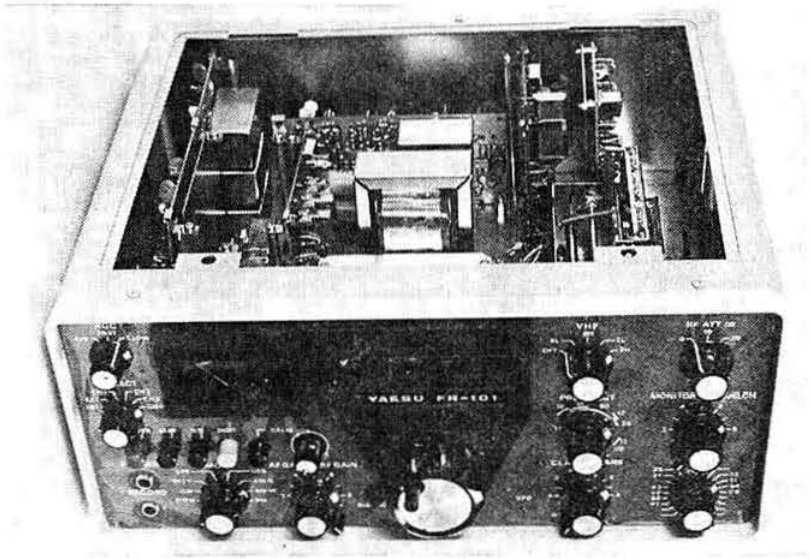
whose practitioners are perhaps the most enthusiastic of all of the users of the radio-frequency spectrum. Radio amateurs have been responsible for much of the technical pioneering of the radio spectrum, they have provided vital service to their fellow men in many instances of natural disaster, they establish a person-to-person relationship of international character that is perhaps unmatched by any other activity, and they provide a reservoir of trained operators and technicians that has proved invaluable to many members of the ITU.

As M Mili has said, ". . . the half-century that has gone by has amply demonstrated the importance of the part played by radio amateurs . . ."

On behalf of radio amateurs everywhere, we thank M Mili for this statement, and we hasten to add that amateur radio *is* dynamic and the future looks even more exciting than the past. Unlike other radio services, the amateur service does not measure its success by volume of traffic, gross revenue, size of listening audience or profits in dollars and cents—simply by how well it has served humanity. □

NEW EQUIPMENT

Yaesu receiver FR-101



THIS equipment is now available in the UK in its various forms. The basic FR-101S is a solid-state receiver covering amateur bands from 3·5 to 29·0MHz. However, complete provision is made for additional bands between 1·8 and 30·0MHz to be included. Additional coverage is available, as an extra, for the 70 and 144MHz bands in the form of internal converters. Provision in the basic receiver is made for the reception of cw, usb, lsb and a.m. The nominal bandwidth is 2·4kHz/6dB. Additional filters are available for cw (0·6kHz/6dB), a.m. (6kHz/6dB) and fm (20kHz/6dB). The readout is normally in the form of a two-section dial permitting an accuracy of 1kHz, although a version is available incorporating digital readout.

As far as can be seen from the literature and the unit provided for evaluation all the optional extras are mentioned above. The basic specifications of all receivers in the FR-101 series relating to sensitivity, selectivity, age and spurious responses are identical. The various options which are available extend the use of the receiver according to the wishes (and purse) of the purchaser.

Sensitivity is quoted as: ssb and cw—0·3μV for 10dB (s+n)/n on 14MHz; a.m.—1μV on 14MHz; and fm—12dB sinad. Image rejection is claimed at better than 60dB. A worthwhile refinement not available on the receiver sections of the Yaesu transceivers is the choice of age off or a fast/slow time constant.

The receiver is fully compatible with the FT-101 series or the FL-101 transmitter. By suitable interconnection, for which provision is made, control of transmitting or receiving frequency (or both) may be achieved by the use of front-panel switches on the FT-101/FR-101 combination.

The front-panel view of the receiver shows that the small switches on the left-hand side have been replaced by press switches which are positive and convenient. The labelling of the numerous main controls accurately describes their function. A worthwhile operating convenience is the band indicator, which appears above the main tuning dial and S-meter, and which shows the frequency to which the band switch has been set. With 21 possibilities the separate indication is invaluable. The back panel contains some 10 jacks and connectors for aerial and other terminations.

The physical size of the equipment is that of the FT-101 series, ie 340(w) by 153(h) by 285(d)mm. Weight is 9kg and the unit is fitted with side handle and feet. It contains 11 FETs, 6 ICs, 28 silicon bipolar transistors and 40 diodes.

Operation

In use the receiver performed as well as indicated by the specification. A test failed by several receivers at the author's location is the reception of GB3SX on 28·185MHz, which is usually a signal just above the noise. The FR-101 gave reception as good as, or better than, the station receiver. On 7MHz the FR-101 gave a superior performance to the receiver section of an early model FT-101, probably reflecting the improvements in the rf and mixer stages. The narrow-bandwidth filter for cw was found to be particularly effective.

The equipment was loaned by Western Electronics (UK) Ltd, 1-3 West Park Road, Southampton. *G2BVN*

TECHNICAL TOPICS

by PAT HAWKER, G3VA

IN preparing *TT* it is often useful to include comments, stemming either from readers or from my own interpretation of the situation, that are highly controversial. For it is only by free and vigorous debate that real progress can be made towards sorting out conflicting views. Three recent topics clearly fall into this category: the warning about filters in third-method ssb generation (September): the suggestion that some of the mysterious long-delay echoes may be subjective rather than objective (September); and the view that the higher the aerial the better, even for short-distance communication (August). All these items have brought in correspondence that puts the opposite viewpoint—and, more important, supports this with personal experience. Willingly we provide a platform for these contrariwise views.

Contrariwise . . .

Third-method ssb

Joe Cropper, G3BY, is convinced that the comments made by R. J. Forsyth, G3PRM, suggesting that simple audio filters of the type used by G3BY in his de Muijnck third-method ssb generator could not be expected to provide much more than 10dB unwanted sideband suppression, are based on a misunderstanding of third-method theory and practice. He is most anxious to refute any idea that the signal spreads out, even when quite badly adjusted—indeed when challenged on this he is quite willing that his on-air signal be subjected to the most careful inspection, and is hilarious at the idea that his unwanted sideband is anything like only 10dB down. To put it bluntly, he finds it deplorable that such criticism may deter possible constructors. He has provided a good deal of further information on third-method filters, and I hope to return to this subject again. But meanwhile carry on experimenting with this system!

Long-delay echoes

On LDEs the situation becomes more mysterious than ever. At least two amateurs are not only of the opinion that LDEs *can* be successfully recorded but they also provide convincing personal accounts of actually doing this in the early days.

R. L. A. Borrow, G3ZTK, was one of those who carried out listening tests together with Professor Appleton at King's College, London, during the original transmissions by Van der Pol from The Hague in 1928–29 (see *TT*, June 1973). He writes:

"In addition to hearing a number of echoes I did succeed in obtaining what was then the only known photographic record of an echo. This record was examined by Appleton and he was quite satisfied that it was undoubtedly genuine (see his letter to *Nature*, Vol 122, December 1928).

"During the course of these trials a number of signals which might have been echoes were heard but, in addition to these doubtful results, on a very few occasions I distinctly heard the signal (an X) which was being radiated repeated after a few seconds delay. Also on one occasion an echo was heard by me in the laboratory at King's and also by Appleton at his home at Potters Bar."

L. A. Reeves, G4CEM, also verifies that even if LDEs are not being heard now, they were heard and recorded by himself and many members of the commercial telegraph fraternity. He comments:

"The last time I heard this phenomenon was around 1938–9 on the Cable and Wireless London-to-Bangkok route. The incoming signals were radiated from Bangkok at 3·5kW, and consisted of on-off morse keying at 25words/min automatic.

"This station had the annoying practice when 'idling' (sending no traffic) of putting on a call-band of spaced VVVs and callsign. The space between each V was about 5s, and following each V there could be heard a perfect echo-type signal approximately 2s behind the original. It was nearly always strong enough to be recorded on the pen-undulators used at that time.

"The Bangkok operator was requested to check his transmissions and he always reported 'outgoing ok', though he persisted with the same tape-band until it finally wore out. These echoes were recorded on the daytime frequency of 19MHz during winter, when the whole route was in daylight.

"Many theories were propounded for these odd signals (including moonbounce!) but they came to be accepted as one of the unsolved mysteries of radio.

"Because of the difficulty in receiving traffic from Bangkok, reception was undertaken at two receiving stations: Somerton in Somerset and Brentwood in Essex, but the results were always the same.

"I can assure you that what we heard and recorded on these tapes was tangible and certainly not subjective!"

Low aerials

Bob Eldridge, VE7BS, writes from British Columbia to challenge the view that there is no merit in purposely placing a dipole at a relatively low height for short-distance ionospheric communication. He writes:

"Surely you are not challenging the whole cos ($H \sin \phi \pm 90^\circ$) thing? This is not just an idea, it is the basis for a lot of practical working short-distance circuits.

"I do not know whether Ross Bell mentioned the significance of the 0·35λ height in his article, but it makes sense to use this as the limiting height—at 0·4λ cancellation becomes marked in the straight-up direction, and by 0·5λ it is complete. To fire straight up, 0·25λ or some odd multiple would obviously be the best height but, since the gain straight up is as good at 0·25λ as at 0·75λ or 1·25λ, why bother to go higher?

"These writers are not ignoring the possibility of dielectric losses in the ground—they are making the judgment that the reflective help from the ground is more beneficial than the possible losses are harmful. It is no myth that there is an optimum height for a specific vertical polar angle. This 'theory' tempted me to lower my 3·5MHz aerial to put a better signal into Seattle in order to run a chess match one Sunday, and I was rewarded with a continuous E-layer contact for more than 7h; I assure you that at its normal height the signal was several S-points lower. I adjusted it

by successively lowering each end while checking signal reports, praying that it would not rain. After all, would you place the reflector of a beam as far back as possible rather than 0·25λ or less?"

On this one I still feel that much depends on the conductivity of the soil; my own argument was rather with those writers who suggest we must strive to put a dipole an exact λ/2 above ground to get the lowest possible angle of radiation due to cancellation. But clearly there can be two views!

CMOS third-method ssb generator

Chris Bartram, G4DGU, notes that the various "filterless" ssb generators that have been described recently in *TT* have shown some ingenious adaptions of standard bipolar-type integrated circuits. But the ic analogue double-balanced modulators mostly require at least two balancing adjustments. And when such techniques are employed on a third-method exciter this leads to a multiplicity of preset pots!

He has found that at low frequencies (ie suitable for the audio side of a third-method exciter) there is, for once, a satisfactory answer in the CD4016 cmos quad bilateral switch devices. In a vhf "third method" ssb generator that he is currently developing, G4DGU obtains 60dB of carrier suppression with no adjustment, and a single preset potentiometer can be adjusted to give a signal leak for both channels of about −50dB!

When using cmos devices for the "clock" (CD4001), the digital phase-shifter (CD4027) and for the modulators (CD4016), the total cost of the devices required in the audio section of the generator is about £3.50. This arrangement is outlined in Fig 1, which also includes the simple active filter used in the af board.

Top cut af filter

One of the causes of broad phone transmissions, whether ssb, a.m. or nbfm, is simply the absence of a really effective top-cut filter in the speech amplifier. In *Break-in* (May 1975), Lawrie Morton, ZL2AUT, recounts his shock at discovering that his audio response was falling by only 6dB/octave and was detectable up to 18kHz. His determination to do something about this led him to consider the various filters described in *Radio Communication Handbook*. While he used these as the basis of his design, the result was something different from any of them—and provides a semiconductor add-on unit which can be easily added to almost any valve speech amplifier. It has an insertion loss of approximately 0dB at 2kHz, 6dB at 3kHz, but over 40dB at 3·5kHz and above, while using convenient inductor values: see Fig 2. There is some attenuation at very low frequencies below about 150Hz but its main value is as a sharp cut-off filter above 3kHz.

His design uses two BC107 transistors to provide a large impedance step-down to obtain a filter impedance of about 1,000Ω. The centre inductor of the filter uses one of the ubiquitous 88mH toroids; the other two will probably need winding to provide the required 26mH, but this can consist of about 170 turns on a Ferroxcube pot core (check number of turns by resonating with 0·05μF capacitor and adding turns until this peaks at 4·5kHz using an audio generator and valve voltmeter).

The four filter capacitors are polyester types (if necessary the 0·082μF can be made by paralleling 0·033μF with 0·047μF). The design can provide an output of about 1·4V rms (4V p-p) before clipping begins. Layout is non-critical although the input wiring from the valve anode is at high impedance and care should be taken that this does not pick

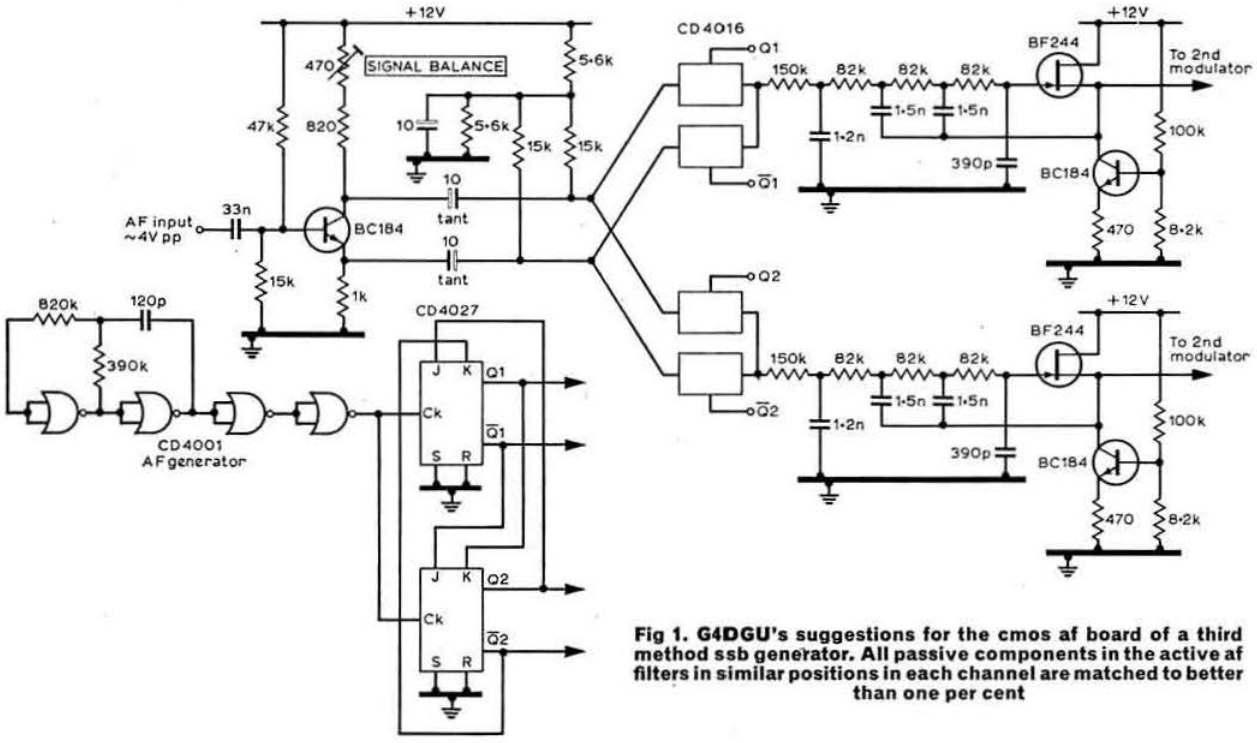


Fig 1. G4DGU's suggestions for the cmos af board of a third method ssb generator. All passive components in the active af filters in similar positions in each channel are matched to better than one per cent

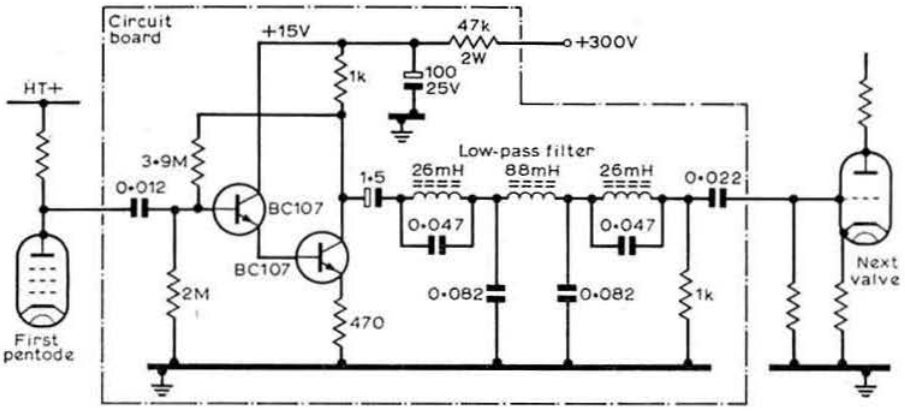


Fig 2. ZL2AUT's top-cut or low-pass filter providing insertion losses of over 40dB above 3·5kHz. Parts outside the dotted lines are already in the speech amplifier

up hum. ZL2AUT built his unit on a 3in by 5in piece of Formica.

If a medium voltage gain is required, part, but *not all*, of the 470Ω emitter resistance of the second BC107 should be bypassed with an electrolytic capacitor.

With a semiconductor speech amplifier, the impedance transformation could probably be simplified. The use of a unity gain filter makes it relatively simple to switch the filter out of circuit in those circumstances where higher quality audio can be justified; we believe it would be a mistake for amateurs to come to think of the audio spectrum *always* ending at about 3,300Hz!

Low-cost filter-type ssb

The various phasing and third-method techniques described over the past year or so indicate that the present high cost of good ssb crystal or mechanical filters can be circumnavigated. But the filter system is so firmly entrenched in many amateurs' minds that it is not surprising that the question often arises whether it is possible to use the filter technique without the problems of making your own filter or of taking out a second mortgage.

Nyall Davies, G8IBR, has come up with an interesting idea capable of providing low-cost filter-type ssb at 455kHz and which he reports as "very promising": Fig 3. Basically this uses a low-cost Toko mechanical filter (type MFH41T) but with the addition of a Q-multiplier to produce a deep notch to steepen up the skirts of the filter on one side. Then the ssb output at 455kHz can be mixed using a standard 11·115MHz crystal to provide output at 10·7MHz which, G8IBR suggests, can then be passed through one of the small ceramic 10·7MHz filters commonly used in vhf/fm broadcast tuners and capable of doing an adequate job in filtering out the rubbish. A further possibility, as in the G3OTK vlf phasing generator (*TT* June 1975), would be to use one of the surplus 10·7MHz mobile-type crystal filters which, although too wide for direct ssb generation, can do a first-class job in removing odds and ends. The gentler sloping side of the mechanical filter need provide no problems with good pre-modulator af filtering.

The idea has not yet been fully tested but G8IBR has built a 455kHz ssb generator using an MC1596 ic balanced modulator with very satisfactory results and now intends to add up-conversion to 10·7MHz and then, via a phase-lock loop, to 144MHz.

Simple low-power cw rig

A watt or so of rf can still give a good account of itself on 1·8, 3·5 or 7MHz cw. This is relatively simple to obtain from low-cost transistors, and because of the duty cycle the nominal ratings of an output transistor can often be exceeded without disaster striking. One of the problems is to obtain chirpless keying of a crystal-controlled rig without excessive chirp or a spacer (backwave).

A crude but seemingly effective way of overcoming keying

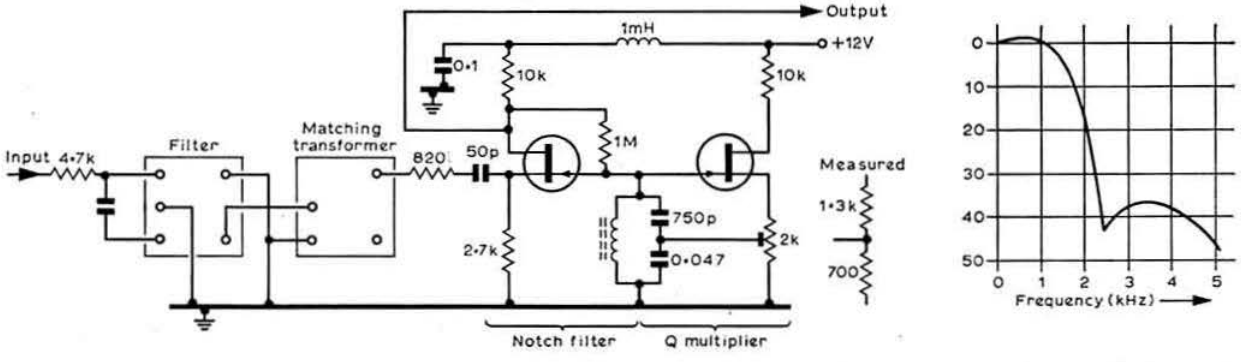


Fig 3. The combination of a low cost filter with a notch-filter used by G8IBR as the basis of a filter-type ssb generator. Two FETs similar to 2N3819. After adjustment the 2kΩ pot can be measured and fixed resistors substituted if required. Filter coil 40 turns on Mullard LA1157 pot core using 20 strand bunched wire

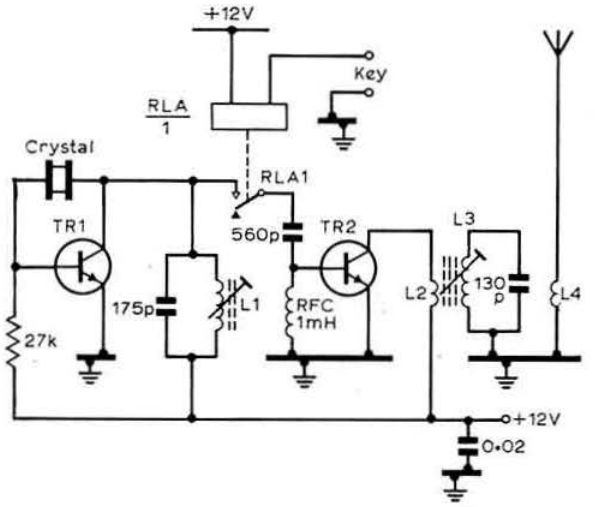


Fig 4. Single-band QRP rig using relay to improve keying characteristics. TR1 40080; TR2 40081; L1 (7MHz) 20 turns No 28 on ¼in diameter slug-tuned; L2, L4 5 turns No 24; L3 28 turns, No 28 on ¼in dia slug-tuned, RLA1 sensitive high-speed relay

problems was described initially in *73 Magazine* by Clifford Klinert, WB6BIH, though it is picked up here from *Old Man* No 6 1975. This consists of leaving the crystal oscillator running and keying the drive applied to the power amplifier by means of a suitable high-speed spst 12V relay. Heat sinks should be used on both transistors. The output arrangement is relatively inefficient but is stated to provide good selectivity and is simple to tune and construct. With the transistors specified it is stated that dc input to the final is about 3W with about 1W output; even with a good heat sink it will be advisable not to hold the key down too long. Component values shown in Fig 4 are intended for operation on the American recommended QRP frequency of 7·040MHz, but the ideas could readily be adapted to other bands. Keying contacts of the relay should not be too capacitive.

Switching over coaxial cable

There are a number of occasions when it may be required to carry out operations at the far end of a transmission line, preferably without extra wires. The technique of powering mast-head preamplifiers over the feeder line is fairly well known, but for transmission there is the additional requirement of being able to bypass the amplifier. Again on both hf and vhf it would often be useful to be able to switch aerials without spending a fortune on multiple feeder lines or motorized coaxial switches.

In *Radio-ZS* (June 1975) Louis De Bruin, ZS5LP, describes a system he uses to provide fully-automatic remote switching to any of three hf aerials, based on silicon-controlled rectifiers, six relays, and a 12V power unit located at the station end. The remote switch "senses" which band the transmitter is tuned to and automatically switches in the appropriate aerial. While there may well be simpler ways of achieving much the same result, ZS5LP's ideas could prove a useful starting point.

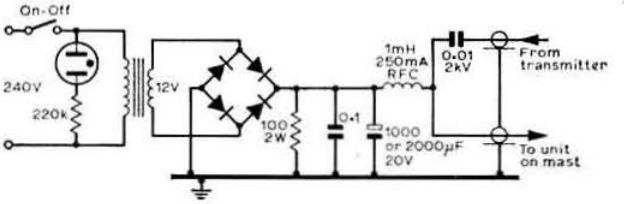


Fig 6. Power supply for the automatic aerial switch

The appropriate one of the three tuned circuits induce into the associated scr a dc signal, causing it to latch and to operate the appropriate pair of relays. When, for example, B relay operates, contact B1 will cause the 470μF electrolytic capacitor to discharge through relay E, operating it momentarily and unlatching the two SCRs not in use. Relay contacts A2, B2 and C2 are used to connect the correct aerial to the feeder (for high power it may be advisable to use two contacts in parallel). The SCRs must be capable of carrying the current flowing in the associated relay and may

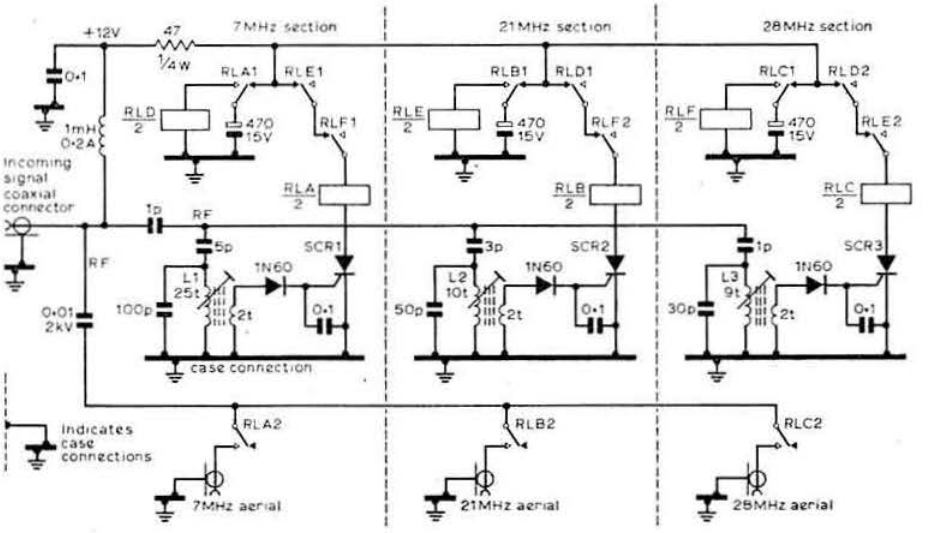


Fig 5. ZS5LP's automatic remote aerial switching system

typically be 100V types at 2A rating. The relays used by ZS5LP are described as made by STC "of the type commonly found in plastic cases, for 12V operation". He says that the prototype had no screening between sections. Although the possibility exists that with direct harmonic relationships two SCRs could try to latch simultaneously, if this occurred resonance of the coils could be staggered and the series capacitors altered to suit. He also adds that by using a vhf diode in place of the 1N60 it should be possible to use the technique to switch vhf aerials. By knowing the usual swr readings of the aerials on the different bands it is always possible to use your swr meter to check that the automatic switching is really working.

DL2EO T-aerial on 3·5MHz

In the May *TT* attention was drawn to a multi-band T-aerial as used by DL2EO and described by Hans-Joachim Brandt, DJ1ZB, in *QRV* No 2 1975. It was then indicated that the aerial could be used on 7, 14, 21 and 28MHz, but DJ1ZB noticed that no mention was made of its use on 3·5MHz as details of this had been contained in the German text. He has kindly sent along the following additional notes on this aerial:

"It should be mentioned that this aerial can also be operated on 3·5MHz. DL2EO noticed that the 14MHz L-network component values also provided a low swr on 3·5MHz. Further investigations showed that the natural resonance of the T-aerial was about 3·2MHz, with a calculated feed-point resistance of about 25Ω. On 3·5MHz, therefore, the aerial must be inductive and higher in resistance. The inductance is thus compensated by the 'C' of the 14MHz impedance matching network, with the series 'L' for 14MHz having little effect on 3·5MHz.

"The aerial could also be tuned up on 3·5MHz by means of a series capacitor, in the manner used by G2RO in his 'double-size' 1·8MHz aerial (also described in the May *TT*).

"As the feed-point resistance of the DL2EO T-aerial is rather high on 7 to 30MHz, a relatively-simple ground rod will usually prove sufficient; for optimum efficiency on 3·5MHz, however, where the feed-point resistance is low, five ground radials each ¼λ long are recommended by DL2EO."

This aerial can thus provide an effective five-band aerial despite the restriction of the "top" to just over 20m, at a height of 9m. Details are given in Fig 7, page 332 of the May issue.

Double tuning-fork beam

Vertically-polarized beams are fairly uncommon among amateurs, although directional arrays for mf broadcasting are in use in many countries and at a number of the IBA's independent local radio stations in the UK. These range from several four-mast arrays designed to provide very deep nulls in unwanted directions to the simple one-mast-plus-sloping-wire technique. In the latter, the parasitic reflector element is a wire sloping up to the top of the single radiator mast, from which it is insulated (a system that might well have possibilities for amateur operation on 1·8, 3·5 and 7MHz).

For the higher-frequency bands a novel array based on three boom-mounted vertical elements has been described by Erwin Schlatter, HB9RU, in the German periodical, *Funkschau* (No 17, 1975). This is shown in Fig 7 together

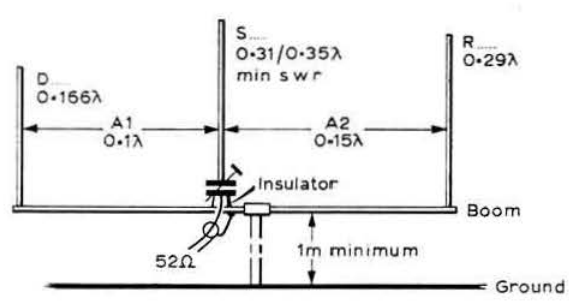


Fig 7. HB9RU's "double tuning fork" array (zwei stimmgabel beam)

Band	Dimensions D (cm)	S (cm)	R (cm)	A1 (cm)	A2 (cm)	C for min swr (pF)
28MHz	174·5	347	302	105	158	approx 90
21MHz	235	467	410	142	212	approx 80
14MHz	356	698	612	211	317	approx 70

with metric dimensions for 14, 21 and 28MHz operation. The variable capacitor at the base of the tall, central radiator element is adjusted for minimum swr on the 52Ω coaxial cable; HB9RU indicates that this can usually be adjusted to give an swr of the order of 1·3 or better. Gain is stated in the article as being 7dB, which seems a bit optimistic but, nevertheless suggests that the system is capable of giving excellent performance as a single-band aerial, particularly when over a good earth or a good earth mat. The boom should be a minimum of 1m above ground and this allows the array to be used without a mast or tower, and yet to be quite easily rotatable. It would be interesting to hear from anybody who gives this novel aerial a try.

Directional vertical arrays

This mention of directional vertically-polarized arrays is a reminder that we owe much of the early work in this field (and also the concept of the ground-plane aerial) to Dr G. H. Brown of RCA. While very much of a professional aerial expert, George Brown supplied some interesting reminiscences of early amateur radio in a Marconi memorial speech last year. He said, for instance:

"I was bitten by the wireless bug when I was twelve years old. I had read all that the local library could provide concerning the adventures of an almost mythical person known as Marconi. My crystal detector was the result of a five-mile bicycle ride from Portage, Wisconsin, to a cluster of houses in a settlement named Galena. Here products of a lead mine were being loaded into railroad gondolas. I returned home with a brown paper bag filled with hundreds of shiny nuggets, one or two of which allowed me to receive code signals from some now-forgotten amateur station."

He also recalled how it was that, as a result of discussions between Godley and Beverage during his crossing to the UK in 1921, Godley erected one of the then-new Beverage aerials at Ardrossan, Scotland, for the historic reception of trans-atlantic amateur signals. Incidentally, Beverage was a pioneer amateur himself: W2BML.

To return, however, to directional arrays: in *Proc IRE*, January 1937, a paper by George Brown included a diagram that has since become the classic source of information on this subject, though curiously enough it is only very infrequently reproduced in amateur publications. It shows the

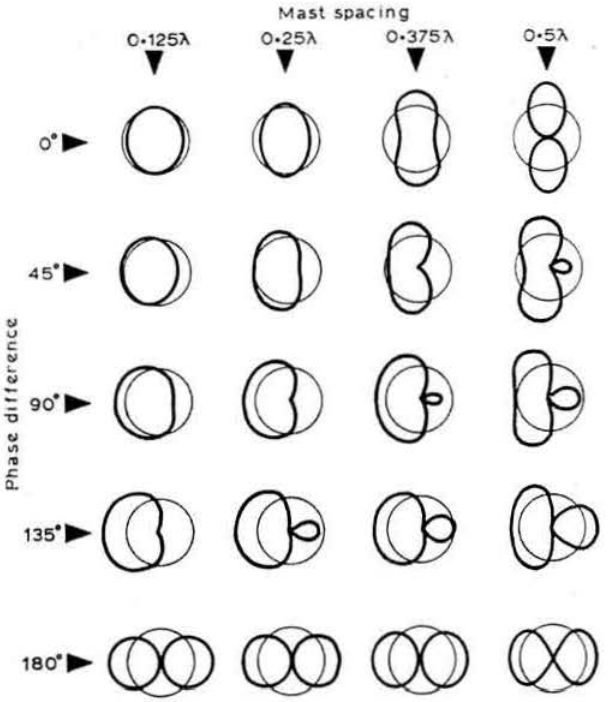


Fig 8. Part of the classic 1937 diagram by G. H. Brown showing horizontal radiation patterns for an array of two vertical aerials (such as monopoles) fed with current of equal magnitudes but varying phases

horizontal radiation patterns for two vertical radiators fed with currents of equal magnitudes, and indicates how the patterns vary with the spacing of the two elements and the phase differences. In the original diagram, which is often reproduced in professional textbooks, the aerial spacings varied from $\lambda/8$ to 1λ, but for most amateur applications the spacing is unlikely to exceed $\lambda/2$. The relevant half of the original diagram is shown in Fig 8, from which it will be noted that cardioid (heart-shaped) patterns are relatively easily obtained, with a fairly sharp null in the backward direction—a characteristic which can be very useful in restricting pick-up of European signals when trying for North America on 7MHz and below. For any given mast spacing it is possible to obtain from the same array each of the patterns indicated by the different phases. For example, this can be done by switching in additional lengths of coaxial cable, as in the "electronic rotary" originally described by I1BER (*Amateur Radio Techniques*) and using $\lambda/4$ mast spacing.

144MHz HB9CV portable beam

Since 1972 Jan Jager, PA0TBE, has often operated in the UK as G5ASD/M on 144MHz, generally using a Trio 7200 with $5\lambda/8$ whip but always taking with him an HB9CV-type beam to help with dx while static on hilltops. He finds that relatively few 144MHz enthusiasts know about the attractions of the HB9CV array, which is a development of the ZL-Special and has been known and used (mostly on hf) for many years. It provides some 5dB gain and is very much easier to carry around than a three- or five-element Yagi or

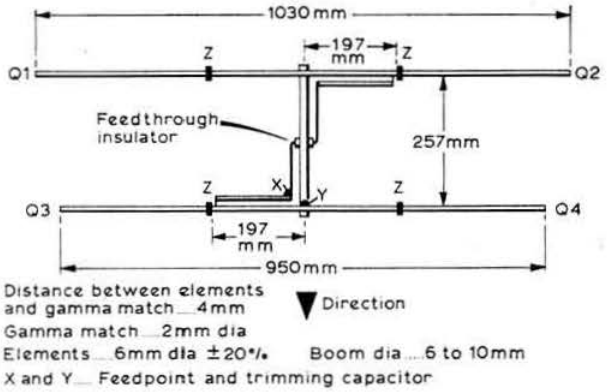


Fig 9. Details of the mobile 144MHz HB9CV two-element array used by PA0TBE/G5ASD

quad arrays for 144MHz. A broomstick attached to the roof-rack serves as a convenient mast. "It will," he writes, "almost fit into a briefcase—what more do we want?" Details are shown in Fig 9.

He uses 6mm diameter tubing for the centre parts of the elements (ie between points Z-Z which are approximately 400mm apart). Bolts that will take 4mm tubing are soldered at points Z; the four sections shown as Q1, Q2, Q3 and Q4 are then made of 4mm tubing threaded at one end to fit the bolts. A 30pF trimmer is connected between points X and Y and adjusted for optimum swr; for convenience this trimmer can then be replaced by a fixed capacitor of approximately the same value. The coaxial cable can be 50, 60 or 70Ω impedance.

A 1·296GHz HB9CV-type two-element array enclosed in a glass-reinforced plastic sphere is used at the GB3DD beacon, and this type of aerial is equally effective on hf. Perhaps this item will help to get it better known.

Simple S-meter

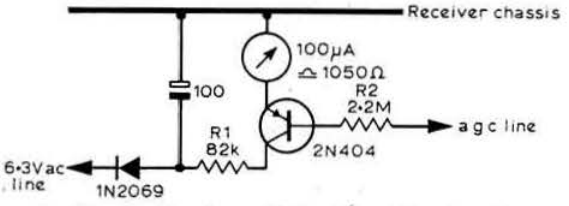


Fig 10. Simple S-meter suitable for adding to valve communications receiver (*Wireless World*)

M. J. Shoobridge in *Wireless World* (June 1974) pointed out a very simple way of adding or replacing an S-meter or tuning meter on a valve receiver: Fig 10. A little agc current drives an emitter-follower as an electronic voltmeter, powered from the 6·3V heater line. R1 should be selected so that full-scale deflection is given with the transistor saturated, while R2 should be such that a strong local signal drives the meter to about 0·95 fsd. It may even be possible, by changing R1 and R2, to use a 1mA fsd meter. The transistor type is not critical but must have a sufficient V_{CEOmax} rating since the transistor is practically base-open-circuit. □

MICROWAVES

by DAIN EVANS, G3RPE*

The 1·3GHz band

A letter from G3HCW in West Yorkshire lists a number of stations which by now should be active on this band from his part of the country, and contains a plea for southern stations to point their aerials in their direction, especially during contests. In the South Yorkshire area he gives G3NHE, G3NEO, G8EPG, G3WHL, G8CUI, G8KB and G3WXI; West Yorkshire is represented by G3HCW, G8EOP, G8BCL, G8HBQ and G8AXY; and North Yorkshire by G3ZIY and G8AWN. All stations run 5–15W to either G8AZM or G3JVL Yagi aerials.

The 3·4GHz band

What is probably a new world record for this band was set on 2 February, when ZL2WB worked ZL2TMI/TSM over a 383km path from Mt Ruapehu on North Island to Mt Murchison on South Island. Signal strengths were S5 to S9. This contact significantly beats the W6IFE/6-K6HIJ/6 344km contact made in 1970, and is only 17km short of the Microwave Award distance for this band. The equipment used was of the polaplexer type to a design by G8AGN. This employs a 726 klystron, the 60mW output feeding dishes 3ft in diameter. Details of this equipment will appear in the 3rd edition of the *VHF/UHF Manual* now being prepared.

For a path of this length to be line-of-sight, both stations would have to be sited at least 7,200ft asl, assuming normal propagation conditions. In the event, one station was at 5,650ft and the other at 4,800ft, which corresponds to a very non-optical path. Path-loss calculations, however, suggest that the loss was close to the free-space value, which would indicate that some form of ducting was present. Since most of the path was over sea, one is tempted to suggest that this was yet another manifestation of super-refraction. If this were the case, then it would be notable both because of the relatively low frequency for this mode and because both stations were many miles from the sea. It would be most interesting to know the weather conditions over the sea on that day.

The 10GHz band

On 3 August, PA0KKZ and G3RPE, who were sited about 10m asl at Noordwijk on the coast of Holland, had a one-way contact with G4ALN. The latter station was sited 2m asl near Clacton, a path length of 240km. G4ALN used a 10mW Gunn oscillator to his dust-bin lid aerial and his signals were 12dB above noise. Attempts to work in the other direction were unsuccessful; a receiver fault was discovered later.

This effort was followed by a very straightforward two-way contact with G8APP, sited 50m asl at Walton-on-the-Naze, to make the first G/PA0 full contact on the band. G8APP's signals from a 20mW klystron to a dish 20in in diameter were 17dB above noise, while PA0KKZ's 3mW signals to a 2½ft dish were estimated to be about 10 to 15dB above noise. This brings the total number of countries worked by UK amateurs to 10. An attempt to work G3PQR had to be abandoned due to lack of time, although signals were passed in one direction. All these contacts were made by super-refraction, of course.

Operating 10GHz equipment in Holland had its problems. Working back to England on 144MHz to make schedules proved difficult with small portable equipment—there are no hills to work from. A major worry was the need to co-opt a PA0 licensee at 24h notice because a PA9 reciprocal licence does not cover bands above 432MHz. Another problem was that access to the beaches in Holland is very restricted compared with the UK, in order to prevent damage to the dunes, and this meant that the relatively few access points were very crowded indeed.

The writer met several PA0s with equipment ready to go. These include KKZ, MAJ, TMP, DBQ and ACM, but there are others. One felt that it would require just one last effort to start the ball rolling in as big a way as in the UK. An interesting possibility is that because the north of Holland is so flat, and because nowhere appears to be more than 50yd from water, conditions might be suitable for long *overland* super-refraction contacts. It was also heard that there are at least a few German stations being organized. One would like to imagine a monster super-refraction test over the North Sea with stations in that country, Holland and Belgium, together with G stations lined up along the east coast right up to the GMs. Perm any two stations from five countries.

The 24GHz band

It is rather an intriguing idea for anyone to have a whole band for themselves but G3BNL and G3EEZ seem to be in this unusual position. They are certainly not letting the grass grow beneath their feet: on 14 September they covered the well-known Dartmoor-Prescelly path to set up what must be yet another world record distance, this time 154km. They can also now claim the first-ever Microwave Awards for this band. Their crystal-controlled transmitters, which operate with a bandwidth of about 10kHz, generate a nominal 5mW and feed dishes 16in in diameter.

The 24GHz band is particularly interesting from a propagation point of view, because water vapour and rain attenuate signals to a much higher degree than at lower frequencies. On the day of the contact the weather was stormy, which was ideal for studying this effect if not for operating. As might be expected, the signal strengths observed were variable, peaking to S8 but also disappearing into the noise from time to time. Some rough calculations for their equipment suggest that the signals should have been between 0dB and 20dB above noise, these values being close to those observed in practice. Note that to achieve the same performance using wide-band rather than narrow-band equipment, the aerials and/or transmitters would have had to produce an extra 10 to 20dB. Alternatively they would have had to wait for a dry day when hopefully atmospheric attenuation was at a level that much lower.

An interesting area for investigation would be super-refraction—with a twist. Signals on one hand would be enhanced by propagation through the duct which results from the humidity gradient over water, and on the other hand be attenuated by the same humidity which produces the duct.

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FOUR-TWO-SEVENTY

by MARTIN DANN, G3NHE*

Scottish VHF Convention

We are indebted to Graham Knight, GM8FFX, for a report on the Scottish VHF Convention on 13 September, which the writer, regrettably, was unable to attend. The event, at the Treetops Hotel, Aberdeen, was well attended, with over 300 visitors during the afternoon and 162 staying on for the dinner. During the afternoon session Geoff Stone, G3FZL, and Mike Dormer, G3DAH, spoke of the current state of the vhf/uhf bands, GM3OXX and GM3DXJ gave a talk on microwave techniques, and GM3ZBE discussed dx working on 70cm: the last three speakers illustrating their talks with tape recordings of some exceptional dx QSOs.

The keynote of the dinner was informality, with G3FZL, G6JP and G3OUF representing the RSGB. Presentations were made to G3BW (the first G to work GM on 2m in 1949), and to G8CQS of Bognor Regis for travelling the furthest to the convention. G8DVD and GM4BIP won the free raffle for two aerial rotators, kindly donated by South Midland Communications.

Good humour pervaded the proceedings and, at one point, by way of a light-hearted protest, a deluge of paper darts bearing anti-repeater slogans descended on the RSGB representatives. The sight of G3FZL and G3OUF returning these missiles will long be remembered in Aberdeen! In all, the convention was highly successful and enjoyed by all who attended, including the traders who appeared to be doing excellent business.

Autumn breezes

It was in the December issue last year that the writer was making cautionary comments about the safety of vhf aerial systems in high winds. After losing the top section of his mast (complete with aerials) a couple of years ago, and replacing corroded wall bolts only just in time last year, the G3NHE system was considered to be a worthy example of a secure, double-checked installation, ready to withstand the worst ravages of the coming winter.

By now the reader might well have guessed what is coming next: the first good blow of the season came on 27 September and, sure enough, at 8.30pm the G3NHE aerials crashed loudly onto the house roof, where the whole top section, hanging from the cables, proceeded to thrash itself into a mass of aluminium spaghetti. The failure this time turned out to be the rotator, an item previously taken for granted. The four bolts holding the bell-shaped top casting to the base ring had stripped the threads from the cast aluminium, and the two halves of the rotator had separated. Needless to say, the wind started to abate the moment the aerials hit the roof.

Closer examination showed that in fact only three threads had been stripped, and there is evidence that one of the bolts had worked loose before the wind did its worst. The lesson to be learnt from this seems to be to ensure that the bolts in question cannot work loose; to drill-out, re-tap and fit heavier-duty bolts; to buy a bigger rotator, or to rotate from the bottom of the mast with the consequent problems of thrust bearings and slip-rings for the guys. For the sake of all those who, like G3NHE, glance nervously aloft at the hint of anything stronger than a gentle zephyr, let us hope that this winter is a particularly calm one!

Auroral warning scheme

Further to the description of the UK auroral warning system in the September *Four-Two-Seventy*, DL7QY passes along details of the Dubus European scheme with which the UK system is linked. This warning system is based on a central cycle, with branches, and the warning can start at any point on the cycle. Each station has a stand-by in case he cannot be contacted, and the UK representatives on the main cycle are G8BCL (Halifax) with G8DHD in reserve, and GW3NJW (Cardiff) with GW3REQ in reserve: GW3NJW is also the link, via G3USF, with the UK scheme. Also on the cycle are stations in SM, DL, PA and ON with branches to SP, DM, HB and F. It is hoped to use this scheme for sporadic-E as well as auroral openings.

Four metres

G3HVI (Stoke-on-Trent) comments on the difficulty he has in getting contacts on both 4m and 70cm using crystal-controlled a.m. He feels that the old habit of tuning the band after a call is dying fast with the advent of co-channel working, and he also finds that sidebanders are reluctant to listen to other than their own mode. On the principle of "if you can't beat them, join them", Sam has now gone at least part of the way on 4m, making his a.m. transmission vfo controlled.

Joining 4m man G3XCS, G4DHA is reported to be putting a second Saltash, Cornwall, station onto the band, good reason for spinning the beam south-west from time-to-time.

Two metres

The installation of a tower by G3HCW (Knottingly) has noticeably improved the success rate of Ernest's skeds with G4CG in Barnstaple, Devon, both stations being in rather poor locations. One peculiar feature discovered by G3HCW is that signals between him and G4CG are better when the beam is at 40ft than when it is at 50ft. The phenomenon of signals *decreasing* with increasing aerial height is not all that uncommon, and it would be interesting to hear what theories readers offer to explain this seemingly anomalous occurrence.

G3XBY took 2m gear with him on his holiday to Cornwall this summer and, although he made contacts with stations (in GC and F for example) that would be mouth-watering dx from his home QTH in Warwick, he confirmed for himself what Cornish stations have been saying for a long time: stations tend not to deviate from the favoured north/south beam headings, and Dale found contacts back into the Midlands hard to come by.

One does not normally expect to work dx via tropo when the area between the stations is covered by a low-pressure system but, as G3IPV has discovered over the years, the

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unexpected does occasionally occur. G3IPV cites the example of his contact with DK6ASA in QRA FM44d on 2m cw at 0830gmt on 14 September, when the low-pressure system was centred over the North Sea, and he wonders why explanations of dx propagation under these conditions are avoided in the text-books.

G3NEO (Sheffield), on checking the band after an abortive sked attempt with GM3JFG in the far north of Scotland, found to his amazement that he was hearing considerably more of the SM being worked via meteor scatter by G3CCH in Scunthorpe. Phillip was thus able to listen to both sides of G3CCH's 120th completed m-s contact—a remarkable achievement by Johnny Stace.

Seventy centimetres

G3XBY in Warwick has for some time had sufficient contacts in his log for his 70cm FMD Senior Award, but is having difficulty in collecting the one further card he needs to complete his claim, despite a total of *three* SAEs being sent to one station without the courtesy of a reply. As he always encloses a "pro-forma" QSL card in case the station in question has none of his own, it is not surprising that Dale is a little bitter.

G3XBY also reports that G3XCS in Saltash, Cornwall, hopes to be on 70cm before long, to give that county a welcome representative on uhf.

G8ECK of Bicester has recently got going on 70cm sideband, running just 1W output from a solid-state transmitter. Mike hopes soon to add a pa and increase the power to a respectable level.

Repeaters

Progress is being made with the Barnsley repeater, GB3NA, which was heard undergoing trials during September. Although the tone-access and time-out facility had not been completed, the device appeared to be working well, covering a good range.

G5UM reports on the enormously improved coverage of GB3PI, which he finds is always S6 in Leicester and can be accessed at any time, even with a horizontally-polarized aerial.

Jack Hum wishes that the idiot fringe who persist in jamming repeaters would realize that 2m is quite big enough for *all* modes and activities; if one does not like or approve of one particular mode or activity, it would surely be less moronic to go away and do what one *does* approve of, rather than risking one's licence by using illegal tactics to deprive others of their pleasure.

Beacons

There has been a noticeable increase in signal strength to the north of the 70cm GB3GEC beacon. This coincides with a marked drop in strength of this beacon noted by G8FMK in Oxfordshire, and these two observations would seem to indicate an alteration in the aerial system.

G3DAO has kindly forwarded information supplied by Jimmy Bruzon, ZB2BL, on the ZB2VHF beacons on 4 and 2m. The site for both is currently Jimmy's QTH at about 250ft asl, but it is hoped before long to relocate the beacons at the top of the Rock. The 4m beacon, on 70·26MHz, runs 15W to a 2-el Yagi. It signs on A1 with a 7s callsign and 6s carrier (or 6s pause/break-in period), and the transmitter is a Pye PTC114 to a QQV03-20 final. When the beacon is moved to the new location it is intended to change to a more efficient aerial system, and alter the keying mode to F1.

On 2m (144·145MHz) the transmitter (donated by the Surrey Hills Contest Group) is fully solid state, including the ttl keyer and a separate 40W linear amplifier which is not yet in use. At the moment the power output is 10W to an 8-el Yagi, although it is hoped to give the beacon omnidirectional coverage when the move to the better location takes place. Keying is on F1, with 9s callsign and 6s carrier.

Also from G3DAO comes news that the French beacon F3THF is back on the air, and Peter measured the frequency as 144·003MHz. Unfortunately it is understood that it now beams east, which limits the coverage as far as the UK is concerned. A couple more Continental beacons which may, under very good conditions, be audible in this country are F3YM (Ardennes) on approximately 144·157MHz, and LX0LX (QRA DJ31b) on 144·139MHz. The latter runs 7W output to crossed dipoles.

Expeditions

Jon West, G4AOS, reports on the Bury and Rossendale RS expedition to GM in early September. G4AOS and John Clifford, G4BVE, operated on 2 and 4m from a site near Gatehouse of Fleet on 3 September, and from the southern tip of the Isle of Arran from 5 to 7 September, covering VHF NFD. No skeds were arranged in advance and little publicity given but, despite this and the poor conditions, about 35 stations were contacted on 4m, and about twice this number on 2m. The site on Arran was approximately 350ft asl, with a good take-off across the sea to the south and south-east. Equipment used was an FT101/Magnum 4 to a 4-el on 4m and an FT101B/Magnum 2 to crossed 8-el beams on 2m. The group wishes to apologize to those stations who were missed due to the poor conditions, and promises to QSL all those it did work in due course.

DX news

Although confessing that he is not very active on cw, Jim Martin, GC3YIZ, was pleased to have that facility on 22 September when he used the mode to work EA1KC. The Spanish station's QSL card shows that he was running just 1W from a home-built transmitter, to a 9-el beam. EA1KC was also worked by several other stations in the south-east, but the opening was so directional that G3DAO in Selsey, West Sussex, only heard a whisper of the dx. By way of consolation, Peter Cutler managed to work HB9AMO/P (DG32g) on the previous morning of 21 September.

G3DAO also reports on a useful lift in conditions on the evening of Sunday 5 October, with cw activity from DL, ON, F, PA and HB. For most of the evening the HB9HB beacon was audible in Selsey at strengths varying between S1 and S6. This is the first Peter has heard of this beacon for some time, and as it is apparently heard and monitored 24h a day in Holland he wonders whether the beam heading of HB9HB has been altered to a more northerly direction.

Openings to the west coast of Sweden are relatively common and there have, in fact, been several this year. Usually, however, the openings do not reach Stockholm and the east coast, which is why Swedish VHF Manager SM5AGM was so disappointed that no UK amateurs were heard taking advantage of such an opening on the morning of 16 September. Checking the fm bc band at around 0645gmt, he heard a transmission obviously emanating from the Pontop

Pike transmitter, and when SM5AGM checked 2m, the Durham beacon, GB3DM, was 15-20dB above noise in a 400Hz bandwidth. Several locals were alerted and within a few minutes Stockholm stations with up to 500W and 40-el beams were calling CQ on both cw and ssb between 144 and 144·4MHz, but no dx contacts resulted. At about 0800gmt GB3DM faded out, and the opening was over. If anyone did hear anything of this occurrence, we should be pleased to hear of it so that the information can be forwarded to SM5AGM.

GM4CXP offers skeds on 4m, 2m or 70cm to anyone requiring the county of Roxburghshire before it disappears at the end of this year. He asks those interested to write to him, QTHR, enclosing an sae and stating preferred times and frequencies. In an attempt to stimulate some activity generally, Derrick has set himself the following schedule of operation, Mondays to Thursdays: 432·31MHz cw/a.m., 1900-1930gmt (tuning 432-432·5MHz); 70·26 or 70·32MHz cw (crystal controlled), 2000-2030, plus Sunday mornings (tuning low to high); 144·05MHz cw, 2100-2130gmt, tuning the low end, transceive. Derrick is also regularly QRV on 2m ssb.

Regular skeds are held between G3DAO and F9LT (Paris) at 1100 and 1700gmt, Saturdays and Sundays on or around 144·05MHz, after which F9LT will be pleased to work any other UK stations who care to call in. Already the sked has activated a few other stations in the Paris area, and on a couple of occasions HB9AMO/P has joined in, and managed to put his 12W signal into the south coast of England from a 1,045m asl location in QRA DG32g.

Further to the information in *Four-Two-Seventy* last month about the DA4BM/DC9KU activity periods towards the UK, Stuart Phillips points out that the time will drop back to 9pm when the clocks go back in this country, because they are working to central European time. Reinhard, DC9KU, has high power to either 4 by 10-el or a 16-el beam at 20m agl, while DA4BM runs 100W to a more modest single 10-el Yagi at 9m agl.

Ducted dx

GM3HAT, Aberdeen, was lucky enough to be one of the few who were active during the 11 August opening, working as far as QRA locator square EK with just 600mW to an 8-el beam, and he feels that the phenomenon was caused by the sea fog that had been present all day. Maurice Hately believes that the dielectric discontinuity formed by the fog/clear air boundary is sufficient to give total internal reflection. The duct thus created could be very narrow, and give the limited coverage noted by GM8EIR last month.

This view is borne out by the experience of Ian Petrie, GM8BRM, who from his portable location has given so many southern stations contacts with Aberdeenshire while in fog or low cloud. On occasions it has been found that the dx disappears when descending below the cloud level.

Sked request

Goetz ("George") Linss, ON8IW, is a regular reader of these columns and a keen dx operator, being especially interested in working into the UK. Fortunately the UK is one of the few directions favoured by the ON8IW location and George has taken full advantage of this. He has so far worked more than 40 counties, but his ambition is to collect the 60 cards required for the FMD 144MHz Senior Award. While there are many British counties still on his unworked list, George has narrowed his immediate aims to Cumbria, Durham, Cleveland, Tyne & Wear and Northumberland, with Merseyside, Salop and West Midlands as secondary targets.

He would be grateful if anyone interested in skeds would write to him at 166 Chaussee Brunehault, B-7433 Masnuy St Jean, Belgium. Preferred operating times are: weekdays 1730-2100gmt, weekends 0900-1300gmt and 1700-2200gmt, on both cw and ssb. Equipment used is a Braun SE600 and linear amplifier running 60W to a 9/9-el long Yagi at 65ft asl.

Contest comment

A combination of wet, windy weather, unexceptional conditions and incorrectly published dates for the RSGB UHF Open contest of 4/5 October kept activity to a very low level and, although conditions improved considerably on the Sunday, it was generally deemed to have been a disappointing event. The G3PMH/A group (Royston) report having worked 11 Continentals, including three Germans and two Frenchmen, and quite a number of stations managed to work ON5FF/P and PA0FWS, both of whom were good signals in the north. GM3ZSS/A, near Aberdeen, was also audible down into the Midlands but was difficult to raise.

Cyril Hayward, G4AHH, puts forward a proposal for a different scoring concept for an achievement table, which could also be applied to contests. This is based on the QRA locator squares, eg ZM, ZN, AM etc, and Cyril suggests a score of one unit for working stations in squares immediately adjacent to one's own, two units for the next set of 16 squares, and so on. To these units could be applied multipliers, and here G4AHH suggests something like a multiplier of one for 2m portables, two for 2m fixed stations, three for 4m portables, five for 4m fixed and six and eight respectively for 70cm portable and fixed stations. He feels that this fixed/portable differential is important to encourage stations to look for fixed stations in the more distant areas, rather than waiting for the visit of a portable station. Cyril feels that his idea that cw contacts should be of less value than a.m. or ssb might not meet with general approval—he could be right!

G4AHH thinks that his proposed new system would encourage people to search for contacts over the entire country, particularly in otherwise neglected areas, and would promote the use of the less-popular 4m and 70cm bands; it could also apply to the whole of Europe. Members' views on these suggestions would be appreciated.

The listening scene

Reports from listeners are rare, which is a pity, because the non-transmitting member, by not being involved in the mechanics of operating, does have the chance to get a very good overall picture of band activity and conditions, and has an important role to play in amateur radio activity. This is why we have been happy lately to report the successes of listening members in winning FMD Awards.

Harold Meerza, BRS34348, whose achievement in earning FMD receiving awards on both 70MHz and 432MHz was reported in August, finds 70cm his most rewarding band and misses little of what goes on. He was receiving good signals from SK6AB during the Jubilee Contest, and noticed that the Swedish station, like other Continentals, was collecting QTH locator squares, much in the same way that we collect

Continued at foot of next page

SWL NEWS by BOB TREACHER, BRS32525*

DX mail

The bulk of correspondence this time centres around the re-emergence of dx signals on all the bands from 160m to 10m after the long summer. Each of the four listeners at the head of the 1975 Countries Table remark on good conditions.

Keith Kerr, BRS35943, reports on several openings on 10m between 1600 and 1800gmt when stations in the southern hemisphere have been audible at good strength. LU8DMS, ZS3AW, CP2AC, TJ1EZ, 8P6EH, OA8V and ZP5NO being the more interesting of the batch. Keith also reports reasonable conditions on 15m where there have been ample signals from YB on many occasions, including YBOCR, YB1KW and YC2QE. As well as the Pacific dx, Keith has found conditions to the Indian Ocean to be good, having heard FB8ZD and FB8ZG. The 40m band has produced signals from VK and ZL plus CO, HI and YS, while 80m, on the other hand, produced T75AA operating from the heart of the Guatemalan jungle. QSL returns are improving also, with interesting confirmations from 9Q5BG, ZM1ADD (Commonwealth Games Special Station) and MP4BIN on 80m.

DX activity on 160m has been poor of late according to David Sharred, A8312, with only KV4FZ of any real note. However, David did hear VQ9SS/C on 15m for an all-time new one, and C5AL, CR4BS, VP2KK, 5T5ZR and 9M8VLC were the best of the remainder. David now has confirmation number 24 on 160m in the shape of ST2AY which came direct. With the CQWW, RSGB 21/28 and 7MHz contests all taking place during October, David hopes that the bands will get even better and that his country totals will also improve.

Neville Spry, BRS17567, reflects on the sudden change in weather, from temperatures up to 90°F to force 9 gales, but is content as the bands are beginning to liven up. Neville's pick of the month was FW0LP heard at 0818 on 20m, and also being able to hear all the W call areas in about an hour.

N. Phelps, BRS35608, lives in Devizes and has been very active of late on cw and has increased his heard tally substantially. Much dx has been heard on all bands from 10 to 80m, including a large number of stations in Africa on 10m. It would certainly be interesting to hear from more cw listeners, especially as many people say it is the only form of communication.

1975 Countries Table

Station	10	15	20	40	80	160	Total	Mode
BRS35943	78	163	224	101	142	0	708	ssb
BRS17567	68	140	225	60	160	8	661	ssb
BRS35608	10	100	200	161	71	0	578	cw
A8312	37	102	171	95	117	29	551	ssb/cw
A8428	28	99	184	46	109	5	471	ssb
BRS25901	32	72	182	69	78	7	440	ssb
A8088	29	61	110	38	50	11	299	ssb
BRS34658	4	8	64	45	94	7	222	ssb
BRS35454	0	20	115	15	53	4	207	ssb
BRS35754	0	0	38	0	51	1	90	ssb

Peterborough is the new QTH of Barry Beatanibeau, A8747, who upon arrival decorated the back garden with a shack and three aerials. The new set-up seems to be working fine for Barry, who has logged many stations from W, JA and VK in a very short space of time.

Listener contests

I have heard from the Cray Valley RS that their printing difficulties have now been resolved and that certificates for the 1974 and 1975 swl contests will have been despatched before receipt of this issue of the journal. Certificates are also in preparation for their 1st 160m Contest which was held earlier this year. These should also be despatched in the very near future.

Apologies this time for a short *SWL News*, but this was due to holiday commitments.

News and comments for the January 1976 issue should reach your scribe not later than 25 November. □

* 392 Rochester Way, Eltham, London SE9 6LH.

Four-two-seventy *continued*

counties. Harold wonders whether this will ever catch on here (as, for example, suggested by G4AHH this month), but he personally hopes that we shall never abandon counties in favour of "mere numbers".

After listening on many occasions to stations on 70cm setting up contacts for the next band up, Harold's thoughts have been straying towards 23cm lately—and a listener award for that band really *would* be something to aim for.

Awards

It was the writer's pleasure to relieve Jack Hum, G5UM, of the awkward task as VHF Awards Manager of checking his own claim for the 70MHz Senior Award. Confirmation that all was in order meant not only that Jack now has 70MHz Senior No 28, but also Supreme Award No 11—no more than just reward for his years of service to vhf.

Other awards are:

70MHz transmitting: No 118 to G3MCS;

70MHz senior transmitting: No 29 to G4AIR;

144MHz transmitting: No 454 to G2AMV (old QTH); No 455 to G2AMV (new QTH); No 456 to G8IAT; No 457 to G8AAY; No 458 to SM7FJE, who has given so many UK stations their first Swedish contact;

144MHz senior transmitting; No 79 to G3VSA;

432MHz transmitting: No 113 to G8BDJ, from a south coast sea-level site;

Microwave: breaking new ground, the first 24GHz awards go to G3BLN/P (No 1) and GW3EEZ/P (No 2) for their world record 158km contact on 14 September.

Miscellany

We rather liked the gem passed along by G4BLH, heard during VHF NFD—"QRZ the two stations calling . . . would the weaker station go ahead please . . ."!

Finally, all items for the December issue should reach G3NHE by 5 November, and for the January issue by 3 December. □

RSGB REGIONAL AND AREA REPRESENTATIVES

ZONE	REGION	
A	1	Cheshire, Greater Manchester, Merseyside, Lancashire, Cumbria, Isle of Man. **RR** B. O'Brien, G2AMV Deputy RR W. Furness, G3SMM **AR** (Wirral) K. Birch, G2FDS
A	2	North Yorkshire, West Yorkshire, South Yorkshire, all that part of Humberside north of River Humber. **RR** R. C. Andreang, G4CMT **AR** (York) J. W. Thompson, G3WQM
B	3	West Midlands, Warwickshire, Staffordshire, Salop, Hereford & Worcester. **RR** H. S. Pinchin, G3VPE **AR** (Coventry) W. F. Mienerts-Hahn, G3UOL
B	4	Derbyshire, Leicestershire, Lincolnshire, Nottinghamshire, all that part of Humberside south of River Humber. **RR** T. Darn, G3FGY **AR** (Derby) M. Shardlow, G3SZJ
B	5	Bedfordshire, Cambridgeshire, Northamptonshire. **RR** P. F. Chilcott, G4BBA
D	6	Oxfordshire, Buckinghamshire, Berkshire. **RR** D. C. Andrews, G4CWB **AR** (Berkshire) C. F. Young, G4CCC
C	7	Greater London south of River Thames, Surrey (including that part of Middlesex now under Surrey jurisdiction). **RR** R. S. Hewes, G3TDR **AR** (Norwood & S. London) G. Cluer, G4AVV
C	8	Kent, East Sussex, West Sussex. **RR** D. N. T. Williams, G3MDO
D	9	Devon, Cornwall. **RR** H. W. Leonard, G4UZ **AR** (N. Devon) R. G. Hughes, G4CG (Torquay) L. H. Webber, G3GDW (Cornwall) M. C. Locke, G3NKE
E	10	Dyfed, West Glamorgan, Mid Glamorgan, South Glamorgan, Gwent, Powys. **RR** R. G. Barrett, GW8HEZ **AR** (Cardiff) T. J. Brooke, GW3GHC (Pontypool) J. S. Hammond, GW3JBH
E	11	Gwynedd, Anglesey, Clwyd. **RR** (*Position vacant*)
G	12	Islands Authorities, Highlands, Grampian, Tayside. **RR** F. Hall, GM8BZX **AR** (Aberdeen) A. M. Allan, GM3ZBE (Tayside) M. W. Bannermann, GM3ZXE
G	13	Fife, Lothian, Borders. **RR** Rev S. J. Smith, GM4DNM **AR** (Fife) D. W. Dalrymple, GM3OLK (Lothians) F. Benson, GM8EKF
G	14	Strathclyde, Central, Dumfries & Galloway. **RR** A. J. Mitchell, GM3UDL
F	15	Northern Ireland. **RR** H. J. Campbell, GI8FOK **AR** (Bangor) H. M. Irvine, GI3TLT (North Ulster) I. J. Kyle, GI8AYZ (Mid Ulster) M. Anderson, GI3WWY
C	16	Norfolk, Suffolk, Essex. **RR** R. E. G. Kendall, G8BNE **AR** (Norwich) J. M. Draper, G8BLD (Chelmsford) K. A. Thompson, G3YNV
D	17	Hampshire, Dorset, Wiltshire, Isle of Wight, Channel Islands. **RR** L. Hawkyard, G5HD **AR** (Farnborough & D) D. N. Jones, G8IMX
A	18	Northumberland, Durham, Cleveland, Tyne & Wear. **RR** P. J. Fay, G3AKG **AR** (Northumberland) E. F. Shield, G8GVN
C	19	Greater London north of River Thames, Hertfordshire. **RR** D. S. Smith, G4DAX **AR** (Acton & Chiswick) W. G. Dyer, G3GEH (Edgware & D) A. J. Masson, G3PSP (Hertfordshire) S. R. Allen, G4CYR
D	20	Somerset, Avon, Gloucestershire **RR** G. Mather, G3GKA **AR** (Somerset SE) C. K. W. Peakin, G8JFQ (Gloucester) E. A. Perkins, G3MA (Woodspring-Avon) J. Thorn, G3PQE

THE MONTH ON THE AIR

by JOHN ALLAWAY, G3FKM*

AN envelope which had contained a QSL card from an Argentinian amateur has been forwarded by BRS35608 to the writer. A rubber-stamped imprint in its upper-left corner reads—"Actividad de Interes General—Tarifa Reducida—Para Radioaficionado". It would therefore seem that amateur radio literature receives postal treatment at specially reduced rates in Argentina. How welcome such a concession would be in Britain.

It is understood that GI3PGG's callsign is being pirated in N Ireland. The genuine GI3PGG is at present in Iran and active as EP2TW.

Apologies to G3KMO who was inadvertently left out of the listing of 5BDXCC holders given in the October *MOTA*. He has No 329.

DX news

Long Skip has recently listed details of amateurs serving with UNEF in Egypt. The most recent to become active is VE1VE/SU. Others who have been on the air (with QSL managers listed afterwards in brackets) include VE3AII/SU (VE1AL/3), VE3CUD/SU (VE3SZ), VE3HEY/SU (VE3PET), VE6CBJ/SU (VE1AL/3), VE6JL/SU (VE6JL), VE6KF/SU (not known), SM2EOB/SU (SM2CEV), SM7JZ/SU (SK7GH) and LU2DZ/SU (PO Box 593316, Miami International Airport, Miami, Fla, 33148, USA). VE1AL/3 is Alan Leith, 11-311 Bunting Rd, St Catherines, Ont, Canada.

Tommy Moyce, ZD8TM, will be moving to St Helena in January. He has an FT101B transceiver but prefers using cw.

From the Pacific area it is noted that the club station on Nauru Is, C21NI, has been heard in the PACDX Net on 14·265MHz at around 0730. VR1AT on British Phoenix Is appears almost daily (except on Saturday) near 14·222MHz at 0815, with GM3DZB sometimes acting as M/C. VR1AA now asks for QSLs via JA0CUV/1 (see *QTH Corner*). KC6CG, located at Yap in the W Caroline Is, is frequently to be found between 14·202 and 14·207MHz at 1400 looking for European contacts.

The latest research by Geoff Watts (of *DX News Sheet*) on the "most wanted" DXCC countries reveals that the first 10 (listed in order of scarcity) are now Clipperton Is (FO8), Bouvet Is (3Y), S Sandwich Is (VP8), China, Iraq, Saudi Arabia/Iraq Neutral Zone (8Z4), Burma, S Yemen (7O), Bajo Nuevo (HK0), and Mellish Reef (VK9).

It is reported that amateur radio in Laos was banned from 25 August. The spread of "freedom" throughout SE Asia would seem to be having a disastrous effect, with all amateur activity now at a standstill in Burma, Cambodia, Vietnam, Laos, Sikkim and China.

ZL3NR/P on Chatham Is has been active on 3·774MHz at around 0600, looking for contacts with Europe.

UK1PAA is located on Franz Josef Land and it is rumoured that UW3HY will operate the station during November using ssb.

News from overseas

VR1AA has advised the Society that from 1 January 1976 the Gilbert & Ellice Islands will become two separate crown colonies—the Gilbert Islands (consisting of the Gilbert Islands and Ocean Is—VR1, Phoenix Is—VR1P, Northern Line Is—VR3, Central Line Is—VR7, and Southern Line Is—VR7), and Tuvalu. The latter consists of what are now the Ellice Is, and the VR8 prefix has been assigned to this area. Each territory will have its own administration, stamps etc.

Larry Day, 5B4LD/G4DIV, is chairman of the English School Radio Club in Nicosia, Cyprus. The club is quite active as 5B4ES, and operates on all bands 3·5 to 28MHz on cw and ssb using an FTDX401 and a TA33Jr beam as well as ground planes, dipoles and inverted-Vs. The club runs lectures for members studying for the RAE, and keeps in touch with former pupils over the air. It is hoped that this year will see some operation on Oscars 6 and 7.

There will be special activity from stations in Hong Kong from 0900 7 December to 0859 8 December. This is a good opportunity to make contacts for the Hong Kong Firecracker Award (see *Awards*).

Readers will be pleased to learn that James Pershouse, 9M2DQ, is now improving in health and is active almost daily on or near 21·355MHz looking for UK contacts.

Don, 9G1GE, now has a TA33 beam and is working Europeans on 21 and 28MHz. On the former band he is active mainly from 1800 to 2000 and can be found around 21·010MHz. UK contacts are welcomed and QSLs go via G3USE.

ZL1ACX is now G3RHL once more and QSLs are available from the address in *QTH Corner*. 9J2DT is also QRT from Zambia but has no definite news of where he will operate from next.

Top band news

The usual winter 160m dx tests have been organized by W1BB. These have been run since 1932 and it is felt that equipment and knowledge of the band have improved to such an extent that they are now to be looked upon more as first-timer's tests. Stew asks regulars, old-timers, and "big-guns" to spend the test times looking only for new callsigns and first-timers.

The **Transatlantic Tests** will take place on 16 November, 21 December, 11 January and 8 February between 0500 and 0730. W and VE stations will transmit between 1·800 and 1·807MHz, and others between 1·825 and 1·830MHz (ie in the "dx window"). Procedure is that W/VEs call "CQ FT DX" for the first 3min of each 15min period, starting on the hour. They will then listen for replies for 12min and make contacts. Those outside the USA and Canada not in QSO will call "CQ FT DX" during the same 12 min.

Transpacific Tests will be held on 15 November, 20 December, 10 January and 7 February from 1330 to 1600. Procedure is the same during these. (Note that ZLs use 1·875MHz, VKs

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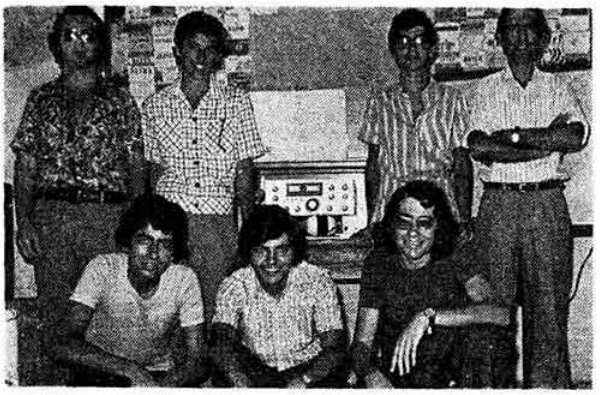


Members of the English School Radio Club, Cyprus, in their shack. L to r (standing): Garo Molozian; Larry Day, 5B4LD/G4DIV; Marcos Carlettides, senior physics master; and club president A. Demetriou; (kneeling) Philip Larkos; Panicos Evripidou and Zeron Protopapas

1·800-1·805MHz, JAs 1·9075-1·9125MHz, and KH6s 1·996-2·000MHz.) Reports would be welcomed by W1BB (36 Pleasant St, Winthrop, Mass, 02152, USA), and also by G3FKM.

VK6HD expects to be active on or near 1·803MHz four nights weekly between 2030 and 2115. He will listen for European callers five kilohertz above and below DHJ on 1·825MHz. VS6DO is also looking for European contacts, transmitting on 1·804MHz and listening on 1·827MHz for half-an-hour before and after VS6 sunrise (this is at 2215 on 1 October and 2300 1 January). VP8NP will be on again this winter during most weekends.

Dxpeditions

At the time of writing, EA8CR was scheduled to visit Equatorial Guinea between 14 and 30 October. He was hoping to be on the air as 3C8CR during the CQ WW DX Contest and was thought to have a TR4C with vfo and L4B linear as equipment. If at all possible he may make a visit to Annobon Is (3C0) at the end of this period.

Arch Hewitt, VK5XK, is due to arrive in Niue on 7 November and to be there until 5 December. He favours cw operation and is believed to have a rather elderly transmitter with crystals for 7·007, 7·010, 7·011 and 14·014MHz. W0JRN will act as his QSL manager. His ZK2 call is not known yet.

The expedition to the Coral Sea islands by VK3JW, VK4WS and VK4ABA, originally intended to take place this autumn, has been postponed until next summer.

PY7YS had considerable success during his expedition to Fernando de Noronha as PU0YS during July. His original plan was to proceed to Atol das Rocas and St Peter & Paul Rocks, but an accident to his family caused him to return home. This part of the trip may now take place during November.

International Amateur Radio Club

This is the club which maintains 4U1ITU, the amateur station located at ITU HQ in Geneva. Its objectives are: (1) to provide a ready means for the promotion of amateur radio within the ITU and other international organizations; (2) to provide operating facilities in Geneva at 4U1ITU for visiting amateurs—especially delegates to international conferences, and (3) to provide for a community of interest among amateurs belonging to or associated with international organizations throughout the world. Equipment was donated by ITU, IARU, and various equipment manufacturers. However, the club has to find funds for QSL cards, maintenance etc, and these come from membership dues. With 1979 rapidly approaching the writer considers that support for this venture is very worthwhile. Life membership costs $21, and Ambassador Life Membership $210. Further details may be obtained from K4ZA (see *Awards*).

QTH Corner

C21NI	Nauru ARC, PO Box 29, Nauru.
C5AR	via G3LQP, R. Brown, 11 Fircroft Close, Tilehurst, Reading, Berks RG3 6LJ.
KC6CG	via WA2MPE, 27 Bayview Terrace, Manhasset, NY, 11030, USA.
VP2LAW	J. Loader, PO Box 91, Castries, St Lucia, BWI
VR1AA	via JA0CUV/1, Tack Kumagai, PO Box 22, Mitaka, Tokyo, Japan.
VS5LH	L. Hickingbotham, PO Box 1403, Bandar Seri Begawan, Brunei.
ZD9GE	Box 8372, Johannesburg, Rep of South Africa.
ZL1ACX	now G3RHL, 8 Green Dell, Canterbury, Kent.
3D6BD	PO Box 1158, Mbabane, Swaziland.
3D6BG	D. Goldman, PO Box 21, Ezulwini, Swaziland.
5B4PW	P. B. West, Apt 19 Pantheon Building, 40 Evagoras Av, Nicosia 118, Cyprus
7P8AQ	W. C. Samson, Box 1266, Maseru, Lesotho.
9Q5SW	via JA8JN, N. Shibuya, 107 Teinetomioka, Sapporo, Japan.

RSGB QSL Bureau, G2MI, Bromley, Kent, BR2 7NH.

"Radio Amateurs World Atlas"

An up-to-date atlas of the world, showing CQ zones, call areas, and other useful and interesting information, produced by Radio Amateur Callbook Inc, is now available from the RSGB for £1.51.

Contests

Results of the 1974 All Asian DX Contest (CW section) have arrived from JARL. Scores of UK stations which took part are as follows: (Multi-band) **G3ESF**—6,552, G3KDB—4,545, **GM3CFS**—2,065, G3SXW—1,736, and G8KP—150 points. On 14MHz **G3FXB**—7,520, G3TXF—2,028, and **GM3SSB**—260 points were listed.

TOPS CW Club Contest

1800 6 December to 1800 7 December.

3·5 to 3·6MHz only. Low end for dx. Contacts with own country count one point, with stations in same continent two points, and others five points. Each call area in the USA, Canada, Australia and the USSR counts as a country. Total score is total points multiplied by the number of different prefixes worked. Entries may be single- or multi-operator. Send logs to Peter Lumb, G3IRM, 14 Linton Gardens, Bury St Edmunds, Suffolk IP33 2DZ, to arrive before 31 January 1976. Enclose sae/irc for results. In the 1974 event there were 261 entries—only eight from Britain! Of these **G3TXF** leads with 26,642 points. **G3BZU** scored 61,056 points in the multi-operator class.

All Austria Contest 1976

1800 15 November to 0600 16 November.

1·8MHz cw only. Exchange RST and serial QSO number (from 001). Each contact counts one point. Multipliers are two for each Austrian "Bundesland" (OE1, OE2, etc), and one for every different prefix. OE stations are permitted to use 1·823-1·838, 1·854-1·873 and 1·879-1·900MHz. Mark duplicate QSOs. Post logs before 13 December to: Ing Viktor Patek, OE3VP, A-2103 Lang-Enzersdorf, PO Box 7, Nieder-Oesterreich, Austria.

Awards

The Hong Kong Firecracker Award

This is available to licensed amateurs and listeners. Stations in *CQ* zones 18, 19, 24, 25, 26, 27 and 28 require confirmed contacts with, or reports from, 10 different VS6 stations. Those located elsewhere (including the UK) need only six. All cw, all phone, and mixed endorsements are available. A list showing full details of contacts, certified by G5GH, and accompanied by 10 IRCs should be sent to QSL Manager, HARTS, Postbox 541, Hong Kong, Note that all contacts must have been made since 1 January 1964.

The Diploma 1975 Salviamo Venezia

This has been devised by ARI to help publicise the attempts to save Venice from sinking into the sea. Contacts from now until the end of 1976 are valid. The rules are complicated and copies may be obtained from your scribe (sae please).

The Diploma des 100 Award

Readers attention is drawn to this award, fully described and illustrated in March 1975 *MOTA*. Note that QSL cards are not required. A list of ITU member countries and valid dates for contacts may be obtained from K4ZA, L. M. Rundlett, 206 East Amhurst St, Sterling Park, Va, 22170, USA. Please enclose sae and IRCs.

WPX Award

Claims for this *CQ* award should no longer be submitted to WA6GLD. Applications (in the UK certified by G3FKM) should be sent to: CQ WPX/DX Awards, Box 3388, San Rafael, Cal, 94901, USA.

Band reports

Something of interest has been reported on all bands—ZLs having been heard and contacted on 1·8MHz, and some readers having now worked more than 50 countries on 28MHz in 1975. Calling "CQ" on the latter band is still an excellent way of getting a surprise!

Many thanks to the following for information set out in this section: Gs 2HKU, 3HB, 4QK, 4RZ, 5JL, 6GH, 3GVV, 3KMO, 3NKQ, 3RHL, 3RZI, 3UOL, 3ZSU and 4BTI, GD4BEG, DA2WN, BRSs 17567, 17991, 31301 and 35608, and As 7056, 8312, 8428 and 8713. Stations listed in italics were using cw, the others ssb.

1·8MHz. 0500 *EL0N/MM* (nr Cuba). *VEs*, *W1HGT*, *W0NFL*. **0600** *VE7UZ*, *WB2URU*, *WA4SGF*, *W8KWN/5*, *W9NFC*, *K9YWO*, *W0OAW*, *ZL3RB*. **2300.** *KV4FZ*.

3·5MHz. 0000 VU2GDG. **0200** KP4, VP2, W7VO. **0500** W1-W0. ZL. **0600** TG4UA, *VE7UZ*, ZL, ZP5AL. **2100** TJ1EZ. **2200** JY3ZH, OX3OO, VS6DO, YB0AAV, 9V1SH. **2300** TA1AQ.

7MHz. 0000 A2CBW, *CO5DM*, PY. **0100** *FP8BR*, 8P6. **0500** *CX*, *YV*, *VE7UZ*, *ZL*, *ZP*. **0600** *KL7AI*, *VK*, *W6/W7*, *YN9FS*. **0700** *VK*, *W7*, *ZL*. **2000** *JA4,5,6*, *JX0AA*. **2200** *VU2DX*. **2300** *EP2OD*, HC, *LU*, *PJ7VL*, VP9HO.

14MHz. 0700 KM6EA, KS6DV, TU2GA (QSL to K9KXA), FW0LP. **0800** *FK8CD*, KB6CU, KM6EB, KS6, VR1AT. **0900** KL7, KS6, VR4DX. **1000** WA6LRG/KB6. **1300** AP2AC, P29. **1400** A7XA, 3B9DA. **1500** HS2AKZ, ST2AY, VK9XK, VS5s, JS, MG. **1700** *SU1IM*, VS9MB, W7, OE2SCL/YK. **1800** *KH6*. **1900** C5AR, VP8NP (QSL to G4BNH), *VP8OB*, ZD7SD, *4S7NE*. **2000** *KL7*, SU1MA, VK9DL, ZL2BAJ. **2100** CT7BER (Berlengas Is), VK5, ZS3QN. **2200** ZL4BX. **2300** KM6EA. W7.

21MHz. 0900 JA, 9U5SM. **1000** KG6. **1300** 7X4MD. **1400** W1-W0, XE1FR, 3B8, *9L1BH*. **1600** ZD9BU, ZS3BK. **1700** VP8, VQ9BP, VQ9SS/C. **1800** *FL8PE*, W7. **2000** HC7RD, *KG6SX*, W6, *5T5ZR*. **2100** W6. **2200** W0.

28MHz. 0900 OJ0MA, *ZS2EM*. **1300** *C9M*, EL, 9J2. **1700** VP8s JA, HZ, *7Q7RM*. **1800** *5T5ZR*. **1900** FC, LU, ZP, 9G, *9Q5XC*. **2000** CE, EA8, PY.

Many thanks to all correspondents, and especially to the following news sources for items extracted: The **DXers Magazine** (*W4BPD*), **Long Skip** (*VE1AL/3*), the **West Coast DX Bulletin** (*WA6AUD*), **DX'press** (*PA0TO*), the **Ex-G Radio Club Bulletin** (*W3HQO*), **DX News Sheet** (*Geoff Watts*), and the **29 DX Club Newsletter** (*VK6WA*).

Please send all items for the **December** issue **to reach G3FKM** no later than **5 November,** and for **January** by **3 December.** □

Propagation Predictions

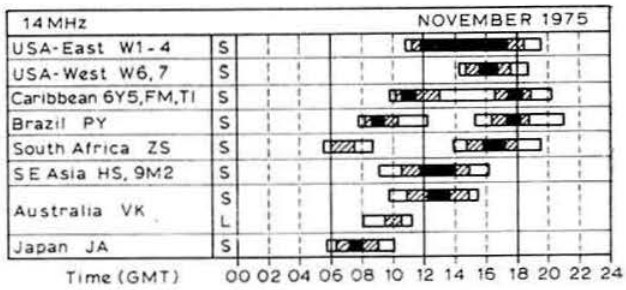
During November dx traffic should be at its best, but because of the present low sunspot activity there will be little dx on **28MHz.** Only under very favourable conditions will traffic with Africa be possible from about 1300 to 1530gmt. Short skip on both 28 and **21MHz** will only be possible under exceptional conditions. Traffic with South America and Africa will be certain on 21 MHz, but western North America and Japan will probably not be heard.

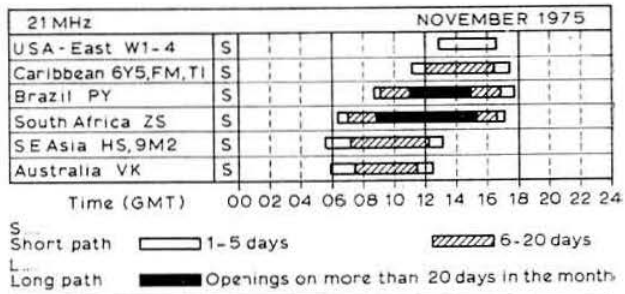
14MHz will be the main carrier of dx during daytime. In contrast to 21MHz, all continents will be heard on this band, but because of seasonal conditions it will close about 1900gmt for dx. Now and again it may remain open a little later, especially to Africa and South America. Traffic via the indirect path will be possible sometimes by virtue of the prevailing winter conditions, where the longer part of the path lies in darkness, especially with South America and East Asia before noon, and western North America during the afternoon. Traffic with KH6 may be possible via the direct path from about 1640 to 1720gmt and via the indirect path from 0500 to 0715gmt.

7MHz will be the main carrier of dx after 1900gmt. Eastern North America will be heard on this band after 1930gmt but traffic will be interrupted because of low frequencies in the latter half of the night. South America will be heard all night.

Conditions on **3·5MHz** will alter little from those given for this band for October. During the latter half of the night it will be interrupted by the dead zone.

The provisional sunspot number for September 1975 from the Swiss Federal Observatory was 14·1. The last week of the month showed almost no solar activity. While indications of the new cycle have appeared, it is apparent that the trough of the present cycle has not yet been reached. Predicted smoothed numbers for January February and March 1975 are 8, 7 and 6 respectively.





YOUR OPINION

The following letter was addressed to the Zone C Council member:
Dear Mr Green,

Having spoken to amateurs within my region, and also in the rest of the country as I have travelled about this year, I have become increasingly disturbed on a number of counts:

(1) The average *G* amateur does not realize how serious the position of amateur radio is with regard to the 1979 World Conference;
(2) Many provincial amateurs regard the RSGB as the London Radio Club!;
(3) Many amateurs believe, quite sincerely, that the only things they get from the RSGB are a very good magazine and a QSL Bureau.

Taking the last point first: while these amateurs will pay £5 per annum for a magazine they will baulk at £8 per annum (see "Current Comment" September 1975). This is not altogether shortsightedness on their part. The RSGB does not publicize its other more serious activities enough. How many amateurs are really aware of the continuous negotiations with the authorities? When a concession is won, two lines in *Radio Communication* is really selling ourselves short. (There are many amateurs who are still not fully aware of the new mobile logging rules, for example).

My second point is sufficient in itself: while a lot of good work is done in the provinces, it is not seen to be done.

Finally, the first, and in some ways the most important point: related to the previous points it is again a lack of publicity. *QST* has been publicizing the 1979 Conference and steps to be taken for a couple of years now. There cannot be an American amateur who is not aware of the danger. While I am no great admirer of America, our English characteristic of modesty and reticence does not favour us greatly.

The RSGB has to go to the market place and sell itself, distasteful as it may seem. We have got to compete for that £8 per annum, and also the £8 belonging to the non-members.

If we do not, we will fail to get the new members we need, and many of our existing members will subscribe to another magazine.

D. S. Smith, G4DAX, RR Region 19

The following letter was addressed to Mr K. C. Woodman, G3EBU, one of the RSGB Slow Morse Transmissions operators.
Dear Mr Woodman,

May I thank you for your slow morse transmissions radiated so unfailingly on Tuesday mornings to help people like myself.

I apologize for not sending you regular reports but, as you would expect, they were well received here and were of great value. As I shall be 71 in August it was all pretty hard going and I must say it would seem to be an easier task at 17 than at 70. However, yesterday I managed to take the morse test and had a verbal OK from the examiner although I have yet to get the official chitty. Your transmissions, so beautifully executed and thus so easy to copy, helped no end; so many, many thanks.

Sincerely,
Ken A. Taylor, G8IVD

The Editor
Radio Communications
Sir—I understand that the proposed Bacton repeater has been turned down by the Home Office.

Many of us in Norfolk are pleased about this as we feel that repeaters are being forced on to us by a few amateurs and the RSGB. In Norfolk we have approximately 180 amateurs of whom about 10 would use the repeater.

On the Colchester Rally day I could hear GB3PO in Norwich on a mobile halo at 5-6, and GB3PI is always a good signal at my QTH.We also have the PA0s and DBs coming in with a slight lift, so I think we have our fair share of repeater frequencies to keep off.

Also, I noticed at the Woburn Rally that Gs with walkie-talkies were working the repeater and saying G8---/M. This, and the kind of stuff one hears on LO-PI could end up with 2m being taken from us and used for a more useful job.

J. R. Tye, G4BYV

The Editor
Radio Communication
Sir— It was extremely disappointing to learn that the proposed 2m repeater station at Bacton, Norfolk, (GB3NB) has been refused a Home Office licence despite the fact that the station was ready and tested for immediate operation. It appears that no reasons were given for refusal but it has been assumed that this was because the Bacton site (about 30 miles north of Yarmouth) is less than 100 miles from the next nearest repeaters, namely GB3PI at Barkway and GB3PO at Martlesham, near Ipswich. The actual distances are 86 and 55 miles respectively.

Even more disappointed, of course, are the group of amateurs who put their own time, money and effort into building and installing the Bacton repeater equipment and who, like others who undertake this difficult task for the benefit of fellow operators, are frustrated by a seemingly nonsensical attitude toward vhf repeater operation.

The 100-mile spacing, for instance, shows a lack of any knowledge of vhf ground-wave propagation on the part of those who advocated the idea. Even a 60-mile spacing could, at best, only provide intermittent and unreliable fringe coverage for mobiles at 30 miles in any direction. This has already been proved from existing repeater operation.

Of course there may be other reasons for repeater licence refusal, such as the occupation of frequencies, or maybe the Home Office is opposed to repeater operation anyway. Or could it be that the RSGB takes this view? We, the members, would like answers to these questions and, moreover, a clear and concise statement published in *Radio Communication* regarding the vhf repeater situation as a whole—not just a small table showing operation, application and refusal as in "UK repeater status" on page 702 of the September issue. The final question is, do we want vhf repeaters? I for one am of the opinion that were a vote taken on this there would be a very large majority return of "yes, we do!"

F. C. Judd, FISTC, AINSTE, MInstA, G2BCX

The Editor
Radio Communication
Sir—I am the present custodian of several hundreds of QSL cards that have been forwarded to ZC4 stations that have now left Cyprus and returned to UK. The list is far too exhaustive to print but covers virtually every callsign issued under the ZC4 banner since 1969.

Should any of your readers have held a ZC4 call in the past and wish to enquire/receive any cards that are addressed to them, then all that is required is a suitable sae to me at Air Transport Liaison Officer, Royal Air Force Akrotiri, BFPO 53. Unfortunately I will not be able to retain the cards after January 1976. There are some "rare uns" among the pile.

G. Brennan (ZC4AU), Staff Sergeant, RCT

The Editor
Radio Communication
Sir—I feel that the statement in the NFD results that an outboard pa for one of the current transceivers is "far" better than an inboard one requires some thought.

The fundamental limitation in these transmitters is lack of drive: they are totally incapable of driving their own pa stages into Class C operation. At the present levels of power in NFD this is of no significance, but as a limitation it would not be affected by the position of the pa stage.

An outboard stage can be more convenient in that ht and lt voltages can be provided for, say, a PL36. Equally, though, a PL36 could be fitted internally in place of a 6146 with an external heater supply—and little modification. An outboard stage would allow the recalculation, for those so minded, of the tank circuit L and C values: with a noticeable increase in efficiency?

My—obsolete—Japanese transmitter uses a pair of 6146Bs in parallel, right down to the heaters. In order to fit an inboard EL81 pa the total modification required was to wire a 9-pin holder to an octal plug and fit a smaller top cap inside the existing one. (In fact the wiring to the octal had to be altered to get a reading on the cathode-current meter, as the circuit diagram was incorrect.) In some cases, of course, a second valve would be convenient for dropping the heater volts from 12·6.

In this way, and with the total outlay limited to the procurement of one EL81, my small and fundless club was on the air with 50W of Class C cw. Yes, Class C: the transmitter has preset bias of ample range, and the EL81 took the full ht without blinking. Admittedly the G2 volts could have been a bit higher, but the pa stage was completely stable at 21MHz without alteration of the neutralization.

J. B. Roscoe, G4QK

COUNCIL PROCEEDINGS

A brief report of the Council meeting held on 14 July 1975

Present: Mr C. H. Parsons, (President, in the Chair), Messrs P. Balestrini, J. O. Brown, R. W. Fisher, J. E. Newnham, W. McGonigle, J. Petty, W. Scarr, R. F. Stevens, D. M. Thomas, F. C. Ward (members of Council), G. R. Jessop (general manager), A. W. Hutchinson (editor), D. A. Evans (minutes secretary).

Apologies for absence had been received from Dr E. J. Allaway and Messrs D. Byrne, R. J. Baker, D. M. Pratt, A. W. Smith and W. Green.

Financial report

Mr Brown reported on his preliminary budget figures for 1975-6. Work on next year's budget gave a total of £151,000 required. Income estimated gave £33,000 from advertising which left a remainder of £118,000. The income from book sales was unknown and not included in the estimate, but may represent £16,000 gross profit (as in the past years) which still left a required income of £102,000 from subscriptions. On present subscription figures this gave a shortfall of £24,000.

On the expenditure side, the cost of *Radio Communication* was estimated at £84,000 and the cost of headquarters staff, £37,500. Postage on *Radio Communication* alone would be £20,000, more than the income of the Society 10 years ago.

Considerable discussion on the Society's financial affairs followed. All aspects of expenditure were discussed and ways and means of reducing these were considered. After all possible reductions had been made it was clear that the only viable option was to increase subscriptions.

Mr Brown said that the previously suggested increase of £2 was based on a 10 per cent inflation rate. If the inflation rate was more than that, then the increase would need to be more, and would an increase of £2, £2.50 or £3 be enough?

It was reported that a Finance & Staff Committee recommendation, not yet circulated, proposed an £8 subscription, but that there should be no final commitment until the full accounts had been prepared.

It was proposed, seconded and approved that, subject to revision following preparation of the accounts, the Finance & Staff Committee recommendation that the subscription be £8 be accepted.

Council approved a suggestion from Mr Brown that he should inform members of the current financial problems under "Current Comment" in the September and October issues of *Radio Communication*.

General manager's report

The general manager reported on staff changes which had taken place in the accounts department, post-room and reception. While there had been temporary difficulties, these had now been resolved.

Membership and affiliation

Figures for June showed a total of 248 new members, and a loss (including deceased) of nine. The net increase of 239 brought the total increase for the first half-year to 891. The current rate of increase was nine per cent.

It was resolved:

(i) to approve the applications for membership and accordingly elect 248 new members;
(ii) to accept reduced subscriptions from six members;
(iii) to waive the subscriptions of seven members on the grounds of blindness or other disability.

IARU

It was agreed that Mr R. J. Hughes, G3GVV, who led the Society's delegation to the IARU Conference in Warsaw, be invited to attend Council meetings to report on progress of undertakings accepted at the conference.

CCIR

Mr Stevens stressed that as the Society had been invited to attend the Study Group 6 meeting in Geneva it was important to attempt to obtain the same recognition as professionals in radio work.

It was suggested that Mr Flavell attend and it was agreed that the invitation be accepted.

Committee minutes

The minutes of the following committee meetings were accepted by Council: IARU Working Group (3/4/75), HF Contests Committee (5/5/75), Finance & Staff Committee (25/5/75), VHF Contests Committee (22/5/75), Raynet Committee (31/5/75), VHF Committee (4/6/75), Technical & Publications Committee (10/6/75), Mobile & Exhibition Committee (10/6/75), Education Committee (14/6/75).

Mr Balestrini reported on a joint meeting of the Raynet and VHF Committees to discuss Raynet frequencies in the 2m band.

Mr Scarr reported that no quorum was present for a meeting of the Membership & Representation Committee scheduled to take place earlier in the day.

It was agreed that the next meeting of the Membership & Representation Committee should take place at 2pm on 15 September.

Repeaters

Mr Newnham originated a discussion on the use of repeaters. Mr Stevens said that one of the original justifications for the GB3PI experiment had been based largely on mobile-to-mobile working but that there was no legal bar to repeaters being used by fixed stations. However, their use for contacts between fixed stations was contrary to the spirit of the experiment.

Election of 1976 RSGB Council

Ballot forms for this election are being distributed to members of the Society with this issue of *Radio Communication*.

Personal details of the candidates

ORDINARY ELECTION

J. Bazley, G3HCT

Council member 1971-2. Chairman RSGB HF Contests Committee. First licensed 1948. Active all bands 3·5 to 144MHz. Profession: managing director.

R. Bellerby, BSc, Grad Cert Ed, FBIS, G3ZYE (ex G8DTO)

Member of RSGB since 1965. Member of RSARS, RNARS, Mid Sussex ARS. Chairman of Rossall School ARS and of Kelly College ARES. Past secretary of Thornton Cleveleys ARS. RAE class instructor. Active all bands 160-2m, fixed station, /P and /M, particularly interested in 160m dx. Profession: college principal.

T. Darn, G3FGY

Joined RSGB in 1947. Has been Town Rep, County Rep and Region 4 Rep. War service in RAF as wireless operator mechanic. Employed in the radio and electrical trade for over 30 years. Joined the South-east Derbyshire College in 1974 as chief AVA technician and part-time lecturer. Active on all bands from 160 to 2m and has been mobile on 20m for six years. Enjoys national contests and spends a ot of time developing the social side of amateur radio. Chairman of Derby & DARS for many years; organized all 18 Derby mobile rallies and all four Amateur Radio Retailers Association Exhibitions at Leicester.

D. S. Evans, PhD, AIM, G3RPE

Metallurgist; member, VHF Committee (chairman of Microwave Sub-committee); member, Telecomms, Liaison Committee; contributor of "Microwaves" feature in *Radio Communication*, co-author of *VHF-UHF Manual* 3rd edn. Main interests: uhf and microwaves.

N. A. Smith, G3HFO

First licensed 1950. Formerly member of amateur radio societies in Japan; founder member of Tokyo International Amateur Radio Association. Currently secretary and newsletter editor of Kingston & DRS. Member of Thames Valley ARTS, Tops CW Club and UK FM Group. Main operating interests are cw on hf bands and mobile

on 2m. RSGB interests are amateur radio administration including reciprocal licensing, Society organization, encouragement of newcomers to the hobby and amateur radio journalism. Profession: civil servant.

G. M. C. Stone, CEng, MIEE, MIERE, G3FZL
Member of RSGB since 1948. Council member, 1960-74. President 1964. VHF Manager since 1965. Chairman of the VHF and Scientific Studies committees. Member of the VHF Contests Committee and IARU Working Group. Represented RSGB at IARU conferences at Opatija, Brussels, Scheveningen (Secretary of Committee B, VHF matters) and Warsaw in 1966, 1969, 1972 and 1975 respectively. Mainly active on bands above 30MHz, fixed, mobile and portable. Profession: electronics engineer, government service.

C. J. Thomas, G3PSM
Joined RSGB in 1958. First licensed as ZC4CT in 1960 and GW3PSM in 1961. Other calls held during the period 1960-3 included MP4EDK, MP4MAL, MP4QAU, MP4TAP, VS9ACT and 5A2CT. Later licensed as DL2CT in 1964 and ZB2BS in 1969. Member of RSGB Intruder Watch since 1961 and honorary organizer since 1967. Region 1 co-ordinator of IARU Monitoring System. Attended the IARU Region 1 conferences in Scheveningen in 1972 and Warsaw in 1975. A number of major operating awards held. A supporter of WAB and a member of RAFARS. Primary interest is in international co-operation and the protection of the present amateur bands. Served in the telecommunications branch of the RAF for 12 years and now owns a public hire taxi business.

ZONE C ELECTION

D. J. Andrews, G3MXJ
First licensed in 1958. Member of RSGB since 1960. Member of HF Contests Committee since 1965. Member of IARU Working Group since 1972. Member of RSGB delegation to IARU Region 1 Conference in Warsaw 1975. Licensed as 9J2MX in 1967-9. Member of First Class Operator's Club since 1962. Past member of Gravesend RS and Surrey RCC Club. Founder member of Channel Contest Group. Frequent entrant to major hf contests. Past winner of 1·8MHz contests and current holder of Braaten Trophy. Profession: computer engineer.

W. J. McClintock, MSc, G3VPK
Member of RSGB since 1966; licensed same year. Member of VHF Contests Committee since 1968. Member of Mobile & Exhibition Committee since 1969. Chairman of Chelmsford ARS in 1973. Member of Essex Raynet and Mid-Essex VHF CG. Active on hf, vhf, uhf and shf; fixed, mobile and portable. Profession: microwave engineer.

G. B. Packer, G3UUS
Member of RSGB since 1961. Licensed in 1965. Chairman of South Anglia Repeater Group. Member of local Raynet group. Interested in amateur radio administration, particularly with regard to licensing conditions and interference problems. Profession: engineer, PO Research Department.

F. A. E. Porter, G2CDX
No details supplied.

ZONE D ELECTION

L. N. G. Hawkyard, G5HD
Licensed G3ZKR; took over G5HD, late father's call, issued in 1922. Region 17 Representative for last four years. VHF Contests Committee member for three years. Currently active on 70, 144 (cw only) and 432MHz, and 1·3 and 10GHz. All home-built gear. Very active vhf contest operator and dxpeditioner, organized the first-ever 1·3GHz dxpedition. Contributor to *VHF/UHF Manual*. Business: toy retailer.

W. A. Scarr, MA(Cantab), FBIS, G2WS
Licensed 1930. President of RSGB, 1950 and 1951. Honorary Member of Society since 1952. Contributor over many years to Society journal and books. Special interests: vhf and uhf working and home-construction. Chairman, Membership and Representation Committee. Chairman, Educational Visits Scheme. Retired education administrator.

C. F. H. Young, G4CCC
No details supplied.

RAYNET

by S. W. LAW, G3PAZ*

THE reputation of Raynet continues to spread beyond the UK. Apart from further enquiries from the Channel Islands, we have had a request for information from the secretary of the Cyprus Amateur Radio Society, 5B4WR, which wishes to form a body on the same lines as Raynet centred on Limassol.

5B4WR informs us that there already exists a clause in their licence to the effect that amateurs will assist the police and civil authorities if so requested. There now remains the problem of clarifying the question of third-party traffic (presumably to cover exercises for training purposes) and the greater difficulty of obtaining permission to use mobile transmitters. (We wonder how many Raynet members realize how fortunate we are in this respect in the UK?) A co-ordinator will be appointed in due course and 5B4WR will keep us posted as to the progress of the new venture.

Food for thought?
We note with mixed feelings that 4m is due for a return to popular use by the availability of fm transceivers on that band. This may prove to be a mixed blessing since the standard crystals supplied are quoted as 70·2, 70·26, and 70·375MHz. For the nonce we refrain from further comment!

Raynet Committee
At the first autumn meeting of the committee there were few absentees, and the usual volume of business proceeded apace. It was eventually confirmed that the Raynet Trophy will be awarded this year to Cornwall. Our congratulations to that energetic group.

To date there have been eight applications for the special Home Office concession in connection with public shows where Raynet participation is requested. That only two of the applications were refused shows that the system is now working well.

At a recent county survey it was reported that the membership count stood at 1,331 registered Raynet members. The committee would like to point out that, in view of increased postal costs, an sae would be appreciated when members apply for re-registration. Also a reminder that any change of address should be notified to the hon registrations secretary and to the local controller where appropriate. The chairman would like to reiterate that all newsletters, reports etc received are read with interest and circulated to all committee members, but that due to postal costs they are not now always individually acknowledged.

Copies of the new Raynet "hand-out" have been approved and groups who require these should apply to Mrs Balestrini (QTHR as G3BPT).

A London City Police symposium held on 15 October had Raynet representation with G3BPT, G3IIR and G3GJW in attendance. An information sheet on Raynet was included in the symposium brochure. This included the latest list of controllers (send sae for this if required). One subject discussed was the combined series of flood exercises Canute 1, 2 and 3.

The latter took place on 21 September and was controlled from Eaglesfield on Shooters Hill (near Blackheath, SE London). Present at the site were G3GJW, G3IIR, G4AVV and other members including G3PAZ. It was unfortunate that this important exercise took precedence over the scheduled Raynet net on 80m and those taking part in Canute 3 tender their apologies for absence from this regular schedule for the third Sunday in the month.

Group news
There are now two groups in Surrey; G4CMB is now controller for Surrey, and the newly formed NE Hants Border group covers Rushmoor, Farnborough/Aldershot under the control of G3XUU. Plymouth will soon be forming a group, as may Aberdeen and possibly Cheshunt (following a lecture by Mike Barker to the local radio club). Finally, all groups note; next 80m net at mid-day Sunday 16 November near 3·700MHz.

Hon Registrations Secretary; Mrs L. A. Crane, "Greta Woods", Bromley Road, Ardleigh, Colchester, Essex.

* 130 Alexandra Road, Croydon, Surrey CR0 6EW.

CONTEST NEWS

SSB Field Day 1975 results

Lichfield ARC are the winners of this contest; concentrating on the 3·7 and 14MHz bands they amassed nearly 750 contacts and 82 countries. Contacting the same number of countries but making fewer contacts, Northumbria RC are in second place. The Channel Contest Group, in third place, made more contacts than Northumbria but their country multiplier was lower.

Comments from contestants give the impression that the contest was enjoyed despite some mishaps. Thunderstorms enlivened the event in some areas, and created a static problem, but not enough to prevent some good dx being worked, including ZS, KH6 and VS6. The USA and Europe provided a lot of points as was to be expected.

The multiplier scoring system seemed to find favour with the majority of groups although one or two have reservations. The new system also caused several logs to be rescored, the multiplier being the number of countries worked *irrespective* of band, not *each* band. Duplicate contacts with points claimed are still causing trouble; in fact, triplicates have been discovered. Otherwise logs were good and only two caused serious eye-strain.

Check logs were received from G3AFM, G3NKS, G3WHK, G3ZCG, G4BEE, G4DMR, GW3XNS, HA5KKN, I2SWX, YZ1ELM, 5B4ES and 9H4G. The HF Contests Committee expresses its thanks to them for the interest shown.

Posn	Name of group		No of contacts made 80m	40m	20m	15m	10m	Multiplier	Points
1	Lichfield ARC	G3WAS/P	237	3	501	—	—	82	620,062
2	Northumbria RC	G4AAX/P	97	50	508	—	—	82	559,186
3	Channel Contest Group	G4DAA/P	315	92	321	13	1	73	438,215
4	Southgate RC	G3SFG/P	219	128	330	5	—	58	303,504
5	Bury RC	G3BRS/P	302	64	367	—	—	49	292,015
6	White Rose RS	G3XEP/P	223	—	348	—	—	57	289,190
7	Grafton RS	G3AFT/P	194	56	233	13	4	51	196,350
8	Stockport RS	G6UQ/P	68	3	293	—	—	38	164,920
9	Guernsey RES	GC3HFN/P	188	2	233	—	—	44	139,040
10	Crawley ARC	G3WSC/P	191	—	177	7	—	42	111,426
11	Port Talbot ARS	GW3EOP/P	135	47	224	5	3	40	105,600
12	Addiscombe ARS	G4ALE/P	179	27	156	8	—	35	88,200
13	Dartford Heath DF Club	G4BDF/P	340	26	70	—	—	32	79,495
14	Sutton & Cheam RS	G4CWH/P	282	73	70	1	3	30	72,000
15	Hull & District ARS	G3AMW/P	250	8	45	—	—	35	59,675
16	Hereford ARS	G3YDD/P	143	3	95	—	—	35	53,375
17	Doncaster College of Technology	G3UER/P	139	1	65	1	—	44	52,995
18	Mansfield ARS	G3GQC/P	180	2	113	2	—	28	52,780
19	Torbay ARS	G3NJA/P	168	42	52	2	2	32	50,280
20	Shefford & District ARS	G3FJE/P	321	2	20	—	—	25	44,875
21	Swansea RC	GW5ZL/P	39	—	99	—	—	39	40,560
22	Denby Dale & District ARS	G4CDD/P	161	—	76	1	—	31	38,440
23	Newbury & District ARS	G3WOI/P	245	14	22	3	—	26	38,220
24	Crystal Palace & District ARC	G3VCP/P	168	31	34	—	—	25	31,625
25	Chad RC	G4CAR/P	165	42	18	—	—	19	21,755
26	South Humberside Group	G3MSB/P	38	27	15	2	—	20	9,196
27	Dunstable Downs RC	G4DDC/P	80	1	15	—	—	12	6,000

144MHz Low Power Contest, July 1975, results

It has been a long time since any 2m event received the widespread acclamation that was bestowed upon this contest. Perhaps the propagation conditions might have been a little better, but any shortcomings in this direction were amply compensated by the fine weather and the absence of the all-too-familiar complaints of splatter which bedevil the QRO events.

More than half the contestants said how much they had enjoyed the contest, and asked the committee to organize more low power events next year. Several queried the use of commercial equipment having a greater than 2·67W p.e.p. capability; and while the adjudicator is very alive to the ease with which this power rule can be abused, it would appear that all the contestants in this category declared a serious attempt to keep within the spirit of the event.

The practice of reducing the p.e.p. output merely by turning down the audio gain is, however, open to question by other competitors, and if higher-powered transmitters must be used in the interests of maintaining a sufficient number of entries, the use of an attenuator and/or a reliable output meter in the aerial feeder is to be preferred.

Operating standards on the air were, in general, very good, but there was at least one group among the leaders who lost points solely because they did not take enough care in accurately logging the QTHs of the stations they were working.

As so often happens, the contest was won by an exemplary log which contained only a few minor errors: congratulations to the Swindon DARC with the Plessey Contest Group, who operated under the callsign GW3FEC/P. Second place goes to the Fylde VHF Group (G3UCA/P), who threw away rather more points than they could afford. Certificates of merit will be sent to both winner and runner-up.

G2HIF

Posn	Callsign	Score	QSOs	Best dx	Km	QRA	TX final amp
1	GW3FEC/P	1,871	223	PA0DUO	646	YM12	2x BLY89a 2·6W p.e.p.*
2	G3UCA/P	1,834	210	F5ZA	615	YO65	2N3375 2·0W p.e.p.
3	G4CRC/P	1,389	106	GM8FFX	760	XK64	PT4176B 2·0W p.e.p.
4	G8EEM/P	1,249	147	G8DZE/P	510	YO60	Liner 2 2·5W p.e.p.
5	GI8JPG/P	1,075	83	F5ZA	720	WO40	Liner 2 1·0W p.e.p.
6	GW8BXJ/P	889	141	GM8CSF/P	385	YL15	2N5642 2·5W p.e.p.
7	G3UUT/P	783	92	G8DZE/P	609	ZO46	PT8727 2·6W p.e.p.
8	G4BAO/P	753	130	G8DZE/P	440	ZN42	2N5642 2·0W p.e.p.
9	G3JVJ/P	725	119	GM8FFX	555	ZM71	Liner 2 2·0W p.e.p. with attenuator*
10	G4DGA	678	148	PA0PUF	411	ZL58	QQEO3/10 2·0W p.e.p.
11	G8GMF/P	647	123	PA0AGI	490	ZL53	Liner 2 2·5W p.e.p.
12	GW8JHV/P	615	94	GM8FFX	570	YM75	BLY33 2·3W p.e.p.
13	G4AKA/P	614	120	GI8JPG/P	481	ZL18	TS700 2·6W p.e.p.
14	G8CFZ/P	594	79	G3XIU/P	457	AK03	2N3375 2·4W p.e.p.*
15	G4BRA/P	572	124	G8DZE/P	354	ZL26	BLY33a 2·0W p.e.p.*
16	G8ELO/A	557	110	GI8JPG/P	405	ZM64	2SC784R 2·0W p.e.p.
17	GW3WRA/P	552	92	F6DTE/P	360	YL06	2N3866 1·0W dc in*
18	G4DZO/P	480	95	G3UCA/P	425	ZK10	BLY87 2·5W p.e.p.
19	GM8DVD/P	440	49	G4CRC/P	555	YP66	2N5641 2·0W p.e.p.
20	G8DKU/P	407	53	——	—	YO30	TS700 2·0W p.e.p.
21	G8JRW/P	400	80	F1ADF	480	ZK08	BLY14 1·0W dc in*
22	G8FDJ/P	386	66	G8DZE/P	420	YN38	BLY36 2·5W p.e.p.
23	G8CUB/P	353	41	DJ7CL	565	AL77	PT4176 2·6W p.e.p.
24	GM8EUG/P	318	26	G3IUD	635	XP27	2SK153 0·5W p.e.p.*
25	G8INN/P	304	66	G3XIU/P	365	ZL36	Liner 2 1·9W p.e.p.
26	G3XFW	255	33	GM8EUG/P	550	YK07	QQVO3-10 2·5W p.e.p.
27	G3NEO	252	44	GM8FFX	405	ZN54	QQVO6-40 2·5W p.e.p.
28	G8FDL/P	239	52	G3XFW	255	YM24	PT5693 2·0W p.e.p.*
29	G8ENR/P	229	50	G8DZE/P	490	ZN28	QQVO2-6 2·6W p.e.p. 2N2218 1·0W dc in
30	G3SNN/P	211	47	G8DZE/P	310	YL10	QQVO3-10 1·0W dc in
31	G8HAK	85	29	G4EGM	230	ZL08	BLY61 0·95W dc in*
32	G4EFB/P	34	22	G8HAK	110	ZK05	01190 1·0W dc in
33	G3WMR	20	14	G4DZO/P	70	AL41	2SC1177 0·5W out

*Equipment declared to be home built or especially modified.

Check logs acknowledged from: G3JFO/P; G3LCH; G3USE; G8BKR; G8HYF/P; G8HZX; G8JWM; G8IYA/P and G8IZD.

The Commonwealth Contest 1976 rules

This contest was previously known as BERU and no changes have been made to the rules used in BERU for some years. Supplies of contest log sheets may be obtained from RSGB, 35 Doughty Street, London WC1N 2AE. UK members should enclose a large sae with their request.

Transmitting section

1. The general rules for RSGB hf contests, published in the January 1976 issue of *Radio Communication*, will apply.

2. When. From 1200gmt on Saturday 13 March 1976 to 1200gmt on Sunday 14 March 1976.

3. Eligible entrants. Members of the RSGB resident in the UK and radio amateurs licensed to operate within the British Commonwealth or British Mandated Territories.

4. Contacts. CW (A1) only, in the 3·5, 7, 14, 21 and 28MHz bands. Contacts may be made with any station using a British Commonwealth callsign, except those within the entrant's own call area. UK stations may not work each other for points. In accordance with current IARU recommendations, contestants are requested to confine their operations to within the lower 30kHz of each band.

5. Scoring. Each completed contact will score five points. In addition, a bonus of 20 points may be claimed for the first, second and third contact with each Commonwealth call area (as listed in the accompanying table) on each band. All British Isles stations (G, GB, GC, GD, GI, GM and GW) count as one call area.

6. Logs. Separate logs are required for each band. Each band log should be separately totalled and should include at the end a check list of call areas worked on the band. Logs should be set out as shown in the general rules for RSGB hf contests. Separate band totals should be added together and the total claimed score entered on the cover sheet.

7. Entries. Entries may be single- or multi-band. Single-band entries should show contacts on only one band; details of contacts made on other bands should be enclosed separately for checking purposes. Multi-band entries will not be eligible for single-band awards.

Each entry will consist of the separate band logs together with a signed declaration. The form of declaration is shown in the general rules for RSGB hf contests.

Entries should be addressed to D. J. Andrews, G3MXJ, 18 Downsview Crescent, Uckfield, Sussex, England. Adjudication of this contest will commence on Monday 17 May 1976. Any entry received after this date may be excluded from the contest. Overseas stations are therefore advised to forward their logs by airmail.

8. Awards. To the winner, the BERU Senior Rose Bowl. To the runner-up, the BERU Junior Rose Bowl. To the leading UK station, the Col Thomas Rose Bowl.

Certificates of merit will be awarded to:

(*a*) 1st, 2nd and 3rd placings in home and overseas multi-band sections.

(*b*) The leading home and overseas single-band entries on each band.

Commemorative certificates will be sent to the leading station in each overseas call area. Commemorative certificates are also available to other entrants on request and five IRCs should be enclosed to cover postage.

Receiving section

1. When. Times and dates as for transmitting section.

2. Eligible entrants. Members of the RSGB resident in the UK and all short-wave listeners resident in the British Commonwealth or British Mandated Territories. Only the entrant may operate his receiving station for the duration of the contest. Holders of amateur transmitting licences are not eligible to take part.

3. Scoring. To count for points a station outside the entrant's own call area must be heard in a contest contact. CQ or test calls will not count for points. A station may be logged only once on each band for the purpose of scoring. Where both stations in a contact are heard they should be logged separately and points may be claimed for both entries, provided that the stations are outside the entrant's own call area.

Each complete log entry will score five points. In addition, a bonus of 20 points may be claimed for the first, second and third stations heard in each Commonwealth call area on each band. All British Isles prefixes count as one call area.

4. Logs. A separate log is required for each band. Logs should show the following details: (i) Date/time gmt, (ii) Callsign of station heard, (iii) Report and serial number sent by station heard, (iv) Callsign of station being worked, (v) Points claimed, (vi) Bonus points claimed. Each log must be set out on one side of foolscap or A4 log sheets and must show the band to which the log sheet refers. A check list showing the call areas heard on each band must also be included.

5. Entries. (*a*) Each entry will consist of the log sheets, check list and a signed declaration that the receiving station was operated in accordance with the rules and spirit of the contest and that the entrant does not hold an amateur transmitting licence. (*b*) Entries should be addressed and sent as in Rule 7 of the Transmitting section.

6. Awards. The BERU Receiving Rose Bowl to the winner. Certificates of merit to the leading entrant in each continent.

Commonwealth call areas

The following call areas are recognized for the purposes of scoring in the 1976 Commonwealth Contest:

A2	Botswana
A3	Tonga Is
A5	Bhutan
C2	Nauru
C5	Gambia
C6	Bahamas
G/GC/GD/GI/GM/GW	
P2	Papua New Guinea
S2	Bangladesh
VE1	
VE2	
VE3	
VE4	
VE5	
VE6	
VE7	
VE8	
VK1	
VK2	
VK2	Lord Howe Is
VK3	
VK4	
VK4	Willis Is
VK5	
VK6	
VK7	
VK8	
VK9	Christmas Is
VK9	Cocos Is
VK9	Norfolk Is
VK0	Heard Is
VK0	Macquarie Is
VK0	Australian Ant
VP1	
VO	
VP2A	Antigua, Barbuda
VP2D	Dominica
VP2E	Anguilla
VP2G	Grenada & Dep
VP2K	St Kitts, Nevis
VP2L	St Lucia
VP2M	Montserrat
VP2S	St Vincent & Dep
VP2V	British Virgin Is
VP5	Turks & Caicos Is
VP8	Falkland Is
VP8	S Georgia
VP8	S Orkney Is
VP8	S Sandwich Is
VP8	S Shetland Is
VP9	
VQ9	Chagos Is
VQ9	Aldabra
VQ9	Seychelles
VQ9/D	Desroches Is
VQ9/F	Farquar Is
VR1P	British Phoenix Is
VR1	Gilbert & Ocean Is
VR3	Fanning & Christmas Is
VR4	
VR6	
VR8	Tuvalu
VS5	
VS6	
VS9	Gan
ZL/C	Chatham Is
VU	India
VU	Laccadive Is
VU	Andaman & Nicobar Is
YJ	
ZB2	
ZC4,5B4	
ZD7	
ZD8	
ZD9	
ZE	
ZF	
ZK1	Cook Is
ZK1	Manihiki Is
ZK2	Nuie
ZL1	
ZL2	
ZL3	
ZL4	
ZL5	
ZL	Auckland & Campbell Is
ZL/K	Kermadec Is
ZM7	
3B6,3B7	Agalega & St Brandon
3B8	Mauritius
3B9	Rodriguez Is
3D	Fiji
3D6	Swaziland
4S7	
5H3	
5N2	
5W	Samoa
5X5	
5Z4, 6Y5	
7P8	
7Q7	
8P	
8R	
9G1	
9H	Maltese Is
9J2	
9L1	
9M2	W Malaysia
9M6/9M8	E Malaysia
9V1	
9Y4	

This list has been compiled from the RSGB Countries List and from information supplied by the Foreign and Commonwealth Office.

Affiliated Societies Contest 1976

This contest has been changed in just about every respect other than name and mode. It will be a contest between groups of up to five individual stations, each group representing its own affiliated society. The band will be 80m cw, and the event will take place during a single four-hour period on the afternoon of Sunday 11 January 1976. Further details and rules later.

Coventry DF Qualifying Round results

Thirteen teams signed in at the start—approximately one mile east of Southam—of this, the last qualifying event of the 1975 season. Competitors had the added incentive of contending for the Rugby Cup which is normally a separate event but, for economic reasons, was combined with the Coventry qualifying round this year.

Station A, manned by G3TFA and G4DSF, was located 5¼ miles NE of the start, next to a small wood midway between Grandborough and Willoughby. To the surprise of the organizers, 10 of the teams went for this station first—it was expected that they would take this station second since it was nearer the tea venue. First to arrive was A. Butcher, seven minutes after the second transmission, whose shrewd judgement paid off. He was followed 12 minutes later by M. Hawkins, but other competitors had rather more difficulty finding the transmitter.

Station B, manned by G3XQE and G4CFG, was also 5¼ miles from the start but in a SW direction, just a few hundred yards west of Chesterton Church. Unfortunately the wire aerial for this station was accidentally broken during the familiar mad scrambling of competitors and meant that the station was off the air for longer than the maximum of 15min. However, when the fault was reported, another aerial was erected as quickly as possible, aided by M. Hawkins, and the station resumed normal random transmissions.

The contest was organized by G. Whenham on behalf of the Coventry ARS.

			Time of Arrival	
Posn	Name	Club	Station A	Station B
1	M. Hawkins	Chelmsford	1418	1458
2	A. Butcher	Chelmsford	1407	1459
3	B. Mahoney	Rugby	1532	1440
4	J. McBurney	S. Manchester	1423	1537
5	R. Parsons	Oxford	1503	1538
6	P. Woollett	Dartford Heath	1545	1451
7	A. Newman	Salisbury	1506	1551
8	D. Newman	Rugby	1552	1442
9	J. R. Vickers	Stratford-on-Avon	1434	1555
10	G. Reason	Banbury	1504	1601
11	C. Schofield	S. Manchester	1509	1630
12	W. North	Chiltern	1422	—
13	T. Gage	Oxford	1434	—

Subject to confirmation, A. Butcher and P. Woollett qualify for the National Final.

RSGB HF Contests Championship 1974-5 results

Posn	Callsign	1	2	3	4	5	6	Total
1	G3MXJ	0	50		25	30	80	185
2	G6CJ		70				70	140
3	G2QT	40	0	30			50	120
	GM3OLK				60	60		120
5	G4BUE		40	60		0		100
6	G3PDL		30		50			80
	G3SEM	80		0				80
8	G4APL	60		15				75
9	G3ORP				35	35		70
	GW3UCB				20	50		70
11	G4ACQ		0	50				50
12	G3JVJ		5	20	0			25
	G3XTJ				0	25		25
14	G3JEQ				0	15		15
15	G3XDY				5	5		10
16	G3TXF	5	0					5
	G4BUO				0	5		5
	G8VF		0	5				5

Contests
1 21/28MHz Telephony 1974.
2 7MHz CW 1974.
3 7MHz Telephony 1974.
4 Second 1·8MHz 1974.
5 First 1·8MHz 1975.
6 BERU 1975.

Awards
The G2QT Trophy to D. J. Andrews, G3MXJ.
Runner-up certificate to F. J. H. Charman, G6CJ.

Jubilee VHF/UHF Contest results amendment

In position 14 in the results table of this contest, published in the October issue, the callsign should have been G8JBZ/P not G8ABZ/P.

RSGB HF Contests Championship 1975-6 rules

1. RSGB hf contest general rules do not apply.

2. No entries for the championship are required.

3. The championship will be decided on the basis of RSGB hf single-operator contests held between 1 October 1975 and 31 March 1976.

4. Points will be awarded to the leading 10 UK stations in the results tables published in *Radio Communication* as follows:

	Position									
Contest	1	2	3	4	5	6	7	8	9	10
21/28MHz Telephony	80	70	60	50	40	30	20	15	10	5
7MHz CW	70	60	50	40	30	25	20	15	10	5
7MHz Phone	70	60	50	40	30	25	20	15	10	5
2nd 1·8MHz 1975	60	50	40	35	30	25	20	15	10	5
1st 1·8MHz 1976	60	50	40	35	30	25	20	15	10	5
Commonwealth Contest 1976	100	90	80	70	60	50	40	30	20	10

5. Points gained by stations using the same callsign entering two or more of the six individual contests will be totalled and a table published in *Radio Communication*.

6. Club stations. To be eligible for inclusion, a club station must be operated by the same single operator during each contest. In the case of a club station meriting an award, the award will be made to the operator concerned and not to the club.

7. Awards. The winner will receive the G2QT Trophy. A certificate will be awarded to the runner-up.

Verulam ARC Transmitting and Receiving Contest 1975 rules

The rules for this contest are similar to those for last year's contest published in the November 1974 issue of *Radio Communication*, with the addition of the following rule for swl entries: "A particular station must only appear once in the 'Station heard' column of the log".

Section 1, 2m, will be held from 0900 to 1300gmt on 23 November, and **Section 2,** 160m, from 0900 to 1300gmt on 14 December.

Logs should be sent to H. Young, G3YHY, 93 Leaford Crescent, Watford WD2 5JQ (from whom full particulars may be obtained), postmarked not later than 22 December 1975.

144MHz Portable Contest results amendment

In position 22 in the results table of this contest, published in the September issue, the callsign should have been G3UEU, not G3UEE.

Contests calendar

8-9 November —2nd 1·8MHz (Rules in October issue)
16 November —432MHz Open (Rules in September issue)
29-30 November—CQ WW DX Contest (CW)
7 December —144MHz Fixed (Rules in September issue)
1976
13-14 March —Commonwealth (Rules in November 1975 issue)

Looking ahead

4 November—RSGB lecture at IEE, Savoy Place, London.
5 December—RSGB AGM, Royal Society of Arts, John Adam Street, Adelphi, London WC2.
1976
23 January—RSGB Presidential Installation, Executive Suite, Warwickshire CC Ground, Edgbaston.
25 April—Northern Radio Societies Association Convention, Belle Vue, Manchester.

1976 mobile rallies calendar

23 May—Northern Mobile Rally, Victoria Park Hall, Keighley, Yorkshire.

RSGB SLOW MORSE PRACTICE TRANSMISSIONS

These slow morse practice transmissions are sponsored by the RSGB. Alterations and additions to this list should be sent to the honorary organizer, Mr M. A. C. MacBrayne, G3KGU, 25 Purlieu Way, Theydon Bois, Essex.

Clock time	Callsign	MHz	Mode	Town
Sundays				
1000	G3HZL	144·160 to south-west	A1/A3J	Isleworth, Middlesex
1000	G3LEQ	1·815 3·615 144·250 145·250	A2/A3 A2/A3H A1/A3J F2/F3	Knutsford, Cheshire
1015	G3CGD	1·875	A1/A3	Cheltenham, Glos
1030	G3NPB	1·875	A1	St Ives, Cornwall
1030	G3LR	1·810	A1	Accrington, Lancs
1030	G4DKK	1·970	A2/A3	Caterham, Surrey
1100	G2FXA	1·900	A1/A3	Stockton-on-Tees
1130	G3WYW	144·300 to south-east	A1/A3	Newcastle-on-Tyne
1200	G3HVI	144·100 omni-directional	A2/A3	Stoke-on-Trent, Staffs
1230	GC4CHY	144·500 to north	A1/A3J	St Peter Port, CI
1500	G4EHW	144·250 omni-directional	A1/A3J	Peterborough
1815	G4DVZ	1·915	A1/A3J	Leeds, Yorks
1830	G3NCZ	1·920	A1/A3	Blackburn, Lancs
Mondays				
1800	G3SWR	1·980	A1/A3	Birmingham
1830	G3VBI	1·910	A1/A3	Goole, Yorks
1930	G3RAF	1·910 3·590 144·024	A1	Locking, Soms
1930	GI3SXG	3·575	A1/A3J	Newtownards, Co Down
2000	G3IBJ	1·910	A1/A3	Southampton, Hants
2000	G3XWZ	1·910	A1/A3J	Mansfield, Notts
2000	G3YZB	1·845	A1/A3	East Molesey, Surrey
2030	G3ASR/A	1·875	A2/A3	Harrow, Middlesex
2030	G3KGU	1·915	A1/A3	Theydon Bois, Essex
2130	G3LQI	145·300	F2/F3	Lancing, Sussex
2230	G3HZL	144·160 to south-west	A1/A3J	Isleworth, Middlesex
Tuesdays				
1800	G3SWR	1·940	A1/A3	Birmingham
1830	G4BNA	3·590	A1	Swindon, Wilts
1930	G3RAF	1·910 3·590 144·024	A1	Locking, Soms
2000	G4AEU	1·910	A1/A3	Southampton, Hants
2000	G3LEQ	1·815 3·615 144·250 145·250	A2/A3 A2/A3H A1/A3J F2/F3	Knutsford, Cheshire
2045	GM3CRY	3·550	A1/A3J	St Andrews, Fife
2045	G4AEU	145·550 omni-directional vertical	F2/F3	Southampton, Hants
2130	GM3UAG	145·800 to south		Ellon, Aberdeenshire
Wednesdays				
1930	G3RAF	1·910 3·590 144·024	A1	Locking, Soms
2000	G8QU	1·970	A1	London N22
2000	G3BPE	1·975	A1/A3	Bexley, Kent
2000	G3SWP	1·920	A2/A3J	Doncaster, Yorks
2000	G4EHW	144·250 omni-directional	A1/A3J	Peterborough
2015	G3WVJ	1·845	A1/A3	Staines, Middlesex
2100	G3HVI	144·100 omni-directional	A2/A3	Stoke-on-Trent, Staffs
2230	G3HZL	144·160 to south-west	A1/A3J	Isleworth, Middlesex

† Alternately

Clock time	Callsign	MHz	Mode	Town
Thursdays				
1800	G3SWR	1·980	A1/A3	Birmingham
1830	G4BNA	3·590	A1	Swindon, Wilts
1830	G3NC	1·968	A1	Swindon, Wilts
1900	G3YEI	1·850	A1	Fleetwood, Lancs
1930	G3RAF	1·910 3·590 144·024	A1	Locking, Soms
2130	GM4CAU	145·800 to north		Aberdeen
2130	G3LQI	145·300	F2/F3	Lancing, Sussex
Fridays				
1800	G3SWR	1·940	A1/A3	Birmingham
1900	G3NPB	1·875	A1	St Ives, Cornwall
1900	GC4CHY	144·500 to north	A1/A3J	St Peter Port, CI
1930	G3PQF	144·360 to north-east	F2/F3	Farnborough, Hants
1930	G3RAF	1·910 3·590 144·024	A1	Locking, Soms
2000	G3LEQ	1·815 3·615 144·250 145·250	A2/A3 A2/A3H A1/A3J F2/F3	Knutsford, Cheshire
2000	G4EHW	144·250 omni-directional	A1/A3J	Peterborough
Saturdays				
0930	G2FNK	1·930	A1/A3J	Staines, Middlesex
1000	G3HZL	144·160 to south-west	A1/A3J	Isleworth, Middlesex
1115	G3HZL	144·160 to north-west	A1/A3J	Isleworth, Middlesex

G3BZU morse proficiency transmissions at 15, 20, 25, 30, 35 and 40wpm are made at 2000 clock time on the first Tuesday of each month on a frequency of 3·520MHz. For 100 per cent copy at 15wpm a certificate is awarded, and endorsement stickers are available for 100 per cent copy at the higher speeds. A charge of 15p or three IRCs is made for the basic certificate, and 5p or one IRC for each endorsement sticker claimed. All claims should be sent to—The QRQ Manager, RNARS, HMS *Mercury*, Leydene, Petersfield, Hants.

CLUB NEWS

RSGB affiliated societies and clubs, and RSGB groups, are invited to submit items for inclusion in "Club News" to their regional representatives (not direct to the editor). In the case of Region 11 clubs, they can send them direct to the editor until an RR is appointed.

Items of news and dates of forthcoming events should reach RRs by 24 November for the January issue.

REGION 1—RR B. O'Brien, G2AMV, "Tanglewood", Anthony's Way, Heswall, Wirral, Cheshire L60 0BP.

Ainsdale (AARC)—Thursdays fortnightly, 8.15pm. 6, 20 Nov, 4, 18 Dec, 1, 15, 29 Jan. Ainsdale Scout Headquarters. Further details from G2CUZ.

Blackburn (East Lancs ARC)—First Thursday in each month, 7.30pm. YMCA, Shearbank Road, Blackburn. Visitors always welcome. Sec G4CDR.

Blackpool (B&DARS)—Mondays, 8pm. Pontins Holiday Camp, Squires Gate. Morse tuition 7.30pm.

Bolton (B&DARS)—Third Wednesday in each month, 8pm. Clarence Hotel, Bradshawgate. Sec G4AQB.

Bury (B&RRS)—Second Tuesday in each month but with informal meetings including morse and RAE classes every Tuesday. Mosses Community Centre, Cecil Street, Bury. 11 Nov (Surplus equipment sale), 9 Dec (AGM). Sec G4ECM, tel Heywood 65911.

Carlisle (C&DARS)—Mondays, 7.30pm. Currock House, Lediard Avenue, Currock, Carlisle. A very full programme of lectures and demonstrations has been arranged for the coming months. Full details from G8DVD.

Chester (C&DARS)—Tuesdays 8pm except first Tuesday in month. YMCA Chester. Full details from GW8DMR.

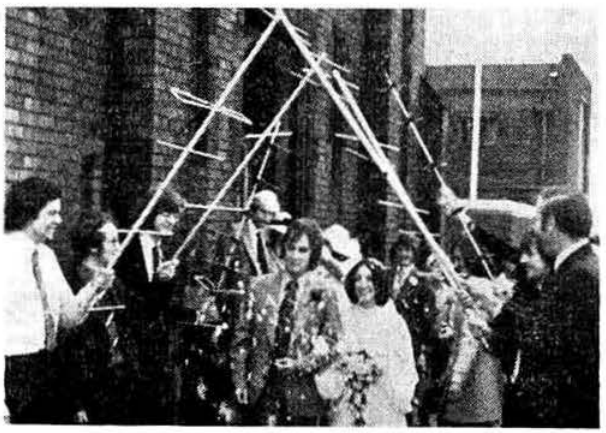
Douglas IoM (IoM ARS)—Mondays fortnightly. Highlander Inn, Crosby. Visitors welcome. Sec GD2HDZ, tel Laxey 465.

Eccles (E&DARC)—Tuesdays, 8pm. Bridgwater School, Worsley, Manchester. Club 2m net, 11am Sundays on 145·66MHz. All visitors and prospective members welcome. Sec G4AEQ.

Lancaster University (UoLARS)—Wednesdays, 7pm. Furness College. RAE and morse classes. The society is active on the hf bands and 2m using G3ZBY and G8DOU. Skeds and visits welcomed; enquiries please to Colin Pegrum, Department of Physics.

Leyland (LHARG)—Second Monday in each month, 7.30pm. "Rose & Crown", Ulnes Walton, Leyland. Net nights Saturdays 2000gmt on 145·8MHz. Details from G3XII.

Liverpool (L&DARS)—Tuesdays, 8pm. Conservative Association Rooms, Church Road, Watertree. Sec G3WCS.



David Holland, G3WFT, chairman of South Manchester RC, and the former Mary Borg after their wedding on 23 August. Members in the photograph are: left, Chris Tredwell, G8CHW, Jeff McBurney, G4AUR, and John Fletcher, G8DMJ; right, Bill Furness, G3SMM, and Chris Scholefield, G8GDM

Liverpool (North Liverpool RC)—Tuesdays, 8.30pm. Informal meetings. "Nags Head", Thornton, Crosby, Liverpool 23. Visitors welcome. Sec R. B. Porter, 11 Cranmore Avenue, Crosby, Liverpool L23 0QD.

Liverpool University (UoLARS)—Details of meetings from J. M. Pagett, G8IAV, c/o The Students Union.

Manchester (M&DARS)—Wednesdays, 7.30pm. All meetings include morse classes. 203 Droylesden Road, Newton Heath, Manchester 10. Sec G3IOA.

Manchester (South Manchester RC)—Fridays, 8pm. Sale Moor Community Centre, Norris Road, Sale, Cheshire. Morse practice precedes the lectures. The vhf lads meet on Mondays at the club shack, Greeba, Shady Lane, Manchester 23, at 8pm. Visitors are welcome on both evenings. 7 Nov (Annual dinner, Bowdon Hotel (Tickets £3)), 14 Nov (Night on the air), 21 Nov ("Safety in the home", GMC Fire Service), 28 Nov (Club quiz), 5 Dec ("Evolution of computer technology", ICL), 12 Dec (Films), 19 Dec (Christmas party), 26 Dec (Club closed for Christmas). Sec G8GDM.

Manchester University (MUARS)—The society is at present inactive. However, interested parties should contact G4AOS.

University of Manchester (UoM—IoS&TARS)—G3CXX is active on all hf bands and G8FOT on 2m and perhaps 23cm. Items for club magazine/newsletter, or letters from intending members gratefully received by G8GOS.

Preston (PARS)—6, 20 Nov, 4, 18 Dec, 1, 15, 29 Jan. Morse practice 7.30 pm, main meeting 8pm. "Windsor Castle" (private room), St Paul's Square, Preston.

Salford (Dial House RS)—Wednesdays, 5.30–9.30 pm. Dial House, W45, 55 Portland Street, Manchester M60 1BA. Net channel 145·25MHz a.m.—most members are now mobile on this channel, and the club station G3WDH now monitors this frequency every club night for calls from any other station. Sec G8JCN.

Stockport (SRS)—Second and fourth Wednesdays in each month, 8pm. Blossoms Hotel, Buxton Road, Stockport. Sec G3FYE.

Thornton Cleveleys (TCARS)—First and third Wednesdays in each month, 8pm, morse practice from 7.30pm. St John Ambulance Hall, Fleetwood Road North (next to "Gardener's Arms"), Thornton. Details from sec G8OY.

Warrington (W&DARS)—Tuesdays, 7.45pm. Grappenhall Community Centre, Bellhouse Lane, Grappenhall. Sec J. Weaver, c/o Grappenhall Comunity Centre.

Wigan (W&DARS)—First and third Wednesdays, second and fourth Tuesdays in each month. Poolstock Cricket Club, Keats Avenue, Poolstock, Wigan. Sec G8FTF.

Winsford (Mid-Cheshire ARC)—5Nov ("Propagation" by G3IAK), 12 Nov (Open night), 19 Nov ("Commercial communication" by a Pye representative), 26 Nov (Film night). 8pm. Technical Activities Centre, rear of Verdin Buildings, Verdin Comprehensive School, Grange Lane, Winsford. Club station G3ZTT on 160m or 80m most club nights from 7.30 to 8pm. RAE class every Wednesday evening 7.15 to 8pm. Further details from sec G8HAV. Net nights: Monday 160m (around 1·91) 8pm onwards. Tuesday 2m (around 145·5) 8pm onwards. Annual dinner to be held 10 January 1976; anyone wishing to attend should contact G8HAV to book before 12 December.

Wirral (WARS)—First and third Wednesdays in each month, 7.45pm. Sports and Recreation Centre, Grange Road West, Claughton, Birkenhead. Sec G3DLF.

Wirral (Wirral DXA)—Members or visitors, who will be welcome, should contact sec G3VZM for details of meetings.

Merseyside members meet for lunch on the first Monday in every month. Please obtain details and book beforehand with G3VQT or G2AMV.

REGION 2—RR R. C. Andreang, G4CMT, 6 Beech Avenue, Bilton, Hull, North Humberside.

Halifax (Northern Heights ARS)—5 Nov (Lecture), 6 Nov (Visit to Peter Black's car museum), 19 Nov (Ragchew), 3 Dec ("Hi-fi" by G3USH), 10 Dec (Open night), 17 Dec (Ragchew). 7.45pm. Peat Pitts Inn, Ogden, Halifax. Sec G3MDW.

Leeds (White Rose RS)—5 Nov (Arrangements for MCC), 12 Nov ("PC boards" by G. Denby, G3FCW), 19 Nov ("Trouble shooting"), 3 Dec (Grand open night, surplus equipment sale, and raffle), 20 Dec (Dinner dance at Tudor Cafe, Pudsey). 8pm. 83 Town Street, Armley, Leeds 12. Sec K. R. Robson, Flat 7, 34 St James Drive, Horsforth, Leeds.

York (YARS)—The club operated a special event station, GB2NRM from the National Railway Museum to commemorate the 150th anniversary of the birth of the railways, and demand for the special QSL card has been very great. A supply of special QSL cards for York Festival 1976 is available free to callers at 61 Micklegate on Thursdays, 7.30pm.

REGION 3—RR H. S. Pinchin, G3VPE, 61 Cole Bank Road, Hall Green, Birmingham B28 8EZ

Birmingham (Midland ARS)—18 Nov (Surplus equipment sale), 9 Dec (Christmas meeting). 8pm. The Birmingham and Midland Institute, Margaret Street, Birmingham. G3ZKQ.

Birmingham (Slade R&SS)—14, 28 Nov, 12 Dec, 8pm. The Committee Room, Church House, Erdington, Birmingham. G8GRC.

Birmingham (South Birmingham RS)—5 Nov (AGM and constructors' competition), 3 Dec (Surplus equipment sale and Christmas festivities). 8pm. Hampstead House, Fairfax Road, West Heath, Birmingham B31 3QY. G8GDZ.

Bromsgrove (B&DARC)—14 Nov (Constructors' competition), 12 Dec (Christmas social and film show). 8pm. Avoncraft Art Centre, Bromsgrove. Sec J. Dufrane, 44 Hazelton Road, Marlbrook, Bromsgrove.

Coventry (CARS)—Fridays, 8pm. Baden Powell House, St Nicholas Street, Radford Road, Coventry. G3HDO.

Coventry Technical College (CTCARS)—Mondays, 7.30pm. Winfray Annexe of the College. 8–13 Dec (GB2CTC special event station). The club has workshop and laboratory facilities. Club stations G3UVW and G6AJO/T. Morse classes. G8ISJ.

Dudley (DARC)—Second and fourth Tuesdays in each month. 7.45pm. Central Library, Dudley. G4BFT.

Hereford (HARS)—7 Nov (EGM), 15–16 Nov (MCC) 21 Nov, 5, 19 Dec. Civil Defence HQ, Gaol Street, Hereford. G4CNY.

Lichfield (LARS)—First Monday and third Tuesday in each month. 8pm. Swan Hotel. Tuesday meetings are natter-nites. Active contest group. Sunday net 11am, 21·150MHz. G3NLY.

Solihull (SARS)—18 Nov (Auction sale of surplus equipment), 16 Dec. 7.30pm. The Manor House, High Street, Solihull. G4AEJ.

Stourbridge (S&DARS)—3 Nov, 2 Dec (Informals at "Shrubbery Cottage" Public House, Heath Lane, Stourbridge), 17 Nov (Surplus sale), 15 Dec (Slide show by N. Hingley and S. Widdett). 7.45 pm. Longlands School, Brook Street, Stourbridge. G4CLX.

Sutton Coldfield (SCRS)—Second and last Monday in each month. 7.30pm. Central Youth HQ, Clifton Road, Sutton Coldfield. Sec Norman Sanderson, 130 Willmott Road, Sutton Coldfield B75 5NW.

Telford (T&DARS)—Wednesday, 7.30pm. Phoenix Centre, Webb Crescent, Dawley. G4AXZ.

Wolverhampton (WARS)—3 Nov ("Aspects of aurora" by Coventry & Warwickshire Astronomy Society), 10 Nov (Natternite), 17 Nov (Junk sale), 1 Dec ("Broadcast short wave listening" by Bill Millerchip), 8 Dec (Natternite), 15 Dec ("Simple fault finding" by Mike Smith, G4BTE), 22 Dec (Meeting at local public house—to be arranged). 8pm. Neachells Cottage, Danescourt Road, Stockwell End, Tettenhall, Wolverhampton. G8GCV.

Worcester (W&DARC)—3, 15 Nov, 1, 20 Dec. 8pm. The Old Pheasant, New Street, Worcester. Club will enter CQ WW DX Contest on 29–30 November. G4BXS.

REGION 4—RR T. Darn, G3FGY, 1 Sandham Lane, Ripley, Derbys

Derby (DADARS)—5 Nov (Surplus sale), 12 Nov (Ladies night), 19 Nov ("Derbyshire churches" by Mr H. R. Nuttall), 26 Nov (Film show), 3 Dec (Surplus sale), 10 Dec (Club constructors contest), 17 Dec (Christmas party), 31 Dec (Technical topics). 7.30pm. 119 Green Lane, Derby. Morse classes every Friday from 7 to 9pm. Prospective members and visitors from out of town always welcome.

Derby (NHCAARS)—14 Nov (Lecture and demonstration on welding by Ken Parker), 21 Nov ("Skin diving" by Peter Ford), 28 Nov (Exhibition and demonstration of vintage car carbide lamps), 5 Dec ("Hang gliding" by Alan Stafford, G3NYZ), 12 Dec (Technical film show), 19 Dec (Night on the air), 31 Dec (New Year's Eve net (late)). 7.30pm. Nunsfield House, Boulton Lane, Alvaston, Derby. G4CTZ.

Grimsby (GARS)—Alternate Thursdays. Room 3, Grimsby Community Centre. 6, 20 Nov; 4, 18 Dec. Further information from sec G. J. Smith, 6 Fenby Close, Grimsby, South Humberside DN37 9QJ.

Lincoln (LARC)—Wednesdays. Lincoln Astronomical Society Clubroom off Burton Road, Lincoln. G4DBS.

Loughborough (LARS)—Loughborough are now re-affiliating to the RSGB and have a new clubroom where they can get organized once again. Further information from J. Smith, G4DZL, 91 Anson Rd, Shepshed, Loughborough, Leics.

Nottingham (ARCON)—6 Nov (Forum), 13 Nov ("Transistor heat sink calculations" by D. F. Moulyneaux), 20 Nov (Activities), 27 Nov (Christmas party at the "Newstead Abbey"), 4 Dec (Forum), 11 Dec (Talk), 18 Dec (Activities). 7.30pm. Sherwood Community Centre, Mansfield Rd, Nottingham. G4AFG.

Operators of G3DJ/P during VHF NFD. L to r: Richard (G3VGW) and Ann (G8KMB) Buckby; Peter Cook, G8KNK; and Jenny (G8KMC) and Martin (G3SZJ) Shardlow, at Derby and D ARS clubroom. *Photo: G3SZJ*

Melton Mowbray (MMARS)—21 Nov ("Integrated circuits" by H. Miles), 19 Dec (Visit to Melton Mowbray automatic telephone exchange, led by G4AMK and G3FXP). The subscription has now been increased to 75p per year and subs are now due. G3NVK.

REGION 5—RR P. F. Chilcott, G4BBA, 258 Coneygree Road, Peterborough PE2 8LR

Bedford (B&DARC)—6 Nov ("Bedford repeater project and 70cm mobile" by G8BCX), 13 Nov (Speaker from Texas Semiconductors and ICs), 20 Nov (Social evening), 27 Nov (Aerials, various), 4 Dec ("Aerials and development" by G3UQR), 11 Dec ("Simple ssb tx" by G3YUQ), 12 Dec (Christmas dinner at Elstow Red Lion), 18 Dec (Informal). 8pm. United Services Club, The Broadway, Bedford. Further details from G8FMG.

Northampton RC celebrating their 62nd anniversary—running GB3NRC on 80-2m. L to r: G5BKN/K4JGI, Dr Ken Grimm; G4DAW, Philip Gibson Daw, and SWL Grimes. *Photo: Northampton Chronicle & Echo*

Cambridge (C&DARC)—7 Nov (Junk sale), 21 Nov (To be arranged), 5 Dec (Films), 19 Dec (Xmas "Do"), 26 Dec (No meeting). Other weekly meetings are informal at Corporation Yard, Victoria Rd, Cambridge. Further details from G3YRZ.
Dunstable (DDRC)—7 Nov (Rag chew at "Chews House"), 14 Nov (Films), 21 Nov (Club construction contest), 28 Nov (Natter and Pepsi nite), 5 Dec ("Measurements" by G3WLM), 12 Dec (Natter night), 19 Dec ("Reminiscing" with G3HJF). 8pm. Chews House, 77 High St South, Dunstable. G3XWS has further information.
Peterborough (GPARC)—Nov ("Graham's first" with G3SGC), Dec (Xmas special with VHF NFD film!). 7.30pm. Southfields Infants School, Stanground. Exact dates from G4BBA. From January, monthly meetings will be on the fourth Thursday in each month with supervised construction meetings continuing as necessary.

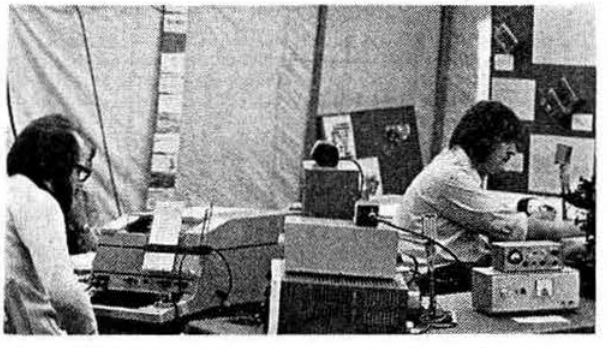
REGION 6—RR D. C. Andrews, G4CWB, 63 Bulmershe Rd, Reading, Berks RG1 5RH.
Banbury (BARS)—Fridays, 7.30pm. 43 North Bar, Banbury. New members and visitors welcome. Details from sec G3LTN, tel Banbury 710623.
Maidenhead (M&DARC)—6 Nov (Junk sale), 18 Nov (Inter-club quiz v Echelford), 4 Dec ("Maidenhead club history"—slides, films and anecdotes), 16 Dec (Judging and presentation of club awards for construction and contests). 7.30pm. British Red Cross Hall, The Crescent, Maidenhead. Sec G3FVC.
Reading (RARC)—First and third Tuesdays in each month. 8pm. "White Horse," Emmer Green. Sec G4CCC.

REGION 7—RR R. S. Hewes, G3TDR, 24 Brightside Avenue, Laleham, Staines, Middx.
Addiscombe (AARC)—Tuesdays, 9pm. "Spread Eagle", Portland Road, South Norwood. Sec G4CZB.
Ashford, Middlesex (Echelford ARS)—10 Nov ("Logic" by Phil Horwood, G3FRB), 27 Nov (Inter-club quiz), 8 Dec (Surplus equipment sale), 18 Dec (Christmas get-together at Links Hotel, Ashford). 7.30pm for 8pm. St Martin's Court, Kingston Crescent, Ashford. Sec G2FNK, tel Staines 54828.
Bexley Heath (North Kent RS)—Second and fourth Thursdays in each month. St Mary's Institute, 2 North Cray Road, Bexley. 8pm. Sec G4ARQ.
Coulsdon (CATS)—First Thursday in each month, 8pm. 10th Purley Scout HQ (opposite Rickman Hill), Chipstead Valley Road, Coulsdon, Surrey. Sec G8KMJ.
Cray Valley (CVRS)—First and third Thursdays in each month, 8pm. Eltham United Reformed Church Hall, 1 Court Road, SE9. Sec G3YWO.
Croydon (Surrey Radio Contact Club)—Third Tuesday in each month, 8pm. "The Ship", 47 High Street, Croydon. Sec G3FWR, tel 01-657 3258.
Crystal Palace (CP & DRC)—15 Nov ("Equipment construction and finishing" by Eric Yeomanson, G3IIR), 20 Dec (Junk sale and Christmas party). 8pm. Emmanuel Church Hall, Barry Road SE22. Sec G3FZL, tel 01-699 6940.
Esher (Thames Valley ARTS)—5 Nov (Talk and equipment demonstration by South Midlands Communication Ltd), 3 Dec ("Phase lock loops" by G4CDY). 8pm. King George's Hall, Esher (next door to fire station). Sec G3ZNW.
Guildford (G&DRS)—Second and fourth Fridays in each month, 8pm. Model Engineering HQ, Stoke Park, Guildford, Surrey. Sec G3SYM.
Kingston (K&DARS)—12 Nov (AGM), 10 Dec (Junk sale). 8pm. Tolworth Scout Hut, Stirling Walk, Raeburn Avenue, Surbiton, Surrey. PRO G8HUW.
New Cross (Clifton ARS)—Fridays, 8pm. 224 New Cross Road, London SE19. Details from sec R. A. Hinton, 48 Camilla Road, Bermondsey SE16.
Reigate (RATS)—4 Nov, 2 Dec (Natter nights), "Marquis of Granby," Hooley Lane, Redhill. 18 Nov (To be arranged), 16 Dec (Constructional contest). 8pm. St Mark's Church Hall, Alma Road, Reigate. Sec G3RIN, tel Reigate 47659.
Sutton & Cheam (SCRS)—Dates and new venue for November and December meetings to be announced. A junk sale is planned for the November meeting. Details from sec G4BOX.
Wimbledon (W&DRS)—Second and last Fridays in each month, 8pm. St John Ambulance HQ, 124 Kingston Road, Wimbledon SW19. Sec G3XTC, tel 01-664 3698.

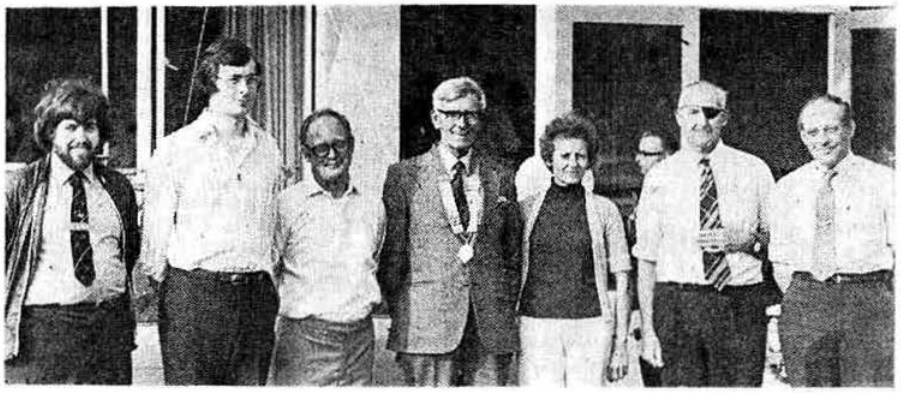
REGION8—RR D. N. T. Williams, G3MDO, "Seletar", New House Lane, Thanington, Canterbury, Kent.
Burgess Hill (Mid-Sussex ARS)—6 Nov (Junk sale), 20 Nov ("Pulse code modulation" by Steve Newbold, G3VQN), 4 Dec (Film show), 18 Dec (Members' evening). Marle Place, Leylands Road, Burgess Hill. Details from G3RXJ.
Canterbury (East Kent RS)—First Thursday in each month. Westgate Hall, Canterbury. Third Thursday in the month devoted to the constructor.
Chichester (C&DARC)—First Tuesday and third Thursday in each month. Lancastrian School, Basin Road, Chichester. Details from G8EPJ. Tel 0234 88069.
Crawley (CARC)—United Reform Church Hall, Ifield, Crawley. Further details from sec G3MGL.
Dartford (DHDFC)—7 Nov (Club night), 21 Nov (Club night), 5 Dec (Club night). Details from sec G4CVC.
Dover (South-East Kent YMCAARC)—First and third Wednesday in each month. All meetings in three parts (1) Morse tuition, (2) Talk/demo, (3) Practical. The shack is open to all members any evening 7-10pm. Further details from G8DRS.
Horsham (HARC)—First Wednesday in each month. Civil Defence HQ, Moons Lane, Brighton. Further details from G3NPF.
Maidstone (MYMCAARS)—"Y" Sports Centre, Maidstone. First and third Fridays devoted to the beginners.
Medway (MATRS)—Fridays, 7.30pm. "Aurora Hotel", Gillingham. Details from John Clayton, 11 Lyall Way, Rainham, Kent.
Tunbridge Wells (West Kent ARS)—Twice monthly. On Tuesdays following the Friday meeting in the Drill Hall, Victoria Road, meetings for general ideas and construction. Details from G4CCQ. Tel Lamberhurst 393.

REGION 9—RR H. W. Leonard, G4UZ, 4 Start Bay Park, Strete, Dartmouth TQ6 0RY.
Camborne (Cornish RAC)—First Thursday in each month. 6 Nov (Sale of surplus equipment), 4 Dec (SWLs' evening with demonstration of RXs), 1 Jan ("Intelligent use of the junk box" by G3RMG). 7.30pm. SWEB Clubroom, Pool, Camborne. Details from G3NKE, tel Camborne 2419.
Exeter (EARS)—Second Monday in each month, 7.45pm. Coombe House, Coombe Street, Exeter. Full details from sec Jack Bawden, 232 Exwick Road, Exeter EX4 2BA.
Newquay (N&DARS)—Alternate Wednesdays starting 12 Nov. 7.45pm. Treviglas School. Full details from G8GOR.
North Devon (NDRC)—12 Nov, 10 Dec at G4CG, 26 Nov at G2FKO, no meeting on 24 Dec. Full details from G4CG.
Penzance (Cornish RAC)—Third Thursday in each month, 7.30pm. The Guildhall, Penzance. Details from G3NKE, tel Camborne 2419.
Plymouth (PRC)—First and third Tuesdays in each month, 7.30pm. Virginia House, Bretonside, Plymouth. Visitors always welcome. Sec G8JES, 36 Higher Mowles, Higher Compton, Plymouth PL3 6NE.
Saltash (S&DARC)—First and third Fridays in each month. 7 Nov (AGM). 7.30pm. Burraton Toc H Hall, Saltash. G4DHA.
Torbay (TARS)—Tuesdays, with special meeting on last Saturday of each month. 29 Nov ("RTTY"by G3UIQ and G3VTQ), 13 Dec (Christmas party and quiz), no meeting on 27 Dec. 7.30pm. Rear of 94 Belgrave Road, Torquay. Visitors always welcome. G3UIQ.

A Happy Christmas and Bright New Year to all in Region 9.



The special station GB2APF operated by the Torbay ARS at the Marldon, near Paignton, Apple Pie Fair. G3UIQ operating rtty and G8GCS checking main FT200



Personalities at the Pembroke & D RSGB Group's Bucket and Spade Party at Saundersfoot on 31 August. L to r: GW8BXQ, GW3XJQ, GW3BAZ, RSGB President GW8NP and his wife, GW3LXI and GW4AKO

REGION 10—RR R. G. Barrett, GW8HEZ, 23 Carshalton Road, Beddau, Pontypridd, Glam.

Barry (BCoERS)—Thursdays, 8pm. Barry Rugby Football Club, Reservoir Road, Barry. Details from sec GW3VPB.
Blackwood (BARS)—Fridays, 7pm. Oakdale Community Centre, Oakdale, Nr Blackwood. Details from sec GW3KYA.
Cardiff (CRSGBG)—Second Monday in each month, 7.30pm. BBC Social Club, 118 Newport Road, Cardiff. Details from GW3GHC.
The annual social, which will include a cabaret and a chicken-and-chip supper, will take place on 1 December at the Roath Conservative Club, Cardiff. Tickets are available from GW3GHC.
Pembroke (PRSGBG)—Last Friday in each month. Defensible Barracks, Pembroke Dock. Details from sec GW3XJQ.
Pontypool (PRSGBG)—Tuesdays, 7pm. Educational Settlement, Park Hill Road, Pontypool. Details from GW3JBH.
Porth (Rhondda ARS)—Every other Thursday, 7.20pm. Transport Employers Club, Porth. Details from GW3PHH.
Port Talbot (PTARS)—Thursdays, 7.30pm. BSC Sports and Social Club, Margam. Details from GW3ACF.
Sully (S&DSWC)—Tuesdays, 7pm. Sully Bowls & Social Club, 59 South Road, Sully. Details from GW4CJC.
Swansea (SARC)—Tuesdays fortnightly, 7.30pm. The Commercial Inn, Killay. Details from sec GW4AYS.
Tondu (Glamorgan VHF/UHF Group)—Third Tuesday in each month, 7.30pm. NCB Social Club, Tondu, near Bridgend. 18 Nov ("FM deviation meters and their construction"), 21 Nov (Social evening, buffet and bar extension, tickets by application to sec GW8HEZ).

REGION 12—RR F. D. Hall, GM8BZX, 45 Priory Cottages, Lunanhead, Forfar, Angus.

Aberdeen (ARS)—RAE classes, Aberdeen Technical College, contact sec GM4BKV.
Dundee (Kingsway Technical College ARC)—Wednesdays, 6.30pm. 5 Nov (Construction nite), 12 Nov ("Oscar" by B. Hardie, GM4BIP). Sec GM4AQM.
Lerwick RC—Wednesday evenings, Annsbrae House, Lerwick. Sec GM3HTH.

REGION 13—RR Rev S. J. Smith, GM4DNM, St Ninians, 6 Derren Drive, Cardenden, Fife KY5 0JG.

Berwick (BARS)—Last Sunday in each month, 3pm. Tweed View Hotel. Further details from GM8IIO.
Dunfermline (DRS)—Second Wednesday in each month, 7pm. CCTV Studios, Pittencrieff School, Maitland Street, Dunfermline. Further details from GM8HEY.
Edinburgh (Ferranti, Edinburgh AR Section)—Second and fourth Wednesdays in each month, 7pm. Recreation Club, Stewart Terrace, Edinburgh. Non-Ferranti employees can attend by arrangement with the society. Further details from N. F. MacLeod, GM4DHN, 54 Drumbrae South, Edinburgh.
Edinburgh (Lothians RS)—13 Nov (Talk by GM4BYF), 27 Nov (Visit to Electronics Museum, King's Buildings). Adult Education Centre, Diddles Court, High Street ,Sec GM8BJF.
Glenrothes (G&DARC)—First Sunday in each month: every Wednesday 7.30pm. Old Nursery Bldgs, Leslie, Fife. 12 Nov ("Get-together" at Laurel Bank Hotel, Markinch), 15/16 Nov (MCC). Sec GM3YOR.
St Andrews University (UStAARS)—Details from R. Marchant GM3ZCQ, Dept of Physics, North Haugh, St Andrews.

REGIONAL EVENTS

12 November—The Glenrothes & DARC is holding its third annual "Get-together" in the Laurel Bank Hotel, Markinch, Fife, on Wednesday, 12 November at 7pm. The programme is as in past years and light refreshments will be served at a cost of 50p payable at the door. A warm invitation is extended to all amateurs, SWLs and their friends.
15 November—A zonal conference will be held at the Station Hotel, Stirling, commencing at 10am on Saturday 15 November.

REGION 14—RR A. J. Mitchell, GM3UDL, 7 Limetree Crescent, Newton Mearns, Glasgow G77 5BJ.

Ardeer (ARCARS)—Thursdays, 7.30pm. Ardeer Recreation Club, Stevenston, Ayrshire. Details from GM8BOM.
Ayr (ARG)—Every second Sunday evening. Community Leisure Centre, 24 Wellington Square, Ayr. Details from GM3THI.
Falkirk (F&DRSGBG)—Temperance Cafe, Lint Riggs, Falkirk. Further details from GM3OQI.
Glasgow (West of Scotland ARS)—Friday evenings. 7.30pm. 22 Robertson Street. Programme and other details from GM3RHR, tel 041-772 3085.
Greenock (G&DARC)—Tuesdays and Fridays, 7.30pm. 22 Inverkip Street, Greenock. Details from GM3LYI.
Motherwell (Mid-Lanark ARS)—Fridays, with alternate meetings informal. Morse class every other Friday. Wrangholm Hall Community Centre, Jerviston Street. 31 Oct (Speech processing), 14 Nov (RSGB night), 28 Nov (RTTY). Further details from GM3KMG, tel Hamilton 28759.

REGION 15—RR H. J. Campbell, GI8FOK, 26 Kilcoole Park, Belfast BT14 8LB.

Ballymena (BRC)—Tuesdays, 8pm. 86 Old Cullybackey Road, Ballymena. RAE and morse classes. Fridays, club night; Sundays, special projects, 3pm.
Bangor (B&DARS)—First Friday in each month, 8pm. Redcliff Hotel, Seacliff Road, Bangor. 7 Nov (Annual surplus equipment sale), Good Templars' Hall, Hamilton Road. 5 Dec (Extraordinary General Meeting, and film on Coastguard Service). Sec D. Steele, 59 Donaghadee Road, Millisle.
Belfast (BRSGBG)—Third Wednesday in each month, 8pm. 90 Belmont Road, Belfast. 19 Nov. Interesting winter programme arranged. For further information contact GI8FOK.
Belfast (QUoBRC)—Tuesdays, 8pm. Queen's University Radio Club, 37 Fitzwilliam Street, Belfast. All welcome.
Belfast (CoBYMCARC)—Saturdays, 2.30pm. 7 Brunswick Street, Belfast. All welcome. Sec GI4CRO.
Mid-Ulster (MURSGBG)—First Sunday in each month, 3pm, at GI4BAC QTH. Everyone welcome. 5 Dec (Annual dinner dance and presentation of awards), Bannville House Hotel. Further details from GI3WWY, 32 Knockview Drive, Tandragee, Craigavon.
North Ulster (NURSGBG)—Details from GI8AYZ.

REGION 17—RR L. Hawkyard, G5HD, 100 Shirley High Street, Southampton, Hants.

Basingstoke (BARC)—First and third Saturdays in each month. Chineham House, Popley, Basingstoke. 7.30pm. Sec G8FKT.

Basingstoke (UKFMG—Southern)—First Wednesday in each month, 8pm. Chineham House, Popley, Basingstoke. Sec G3ZRM.

Bournemouth (Wessex ARG)—First Friday in each month and the Monday 17 days later. 8pm. Cricketers Arms, Windham Road. Sec G8BBN.

Chippenham (C&DARC)—Meetings every Tuesday, 7.30pm. The Boys High School, Hardenhuish Lane, Chippenham. G3UFN.

Fareham (F&DARC)—Wednesdays, 7.30pm. Porchester Community Centre, Room 9. Details from G8FFI.

Farnborough (F&DRS)—Second and fourth Wednesdays in each month, 7.30pm. Railway Enthusiasts Club, Access Road, off Hawley Lane, Farnborough. Sec G8ECO. PRO G8ATK.

Jersey (JARS)—Sundays, 10.30am, and Fridays, 8pm. Le Hocq Tower, St Clement, Jersey. Sec Mary McTaggart, 19 Parade Road, St Helier.

Portsmouth (P&DRC)—Wednesdays, 3.30pm. Portsmouth Community Centre, Malins Road, Buckland, Portsmouth. G3NCO.

Salisbury (SR&ES)—Tuesdays. Salisbury Activity Centre, Wilton Road. Sec G2FIX.

Southampton University (SUARC)—Tuesday evenings, also informal meetings, every lunchtime during term in the clubroom, Old Union Building. Sec I. Mercer, G3ZER.

Southampton (SRSGBG)—Second Saturday in each month at the Lanchester Building, Southampton University, also Wednesday at the clubroom, Kent Road. Both at 7.30pm. G4AEU.

South Dorset (SDRS)—First Tuesday in each month, 7.30pm. Lecture Hall, South Dorset Technical College, Newstead Road, Weymouth. G3WAO.

West Dorset (WDARG)—First Friday in each month, 8pm. British Legion Club Hall, Dorchester. Sec L. A. Barnes, G8GHU, Flat 1, 107 The Esplanade, Weymouth.

Winchester (WARC)—First and third Fridays in each month, 7.30pm. Antrim House, St Cross Road, Winchester. Sec G4BKE.

REGION 18—RR P. J. Fay, G3AKG, 5 Harland Way, The Glebe, Washington, Tyne & Wear NE38 7RB.

Easington (EAR&EC)—Tuesdays and Thursday, 7.30pm. Easington Village Workmen's Club (3min from A19). CW practice, 80m and 160m operation. Sec G3VSS.

Morpeth (Northumbria EC)—Thursdays, 7.30pm. Old Wheatsheaf Yard, Morpeth, except first Thursday each month when a lecture is held (open to public) at Ashington High School Annex, 7.30pm. Sec G8GVN.

South Shields (SSD&RS)—Fridays, 7.30pm. Trinity House, Old and new members welcome. Sec G8BQF, 67 Lauderdale Avenue, Kings Estate, Wallsend.

Sunderland (SARS)—First and third Tuesdays in each month, 7.30pm. Polytech (Priestmans Bldgs). Sec G4DQA.

Middlesbrough (PORC)—Sec G8CDP, 200 Marton Rd, Middlesbrough.

Newcastle-upon-Tyne (Tyne-Wear Repeater Group)—Newly-formed group. Meeting place and times to be announced later. Chairman G3WYW, secretary G8GUP, treasurer, G8IRK.

Washington (Tyne-Wear)—SWLs and others interested in a **CRASH** course for next RAE together with morse please write to G3AKG as soon as possible. Local club proposed.

REGION 19—RR D. D. Smith, G4DAX, 151 Hamperhill Lane, Oxhey, Watford, Herts.

Acton, Brentford & Chiswick (ABCRC)—18 November (Contest result discussion), 16 December (Members problems—open forum). 7.30pm. Chiswick Trade & Social Club, 66 High Road, Chiswick. Sec G3GEH.

Barking (BR&ES)—Mondays (Constructional), Wednesdays (CCTV techniques), Thursdays (Informal). Morse classes Tuesdays, 7.30pm. Westbury Recreation Centre, Westbury School, Ripple Road, Barking, Essex. Sec G8JEG, tel 01-599 1103.

Cheshunt (CRDRC).—5 Nov (Vertical aerials for uhf), 12 Nov (Informal), 19 Nov (Royal Corps of Signals lecture), 26 Nov (AGM), 3 Dec ("SSTV" by G3GRJ), 10 Dec (Informal), 17 Dec ("Drake's progress" by G3GBL). 7pm for 8pm. Rosedale Sports Club, Andrews Lane (off Goffs Lane), Cheshunt. Sec. R. E. Chastell, 4 Fairley Way, Cheshunt, Herts.

Chingford (Silverthorn RC)—Fridays, 7.30pm. Friday Hill House, Simmonds Lane, Chingford E4. Visitors very welcome. Sec G4AJA, tel 01-529 2282.

Harrow (RSH)—Fridays, 8pm. Sea Cadets HQ, Woodlands Road, Harrow. Sec G3KDL, tel 01-902 2570.

Havering (H&DARC)—Wednesdays, 8pm. British Legion House, Weston Road, Romford.

Holloway (Grafton RS)—Fridays, 7.30pm. Archway School Annex, Whittington School, Highgate Hill, N19. Details from John Hitchins, 46 Granville Road, Finchley N12. Tel 01-346 2744.

Ilford RSGB Group—Thursdays, 8pm. 50 Mortlake Road, Ilford, Essex. Further details from sec G3YMW.

Northolt (British Airways European Division ARS)—First Monday in each month. Trident Club, Western Avenue, Northolt, Middlesex. This club is open to non-BA employees by invitation. Contact G3OUF, tel Amersham 21573 for details. Civil Aviation Sunday net at 1100-1200gmt on 3·68MHz, listen for G3NAF or G3BEA.

South Kensington (Baden Powell House Scout ARG)—Third Tuesday in each month, 8pm. Baden Powell House, Queensgate, South Kensington.

Southgate (SRC)—Second Thursday in each month, 8pm. The Green, Winchmore Hill, N21. Sec G4AEZ, tel 01-336 7166.

St Albans (Verulam ARC)—Third Wednesday in each month, 8pm. Market Hall, St Albans. Visitors very welcome. Further details from sec G3YHY, tel Watford 25633.

UK FM Group, London—Second Tuesday in each month, 7.30 for 8pm. Grove Park Hotel, junction Bolton Road and Spencer Road, Grove Park, Chiswick. Talk-in S20. Meeting sec G3TJA.

REGION 20—RR R. G. Mather, G3GKA, 8 Hills Close, Keynsham, Bristol.

Bath (B&DRG)—Mondays, 8.30pm. Church of the Ascension, Claude Avenue, Oldfield Park, Bath. Further information from John Noden, Flat 4, 30 Paragon, Bath BA1 5LY.

Bristol (BRSGBG)—Mondays, 7pm. Becket Hall, St Thomas St, Bristol 1. Sec G3ULJ.

Bristol (BARC)—Tuesdays, 7.45pm. 24 Bright Street, Barton Hill, Bristol 5. G4BZZ.

Bristol (Shirehampton ARC)—Fridays, 7.30pm. Twyford House, Shirehampton. New members most welcome. G4BWB.

Bristol (BUARS)—Most Saturdays during term time, 2.30pm. Dept of Physics, Royal Fort, Tyndall Avenue, Bristol 8. Full details from G3WDG.

Cheltenham (CRSGBG)—First Thursday each month, 8pm. Royal Crescent Hotel, Clarence St, Cheltenham. Sec G3KII.

Gloucester (GARS)—First Thursday in each month, 8pm. Oddfellows Club, Barton St, Gloucester. Remaining Thursdays informal club night, G4AYM, The Chequers Bridge Centre, Painswick Road, Gloucester 8.

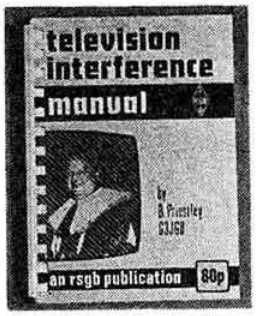
Taunton (T&DARS)—Fridays, 7.30pm. Jelalaband Barracks, The Mount, Taunton. Sec G. Swetman, "Little Copse", Monkton Heathfield, Taunton. Tel West Monkton 298.

Weston-super-Mare (WsMRS)—Second Friday in each month, 7.30pm. Room Lewis M2, Worle School, New Bristol Road, Worle. G3PQE.

Yeovil (YARS)—6 Nov (Regional rep), 13 Nov ("Some further thoughts on propagation" by G3IOR), 27 Nov ("The QRA locator" by G3XFW), 11 Dec ("Oscar and all that" by G3IOR). Thursdays, 7.30pm. The Youth Centre, 31 The Park, Yeovil. Sec G3NOF.

At a meeting of the Stamford & DRS held on 23 September, Miss Jennifer Bate, BA, FRCO, FRCM, the celebrated organist, gave a very interesting talk on her world travels. She has now become a patron of the society, and a presentation on behalf of the RSGB was made to her by the Stamford & DRS chairman, Mr George Kay, G3LQD. Among those attending were G3HES, G3OJQ, G3KWC, G3PLL, G8IIP, G3ZJW, G8HXR, G8KCM and G3QS.

A SELECTION OF RSGB PUBLICATIONS



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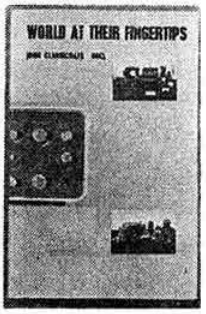

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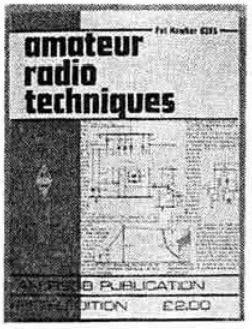

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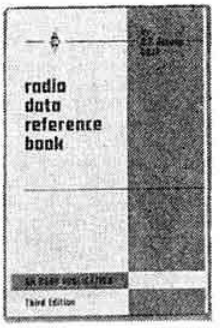

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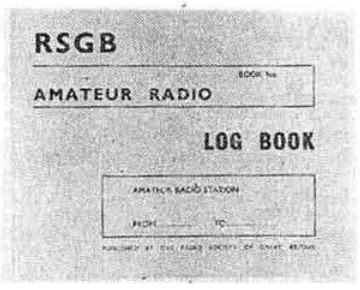

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Trade or business advertisements, even from members, will not be accepted for Members' Ads but should be submitted as classified or display advertisements in the usual way.

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Post to: MEMBERS' ADS, "RADIO COMMUNICATION", 35 DOUGHTY STREET, LONDON WC1N 2AE

FOR SALE

Trio JR599 custom special rx, £165. D. J. Fernie, 78 Broadacres, Guildford, Surrey. Tel Guildford 75627 daytime or Leatherhead 75479 after 7.30pm.

Sensible offers invited for FTDX560 (almost identical to FT401B) with YD844 mic and spare set of valves (inc finals) in immaculate cond and in original packing. Going QRP cw. Buyer collects or arranges delivery, sae please. G3ZPF, QTHR.

RCS Digisix radio control gear with three servos, good cond, minus aerial, £65. S. Cooper, Creech Lodge, Denmead, Hants PO7 6UD.

Mullard high-speed valve tester complete with cards, instructions etc, vgc, £15. G4AZK, QTHR. Tel East Bergholt (020629) 316.

Londex type coaxial relays, as new, N-type sockets with plugs, £3.50. Ditto, C-type, £3. PSU, 12V 400mA stabilized plus 18V 1-5A unstabilized, metered, £4. 100kHz xtal ic calibrator, £3. Microcell Electronics large stabilized psu, 12V 5A+, £6. All carriage extra. G8ENI, QTHR. Tel Cheslyn Hay 415374.

Digital-readout 80-10m tx/rx, similar FT501, exc cond, £200. 18AVQ, £15. Hustler folding mobile aerial, 20m coil, bumper mount, unused, £15 ono. *Wanted:* Eddystone 888A rx, 898 dial. G3ZYW, c/o 277 Bloomfield Road, Odd Down, Bath.

KW balun, £2. Jap 58MI auto key, £3.50. Five-band cw rig, £10. 14AVQ, £16. S. G. Brown phones, £3. HB reflectometer, 75Ω, £2. New 10m 52Ω low-loss coaxial cable rated 2kW, £3.50. G4CJY, QTHR. Tel 0494 444417.

KW Viceroy Mk 3, Eddystone 888, prof mod prod det and cascode rf stage, ex cond, £100. G3MYX, QTHR. Tel 0303 57991.

Trio JR310 rx, £59. Pye AM10D six-channel Cambridge, a.m./fm on 2m, vgc, £45. AM10D, tx works, rx needs ift/former, £12. TS175U frequency meter, 85-1,000MHz, vgc, £15. All ono, must be sold. Tel 051-733 0088 daytime or 051-722 4669 after 6pm.

Liner 2, unmodified, £120. FT75, DC75, homebuilt vfo for 3·5/14/28, £115. G3ORL, QTHR.

Radio and tv service sheets, old and new, 20p each. 92 Arlington Road, Southgate, London N14 5AT.

Liner 2 with preamp, mint, £130 ono. Tech TE15 gdo, new, £17.50. Coles, 10 Fox Lane, Westcot, Barton, Oxon OX5 4BS. Tel Steeple Aston 40609.

Television camera: Marconi Mk 4 Vidicon caption scanner, working order, comprising camera head, control unit, control panel, psu, £20. *Wanted:* Manual or circuit for EMI301 monitor and 302 w/f monitor, Hewlett Packard scope HP120AR. Your price paid, desperate. G8GQS, QTHR. Tel Gainsborough 3940.

AR88LF, fm discriminator module, manual, spkr, spare valves, £40. FET 2m converter, 24-26 i.f., plus preamp, £6 ono. Cossor 144AB tx/rx, £5 ono. SDRAC xtal calibrator, £6. Exchange Trio 2200 xtals for 145·32MHz for same on 145MHz and 145·5MHz. G8DLT, QTHR. Tel Broadstone 5370.

2m tx, a.m./cw, complete, £30. 2m rx, G3HBW conv, 70cm conv, tunable i.f., £10. AVO speedy valve tester, cards, £10. 100pF variable capacitors, shaft, small, used but ok, 45p each. Various 2in and 4in meters, 75p each. Transformers, chokes. Buyer collects. G3LTN, QTHR.

KW77, triple conversion, £50. Xtal calibrator No7 Mk2, £5. Buyer collects. G3SUD, QTHR. Tel 021-359 2903.

Heathkit HW12A, mint, plus psu, will del up to 50 miles, £55 ono. G3NPJ, QTHR. Tel 051-334 1960.

Codar CR70A gen cov rx, nine months' old, vgc, £25. Pref buyer collects. T. Charles, 40 Gurdon Road, Colchester, Essex.

Liner 2, with preamp, £120. 8008 micro-processor ic with data, not used, £15. J. Owen, Castle Lloyd, Pendine, Dyfed.

FT200 plus psu, all of 10m, mint, boxed, £220. Ken KP202, six channels, helical, case, mint cond, £90 ono. G4AJE, QTHR. Tel 0536 722789.

Audio oscillator TS-382DU, 240V mod, £20. Avo test calibrate unit CT155, £8. USA 115V rack psu, 15V 4A, 15V 750mA, £4. Cossor storage tube unit, £10. Thermistor bridge, £5. Buyer collects. G8DFZ. Tel Otley 3083 after 7pm.

Complete station, a.m./cw/ssb. AR88D rx, Hammarlund HX50 tx with step-down transformer and manuals, £100. Will del 40 miles. G3VSS, QTHR.

HW100, very good cond, with psu and swr meter. G3ZFT, QTHR. Tel Hindhead 4423.

Marine vhf band dipole (G-S Antennas Ltd, Type GMD), 50ft coaxial cable, connectors, £10. Crystal filters (SEI), 5·2MHz, QC1246AD (a.m.), QC1246AD (lsb), QC1246AB (lsb), £10 each. Plessey 1·6-4MHz bandpass LC filter, £5. All carriage paid. G3JMJ, QTHR. Tel 073-271 3467.

FT200 and psu, full 28MHz with mic and transverter for 2m, Microwave Modules converter, £250 the lot. G8GJZ, QTHR. Tel Sunbury 86504.

IC22A matching dc psu (IC3PA) in exc cond and original packing, best offer secures. Selling because of theft of my IC22A, serial No 2059. G4DIC, 47 Dean Road West, Hinckley, Leics. Tel 36811.

Labgear wideband multiplier with connection info, offers. *Wanted:* HW22A (40m), state cond etc. G3RWL, QTHR. Tel 01-366 4297.

VHF rx type 62H, psu type 234 and connecting cables. CRT type VCR138A with screen, base and mounting assembly. Group A uhf aerial, 18-el. Offers. C. A. Cooper, 45 Nightingale Crescent, Bracknell, Berks. Tel 54168.

Complete 2m station: TW2 tx, psu, xtals and 28-30 i.f. converter, £40. TW 70cm converter, 14-18 i.f., £10. G3WHK, QTHR. Tel 01-337 0117.

KW500, good cond, £30 ono. G2FLB, QTHR. Tel 01-467 1078.

KW Viceroy 4 80-10m ssb/cw tx, vgc, £75. Sommerkamp FRDX500 160-2m ssb/fm/a.m./cw rx, vgc, £95. Liner 2 144MHz ssb tx/rx, purchased July 1975,l ittle used, £130. Buyer collects. G8GSO/G4DOL, QTHR. Tel Weymouth 75239 6pm-9pm only.

Advance constant-voltage transformer, 190-260V i/p, 230V o/p at 1kVA, brand new, £45. HRO spares, sae list. *Wanted:* BC342N in good cond, also scrap or faulty specimen for spares, details and price please. G3GUU, QTHR.

Liner 2, as new, 144·10-144·33, £125. Europa, mint, with relay, valves and connectors for FT101, £55. Telford TC7 tunable i.f., immac with bandsearcher, £30. *Wanted:* Mint 2000A, would part exchange any of above. G3WPX, QTHR. Tel Keevil 350.

FL50B, FR50B hf ssb tx/rx, very good cond, £120 pair, or offers for separates. YD846 mic included with pair. Enquiries to Gordon Yarnold, c/o Devonshire Hall, Cumberland Road, Leeds LS6 2EQ. No telephone calls please.

Heathkit HW202 2m fm tx/rx, xtals fitted for channels 144·48, 145·0, 145·5, 145·6, 145·8 and tx only on 145·3, factory aligned and tested, £110 ono. G8INO, QTHR. Tel Harrogate 63134 evenings.

AEI potentiometric chart recorder, £5. Philips GM6020 electronic dc millivoltmeter, £5. Grundig 700L recorder, £2. 250V bridge megger, £2. R209 Mk2 1-20MHz, £15. All above buyer collects. SAE further details. Newton, 7 Little Pynchons, Harlow, Essex CM18 7DB.

FT171 xtals, 3·510, 3·520, 3·539, 3·550 (two), 3·583, 3·629MHz. *Wanted:* 28 and 21MHz cw xtals, third overtone or fundamentals, why? B. K. Booth, 49 Park Avenue, Normanton, West Yorks WF6 2DR.

Heathkit Twoer, mains and battery, £19. GW3COI, Penrhyn Bach, Bwlch Tocyn, Pwllheli.

Ken KP-202 2m fm hand tx/rx, £100. Pye Westminster W15AM on 2m, fm mod, six channel, xtals S20, £60. MM 432MHz cvtr, 28-30 i.f., £18. Eddystone spkr, £4. Antec 2m helical, BNC, £3.25. Burns tone burst unit, £3. G4AFY, QTHR. Tel Kidderminster 63358.

Eddystone EC10 gen cov transistor hf communications rx, cond as new, £65 ono. Pye Cambridge, unmodified a.m., complete S0 and S20 xtals, nice clean cond, £22 ono. G8HQH. Tel Beaconsfield (04946) 6933.

Solartron AD557, slight marks on tube face, with manual, best offer. 41Wingfield Road, Knowle. Tel Bristol 772804.

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Heathkit vvm 1M-18, near new, half price. 18AVT, offers. Wight-traps (HP), £2. G2KF, QTHR. Tel Par 2337.

Diamond KB104 20/15/10m trap vertical, 1kW rating, as new in original packing, £17, buyer collects. Twin-meter swr bridge, mint cond, £5. 2·5A rf ammeter, as new, £1.50. Isle-of-Wight traps, vgc, £2. SAEs with all enquiries. G3ZPF, QTHR.

Panda PR120V tx, 80-10 a.m./cw, working order, going ssb, £30. HRO/MX rx, nine coil units, 50kHz-30MHz, with psu, £15. G3SHS, QTHR. Tel Potters Bar 58058 evenings.

DC psu for KW2000A, £25. Goodmans spkr, Mezzo 2, £20. Zeiss Moviscop std 8mm film editor, £18. Prefer buyers collect. G4CAO, QTHR. Tel Weybridge 45719.

R209 rx, 12V, recently re-valved, 1-20MHz in four bands, £6 or would exchange for good 4m converter. Tel Newcastle (Staffs) 615652.

Trio JR310 rx, topband, crystal calibrator, 10AZ filter, good cond, £70 ono. Mr Kell, 177 Main Street, Seahouses, Northumberland. Tel Seahouses 463.

AR40 rotator with solid-state control box, brand-new, unused, with 20yd five-core cable, £33. GM3HBT, QTHR. Tel Larkhall 883306 after 6pm.

Thorens TD125ABC Mk2 (arm, base, cover), unused in makers' sealed carton, £120 or exchange Liner 2 in new cond. D. Aulton, 34A Newcombe Park, Mill Hill, London, NW7. Tel 01-954 2311 ext 204 9am-5pm.

Pye Pocketfones, pair wkg 433·2, £26. 70cm conv, 9MHz i.f., £10. 5λ/8 70cm mobile whip, £1.50. Woden UM2 mod transformer, new, never used, £10. Class D wavemeter, £5. All items ono. G3VSJ, Wormley, Herts. Tel Hoddesdon 68052.

Ultra Cub hand-held tx on 2m, complete with internal 12V NiCd battery, LO xtals, 1,750Hz tone burst, extending whip aerial, offers around £35. 15kHz xtal filter 30MHz, £10. Used MECL2 ICs, 1013/1027, 50p each. G3YJC, not QTHR. Tel Marlow 71353.

Vidicon camera, H/B Mullard design (Crofton), with 25mm lens, £25. Heathkit HG-10B vfo, £10. Heathkit dc psu HWA-17-1, £10. Heathkit fm adaptor, HWA-17-2, £5. Codar AT5, parts for mains psu, 160m Tavasu whip, £15. G3YXZ, QTHR. Tel 01-866 7900.

Trio 9R-59DE communications rx and manual with xtal calibrator, stablizer, spkr etc, mint cond, £50, carriage extra. SAE with enquiries. G8JDU, "Sunnyfields", Lighthouse Road, St Margarets Bay, Dover, Kent.

70cm Pye PF5 Pocketfone, xtalled up 432·3, with circuit, offers or why? Also Pye 2788 video monitor, £5. Foster, G3VOF. Tel Ingrebourne 73366.

Clearing shack. Large number valves etc, suitable linears, 813, 4X150A, 4X250B, QY3-125 plus valve holders for same. 10V heater and hv transformers. Wide-spaced tuning capacitors. SAE for lists. *Wanted:* 7094 valve and KW2000 tx/rx. G3RTN, QTHR.

Barlow Wadley XCR Mk2, fabulous performer, mint, £85. Would consider exchange for good hf linear or 2m portable or hand-held tx/rx. G3GJX, QTHR. Tel Guildford 60163.

Heathkit 90W a.m./cw tx, 10-80m plus ac psu, good cond, £20. *Wanted:* 160m ssb tx with psu and in good cond. John, 7 Barmouth Avenue, West Knighton, Leicester LE2 6JB. Tel Leicester 883362 evenings.

Teleprinter rolls, standard for Creed, two-ply, date expired (one usable ply of approx 100ft), 75p box of dozen. Due to high cost of transport buyers must arrange collection. G5XB, QTHR. Tel 073-525 2195.

4m fm dash-mount Cambridge, £25. 4m a.m. dash-mount Cambridge, £20. Hudson FM208 4m rx, needs slight attention, £15. All with xtals for 70·48. G3UDV, QTHR. Tel 01-998 6225 7-9pm.

FT2F, good cond, 12 channels incl 145·00, S19, S20, S21, S22, S23, R5, R6, R7, tone burst, mobile mount, £95. Cossor 1045K scope with manual, £12. G3YNC, QTHR. Tel 01-521 3008.

Leak Stereo 30 plus amp, perf cond, £25. G8KKW. Tel 054-33 2169 (Staffs).

AN-USM24C scope, with manual and probes, good cond, £35. 2m a.m. tx/rx, good tx and converter, £18. Desk top projector 3M type 88, £10. G3TDZ 2m rx and tx part built, £12. Pawley, 52 Sumatra Road, London NW6. Tel 01-794 9934.

Yaesu FR50B, modified for top band, purchased May 1975, hardly used, £85. Also Hamgear aerial preselector. J. Raven. Tel Leicester 737617.

Hewlett Packard sampling scope model 185B, double beam, 5in tube, up to 1GHz, manuals, £65. Airmec wave analyser type 248, 5-300MHz, six ranges, £20. R. Earnshaw, 62 Mount Culver Avenue, Footscray, Sidcup, Kent. Tel 01-302 2039.

KW2000A with ac psu, £140 ono. Pair Pocketfones with xtals for 433·2, spare tx unit and batteries, £30. Low-band AM10D six-channel Cambridge, £30. Vanguard AM25T high-band 12·5kHz, £30. Heathkit RA1, £25. Creed 6S auto-tx, £4. Lots more, sae. G3TTV, QTHR.

Going rtty? As one lot only. Teletype 15 teleprinter on table with psu and tu AP66862 with psu exchanged for EC10, Mohican etc and/or vhf rx. Cash either way or sell, £45 or why? Sorry, cannot deliver. G3VTM, QTHR.

Hustler 4-BTV vertical aerial, 10-80m, not mobile model, £25 ono or swap. Why? Buyer collects. G4AKP, QTHR.

Hallicrafters FPM300 Mk2 tx/rx, fan, manual, mobile mount, dc lead, built-in psu (117/240V and 12V), 250W p.e.p. 80-10m, £295. G3PLI, QTHR. Tel Bingley 5218 evenings or Bradford 29692 daytime.

VHF Elliott base station, £20. Microwaves converter, £5. Painted 8/8 beam, £7. AR88 with mechanical filter and xtal bfo, £25. Also many other items: coaxial cables, plugs, halo, Rangers, Tavasu 80m whip, 1,600V psu. GW8CSV, QTHR. Tel 0244 570212.

B40 rx with S-meter, £20. Racal psu +12/0/−12V at 1·5 and 5A, consists of two stabilized units in 19in rack mount and contains two transformers rated 12·5 and 6·5A, £25. *Wanted:* RF board for high-band Cambridge. G8JNI. Tel Godalming 22834.

KW2000E with ac psu and spare valves, £260 ono. G3NFV, QTHR. Tel Lea 75204 evenings or weekends.

G-whip, helical, 10/15/20 plus 80m coil and telescopic extension, base, offers, must sell. Also Heath gen RF1U, £15. G3JQ, QTHR. Tel Macclesfield 22568.

150MHz dfm prescaler fitted with BNC connectors, £15 ono. Also 1,750Hz tone burst unit, £2.50. Clampitt. Tel 01-505 1994 (Buckhurst Hill, Essex).

2m transistor tx, 15W, six channel, £30. 160/80m QRP tx, xtal controlled, £8. Xtals 8MHz R6 in, 35MHz, 18MHz, £1.50 each. Tel 041-334 5051.

KW2000E tx/rx, mains psu with spkr, Shure 444, all vgc. £275 ono tx/rx and mic. View weekends only. G4ATF, QTHR. Tel 01-653 0881 ext 38 weekdays, 01-679 3547 weekday evenings ask for Mr French.

FM Cambridge, six channels all fitted, internal preamp, tone burst, fm/a.m. rx, with 12V ni-cads, swr bridge, dummy load, 4-el beam, charger for ni-cads, all interconnections, £70 ono. Slack, 53 Ethelbert Road, Cliftonville, Margate, Kent.

Yaesu FR101D, amateur bands 2m-160m, sw bands, little used, £350 ono. Drake R4C 10m-160m plus sw bands, spkr, also little used, £300 ono. Verstage, 5 Milkingpen Lane, Old Basing, Basingstoke, Hants. Tel Basingstoke 65165.

Telford TC7 tunable i.f., 28-30MHz all modes, £35. Heath HW17A, Heath re-aligned in June, £35. Katsumi MC701 speech compressor, £14. All in new cond. G5NN, QTHR. Tel Winslow 2498.

FTDX401, exc cond, £290. 18AVT/WB, £30. Heath FMT-4U tuner, £10. Europa tx/rx, mods to B standard, hardly used, £75. Microwave Modules 2m converter, 2-4 i.f., £10. G4CXM, QTHR.

Hallicrafters S27, 27-140MHz in three bands, fm, a.m., ssb/cw (bfo), complete with circuit diagram and alignment sheet, ideal 2m rx with 28-30 converter, first £12 secures. Tx pa, tunes 2·8MHz to 18MHz, includes pair 4X150 valves, blower cooled through chimney, ideal for linear, bases not uhf. Also modulator and atu for above, £10. 18-el 70cm beam, £5. Buyer collects. G8ICM, QTHR. Tel Bourne End (06285) 26377.

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Yaesu FRDX400, £175. FLDX400, £180. G3PEK, QTHR. Tel 061-483 7607.
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Liner 2, mint cond with preamp, 144·10-144·33, £120. G8HKQ/G4EIA, QTHR. Tel Keynsham 61326.

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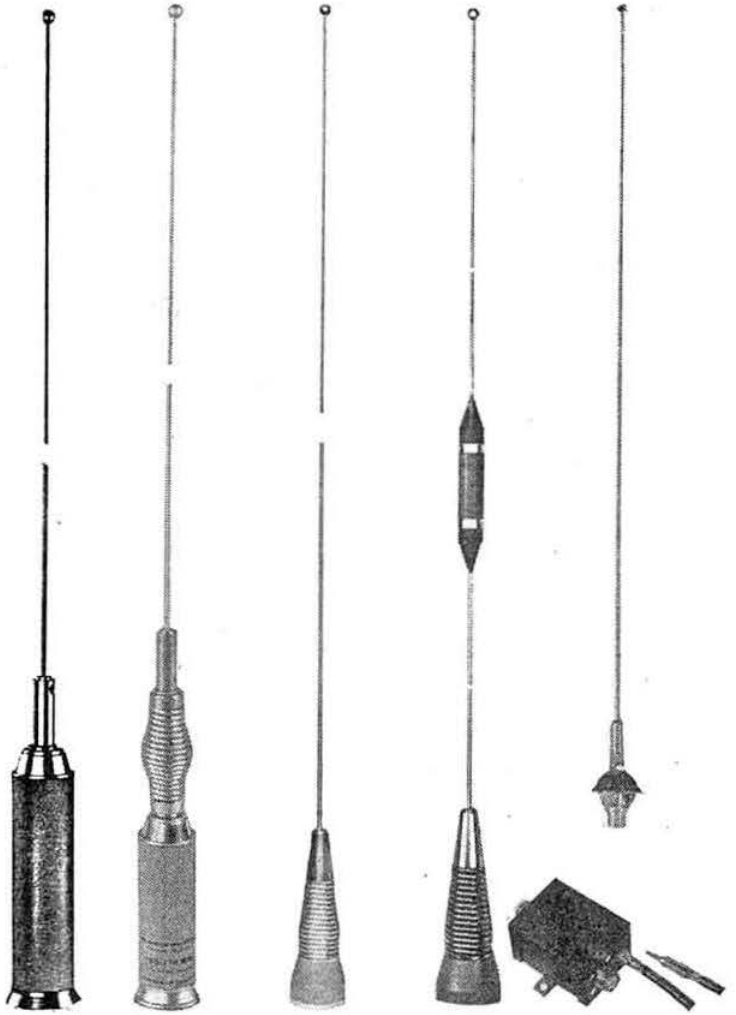

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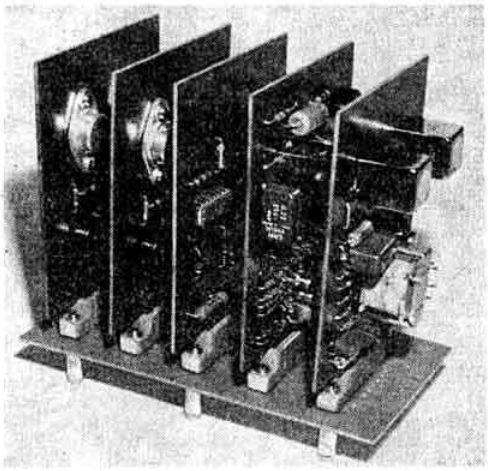

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Rx Audio board ex AM25B **50p**; ex AM10 **£1.70**; ex AM25T **50p**
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AGC Assembly ex AM25B **30p**
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p.p. NKT404/PC28/OC35 to QQV03—10 **£1.45**. Driver to suit 40p.
—20a, **£1.45**. Driver to suit, 40p.
Audio Transformers 6AQ5 to 3Ω & 10Ω, pp NKT404 to 3Ω, small or large. Drivers to suit, small or large. **40p** ea, any 2 for **70p**, 3 for **£1.00**.
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HC6U for 2m Tx 9·0656, 9·0688, 9·0719MHz **£1.70**
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Transistors (tested, with mtg. kits) NKT404 **17p** each, 4 for **60p**
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Beehive trimmers 2–8pf 5p
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144·030 ...	b	b	b	b	b	b	b	b	b	b	b	b	c
144·4/433·2 ...	a	b	b	b	b	b	b	b	b	b	b	b	c
144·480 ...	b	b	b	b	b	b	b	b	b	b	b	b	b
144·600 ...	b	b	b	b	b	b	b	b	b	b	b	b	b
144·700 ...	b	a	b	b	b	b	b	b	b	b	b	b	c
145·000 ...	a	a	b	b	b	b	b	b	b	b	b	b	c
145·050/R2T ...	a	a	a	b	b	b	b	b	b	b	b	b	b
145·075/R3T ...	a	a	a	b	b	b	b	b	b	b	b	b	b
145·100/R4T ...	a	a	a	b	b	b	b	b	b	b	b	b	b
145·125/R5T ...	a	a	a	b	b	b	b	b	b	b	b	b	b
145·150/R6T ...	a	a	a	b	b	b	b	b	b	b	b	b	b
145·175/R7T ...	a	a	a	b	b	b	b	b	b	b	b	b	b
145·200 R8T ...	a	b	b	b	b	b	b	b	b	b	b	b	b
145·300 ...	b	b	b	b	b	b	b	b	b	b	b	b	b
145·350 ...	b	b	b	b	b	b	b	b	b	b	b	b	c
145·400 ...	b	a	a	b	b	b	b	b	b	b	b	b	c
145·500/S20 ...	a	a	a	b	b	b	b	b	b	b	b	b	c
145·525/S21 ...	a	a	a	a	a	a	a	a	a	a	a	a	b
145·550/S22 ...	a	a	a	a	a	a	a	a	a	a	a	a	b
145·575/S23 ...	a	a	a	a	a	a	a	a	a	a	a	a	b
145·600/S24 ...	a	b	b	b	b	b	b	b	b	b	b	b	b
145·650/R2R ...	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
145·700/R4R ...	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
145·750/R6R ...	b	b	b	b	b	b	b	b	b	b	b	b	b
145·775/R7R ...	b	b	b	b	b	b	b	b	b	b	b	b	b
145·800/R8R ...	a	a	b	a	a	a	b	b	a	b	b	b	c
145·950 ...	a	a	b	a	a	a	b	b	a	b	b	b	b

N.B. Frequencies as listed above but in alternative holders are available as per code (b).

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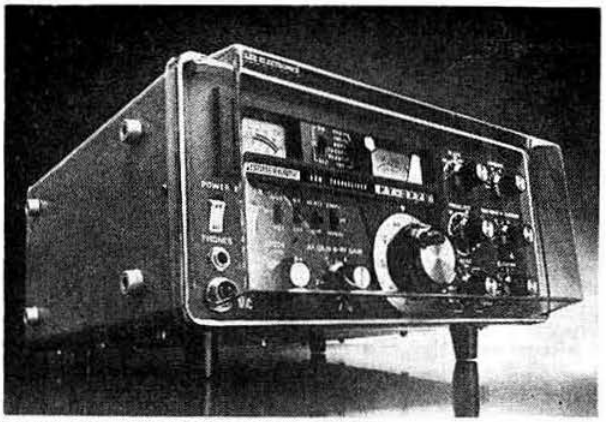

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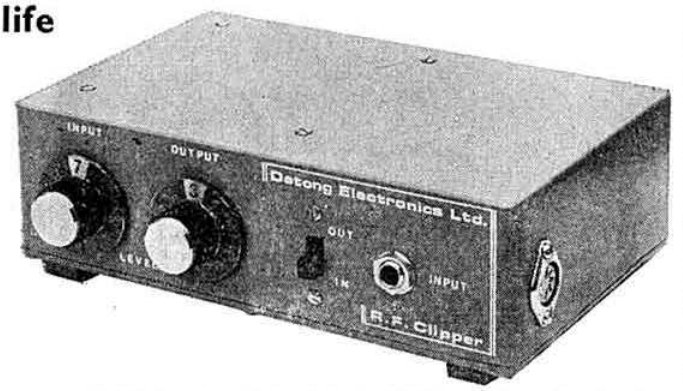

See Rad Comm (August 1974) and S.W. Mag (July 1975) for reviews of this equipment.

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H.M. Customs and Excise have now revoked their interim ruling which enabled us to charge VAT at the old rate of 8% instead of 25% on our r.f. clippers. However as our contribution to price stability in the UK we have decided that

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144MHz DOUBLE CONVERSION MOSFET CONVERTER

I.F.s available ex-stock: 2–4, 4–6MHz. Price **£18.90** inc. VAT
This unit was developed to meet the heavy demand for a converter suitable for use with receivers having better performance at lower frequencies. It uses two dual-gate mosfet mixers, both fed from the output of a 70 or 71MHz crystal oscillator. Selectivity is obtained at the first I.F. In the 74MHz range, thereby overcoming the usual problems associated with low-I.F. single conversion converters.

144MHz DUAL OUTPUT PREAMPLIFIER

This two-stage mosfet preamplifier has two separate isolated outputs, for feeding two receivers, for example. The gain is 18dB, and the noise figure is 2·5dB. The noise figure is individually optimised on each unit using our new automatic noise measuring equipment. Price **£11.30** inc. VAT

70MHz MOSFET CONVERTER

I.F.s available: 4–4·7, 14–14·7, 18–18·7, 28–28·7MHz. Price **£18.90** inc. VAT

70MHz CONVERTER FOR SSB

I.F. 28–28·7 with 42MHz osc. output (similar to 144MHz version above)
Price **£19.90** inc. VAT

SOCKETS

All our equipment (apart from 1,296MHz) is fitted with Belling-Lee sockets. Optionally all equipment can be supplied from stock fitted with BNC sockets (50 or 75 ohms). Extra charge **£1.00** inc. VAT

432MHz POWER SOURCE

A simple and efficient method of producing power is provided by the use of our MMV432 varactor tripler. This unit, when driven by a 144MHz transmitter (AM, FM, or CW), converts this power with high efficiency to 432MHz. A pi-network in cascade with an L-network matches the input impedance to the low impedance of the diode. A similar circuit is used as the output network to provide optimum filtering of harmonics.
Spectrum analysis of other varactor tripler designs leaves us in no doubt that our unique design concept alone achieves the necessary high degree of unwanted harmonic rejection as specified below.

MMV432 Price **£21.90** inc. VAT

MMV432 SPECIFICATION

Output Power at 432MHz: 14 watts typical (for 20 watts drive at 144MHz)
Bandwidth: 430–440MHz at −1dB
Typical Harmonic Performance:

Fundamental	−30dB
288MHz	−50dB
576MHz	−40dB
Others	−60dB

432MHz MOSFET CONVERTER

I.F.s available ex-stock 14–16, 18–20, 24–26, 28–30, 144–146MHz
Price **£22.60** inc. VAT

This unit uses a dual-gate mosfet mixer for excellent strong-signal performance preceded by two BFY90 transistor RF stages for high sensitivity. All UHF tuned circuits are printed using Microstrip technology, and a crystal in the 100MHz region is used in the oscillator chain to overcome unwanted beats in the tuning range.

1,296MHz CONVERTER

This converter has been developed using an extension of the microstrip techniques that have been well proven in our 70cm converter design. Two versions of the design are available using either a 96MHz or 105·666MHz crystal to produce I.F.s of 144–146MHz or 28–30MHz respectively, corresponding to the 1,296–1,298MHz band. We are using crystals of a very tight tolerance to minimize the offset that would otherwise be very noticeable when using a high-performance 28–30MHz tunable receiver. The multiplier chain uses three BFY90 transistors and the mixer is fabricated using a pair of MA 4882 Schottky diodes in a balanced hybrid ring configuration. The I.F. head amplifier uses a selected low noise dual-gate mosfet to give an overall noise figure which is typically better than 8·5dB, and a gain of 25dB. Microstrip UHF circuitry ensures repeatability of this high performance design. The unit is housed in the same small die-cast box as the rest of our range of converters and is fitted with 50 ohm BNC connectors for optimum UHF performance. The converter operates from a nominal 12V supply and is available in negative earth version only. Price **£29.90** inc. VAT

1,296MHz VARACTOR TRIPLER

Maximum input power at 432MHz: 24 watts. Typical output power (at maximum input): 14 watts Price **£31.30** inc. VAT

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We have just been appointed as exclusive UK representative for KLM Electronics of California.

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QM70 PRODUCTS

2FM70

This small unit obviates the need for the expense of a second transceiver or the complexity of numorous add on units with multiple connecting leads which need changing to move from 2m to 70cm. By simply inserting the unit in the antenna line of your existing 2m FM transceiver you are ready for instantaneous operation on 70cm or by the flick of a switch operation is transferred back to 2m. What could be simpler?

With the 2FM70 you have 2m operation as before and 70cm simplex and repeater operation **at the flick of a switch.** No internal modification required to your 2m rig. Compact size 105mm × 40mm × 180mm and lightweight, only 450 grams. Supplied complete with DC power cord and mobile mounting bracket. **£50.00. 70cm repeater groups contact us for special offer on bulk purchases.**

28/432 10W rms output transverter

NB NOW RATED AT 10W rms **OUTPUT.** The first 28/432 transverter offered on the commercial market and after looking around leaves us in no doubt THE BEST. All solid state circuitry excellent mixer characteristics (where it matters) and microstrip PA circuitry give a clean linear signal. Receiver uses 2 RF amplifier stages into a MOS fet mixer for optimum gain and noise characteristics. Second independent IF fitted as standard, RF power output meter led tx/rx indicators, built in ae c/o relay. BNC output socket. Measures 250mm × 125mm × 50mm. Supplied complete with ready wired harness for your transceiver **£83.25.**

432VLA

Fully compatible with our 28/432 transverter providing up to 50W rms output. Requires 5v AC and 300-1000v. Attractively styled and supplied complete with BNC input and output sockets.

144PA50

All solid state 50W rms output 2m linear amplifier. Just connect in the antenna line of your 2m transceiver and leave the rest to the built in RF sensing aerial c/o relay. Accept FM, SSB, AM and CW with switchable hang-time for SSB operation. Supplied complete with DC power cord and SO239 input and output sockets. **£50.00.**

28/144 High Power Transverter.

Hybrid circuitry offering up to 200W pep input, all components conservatively rated, excellent FET converter, 2 IF outputs as standard, solid construction and attractive styling, excellent ventilation to the PA. Superb sensitivity and stability. Takes all drive and switching levels from your transceiver FT101 etc. Fully metered, SO239 antenna socket. Supplied complete with harness and plugs ready to mate with your existing ssb transceiver **£97.75.**

28/144 Solid State Transverter.

All solid state circuitry employing high gain low spurii mixer configuration. Fully metered and LEDs to indicate tx/rx condition Measuring 250mm × 125mm × 50mm, attractively styled. 2W output (linear and clean). Built-in ant c/o relay. The qrp mans delight or use it for driving a high power linear amp. Relay contacts already built in for switching external linear. Receive side employs a superb FET converter. SO239 ant socket. Supplied complete with harness for your ssb transceiver. **£51.75.**

SEND SAE FOR FULL SPEC ON ALL OUR UNITS.

QM70 PRODUCTS

10 Pilgrim Road, Droitwich, Worcestershire WR9 8QA

All prices include VAT and carriage (UK mainland only).

We have tried to maintain our prices as long as possible but but must unfortunately raise these as of 1st December. Orders before then will be invoiced at the old prices.

All units are fully air-tested and carry our 12 month guarantee.

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C&C electronics

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Telephone 01-852 9397

PRICE NEWS

Due to your support over the last few months enabling us to purchase in greater quantities and in order to offset recent increases in VAT we have decreased many of our basic prices. In order to do this we regret that we can no longer offer the 10% quantity discount on our stock crystal range. However, we believe that to the majority of our customers we will be offering better value.

MADE TO ORDER CRYSTALS

Holders available: HC6/U, HC18/U and HC25/U.
Frequency range: 1·5-21MHz Fundamental (please state required input capacity) 21-105MHz Overtone.
Specification: 50ppm 0-60°C or 30ppm at ambient t. (state which required).
Price: 2-105MHz. **£2.61** less 5% for 5 or more. 1·5-2MHz **£3.25.**
Please note crystals under 4MHz only available in HC6/U.

CRYSTALS IN POPULAR FREQUENCIES

We have now added many of the IARU recommended 70cm channels to our stock list together with two additional 2 metre repeater channels and 145·8MHz.

TRANSMIT CRYSTALS (MHz) in HC6/U Price **£1.75**

S20	S21	S22	S23	R3	R4	R5	R6	R7
145·500	145·525	145·550	145·575	145·075	145·100	145·125	145·150	145·17
4·0416	4·0423	4·0430	4·0437	4·0298	4·0305	4·0312	4·0319	4·0326
8·0823	8·0847	8·0861	8·0875	8·0597	8·0611	8·0625	8·0638	8·0652
RU1		SU20	SU22	GB3PY				
144·342	144·400	144·500	144·520	—	145·000	145·800	70·266	
433·025	433·200	433·500	433·550	431·350				
8·0189	8·0222	8·0277	8·0287	7·9879	8·0555	8·1000	8·7825	
12·0284	12·0333	12·0416	12·0430	11·9819	4·0277	4·0500		

RECEIVE CRYSTALS (MHz) in HC6/U Price **£1.75.** 44MHz range also in HC25/U. Price **£2.10**

S20	S21	S22	S23	R3	R4	R5	R6	R7
145·500	145·525	145·550	145·575	145·675	145·700	145·725	145·750	145·775
10·3503	10·3621	10·3639	10·3657	10·3728	10·3746	10·3764	10·3782	10·3800
44·9333	44·9416	44·9500	44·9583	44·9916	45·0000	45·0083	45·0166	45·0250
RU1		SU20	SU22	GB3PY				
434·625	433·20	433·500	433·550	433·350	145·000	145·800		
30·2803	30·1785	30·2000	30·2035	30·1892	10·3246	10·3817	29·7800	
					44·7666	45·0333		

Crystals supplied in 3 weeks to any stated frequency for the following V.H.F. transceivers Beltek, Icom, Heathkit, Ken, Trio and Yaesu. Price **£2.10** Crystal.

REPEATER I/P CHANNEL CRYSTALS in HC6/U. Price **£1.75**
R3 44·7916MHz R4 44·8000MHz R5 44·8083MHz R6 44·8166MHz R7 44·8250MHz

CONVERTER CRYSTALS (MHz) in HC18/U. 38·66666, **£1.75**
70·0000 101·0000 105·6666 116·0000 Price **£2.55**

PYE POCKETFONE CRYSTALS in HC18/U. Price **£4.00**/pair.
for 433·200MHz GB3PY 433·500 (SU20)

CRYSTAL SOCKETS HC6/U and HC25/U, 15p.

LOW FREQUENCY STANDARDS 8% VAT
100kHz in HC13/U (Same base as HC6/U) price **£2.50**
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All prices include postage to UK and Irish addresses. Crystals supplied to any specification for industrial, mobile radio or marine use etc. State equipment/specification when enquiring. Please send sae with all enquiries.

The above prices are ex VAT. Please add 25% unless otherwise stated. Please note we are now authorised distributors for antenna specialist products. Prices available on request.

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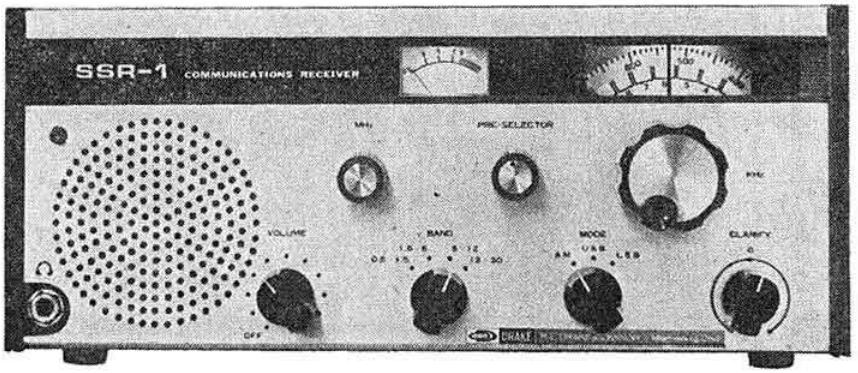

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SPECIFICATIONS

Frequency Coverage: 0·5 to 30MHz in 30 ranges each tunable over 1MHz range with a dial having 10kHz graduations.

Reception Modes: CW, USB, LSB, AM.

Sensitivity: At least 10dB S + N/N under the following conditions:

Mode	Frequency	Input level*
SSB	0·5-2MHz	1·0uV
	2-30MHz	0·3uV
AM	0·5-2MHz	3·0uV
	2-30MHz	1·0uV

AM: 1,000Hz at 30% modulation.)

* These voltages are ½ the open circuit signal generator voltage, ie, the voltage read on the meter of a HP Model 606 Generator.

Output: Capable of 200 mw output on SSB at 2MHz with input signal of 0·5uV and 2 Watts output with 5uV input.

Audio Distortion: Less than 5% at 2 Watts.

Calibration Accuracy: Within 5kHz at all frequencies.

Selectivity:

BANDWIDTH

Mode	—6dB
SSB	3kHz ± 25%
AM	5·5kHz ± 25%

Image Rejection: Greater than 50dB.

IF Rejection: Greater than 50dB at f_d below 20MHz.
Greater than 40dB at f_d above 20MHz.

Antenna: Self contained telescopic whip antenna External connection to terminal strip. (75 ohm input impedance—unbalanced.)

Audio Output Provisions: Internal 8 ohm speaker and phone jack on front panel that disables speaker when plugged in.

Muting Provisions: External mute jack (RCA type) that provides normal reception with closed circuit and mute with open circuit connections.

Power Supply: 8 type "D" (1·5 v) dry cell batteries. Tapped transformer to provide operation from 117 v ± 15% or 240 v ± 10%-20%, 50-60Hz source with automatic switch over to batteries when AC line is disconnected.

Current Consumption: Less than 100ma quiescent at 12 v DC.

Dial Lights: Momentary push button to light when on battery operation. Always on for AC operation.

Clarifier: Tunes minimum of ± 2kHz and maximum of ± 5 kHz.

Size: 13in (33cm) wide, 11in (28cm) deep, 5½in (14cm) high.

Weight: 14lb (6·4kg).

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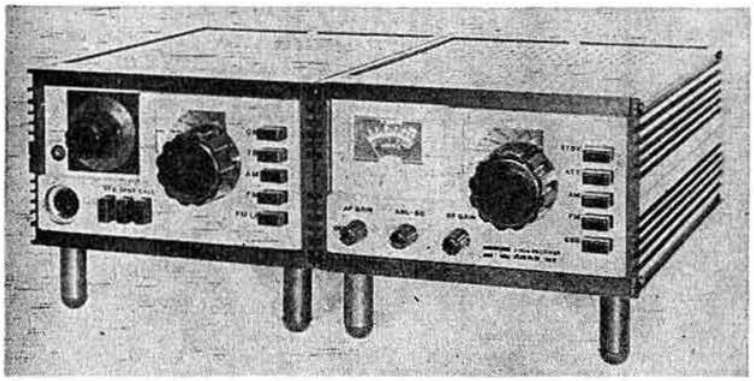

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We are pleased to announce that Electronic Developments is now part of our organization. The Magnum Two and Four metre Transverters 2m and 70cm Linear Amplifiers now available direct from us. Overseas trade enquiries welcome.

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SWL ANTENNA TUNING UNIT. 50 switched and tunable positions. Single wire or Co-Ax input. Small neat cabinet. £14.25 inc postage.

VHF ABSORPTION WAVEMETER MK1. Frequency coverage 65-230MHz. Price including postage £16.00.

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★ YAESU ★ DECCA COMMUNICATIONS ★ SWAN ★ STE(Milan) ★ DRAKE ★ OMEGA ★ HY-GAIN ★ G-WHIPS ★ ATLAS ★ SPACEMARK ★ C.D.R. ★ MICROWAVE MODULES ★ ELECTRONIC DEVELOPMENTS ★ SHURE ★ AMTRON ★ BARLOW ★ WADLEY ★ EAGLE ★ KATSUMI ★ JAYBEAM

Send for details and current price list. Due to high rate of postage SAE with all general enquiries please.

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All prices include VAT at current prices

Single Meter SWR Bridge	£8.60	Post 25p
Twin SWR meters	£11.20	,, 25p
Oaker SWR meter	£22.68	,, 50p
Omega Noise Bridge TE-701	£22.50	,, 25p
Omega Noise Bridge TE-702	£30.00	,, 25p
Planet Speech Compressor	£32.39	,, 45p
SWL Tuning unit	£14.00	,, 45p
Absorption wavemeter, 65-230 MHz	£16.00	,, 30p
Dipole "T" Pieces	32p	,, 20p
2½" Plastic Insulators	15p	,, 20p

PL259 Plugs 45p SO239 Sockets, 40p; cable reducers 14p; 300 & 75 ohm twin feeder, 8p yard: UR43, 16p; UR67, 40p; Due to postal increases minimum postage charge 20p.

Arac 102 Solid state receiver. 28-30MHz 144-146MHz AM-FM-SSB. 12V dc operation £108.00.

Atal Solid state 8 watt TX AM-FM 144-146MHz. £145.00.

NOTE

Shop Hours 9:30-5:30 Monday to Saturday

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Inoue IC22 Transceiver with 3 channels for 2m, **£109.26,** with tone burst.
Inoue IC22A Transceiver, 5 channel version, **£115.00.**
Inoue IC225 Transceiver, 80 channel for 2m, **£195.00.**
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Liner 2. SSB 2m Transceiver, **£145.00.**
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THE SENTINEL 2 METRE CONVERTER KIT, 28-30MHz only. Price only: **£12.74.** Ex-stock. If you can't get it to work properly, we will align if full spec. for **£2.50.**

SM70 70cm FET CONVERTER. I.F. output 144-146MHz. Noise figure 3·5dB. Gain 30dB. An excellent 70cm converter for only **£18.75.** Ex-stock.

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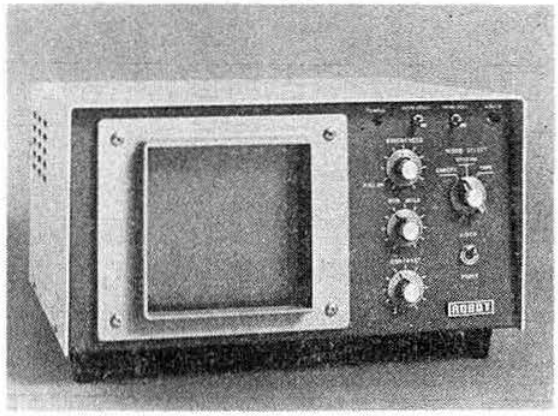

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PRICES: At the time of going to press (Oct) U.K. prices had not been finalised but we at Robot (in conjunction with Aero & General Supplies) are determined to ensure that the U.K. Amateur can enjoy the worlds finest SSTV equipment at around the same price as ordinary SSTV gear. REMEMBER—Thousands of Robot monitors are now in use throughout the world.

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POLYESTER AND POLYCARBONATE CAPACITORS 1n2, 2n2, 400V, 10nF, 22nF, 250V @ 1½p. 22nF, 160V, 33nF 400V @ 2p, 1nF, 4n7 1000V, 10nF, 22nF, 400V @ 2½p, 150nF, 250V, 470nF, 680nF, 100V @ 2½p. 220nF, 250V @ 3p.
FEEDTHROUGH CAPACITORS 22pF Nut Fixing @ 2½p 1000pF Solder in (small) @ 1p. **TRIMMERS** tubular ceramic solder in 2pF @ 1½p, Oxley air spaced trimmers 10mm sq, two types max cap = 10pF and 14·5pF @ 5p. **ELECTROLYTIC CAPACITORS** 2·5μF 16V, 4μF 40V, 4μF 64V, 8μF 4V, 32μF 4V, 32μF 6V3, 100μF 4V, 100μF 6V4, 125μF 4V @ 3p, 64μF 40V, 125μF 16V, 330μF 63V, 400μF 4V, 1000μF 4V @ 4½p **PAPER CAPS** 40μF 150V @ 15p, **MONOLITHIC CERAMIC PLATE CAPACITORS** 4·7, 5·6, 22, 39 and 47pF @ 1½p. **PHILIPS BEEHIVE TRIMMERS**, 8pF @ 5p. **50Ω BNC SOCKETS** (single hole) @ 12½p. **TEN TURN POTS** 5kΩ @ 80p (new) also 100Ω @ 40p (ex equip) **DIN SOCKETS** 5 pin (180°) @ 5p **DIODES** OA81 10 for 20p BAX13 10 for 25p **BC107** (ex new equipment) 25 for 70p, 100 for £2.50p. **MULLARD 22pF FILM DIELECTRIC CAPACITORS** @ 5p. **LEADLESS CERAMIC DISC CAPS** 390pF, 25 for 10p. **JACKSON C803** 50pF and 100pF Trimmers pre-set @ 20p.

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TELFORD COMMUNICATIONS

We think its about time we blew our trumpet a bit this month, as we believe we are the only British manufacturer of complete 2 metre rigs, that is, mains In at one end and RF or audio out of the other. There are numerous "die cast box merchants" in the business, producing all sorts of "add on" equipment, but we believe we are the only *British* concern to offer complete ready to go 2 metre stations comprising separate transmitters and receivers, which we know is what the true VHF enthusiast wants. There is a glut of imported transceivers admittedly at attractive prices, but they are generally only so priced as they are quite often modified commercial units, on which the commercial buyers have borne the design and developments costs.

It's not an easy way of making a living, but we believe in Britain, and we are determined to continue offering competitive equipment at a competitive cost which is **BRITISH DESIGNED AND BRITISH BUILT.** So, if you are on the lookout for 2 metre solid state gear, remember Telford Communications.

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ADVANCE INFORMATION ON ONE OF OUR NEW PRODUCTS

The TC12 200MHz Frequency Counter. This, the latest addition to our range, and ideally suited for use with our transmitters to form a digital readout station, will be available shortly, priced in the region of £130. The unit has a 6 digit readout employing high intensity 7 segment indicators, and has a bandwidth extending from less than 10Hz to greater than 200MHz, in two ranges with separate inputs. Basic sensitivity is 20mV, into 10K on range 1 (10Hz to 20MHz) and into 75 ohms on range 2. (1MHz to 200MHz). There is a gate time correction between ranges and the display accuracy is ± 1 count, or 1Hz on range 1, and 1KHz on range 2. 1MHz fundamental crystal controlled count period, with 1µS, 10µS, 100µS, 1mS, 10mS, 100mS, and 1Sec. output brought out to the rear panel for use as Rx. calibrator or marker pips etc. LED indication of clock generator function, with both inputs schottky protected against overload, while the basic sensitivity is sufficient to obtain a reliable count at 145MHz by using a whip or halo fed directly into the counter, in the vicinity of a transmitter running about 10watts. Attractive case finished in standard "Telford" dark grey hammer stove enamel, measuring 10"×2·5"×11" deep, with a ½" visor. **Price and delivery schedules to be announced**

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A1/A3J/A3H/F3, full 2MHz coverage of 2M band from high stability mixer VFO, and xtal on 144·300MHz for SSB. 10 watts RMS output. Incl. dynamic PTT microphone, key jack, anc. plug. Dual frequency repeater tone access. Mains or DC. Case 14" × 5½" × 7½", 11½lbs. **£140.00.**

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Further details of all units is yours for the asking, please do, either direct or from our agents, if direct please include a cheque for the postage. All prices are less the Customs and Excise share, for which kindly add 25%, which we will pass on. Securicor delivery of TC10 and TC7 will cost an extra £4.50, but is well worth it, and the VAT on this is only 8% which is a mere 36p. H.P. Terms available, rapid clearance for licensed clients.

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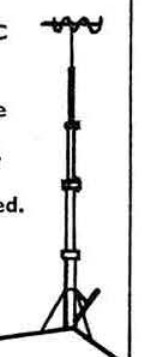

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470mfd at 10V, **5 for 60p.**
3300mfd at 10V, **5 for 95p.**
33mfd at 16V, **5 for 35p.**
330mfd at 16V, **5 for 60p.**
1000mfd at 16V, **5 for 95p.**
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1000mfd at 25V, **5 for 95p.**
3·3mfd at 35V, **6 for 30p.**
10mfd at 35V, **5 for 40p.**
33mfd at 35V, **5 for 40p.**
47mfd at 35V, **5 for 45p.**
100mfd at 35V, **5 for 60p.**
220mfd at 35V, **5 for 75p.**
330mfd at 35V, **5 for 95p.**
2·2mfd at 50V, **10 for 40p.**
22mfd at 50V, **5 for 40p.**
33mfd at 50V, **5 for 45p.**
330mfd at 50V, **5 for 95p.**
64mfd at 65V, **5 for 65p.**
1mfd at 100V, **10 for 25p.**
0·0015mfd min. disc ceramics, **20 for 20p.**
390pf tantalum at 500V, **10 for 30p.**
Dubillier Electrolytics. 50µF, 450V, **2 for 50p.**
Dubillier Electrolytics. 100µF, 275V, **2 for 50p.**
Plessey Electrolytics. 470µF, 63V, **3 for 50p.**
TCC Electrolytics. 1000µF, 30V, **3 for 60p.**
Plessey Electrolytics. 1000µF, 180V, **40p each, (3 for £1.00).**
Dubillier Electrolytics, 5000mfd at 35V, **50p each.**
Dubillier Electrolytics. 5000µF, 50V, **60p each.**
Dubillier Electrolytics. 5000mfd at 70V, **65p each.**
ITT Electrolytics. 6800mfd at 25V, high grade, screw terminals, with mounting clips, **50p each.**
Plessey Electrolytics. 10,000mfd at 63V, **75p each.**
Plessey Cathodray Capacitors. 0·04µF at 12·5kV DC. Screw terminals, **£1.50 each.**

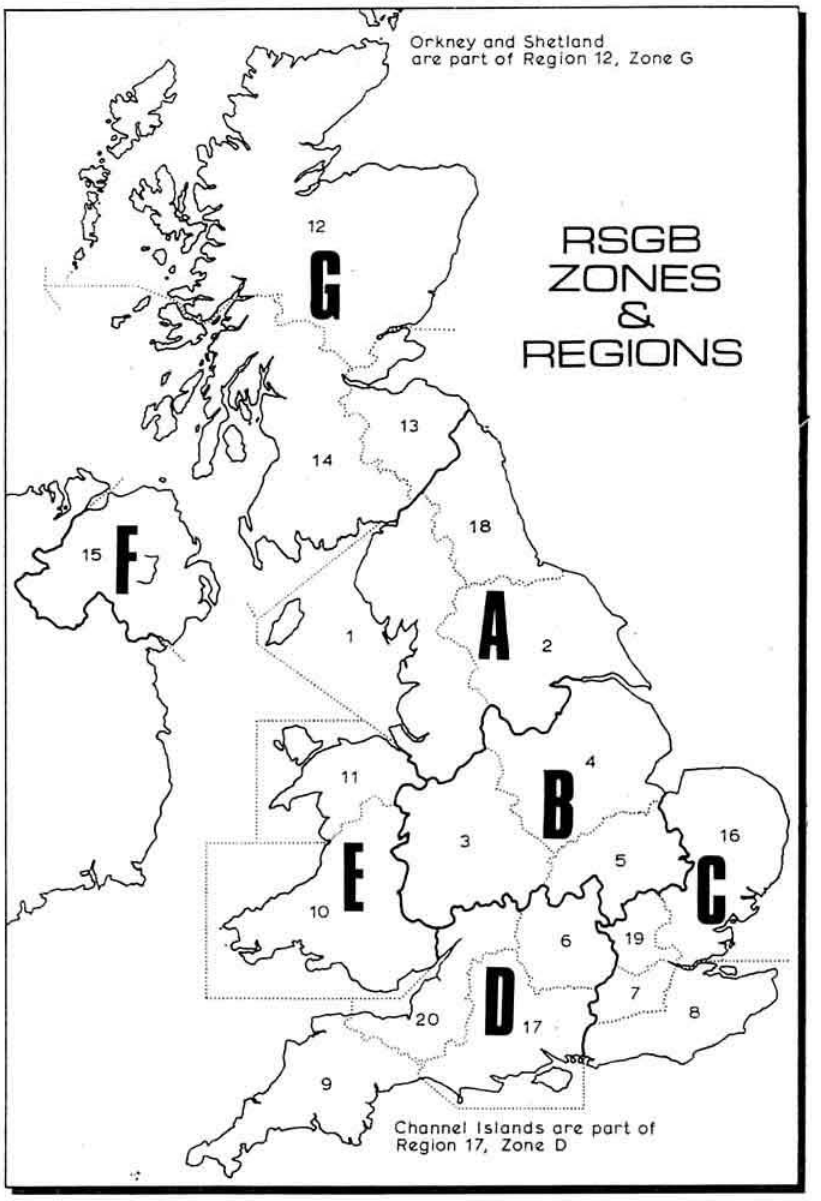
A LARGE RANGE OF CAPACITORS AVAILABLE AT BARGAIN PRICES, SAE FOR LIST.

RADIO SOCIETY OF GREAT BRITAIN

and

LAMBDA INVESTMENT COMPANY LIMITED

REPORT AND ACCOUNTS FOR THE YEAR ENDED 30 JUNE 1975



Radio Society of Great Britain

35 DOUGHTY STREET, LONDON WC1N 2AE

4 November 1975

NOTICE IS HEREBY GIVEN that the **FORTY-NINTH ANNUAL GENERAL MEETING** of the Society will take place at the Royal Society of Arts, John Adam Street, Adelphi, London WC2, at 6.30pm on Friday 5 December 1975 for the transaction of the undermentioned business:

1. To receive and, if approved, confirm the Minutes of the Forty-eighth Annual General Meeting as published in the June 1975 issue of *Radio Communication*.

2. To receive and, if approved, adopt the audited accounts of the Society for the year ended 30 June 1975 and the Financial Report of the Council to the members of the Society for the year ended 30 June 1975.

3. To consider and, if thought fit, pass the following *Special Resolution*:

   SPECIAL RESOLUTION

   To amend the Articles of Association so that the following Article be substituted for the present Article:

   19. Subscriptions and resignations of members

   The annual subscription for corporate members and associates shall be such a sum as the Council may from time to time decide.
   Where two or more members of a family have the same address registered with the Society, the second and subsequent members shall be eligible for reduced subscription, which shall entitle them to all privileges of their grade of membership except that of receiving a copy of each issue of the Society's journal. The annual subscription payable by such second and subsequent members shall be as determined by Council from time to time.
   Upon the conditions of the preceding paragraph ceasing to apply such members shall forthwith be required to pay the full subscription appropriate to their category of membership.

   Explanatory note:

   This Article will enable Council to decide the subscription rates without the necessity of calling an Extraordinary General Meeting to pass a Special Resolution each time an increase is required.

4. To announce the names of members to serve on the Council for the year 1976, and in the event of Mr W. A. Scarr having been successful in the ballot to have his appointment confirmed by the members as he is over 70 years of age.

5. To authorize Council to fix the remuneration of the auditors for the ensuing year.

6. To transact any other business which may be properly transacted at an Annual General Meeting.

Any member entitled to attend and vote at the above meeting may appoint a proxy to attend. A proxy need not be a member of the Society.

By Order of the Council

G. R. JESSOP
Secretary

Notes

(a) Forms for the appointment of proxies may be obtained from the Secretary upon request.

(b) The instrument appointing a proxy shall be deposited at the office of the Society not less than 48 hours before the time appointed for holding the meeting.

(c) The explanatory note relating to the proposed amendment to the Articles of Association does not form part of the Special Resolution and is only given for the information of members.

Radio Society of Great Britain

35 DOUGHTY STREET, LONDON WC1N 2AE

Patron: HRH THE PRINCE PHILIP, DUKE OF EDINBURGH, KG

COUNCIL

President
C. H. Parsons, GW8NP

Executive Vice-President
E. J. Allaway, MB, ChB, MRCS, LRCP, G3FKM

Honorary Treasurer
J. O. Brown, LLB, FCA, G3DVV

Telecomms Liaison Officer
R. F. Stevens, G2BVN

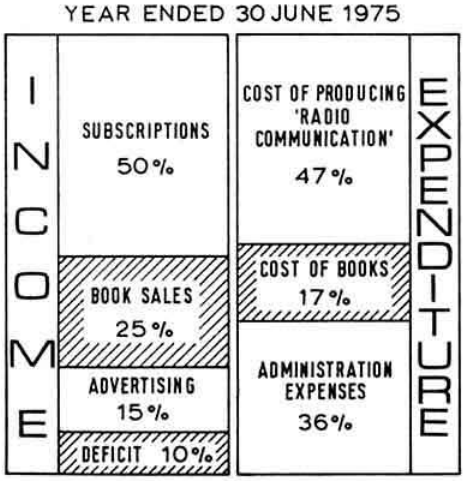
Members
R. J. Baker, G3USB
P. Balestrini, TEng(CEI), MITE, MIAM, G3BPT
D. Byrne, G3KPO
R. W. Fisher, G3PWJ
W. J. Green, G3FBA
W. F. McGonigle, GI3GXP
L. E. Newnham, G6NZ
J. R. Petty, G4JW
D. M. Pratt, BTech, MIEE, MIERE, G3KEP
W. A. Scarr, MA, FBIS, G2WS
A. W. Smith, GM3AEL
R. F. Stevens, G2BVN
G. M. C. Stone, CEng, MIEE, MIERE, G3FZL*
D. M. Thomas, GW3RWX
F. C. Ward, G2CVV
**Retired on 31 December 1974*

Secretary & General Manager
G. R. Jessop, CEng, MIERE, G6JP

Auditors
Edward Moore & Sons, Chartered Accountants

Bankers: Barclays Bank Ltd

Chart showing comparisons of different sources of revenue with expenditure



FINANCIAL REPORT OF COUNCIL TO THE MEMBERS OF THE SOCIETY

THE Balance Sheet at 30 June 1975 and the Income and Expenditure Account for the year ended on that date as set out on pages iv to vii are submitted for the approval of members.

Members may have noticed from the results of other clubs and societies and even from the great companies of industry, that an immense strain has been put upon the various organizations to meet their current expenditure. The Society is no exception. Consideration of the figures in the Income and Expenditure Account shows some staggering increases, for instance:

Staff remuneration	Up 40%
Telephone, etc.	Up 20%
Bank charges	Up 50%
Net cost of *Radio Communication* ..	Up 40%

The Society is just another casualty of inflation and regrettably there is only one step that can be taken to remedy the position and that is to ask the members to agree to a subscription increase. The proposed figure is £8 and members will be asked to confirm the formalities relating to this at the Annual General Meeting.

Several of the more important points in the accounts are singled out as follows.

Subscription income
This has increased by approximately £9,000 during the year. This is partly due to an increase in membership and partly due to the increase in the previous subscription having come fully into effect. The collection of subscriptions during the year fell seriously into arrear but the position has now been corrected, and is reflected in the exceptional items at the foot of the Income and Expenditure account.

Profit on sale of publications
This figure is considerably down due mainly to the delay in bringing out a new edition of the *Radio Communication Handbook*.

"Radio Communication"
As a matter of policy the number of pages in our magazine was increased during the year and an increase in the cost was expected. What was not allowed for was the huge inflationary boost to the figure. As you will see the accounts have taken credit of £4,802 in respect of a VAT repayment and it was always intended to use this repayment to issue a bigger and better *Radio Communication*.

The cost is shown after deducting advertising revenue of £25,506 (1974 was £16,073) and satisfactory as this advertising income is, the rate of inflation was so fast towards the end of the Society's year that we could not make advertising rate increases fast enough to cover the cost of the printing and postage relating to the advertising.

Surplus on rallies
During the year this amounted to £1,890 (1974, £685) and the Society is very appreciative of the hard voluntary work put in by many members which has resulted in such a satisfactory outcome.

Freehold property
The Council is still of the opinion that the present market value is in excess of £100,000.

What of the future?
The Society is asking members to pay a higher subscription, but even this will take some time to work its way through the Society's accounts and next year there will inevitably be a deficiency, and if inflation is not kept under control the Society is going to be hard pressed to stabilize its finances.

RADIO SOCIETY OF GREAT BRITAIN

(COMPANY LIMITED BY GUARANTEE)
AND ITS SUBSIDIARY COMPANY

CONSOLIDATED INCOME AND EXPENDITURE ACCOUNT

for the year ended 30 June 1975

1974 £	£		£	1975 £	£
		INCOME			
70,653		Subscription income			76,165
16,547		Gross profit on sales of publications			10,422
316		Quoted investment income (gross)			316
422		Bank interest			415
87,938		**Total income**			87,318
		EXPENDITURE			
	3,403	Headquarters rates, lighting, heating and cleaning		4,744	
	24,753	Staff remuneration		34,375	
	200	Pension		250	
	5,474	Telephone, postage, printing & stationery		6,597	
	318	Insurance		312	
	2,084	Repairs and maintenance		632	
	70	Hire of equipment		10	
	1,332	Depreciation of equipment		1,401	
	481	Bank charges		719	
	450	Audit fees		755	
	1,000	Legal and professional fees		26	
	603	Sundry expenses		521	
	—	Bad debts written off		763	
	1,141	Debenture interest of Lambda Investment Company Limited (gross)		1,141	
41,309				52,246	
36,558		*Radio Communication*—distributed free to members—cost including staff remuneration and after deducting advertising revenue		50,797	
	266	Membership certificates, Awards, Trophies, etc.	117		
	1,679	QSL Bureau, Beacons and Intruder Watch	1,862		
	843	Contributions to IARU Region 1	1,021		
2,788				3,000	
2,272		Cost of general meetings and Council and committee expenses (after deducting surplus on rallies of £1,890 [1974 £685])		1,750	
1,000		Cost of international conferences		701	
300		Taxation		—	
84,227		**Total expenditure**			108,494
3,711		**DEFICIT FOR THE YEAR (1974, surplus) (all of which arises in the Society)**			(21,176)
—		less: Exceptional items—subscription income: credit arising from different method of apportionment [Note 1 (a)]		3,381	
—		—transfer from VAT suspense account at 1 July 1974		4,802	
					8,183
£3,711		**DEFICIT AFTER EXCEPTIONAL ITEMS (1974, surplus)**			£(12,993)

RADIO SOCIETY OF GREAT BRITAIN

(COMPANY LIMITED BY GUARANTEE)
AND ITS SUBSIDIARY COMPANY

BALANCE SHEETS 30 JUNE 1975

1974 The Society & Subsidiary £	1974 The Society £		Notes	1975 The Society £	1975 The Society & Subsidiary £
		FIXED ASSETS			
41,675	—	Freehold property at cost	(1) (2)	—	41,675
2,918	—	Sinking Fund Policy, premiums paid, (Surrender value £3,367)		—	3,335
3,161	3,161	Furniture and equipment, at cost less depreciation	(3)	1,814	1,814
—	26,176	Investment in and loan to subsidiary	(4)	26,176	—
47,754	29,337			27,990	46,824
		NET CURRENT ASSETS			
9,055	9,055	Quoted investments at cost less amount written off (Market value £8,645 [1974, £7,750])	(5)	9,055	9,055
18,582	18,582	Stocks at lower of cost and net realizable value		16,346	16,346
13,658	13,658	Debtors, and payments in advance	(10)	20,445	20,445
13,067	12,676	Bank balances & cash in hand		7,208	7,208
54,362	53,971			53,054	53,054
16,655	16,212	**Less** Creditors & accrued charges	(11)	24,870	25,339
37,707	37,759			28,184	27,715
£85,461	£67,096	**NET ASSETS**		£56,174	£74,539
		Financed by:			
17,353	17,291	**ACCUMULATED FUND** Balance at 1 July 1974		21,002	21,064
3,711	3,711	Less: Balance brought forward from the Income & Expenditure Account		(12,993)	(12,993)
21,064	21,002			8,009	8,071
(722)	—	Less preliminary expenses of the subsidiary		—	(722)
20,342	21,002			8,009	7,349
4,802	4,802	**Value Added Tax** suspense account	(8)	—	—
41,292	41,292	**SUBSCRIPTIONS IN ADVANCE**		48,165	48,165
19,025	—	6% **DEBENTURE STOCK** of Subsidiary (Redeemable at par on or before 30 June 1997: Secured on the assets of that Company)		—	19,025
£85,461	£67,096			£56,174	£74,539

(The notes on pages vi and vii form part of these accounts)

C. H. PARSONS, *President*

J. O. BROWN, *Treasurer*

NOTES ON THE ACCOUNTS

1. Accounting policies:
   (a) Subscriptions—cash received in respect of subscriptions for the year has been apportioned on a time basis from the due dates receivable: in prior years the apportionment was made from the actual dates subscriptions were received.
   (b) Depreciation—no depreciation has been provided on the freehold property. Furniture and equipment has been depreciated using a straight-line basis on cost so as to write off the assets over their estimated useful lives.
   (c) Life subscriptions are credited to Income & Expenditure Account over a period of 10 years.

2. The Council is of the opinion that the present market value of the Society's freehold property (which is held in the subsidiary company) is in the region of £100,000.

3. Furniture and equipment:

Cost 1 July 1974	£10,542
Additions during year	54
Disposals during the year	(117)
Cost 30 June 1975	10,479
Accumulated depreciation	8,665
Book value as shown in Balance Sheet (Book value 30 June 1974, £3,161)	£1,814

4. The share capital of the subsidiary, Lambda Investment Company Limited (registered in England), is £100 in shares of £1 each and all the shares are held by the Society or its nominees. The debenture stock has been subscribed for or purchased by individual holders in their own right.

5. **Investments**

		Cost less amount written off
£5,000	3% Savings Bonds 1965/75 (redeemed August 1975)	5,000
£4,145	British Transport 4% Guaranteed Stock 1972/77	4,055
		£9,055

Both investments are charged to Barclays Bank Ltd as security in case the Society requires overdraft facilities.

6. The sales of publications during the year amounted to £37,857 (1974—£45,010), and advertising revenue amounted to £25,506 (£16,073) before deducting commission.

7. At 30 June 1975 there were no commitments for capital expenditure.

8. In 1974 HM Customs and Excise agreed that 60 per cent of the subscriptions from UK members should be zero-rated for VAT. The resultant credit arising from this at 30 June 1974 was held in the VAT suspense account in the foregoing Balance Sheet and at 30 June 1975 the balance has been transferred to Income and Expenditure Account.

9. The Society administers the following prize and memorial funds:

	£	£
(*a*) **The Pilot Officer Norman Keith Adams Prize Fund**		
At 30 June 1975 the fund amounted to		165
Accumulated income at 30 June 1974 was	34	
Income for the year to 30 June 1975 was	11	
	45	
Less: Cost of prize awarded	10	35
		£200
Which was invested in: 7% British Savings Bonds		165
Cash at bank		35
		£200
(*b*) **The J. Fraser Shepherd Prize Fund**		
At 30 June 1975 the fund amounted to		300
Accumulated income at 30 June 1974 was	19	
Income for the year to 30 June 1975 was	22	
	41	
Less: Cost of prize awarded	20	21
		£321
Which was invested in: £506.62 3½% War Loan		200
6% Debenture Stock Lambda Investment Company Limited		100
Cash in the general funds of the Society		21
		£321

(*c*) The fund of **The Bevan Swift Memorial** amounted to £15 at 30 June 1975, and is represented by £15 held in the general funds of the Society. £8 was paid out as a prize during the year.

(*d*) The subscribed fund of **The J. Clarricoats Memorial** amounted to £48, held in a separate bank account and there was no distribution during the year.

(*e*) The fund of **The Thomas Memorial** now stands in the books at £1 recording the obligation of the Society to supply miniature cups from its own resources.

(*f*) The fund of **The L. N. Goldsbrough Memorial** amounted to £50 and is represented by £50 held in the general funds of the Society.

10. Debtors and payments in advance include £10,000 paid on account of the cost of publishing the new edition of the *Radio Communication Handbook.*

11. Creditors and accrued charges include £2,000 in respect of provisions created in the previous year, £1,000 towards cost of international conferences and £1,000 towards legal costs on behalf of members.

REPORT OF THE AUDITORS TO THE MEMBERS OF THE RADIO SOCIETY OF GREAT BRITAIN

The Income and Expenditure Account includes an item of £3,381 as an exceptional item which represents the increase in the credit for subscriptions receivable for the year resulting from the changed method of calculating subscription income compared with previous years. In our opinion this item results from a change in accounting policy and therefore the treatment is not in agreement with Statement of Standard Accounting Practice No 6.

With this exception, the Accounts set out on pages iv to vii in our opinion give a true and fair view of the state of the Society's affairs at 30 June 1975 and of the Deficit for the year ended on that date and comply with the Companies Acts 1948 and 1967.

4 Chiswell Street, London EC1Y 4XB
6 October 1975

EDWARD MOORE & SONS
Chartered Accountants

LAMBDA INVESTMENT COMPANY LIMITED

The directors have pleasure in submitting their report for the year ended 30 June 1975. The company is a wholly-owned subsidiary of the Radio Society of Great Britain (a company incorporated in England) and was formed to acquire the freehold property, 35 Doughty Street, London WC1, which is the headquarters of the Society. The directors are of the opinion that the market value of the property is in the region of £100,000.

The directors are Messrs L. E. Newnham (Chairman), R. F. Stevens, G. R. Jessop and J. O. Brown (Secretary); the first two named hold one share each as nominees of the Society and Mr Newnham holds £300 Debenture Stock. Mr R. F. Stevens retires by rotation at the Annual General Meeting, and being eligible, offers himself for re-election. The auditors, Messrs Edward Moore & Sons, will continue in office in accordance with Section 159(2) of the Companies Act 1948.

By order of the Board

J. O. Brown,
Secretary

6 October 1975

BALANCE SHEET 30 June 1975

and

REVENUE ACCOUNT for the year ended on that date

1974 £	£			£	1975 £	£
			ASSETS			
41,675			Freehold property at cost			41,675
2,918			Sinking Fund Policy, premiums paid (Surrender value £3,367)			3,335
241			Preliminary expenses			241
481			Debenture Issue expenses			481
391			Bank balance			—
45,706						45,732
			LIABILITIES			
	443		Sundry creditors		469	
	26,076		Loan from the Radio Society of Great Britain		26,076	
26,519						26,545
£19,187			**NET ASSETS**			£19,187
			Financed by:			
			Authorized and Issued Capital			
100			100 shares of £1 each fully paid			100
			Revenue Account			
62			Balance at 1 July 1975			62
	1,196		Rent receivable in the year to 30 June 1975		1,191	
		1,141	*Less:* Debenture interest	1,141		
		30	Bank charges	20		
		25	Audit fee	30		
—	*1,196*				1,191	—
19,025			6% **Debenture Stock** (redeemable at par on or before 30 June 1997—secured on the assets of the Company).			19,025
£19,187						£19,187

L. E. Newnham
J. O. Brown
} *Directors*

Report of the Auditors to the Members of Lambda Investment Company Limited
In our opinion, the accounts set out above give a true and fair view of the state of the Company's affairs at 30 June 1975 and of the result for the year ended on that date and comply with the Companies Acts 1948 and 1967.

4 Chiswell Street, London EC1Y 4XB.
6 October 1975

EDWARD MOORE & SONS
Chartered Accountants

REPORT OF COUNCIL

The year in review – a report on some of the activities of the Radio Society of Great Britain during the 12 months ended 30 June 1975

COUNCIL

Mr G. R. Jessop, G6JP, completed his term of office as President on 31 December 1974, and on 1 January 1975 Mr C. H. Parsons, GW8NP, became the 41st President of the Society. Mr Parsons was installed as President of the Society at a social function held for the first time outside London. This took place in the Banqueting Hall of Cardiff Castle in the presence of 150 members and guests.

Dr E. J. Allaway, G3FKM, was elected by Council to be the Executive Vice-President for 1975.

An election was held at the end of 1974 to fill three vacancies on Council: one ordinary member and one zonal member, retiring by rotation and another zonal vacancy arising from the elevation to the Presidency of Mr C. H. Parsons.

There were five nominations for the ordinary member vacancy, but due to an administrative error the retiring member, Mr G. M. C. Stone, G3FZL, who polled the largest vote, was disqualified, and Mr D. M. Pratt, G3KEP, who polled the next highest vote, was duly elected.

In Zone A, Mr J. Petty, G4JW, was returned unopposed.

A poll was necessary in Zone E where two candidates, Mr D. H. Adams and Mr D. M. Thomas had been nominated. Mr D. M. Thomas was elected.

Council records its regret at the passing of Lord Fraser of Lonsdale CH, CBE, ex G5SU, Past President (1928), in December 1974; and of Mr D. N. Corfield, G5CD, former Council member, in April 1975.

Vice-Presidents

Council elected three new Vice-Presidents of the Society during the year: Mr W. Browning, G2AOX, in recognition of his considerable work in the plotting of amateur satellites (Oscars); Mr J. Hum, G5UM, for his many years of work for the Society as a Council member and in many other spheres, and Mr P. A. Thorogood, G4KD, for his work in organizing many amateur exhibitions and London UHF Group meetings.

Council meetings

Council met on eight occasions during the year, seven of them being held in the Council Chamber of the Institution of Radio and Electronic Engineers in London. Council wishes to thank the Director and the Institution for this considerable assistance afforded to the Society. Council members' attendance at these meetings is set out in Table 1.

Table 1. Attendance at Council meetings

	J	S	O	N	J	F	A	J
Mr G. R. Jessop, G6JP	x	x	x	x				
Mr C. H. Parsons, GW8NP	x	x	x	x	x	x	x	x
Dr J. A. Saxton	–	–	x	–				
Dr E. J. Allaway, G3FKM	–	x	x	–	x	–	x	x
Mr J. O. Brown, G3DVV	x	x	x	x	x	x	x	x
Mr R. J. Baker, G3USB	x	x	–	–	x	x	x	x
Mr P. Balestrini, G3BPT	x	–	–	x	x	x	x	–
Mr D. Byrne, G3KPO	–	x	x	–	x	x	–	–
Mr R. W. Fisher, G3PWV	–	x	x	x	x	x	x	x
Mr. W. Green, G3FRB	x	x	x	x	x	x	x	x
Mr W. McGonigle, GI3GXP	x	–	x	x	x	–	x	x
Mr L. E. Newnham, G6NZ	x	–	x	x	x	x	x	x
Mr J. W. Petty, G4JW	x	x	x	x	–	x	–	x
Mr D. M. Pratt, G3KEP					x	x	x	x
Mr W. A. Scarr, G2WS	x	x	x	x	x	x	x	x
Mr A. E. Smith, GM3AEL	x	–	x	x	x	–	–	–
Mr R. F. Stevens, G2BVN	x	–	x	x	x	x	x	x
Mr G. M. C. Stone, G3FZL	x	x	x	x				
Mr D. W. Thomas, GW3RWX					x	x	x	–
Mr F. C. Ward, G2CVV	–	x	x	x	x	x	x	x

x Present
– Absent

MEMBERSHIP

During the year there was a satisfying increase in the number of new members joining the Society, a significant proportion of new applications having resulted from advertising. A graph showing the monthly totals is given in Fig 1.

The actual figures may be summarized as:

	1973/4	1974/5	Percentage increase/decrease
New members	1,651	2,339	+41
Resignations	385	234	−39
Deceased	95	69	−27
Nett increase	1,266	2,105	+67

The recorded membership at the end of June 1975 was 18,300, and it is hoped that this upward trend can be maintained or accelerated.

The new student subscription arrangements approved at

the last Annual General Meeting have been welcomed. There is clearly a reduction in the number of resignations of these young persons still studying. At the other end of the age scale, senior citizens are applying for reduced subscriptions rather than leave the Society. These concessions have, of course, significantly reduced the total subscription income but the long term benefits are believed to be beneficial. Table 2 shows the relationship between new members and issues of new licences. The significant figures are the increase of membership compared with the increase of licence issues. During the past year there has been an increase in members of nearly twice the increase of licences, whereas in the previous year the rate was slightly lower than the issue of licences.

Table 2. Licences and membership

	1973/4		1974/5	
	New licences	Increase	New licences	Increase
Class A	369	2·5%	405	2·7%
Class B	1,223	37·0%	761	16·7%
Class A/M	213	7·1%	472	14·7%
Class B/M	307	30·2%	434	33·4%
Class TV	19	7·6%	26	10·0%
Total A+B+TV	1,611	8·9%	1,192	5·95%
Society membership	1,266	7·9%	2,105	11·7%

The high percentage of increases in Class B mobile licences has continued during this year. It is undoubtedly due to ever-increasing interest in vhf and uhf together with the introduction of repeaters. There are now six repeater stations operating on 2m and one on 70cm.

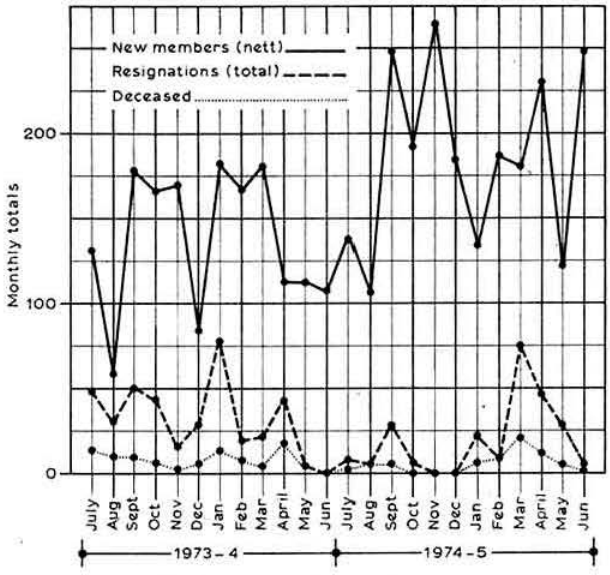


Fig 1. Membership totals 1973-5

REPRESENTATION

The changes of county boundaries made necessary some re-arrangement of regional areas and there was a need to divide some of the larger RSGB regions to enable the representatives to cover them without excessive travel. The number was therefore increased from 17 to 20: the division of the old Region 2 into two separate regions, one north (Northumberland and Durham) and the other south (Yorkshire and North Humberside) will allow the two major centres of population to be more conveniently covered.

Equally, the division of the London area into two separate regions north and south of the Thames, together with the inclusion of Hertfordshire in the north in the new Region 19 and Surrey in the south in Region 7, will, it is hoped, both ease the burden of the representatives and also lead to their becoming more coherent regions.

In the south-west, popularly known as the West Country, separation into two regions was considered desirable to reduce the long distances that one representative would need to travel.

As for the rest of the regions, there have been some changes in their county composition. The new arrangements came into force and representatives took office on 1 July 1975. A list of regional and area representatives is being published in the November 1975 issue of *Radio Communication*.

In the Northern Ireland region, the Society in co-operation with the police organized the introduction of identity cards for mobile operators, and these have been readily accepted by the authorities.

REGIONAL MEETINGS AND CONVENTIONS

Continuing the trend set by the Diamond Jubilee Year, a number of notable regional meetings and conventions have been held during the year. From these it is clear that the members generally welcome the opportunity to attend lectures on a wide variety of subjects. It is believed that more of these events should be encouraged and that they will be both well supported and popular. The social aspects also attract significant numbers of members' wives and friends, a trend which should also be encouraged.

Region 1

The North West Amateur Radio Convention was held on 14-15 September 1974 at Lancaster University. This, the second convention to be held at the university, demonstrated the popularity of lectures on vhf and microwave subjects. An Official Regional Meeting was held on the Sunday afternoon. The President and several members of Council attended and lectured on popular matters. A well-attended and excellent dinner was held on the Saturday evening. The whole event was very well organized and

established a high standard for this type of regional convention.

Region 7

The 21st National VHF Convention was held on 10-11 May 1975, at the Winning Post, Whitton, Middlesex. This event was again well supported with a record attendance of over 700. The extensive programme of lectures and the trade stands attracted a good deal of attention. The dinner was attended by the President and the Executive Vice-President. The guest of honour was Mr Harold Haynes, G2ALH, of Mullard Ltd. After the dinner the VHF Manager's Trophy was presented to Mr F. J. P. Connor, GC3WMR/P, and the Fraser Shepherd Prize was shared by GM3OXX and GW4BRS (of the Barry Radio Society) for their record-breaking contacts on 10GHz. The dance following the dinner again proved to be very popular.

In the home-constructed equipment competition the 1962 Committee Cup was awarded to Mr G. Lean, G3WJG. It was decided to introduce an additional trophy for this competition, the John Rouse Memorial Trophy, which had been originally presented for a similar competition held in conjunction with the former RSGB exhibitions. Now that the National VHF Convention is the major Society event, it was felt that this was a suitable occasion to present this trophy, which was won by Mr A. Bellerton, G8FNF.

Region 10

The Welsh Amateur Radio Convention was held on 22 September 1974 at the Community College, Oakfield, Gwent. The exhibition and lecture programme, which covered both vhf and hf subjects, were attended by the Executive Vice-President and some 250 members and visitors. This was the first event of its type to be held at this venue and it illustrates the increasing interest in conventions.

Region 12

The Scottish VHF Convention, held at the University of Dundee on 28 September 1974, was attended by some 200 persons. The President, the vhf manager and the zonal manager were present. The dinner which followed the programme of lectures was also well attended and enjoyed by all those present. During the evening the Jock Kyle Trophy was presented to GM3OXX and GM3DXJ with GM8HEY for their work on microwaves, and GM3CAU was awarded a prize for home-constructed equipment.

An Amateur Radio Assembly was held at Robert Gordon's Institute of Technology, Aberdeen, on 28 June 1975. The Executive Vice-President and the zonal manager attended this well-worthwhile event covering hf and vhf subjects.

Region 17

Southampton RSGB Group sponsored a convention held at Southampton University on 21 September 1974. This was the first event of the kind to be held in this region for many years. The President, the zonal manager and the general manager attended the ORM. All the lectures were well attended.

COMMITTEES OF COUNCIL

The composition of the committees of Council for the current calendar year 1975 was published in the April issue of *Radio Communication*, and shows that members are drawn from as far afield as is reasonable.

Council wishes to express its appreciation to all these members who devote their time and expertise to various specialist matters. Without their assistance many Society activities could not be undertaken.

The membership of the various committees is summarized in Table 3, which shows the vast amount of work and time being devoted to the Society in the interests of the membership.

Table 3. Committee membership

Committee	Total No of members	No of corresponding members	No of Council members	Effective No of members
Education	8	2	3	6
Finance & Staff	8	1	6	7
HF Contests	10	1	1	9
IARU Working Group	8	1	3	7
Interference	12	6	1	6
Membership & Representation	9	–	9	9
Mobile & Exhibition	10	1	1	9
Raynet	8	–	1	8
Scientific Studies	13	5	–	8
Technical & Publications	13	3	3	10
Telecommunications Liaison	10	–	6	10
VHF	12	2	1	10
VHF Contests	9	–	–	9

Education Committee

The committee consists of six members and two corresponding members and met on five occasions during the year. A very successful lecture was given to school children and young people at Nottingham University. This was followed by a similar presentation at the Science Museum, South Kensington, in January. Each lecture stimulated many enquiries from young enthusiasts and potential members. The Science Museum lecture has now been established as a bi-annual event and the committee has been invited to repeat the lecture in January 1977 for which initial preparations are currently being made.

Work is proceeding on the revision and updating of the Society's tape/slide lecture "The World at Your Fingertips". The lecture should be available for loan early in the new year.

Enquiries about the Radio Amateurs' Examination and other educational matters continue to be handled by the committee, and regular liaison is made through members with the RAE Examination Advisory Committee. A new booklet of RAE questions and model answers is being prepared and will be available in 1976.

The committee is represented on the working group for the Educational Visits Scheme whereby arrangements are being made for introductory lectures on amateur radio to be given in schools and colleges throughout the country.

Finance & Staff Committee

The committee faced three inter-related problems during the year. These were major staff changes, failure to collect subscriptions, and inflation.

At the end of 1974 Mr Findlay, who had been general manager for a number of years, resigned through ill health but expressed a desire to become the subscriptions manager and bring that department back on to a firm basis. Mr Jessop became general manager, putting the Society in the unusual position of having had him as President for one year and then suddenly as general manager—admittedly on a temporary basis. In due course Council found the arrangement working satisfactorily and Mr Jessop's engagement was extended.

Because of difficulties in obtaining staff of the right calibre very few subscriptions had been collected since July 1974 and there was a vast backlog of undealt-with changes of address and other subscription problems. At the time of writing this report the subscription position has been brought up to date and most of the changes of address have been dealt with.

The inflation problem cannot be so effectively dealt with, and the committee noted the rapidly-rising expenditure in excess of budgets with deep concern, especially as the causes were outside its control.

Other matters considered during the year concerned the ocation of headquarters, and the eventual decision not to move out of London mainly as a result of the improved staffing situation. In fact, the Society is better off for staff now than it has been for many years. In addition to the general manager, on the administration side we have Mr D. Findlay, G3BZG, subscriptions manager; Mr D. A. Evans, G3OUF, (who is on leave from British Airways and will not be with us permanently) as assistant to the general manager, and Mr A. Othen, G8FSZ, as information officer. In the editorial department, Mr R. J. Eckersley, who joined us as assistant editor in December, has just passed his RAE and we hope to see him with a callsign next year.

HF Contests Committee

The committee held seven meetings during the year, one of which was devoted entirely to examining in detail each of the current contests organized by the Society, with particular attention being paid to the comments submitted by members. During the summer months direction-finding events have been organized on behalf of the Society by affiliated clubs under the guidance of Mr G. T. Peck, to whom our thanks are due. In line with other Society contests, participation over the last 12 months has been lower than in previous years, BERU being a notable exception.

The committee supported the recommendation of the IARU Region 1 Conference held in Warsaw in April 1975 that member societies should include in their hf contest rules some frequency limits for each band, so that some segments are left free of contest traffic. Increasing co-operation with other Region 1 societies is sought, and the moving of the dates of the SSB Field Day to coincide with those of the DARC SSB Field Day is being studied. It is also intended to introduce an overseas section into each of the Society's 1·8MHz events.

With the intention of increasing world-wide interest in all hf contests, special efforts were made to publicise rules in overseas publications and by distributing copies to well-known contest participants in a number of countries. In addition to this, during the year all overseas stations sending in a contest entry were awarded certificates of participation.

There appears to be considerable interest in the possible introduction of an inter-UK contest, similar to the extremely successful Jubilee contest, and thought is being given to suitable dates and rules.

IARU Working Group and the Warsaw Conference

The work of this group at its five meetings was concentrated on preparation of material for and briefing of the Society's delegation to the IARU Region 1 Warsaw Conference held in April 1975.

The Society was represented by Messrs R. J. Hughes, G3GVV (leader); D. Andrews, G3MXJ; R. J. Baker, G3USB, and G. M. Stone, G3FZL, vhf manager. They were assisted by Dr E. J. Allaway, G3FKM, EVP, and Mr D. A. Evans, G3OUF, both of whom attended as observers and at their own expense. Messrs A. Taylor, G3DME, and C. J. Thomas, G3PSM, also attended as IARU personnel, as mentioned below.

The main object of the conference was consideration of a plan for the expansion of the amateur service, acceptable to all member countries, in preparation for the World Administrative Conference to be held in Geneva in 1979. It will be essential that a concerted plan supported by the maximum possible number of national administrations is presented if the amateur service is to continue and possibly expand.

Reports were presented to the conference on: the IARU Monitoring Service, by C. J. Thomas, G3PSM; the International Beacon Project, by A. Taylor, G3DME; and Propagation Research, by Professor Martin Harrison, G3USF.

Members of the Society made a major contribution to the conference by providing 19 out of 48 papers discussed. Preparation of further material for the next conference from the various committees will be collated by this working group.

Conference reports prepared by Messrs R. F. Stevens, G2BVN, and G. M. Stone, G3FZL, were published in the June issue of *Radio Communication*.

Interference Committee

One of the committee's main efforts was the production of material for the special "Interference" issue of *Radio Communication* and its associated survey. The latter produced

an encouraging response from members, many of whom outlined their interference problems in detail. The results are being analysed and the findings will be published in due course.

Liaison with other bodies has been maintained and, where possible, strengthened. The committee's representative on BREMA has been advocating design changes in tv receivers to improve rejection of out-of-band signals, but many viewers who suffer breakthrough prefer to "blame the amateur" rather than bring pressure to bear on set manufacturers to improve their standards.

A number of interference cases have been discussed with the Home Office and with PO Investigation Officers at local level, and the committee's representations have been met courteously and helpfully.

The number of cases referred to the committee is somewhat lower than last year, and it is believed that members are more willing to tackle their problems themselves, rather than that problems are actually diminishing. On the contrary, the problems of breakthrough on hi-fi and of radiation from tv receivers are of much greater significance.

Membership & Representation Committee

The complex operation of revising zones and regions to conform to the new system of counties and county boundaries was completed during the year, and although it was impossible to satisfy all members entirely it is felt that the new pattern of 20 regions provides a better working arrangement for the scheme of representation than did the previous one.

The committee continued its policy of holding meetings in the regions by assembling at Peterborough late in 1974 and in Birmingham early in 1975. On both occasions members from the areas were able to join in the committee's deliberations and to discuss Society affairs at length with committee members. For economy reasons it is unfortunately not possible to hold meetings outside London at more frequent intervals.

In common with all committees, the M & R has given earnest thought throughout the year to the worsening financial situation and has realized the urgent need to increase Society membership by every possible means. In co-operation with the Education Committee, therefore, and with Council approval, the RSGB Educational Visits Scheme has been established for the purpose of increasing knowledge of and enthusiasm for amateur radio throughout schools and colleges in all parts of the country. Experienced amateurs will be invited to give informal talks in many types of educational establishment and will be provided with notes and aids, photographs and apparatus as appropriate. The committee hopes that through the giving of several hundred lectures during the next two or three years, amateur radio will be given a considerable boost at the "grass roots".

Mobile & Exhibition Committee

The committee again organized the Society's mobile rally at Woburn on 4 August, and in spite of very bad weather the event was well attended.

Once again the Society's stand at the 1974 ARRA Exhibition at Leicester was manned by the committee, and a considerable sale of publications was made.

Members of the committee attended other events in various parts of the country, and the committee has been collating information for the production of a mobile interference booklet.

Scientific Studies Committee

The work of this committee has been concerned with the following two subjects:

1. International Beacon Project. Mr Alan Taylor, G3DME, is the co-ordinator and organizer, and is chairman of the Beacon Working Group of IARU Region 1. The beacons include GB3SX, 3B8MS, VP9BA, 5B4CY, VE3TEN, PY1CK and ZL2MHF. The latter two beacons have been established during the period under review. All the above are in the 28MHz band.

2. The preparation of papers for publication. Papers submitted for consideration at the IARU Region 1 Conference in Warsaw included the following:

Preparing for auroral propagation, by Ron Ham

Auroral propagation, by C. E. Newton, G2FKZ

The 28MHz beacons and propagation research, by Martin Harrison, G3USF

The International Beacon Project, by Alan Taylor, G3DME

28MHz propagation from Mauritius and Cyprus to the UK, towards the sunspot minimum, by Martin Harrison, G3USF

During the period under review, the committee has been provided with detailed and extensive reports of reception of 3B8MS and 5B4CY by Professor Harrison.

Mr R. Flavell, G3LTP, produced a paper entitled *Analysis of radio refractive indices in the lower 3km of the troposphere.*

T. Damboldt, DJ5DT, a corresponding member of the committee, attended a special meeting to discuss beacons, recordings of beacons and propagation forecasts.

Technical & Publications Committee

The programme of work of this committee is a continuing one arising from the publication of *Radio Communication* and the books offered by the Society. All articles for the journal, of which 77 were offered to the editor during the year under review, are read and evaluated by the members of the committee who may enlist such specialist help as is necessary. In addition to technical matters the committee has devoted much time to consideration of the various aspects of the publication and economics of the journal. Methods of production, paper shortages and postage have all received attention. Considerable concern is felt at the future cost of *Radio Communication.*

Revised editions of the following books were published: *Amateur Radio Techniques* and the *Guide to Amateur Radio* (G3VA), the *Call Book* (A. W. Hutchinson), *RAE Manual* and *RAE Revision Notes* (G3HB). The 5th edition of the *Radio Communication Handbook* has been delayed and the committee views the position with considerable concern; its preparation is now in an advanced stage. A new edition of

the *VHF-UHF Manual* (G6JP and G3RPE) is with the printers and publication is under way. The *NBFM Manual* (G6JP and G3TDR), a new book, has proved to be popular.

The committee would like to record its appreciation of the services of Jimmy Mathews, G6LL, who retired at the end of 1974 after a very long and valuable period of service.

Telecommunications Liaison Committee

This committee has the task of advising the Council on matters concerned with frequency allocations, without which there would be no amateur service. The preparations for the World Administrative Radio Conference in September 1979 commenced at the beginning of the period under review and the work will intensify with the approach of this vital meeting. The IARU Region 1 Conference in Warsaw was a preliminary to the 1979 event, and papers submitted to this conference were reviewed by the committee. Close liaison with the Home Office is essential and this has been achieved at all levels during the year.

In co-operation with the VHF Committee the TLC has been responsible for the orderly development of the repeater stations in the 2m and 70cm bands. The amount of correspondence received on this subject, and the time spent by HQ staff and committee members, has been very demanding. It should be noted that this work by the Society benefits both members and non-members. Under guidance of G3PSM the Intruder Watch has continued its invaluable work, which is of benefit both immediately and in the 1979 Conference preparations. Action has been taken by the Home Office following IW monthly reports.

Microwave allocations, radiation hazards and the planning aspects of masts and aerials have also been considered by the committee.

Town and Country Planning matters form part of this committee's work and on this subject the Society is fortunate in having the voluntary assistance of two solicitors, Messrs R. L. Price, G4BSO, and C. E. Benson, G3MUX, both of whom are directly interested in mast and aerial planning. We wish to thank these members for their work on behalf of the Society.

Raynet Committee

During the last 12 months the committee has met five times and at all these meetings at least 90 per cent of members were present.

Fortunately no major disasters occurred during the year, but on various occasions up and down the country Raynet has been called upon to provide communications assistance. In many cases this involved "missing" children or first-aid requirements at county shows etc. Apart from these activities a continued high level of exercise has been maintained and Raynet has been placed on standby from time to time.

Liaison with the user services has been maintained at a satisfactory level. Special mention should be made of the successes in this field in the metropolitan area of Birmingham and in the Suffolk area where groups have made great impact with their user services to the credit of Raynet and the radio amateur at large. Owing to the possibility of flood emergencies occurring in the London area and the low-lying areas bounding the Thames, great interest in Raynet facilities is being shown by user services, and several exercises have recently been held to "prove" communications.

Perhaps the major breakthrough in the last 12 months has been the relaxation by the Home Office of the licence with respect to Raynet, which can now attend county shows and other public events at the request of British Red Cross Society or St John Ambulance Brigade to provide communications in the case of emergency arising involving risk to life. Each case has to have a separate application to the Home Office, and several of these have been processed recently. This means that Raynet can now attend a "non-disaster event" and be on site in case its services are required.

Raynet has been represented at various rallies and functions during the year and active discussions are currently taking place with reference to the possible use of repeaters for emergency and controlled-exercise operations.

All members are thanked for their dedication and enthusiasm, in many cases (before the Home Office relaxation) carrying out an academic exercise in communications without a user service.

Finally, Raynet provides the best means whereby a radio amateur can use his expertise and knowledge as a service to the community. Such service can only bring credit to the amateur radio service and its national Society.

VHF Committee

Much of the committee's time was concerned with papers for presentation at the Warsaw Conference covering vhf and higher frequencies. These included:

Oscar band planning and operating practice, by P. Gowen, G3IOR

Microwave radiation hazards, by D. S. Evans, G3RPE

10GHz operation in the UK, by D. S. Evans, G3RPE

Band planning of the 23cm band, D. Hayter, G3JHM

Repeater station specification, R. J. Baker, G3USB

The recommendations of the conference were detailed in the June issue of *Radio Communication* and included the revised band plans for 2m, 70cm and 23cm.

The committee was responsible for organizing the 21st National VHF Convention and it is planning next year's event at Brunel University, Uxbridge, where the accommodation is more adequate for this important event.

Repeaters. Planning and specification detail is another activity of this committee. Several more stations became operational during the year, including the first 70cm station.

Control of this presently active area of operation will, it is thought, require a separate sub-committee to co-ordinate all the interests involved.

Beacons. The number of beacons on 2m, 70cm and 23cm continues to increase, and the interest in 23cm has undoubtedly increased as a result of the Dunstable Downs beacon. Others are being prepared.

Microwave Sub-Committee. This sub-committee was formed

in September to deal with the many new problems raised by the rapid development of the amateur bands above 1GHz. It has nominally four members but others are co-opted as necessary to handle particular problems. Its most direct link is with the VHF Committee, but it is also linked with the Telecommunications Liaison Committee and the Scientific Studies Committee by having common members.

The sub-committee's main output is in the form of papers which are intended to be the basis of Society policy on microwave matters. Those produced so far are: "WA29 Microwave Radiation Hazards", "WA30 10GHz operating in the UK", "WA31 Future planning of the 1·3GHz band", "WA41 Proposals for new amateur bands between 40 and 275GHz" (all presented at the IARU Warsaw Conference where 1 and 4 were adopted as Region 1 policy); "Microwave allocations"—a first attempt to specify the most valuable parts of our present allocations, and "Microwave beacons and repeaters"—*Radio Communication* March 1975. A detailed study of microwave radiation hazards in an amateur radio context has been made and an article containing a code of practice is in draft form.

A full microwave lecture programme was organized for the National VHF Convention. Three Microwave Round Tables, which are fairly informal meetings covering both theory and practice of microwaves, have been held at Winchester and Oxford.

Much effort is being put into the development of a framework within which individuals and small groups can perform controlled tests which eventually build up into a comprehensive study. There is a demand for this "operating with a purpose" with the bonus that if the results impress the professionals the status of amateur radio can only benefit. Progress is being made both on tropospheric scatter on 1·3GHz and the study of super-refraction as a propagation mode on 10GHz.

The sub-committee is concerned with the 10GHz beacon GB3IOW, with new beacons in Scotland and on Alderney, and with a 10GHz beacon/repeater having inputs on 432MHz and 10GHz which will be sited in the London area.

VHF Contests Committee

During the 12 months under review, the VHF Contests Committee met 11 times, organized and adjudicated 21 contests, and spent literally hundreds of man-hours in discussion upon almost every aspect of contest activity. Issues arising from adjudication, together with the analysis of the comments and criticisms of contestants, accounted for the highest proportion of committee time, with contest rules and results a close second.

The committee has been rewarded for its efforts by the knowledge that vhf/uhf contests continue to attract a large and enthusiastic following. This is particularly evident not only by the measure of support which the 2m band commands, but also by the amount of feedback which the devotees of all bands provide with unfailing regularity whenever they feel that their special interests are being questioned.

There were indications towards the end of 1974 that although the number of participants in all vhf/uhf contests was being maintained, the proportion of actual entries to active stations was decreasing. The committee has not been able to single out any one cause for this tendency, but a too heavy calendar and a growing desire on behalf of some stations to opt out of what they consider to be a marathon rat-race were thought to be contributing factors.

The calendar planned at the beginning of 1975 reduced the number of events by 25 per cent in an attempt to alleviate this problem, but within three months the committee came under strong pressure to restore most of the contests that had been dropped.

Four out of every five contestants, however, appear to be quite satisfied with the general rules and types of event organized since July 1974, but as the character of contests continues to change under the increasing pressure of the sideband revolution, so the committee has tried to keep under constant review not only the needs of these changing circumstances but also the requirements of those amateurs who prefer to give their allegiance to the less-sophisticated means of communication.

LECTURES

The annual Society lecture was given on 25 November 1974 at the IEE, when the subject was interference. The President took the chair. Mr R. J. Harry, of the Home Office, dealt with the investigation and suppression of interference, and he was followed by Messrs A. Holloway, G3VUQ, and I. Jackson, G3OHX, on problems confronting the amateur.

The Society also contributed a paper on the frequency allocations of the amateur service at an IEE symposium on Frequency Allocation of the Radio Spectrum. The paper was prepared by Mr R. F. Stevens, G2BVN, and read by Mr L. E. Newnham, G6NZ.

GB2RS NEWS BROADCASTS

Some further improvement of coverage has been made by the services of additional newsreaders, one on hf and the other on vhf, for Region 1, covering principally the industrial north-west area. It is believed that these broadcasts can be received in most populated areas, either from the hf or vhf transmissions.

The preparation of the bulletin is now being undertaken by the Society's editorial staff, so that it can be expected to become a weekly "QTC".

"RADIO COMMUNICATION"

During the year the total number of pages of the journal was 996 compared with 880 in the previous year, in line with the policy of the Finance & Staff Committee to have as large a journal as the Society could afford.

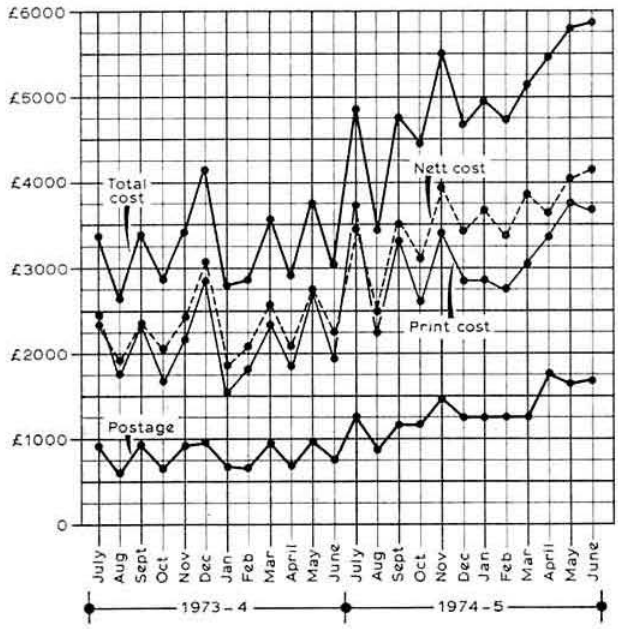


Fig 2. "Radio Communication" costs 1973-75

However, the massive rise in printing and postage costs has prohibited any further expansion. Fig 2 shows the relationship of the various increases; the last three months of the year setting the starting level for the following year's costs. The significant curve is that of the nett cost to the Society after deducting revenue from advertising from the total cost. Analysis shows that the nett cost of a delivered journal has now risen by 70 per cent above the previous year. During this time the postal charge has gone up 100 per cent.

In addition to the continued high standard of technical and regular feature articles, there was one special issue: the May issue being devoted to interference matters and including an extensive questionnaire. This attracted a good deal of attention professionally, copies being requested for circulation at an international conference in Montreux. Members responded well to the survey—over 2,500 forms were completed for analysis by the Interference Committee.

CERTIFICATES

Under the control of our awards managers: C. Emary, G5GH, (hf), and J. Hum, G5UM, (vhf), to whom thanks are extended, the following quantities of certificates have been issued:

HF bands	625 all categories. Some 200 claims for other societies have also been vetted;
VHF/UHF bands	120 all categories, compared with 121 issued during the previous year.

In addition to the work involved in issuing these certificates, there is a considerable amount of correspondence.

QSL BUREAU

The number of cards handled by the Bureau remains fairly consistent at about 1¼ million per year. The reduced quantity of hf band cards, due to poor operating conditions, is balanced by a considerable increase in cards for the vhf and uhf bands, notably from the G8 members.

The QSL Manager and all his sub-managers are thanked for their continuous efforts.

HONORARY OFFICERS AND REPRESENTATIVES ON OUTSIDE BODIES

Council wishes to express its thanks to all those members serving the Society as honorary officers or as representatives on outside bodies. Their efforts assist the Society organization to function effectively.

Honorary officers

Awards manager, hf ..	C. R. Emary, G5GH
Awards manager, vhf ..	Jack Hum, G5UM
Intruder Watch organizer	C. J. Thomas, G3PSM
QSL Bureau manager ..	A. O. Milne, G2MI
Slow morse practice transmissions organizer ..	M. A. C. MacBrayne, G3KGU
Society historian ..	L. E. Newnham, G6NZ
Taped lecture library curator	S. W. Coursey, G3JJC
Trophies manager ..	P. A. Miles, G3KDB
VHF manager	G. M. C. Stone, G3FZL

Representatives on outside bodies

R. G. Flavell, G3LTP	CCIR Study Groups 5 and 6
R. F. Stevens, G2BVN	CCIR UK General Purposes BSI TLE 25/1 and /2 Frequency Advisory Committee
D. A. S. Dryborough, G8HEV	CCIR Study Group 8 BSI TLE 23/1, 25/3, 25/6
R. S. Roberts, G6NR	BSI TLE 1/5, 1/30, 25/4, 25/6
R. J. Hughes, G3GVV L. E. Newnham, G6NZ W. A. Scarr, G2WS	RAE Advisory Committee

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Radio Amateurs' Examination Manual	£1·11
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VHF/UHF Manual (Out of print)	
World at their Fingertips (Paperback)	99p
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Radio Communication Easi-binder	£1·75
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" " " " octavo	41p
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