

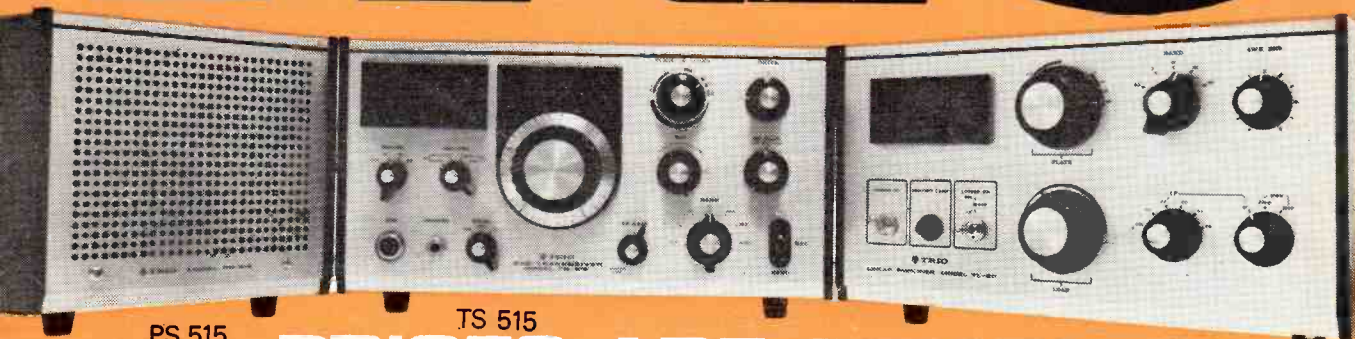
The SHORT WAVE Magazine

VOL. XXX

SEPTEMBER, 1972

NUMBER 7

TRIO



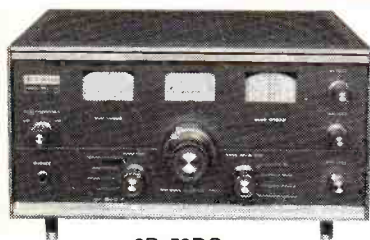
PS 515

TS 515

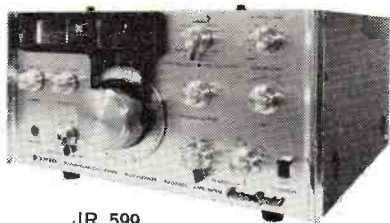
TL 911

PRICES ARE DOWN

9R 59DS	General Coverage Receiver	£49.50	TS/PS 515	SSB Transceiver	£210.00
JR 310	Amateur Bands Receiver	£75.00	TL 911	2KW PEP Linear Amplifier	£140.00
JR 599	Amateur Bands Receiver	£185.00	TR 2200	2M Personal Transceiver	£62.50
TX 599	Matching transmitter to JR599	£185.00	SP 5D	Communications Loudspeaker	£4.50



9R 59DS



JR 599



JR 310



exclusive United Kingdom distributors
b.h.morris and co. (radio) limited
 84-88 Nelson Street, London E 1 2DY. TEL: 01-790 5011

LOWE ELECTRONICS

119 Cavendish Road, Matlock, Derbyshire, DE4 3HE

Tel: Matlock 2817 or 2430 9 a.m. - 9 p.m.

John: G3PCY

Bill: G3UBO

Alan: G3MME

MAIN DISTRIBUTOR FOR YAESU MUSEN EQUIPMENT

Hours : Tuesday to Saturday 9-5.30 (closed for lunch 1-2 and all day Monday)

SERVICE AND SALES (evenings and weekends only) : John G3JYG, 16 Harvard Road, Ringmer, Lewes, Sussex. Tel : Ringmer 812071. Sim GM3SAN, 19 Ellismuir Road, Baillieston, Nr. Glasgow. Tel : 041-771 0364. Alan GW3YSA, 35 Pen y Waun, Efail Isaf, Nr. Pontypridd, Glam. Tel : Newton Llantwit 3809.

SERVICE ONLY (evenings and weekends) : Dave Dryden, G3BKQ, 205 Main Street, Thornton, Leics. Peter Ward G3XWX, 47 Radstock Avenue, Ward End, Birmingham, B36 8HD.

Sim, John and Alan will be happy to demonstrate New Yaesu Gear by appointment. They also have a pretty good selection of second-hand trade-ins at the right price.

PRICES

When you realise that one now only gets 730 Yen (at the time of writing) for a pound note compared with 840 Yen a year ago, you'll no doubt accept the fact that prices of Japanese imports have to go up.

In the case of Yaesu Musen equipment we have to increase a few items, but these will be sold at the old price while stocks last. In the case of other imports, we will maintain old prices as long as stocks last—but please remember that any fresh stock costs us considerably more and this must be passed on to you. I will not, insult your intelligence by urging you to buy now—I merely state the facts and leave it to you.

YAESU MUSEN EQUIPMENT

FT101 Latest model with 160m. Fitted at the factory. £255 H.P. £26 deposit.

FT200 This immensely popular low-priced rig remains the same fantastic value at £134 with A.C. p.s.u. the same at £38. D.C. p.s.u. up to £46-50. HP terms from £14 deposit. Best value for money on the market.

FTdx401 This 560 W p.e.p. fixed station with additional CW filter, fan and noise blanker fitted as standard goes up in price to £230. Even so, it is still the tops. Compare this rig with anything else on the market. This is Yaesu's top model developed from the FTdx400 of several years back, through the FTdx560 to the present FTdx401 with its high degree of development. HP £23 deposit.

FRdx400 The super de luxe version with all factory options installed including both 4m. and 2m. converters remains at £160. This Rx has everything at a price where others start to add the extras. HP from £16 deposit.

FLdx400 The companion 240W p.e.p. Tax increases slightly to £146 which still ensures its place as top value. HP £15 deposit.

FL2000B Linears Increased to £148. HP £15 deposit. Accessory speakers and V.F.O.'s for the above equipment remain unchanged in price.

FR50B Receiver Unfortunately the price must increase to £59, but it is still far and away fantastic value. An Amateur Band Rx covering 80 to 10m. (28-0-29.2 MHz) with excellent sensitivity, stability and freedom from spurious. The 2m. fanatic may turn his nose up at the limited 10m. coverage, the ardent CW man at the lack of CW selectivity, and the 160m. enthusiast at the missing top band, but for the vast majority—this is an excellent Rx measured by any standards. HP deposit a mere £6.

FL50B Transmitter This uses the FR50B Rx VFO in transceiver or xtal controlled separately, or the separate FV50B VFO. For the man with an FR50B Rx, it is a very cheap way of getting on the air with a nice 50W SSB signal. Price up to £68—but let's face it, not a bad price for a new SSB Tx with p.s.u. built in. HP deposit £7.

FT75 Transceiver Price up to £99 A.C. p.s.u., £22-50 ; D.C. p.s.u., £22-50. For £121-50 you have either a beautiful little mobile rig or a lightweight fixed station ideal for taking away on holiday. The mobile rig will fit the smallest of cars and gives incredibly good performance—even though xtal controlled, it's surprising how many people come back to a CQ. For mobile, crystal control has some very definite advantages. HP from £10. FV50B External VFO, £27-50.

YC305D Counter This is a new product similar to the YC305, but it measures up to 250 MHz. It's price of £111 puts it a bit above the BC221, but for a direct reading frequency meter reading up to 250 MHz to a cycle or two, the price is extremely low, and if you are interested in a sophisticated piece of professional test equipment at an Amateur price, you can't go wrong with the YC305D. H.P. deposit £12.

FT/2F 2m FM Transceiver For the time being, the price remains at £84, but I must emphasize that this is only because we have large stocks. When they're gone up goes the price! For 2m. mobile (and fixed for that matter) these 2m. FM mobiles are really FB. Once confined to the London Area, they are now country wide. HP deposit £9.

FT-2 Auto This is up to £143 (HP deposit £15). This must surely be the most sophisticated package ever to come on the Amateur Market. This transceiver monitors up to 8 channels and whenever a signal comes up on one of the channels, it automatically locks on to it. Even if the signal is a bit off channel, the FT-2Auto a.f.c. will pull it in. There is also a Priority Channel and even if you are in QSO on another channel the FT-2 Auto keeps flicking over to the Priority Channel, monitoring it. If a signal comes up, it takes precedence, but there is of course a manual over-ride on all the automatic functions. This is a truly remarkable piece of electronics.

Other items of Yaesu gear, speakers, external VFO's and micro-phones remain unchanged in price.

OTHER EQUIPMENT

Inoue IC21 This is a very sophisticated 2m. transceiver. Mains or 12v. D.C. built-in SWR meter, built-in crystal check, built-in PA protection, R.I.T., etc., etc. There is a beautifully made, exceptionally stable VFO to match this rig. HP deposit from £12. IC21—£120 ; matching VFO, £30.

Inoue IC20 Similar in performance to the FT-2F price, £94. H.P. deposit £10. It's no wonder this FM gear is becoming popular—it is beautifully made, it gives top performance, it is trouble free, it is highly sophisticated and professional. A.M. can be added to any of the Rx's for an extra £10. After all, by the time you have bought a decent Tx, a top quality converter and tunable I.F. to go with it, the necessary p.s.u.'s, coax relay, and all the other bits and pieces you could very well wind up with a pretty tatty station at just about the same price.

AERIALS**Fixed Vertical**

Echo 8G 40-10 trap vertical, £18-50.
 Diamond KB103 80 and 40 trap vertical, £26-00.
 Diamond KB104 20, 15 and 10m. trap vertical, £17-50.
 Diamond KB105 80, 40, 20, 15, and 10m. trap vertical, £34-50.

Multi-Element Beams

Asahi full size 3 element 20m. beam, £60.
 Asahi full size 3 element 15m. beam, £32.
 Asahi full size 4 element 15m. beam, £40.
 Asahi full size 4 element 10m. beam, £33.
 Asahi full size 3 element 10m. beam, £18.
 Carriage paid on fixed antennas.

Mobile Antennas

Diamond DP-100S complete 80-10m., £35, carriage paid.
 This includes bumper mount. "cor! what a price" you say. Yes, but cor! what a beautiful mobile antenna.
 Tavasú base loaded 160 to 10m. complete set £13-75, postage extra 30p.

G-Whips

Tribander (20, 15 and 10m.), £9-45.
 Duobander (160 and 80m.), £9-00.
 Multimobile 71 (20, 15 and 10m.), £12-50.
 160, 80 and 40m. loading coils for Tribander and Multimobile, £4-00 each.
 Top whip section for loading coils, 70p.
 Base section for all G-Whips, £1-45.

Carriage

The whips are too long to go by mail, so we send them British Rail costing 50p. We can, if you wish send them Securicor for £1-75.

2m. Whips

The G-Whips $\frac{3}{8}$ vertical, £4-30, post paid.
 Diamond DP-SH144 $\frac{3}{8}$ vertical with gutter mount, £9-50, carriage paid.
 Diamond NGR 144 $\frac{1}{2}$ vertical with suction attachment for roof mounting, £8-50.

Coaxial Cable

UR43 52 ohms, 5-1 mm. dia., 4-33 dB attenuation per 100ft. at 100 MHz, 8p yard.
 UR70 72 ohms, 5-8 mm. dia., 4-65 dB attenuation per 100ft. at 100 MHz, 10p yard.
 UR67 (equivalent to RG8/U) 50 ohms, 10-2 mm. dia., 2-2 dB attenuation per 100ft. at 100 MHz, 22p yard.
Balanced Twin Feeders
 Type 302. 75 ohm 2-9 dB attenuation per 100ft. at 50 MHz, 5p yard.
 Type 306/B 300 ohms 1-0 dB attenuation per 100ft. at 50 MHz, 5p yard. Postage extra on cable.

Wattmeter

Kuranishi switched 0-12; 0-120 watts. This wattmeter/dummy load presents a constant 50 ohm impedance with better than 1:1.2 SWR over the frequency range of 3 to 500 MHz. Here is a piece of professional test gear at an Amateur price, £32-00.

Rotators

AR22R for 2m. beams or similar, £25;
 TR44 for bigger arrays, £45 and the Ham-M for full size, heavy beams, £70.

Rotator Cable

TR44 for bigger arrays, 15p yard, for TR44 and Ham-M, 30p yard. This is heavy duty cable, well on top of the minimum requirement.

Headphones

Low impedance padded types, very comfortable. These are stereo and fitted with a moulded stereo plug. Easily converted to mono, instructions enclosed, £2-75, post paid.

Morse Keys

Standard, plain brass with ball bearing pivots, £1-00, post paid.
 Electronic Keyers, Katsumi EK9X, £8-50, post paid.

Low Electronics

119 CAVENDISH ROAD, MATLOCK, DERBYSHIRE, DE4 3HE

Tel. Matlock 2817 or 2430 (9 a.m. - 9 p.m.)

Bill G3UBO, Alan G3MME, John G3PCY.

MEMBERS AMATEUR RADIO RETAILERS ASSOCIATION

C.W. Monitors

A nice little monitor with built-in speaker and tone control. Requires 1½v. pen light battery, £2-20, post paid.

Microphones

50K dynamic PTT. Teisco DM 501, £3-50; Yaesu YD846, £5; YD844 Table Model, £12-00. Post paid.

S.W.R. Meters

The very popular Hanson SWR3 at £4-70, post paid or the top quality Asahi twin meter at £7-20, post paid.

VALVES

6AH6	80p	6BZ6	40p	6CB6A	42p	6U8A	80p
6CL6	50p	6AN8	74p	6EV6	75p	6EH7	45p
6BM8	50p	6AV8A	£1-15	7360	£2-10	12BY7A	70p
EF183	45p	6GK6	92p	6146B	£3-00	6JM6A	£1-25
6JS6C	£1-75	6KD6	£1-75	6JB6A	£2-00	572B	£8-00
6LQ6	£2-25	6HF5	£2-25				

SECOND-HAND EQUIPMENT

All mint, checked, serviced and aligned unless specifically stated otherwise.

RECEIVERS

Trio JR500S, £50.
 Inoue IC700R, £60.
 AR88D's, one £48 one £60.
 Trio JR310, £60.
 Eddystone 770R, £95.
 Sommerkamp FR100B, £85.
 Drake R4A and speaker, £140.
 Eddystone EA12, £90.
 Trio JR310, 160m., xtal cal.,
 Kokusai filter, £70.
 HRO, p.s.u., 6 coils, £15.
 KW77, £65.
 Heathkit RA1, £22.
 Collins 75S1, additional C.W.
 filter, £175.

TRANSMITTERS

Vanguard, £30.
 Early Viceroy, £45.
 Viceroy Mk. 2, £55.
 Codar AT5, D.C. p.s.u.
 remote control, £21.
 Heath DX40, VFO, £20.
 Viceroy Mk. 3, £60.
 Vespa, £70.
 Sommerkamp FL200B, £80.

TRANSCIEVERS (with p.s.u.'s)

KW 2000B, £160 choice of 3
 Sommerkamp FTdx500, £150
 choice of 2.
 Atlanta, £140.
 KW2000A, £150.

SUNDRIES

Codar PR30X, £5.
 Lafayette add on "S" meter,
 £3.
 Cossor 1035 Scope, £20.
 M.L. Transistor Analyser, £35.

Carriage extra on the above, by Securicor, usually 24 hours £1-75.

SERVICE

You may be lucky—your rig may never ever go wrong. You may never ever require a hard-to-get spare in a hurry. But should any thing ever at any time go wrong, you'll be glad you got your gear—from us, because all you have to do is pick up the phone and tell us. We arrange collection, repair your rig and return it to you within a very short space of time—average total elapsed time less than 4 days (excluding weekends of course), although on many, many occasions we have repaired the rig and returned it the same day as received, making the total elapsed time 48 hours. This service is a result of years of experience of Yaesu, years of experience in communications equipment generally, top quality test equipment and an extensive stock of spare parts. This service is, we are convinced, the best in the country and it is for OUR customers. If you bought gear elsewhere, we will do our best to fit you in, but quite clearly OUR customers MUST come first.

TRADE FAIR

OCTOBER 26 — 28, GRANBY HALLS, LEICESTER

This is an absolute MUST. A trade fair at which just about everyone in the Amateur Trade will be exhibiting—come and see the latest and best in glossy, expensive, new stuff, the best in the lower price field, great dollops of second-hand, sundries, components, surplus, etc., etc. to say nothing of specialist exhibitions. I confidently predict that this show will handsomely outshine the London Shows of recent years.

R. T. & I. ELECTRONICS LTD.

where equipment is fully overhauled

NATIONAL NCX-5 and p.s.u.	£130.00 (£3.00)
KW2000 and p.s.u.	£220.00 (£3.00)
SWAN 2500 and p.s.u.	£250.00 (£3.00)
TRIO TS510 and p.s.u.	£160.00 (£3.00)
EDDYSTONE EB 35 Mk. 2	£65.00 (£1.50)
EDDYSTONE EC 10 Mk. 2	£65.00 (£1.50)
EDDYSTONE S 640	£25.00 (£2.00)
EDDYSTONE 660 X	£90.00 (£1.50)
EDDYSTONE 940	£135.00 (£1.50)
EDDYSTONE 840A	£35.00 (£1.50)
EDDYSTONE 840C	£52.00 (£1.50)
EDDYSTONE EA12	£160.00 (£1.50)
EDDYSTONE 770R	£150.00 (£2.00)
EDDYSTONE 770R	£80.00 (£1.50)
DRAKE 2A c/w spkr	£48.00 (£1.50)
LAFAYETTE HA 350	£65.00 (£1.50)
LAFAYETTE HA 800	£48.00 (£1.50)
HALLICRAFTERS HQ 170	£150.00 (£2.00)
ECHELCOMM 2 Transmitter & p.s.u. etc.	£40.00 (£1.50)
KW77	£80.00 (£1.50)

WE CAN ALSO SUPPLY ANY MAKE OF NEW EQUIPMENT—and have pleasure in giving a few examples which are normally in stock—

STOCKISTS OF YAESU MUSEN EQUIPMENT.

AVOMETERS, Model 7, Mk. 2, £37.60; Model 8, Mk. 4, £40.90; Model 9, Mk. 4, £40.90; Model 40, Mk. 2, £37.60; Multimeter, Mk. 4, £13.50; Standard leather carrying case (Models 7, 8, 9, 40), £6.50; Ever-Ready ditto, £7.40; Multimeter leather case, £3.30; 10KV D.C. Multiplier for Model 8 or 9, £6.10; 30KV D.C. ditto, £9.90; Pair of Long Reach Safety Clips, £1.50; Model EA113 Electronic A.V.C., £82.00. All above post free in U.K. Trade and Educational enquiries invited.

S. G. BROWN'S HEADPHONES, Type "F" 120 ohms, 2,000 ohms, 4,000 ohms, £4.95 (25p); Rubber earpads for same, 45p per pair (5p). Type 3C/1100 Noise excluding (with superb fitting, high quality, electrodynamic, £7.55 (25p). Standard Jack Plugs, 24p (4p).

EDDYSTONE EQUIPMENT, Receivers, 830/7, £389.00; EA12, £205.00; EC10/2, £79.00; EC10/1, £64.50; 924 A.C. mains p.s.u., £7.75 (50p); Doublet Aerial, 731/1, £7.50 (50p); Pinch Speaker, 906, £6.20 (50p); General Purpose Speaker, 935, £5.55 (40p); Edometer, 902 Mk. 2, £29.50 (50p); Telescopic Aerial, LP.3126, £2.50 (25p); Diecast Boxes from 45p (10p). Brochure on request.

CODAR EQUIPMENT, AT5 Mk. II, £22.50 (50p); PR 40, £8.50 (30p); 250/S, £11.00 (65p); CR70A, £22.50 (65p); T28, £17.50 (25p); PR30, £7.50 (25p); PR30X, £9.50 (25p); 12M/S, £11.50 (40p); 12/R/C, £2.50 (15p); RQ10X, £9.00 (35p). Leaflets on request.

Our latest list of over 50 receivers, and many other interesting items sent free upon receipt of your S.A.E. Carriage for England, Scotland and Wales shown in brackets. Terms: C.W.O., Approved Monthly Accounts, Hire Purchase and Part Exchange. Special facilities for export. Enquiries invited.

- At R.T. & I.
- ★ We have full H.P. facilities
- ★ Part exchanges are a pleasure
- ★ We purchase for cash
- ★ We offer a first-class overhaul service for your electronic equipment, whether you are an amateur or professional user
- ★ We have EASY Parking facilities
- ★ We welcome your enquiries for specific items which, although not advertised, may very well be in stock.

PARTIRIDGE "JOYSTICKS", "New Lightweight VFA" £12.99 (30p). "JOYMATCH" III. Aerial Tuning Unit, £12.99 (30p). Literature on request.

TRIO EQUIPMENT, Transceiver, TS-510 + PS-510 a.c. p.s.u., £180.00 (£2.00); VFO-5D for above, £25.00 (50p); Receivers, JR-599, £199.00 (£1.00); JR-310, £83.50 (£1.00); JR-500-SE, £65.00 (£1.00); 9R-59-DS £57.50 (50p); SP-5D Loudspeaker, £4.50 (40p); Headphones, HS-4, £5.97 (20p). Leaflets available.

SHURE MICROPHONES, 444T, £15.00 (40p); 444, £13.00 (40p); 401A, £6.50 (30p); 201, £5.40 (30p); 202, £6.00 (30p). Full details on request.

KEYNECTORS, piano key mains connector units, £2.75 (25p).

VALVES. Please state your requirements.

TMK METERS: TMK500, £8.25 (25p); TW20CB, £10.25 (25p); TP50SN, £5.75 (25p); 700, £16.50 (25p); also leather cases.

PHILIPS PM2403 ELECTRONIC MULTIMETER, £49 (25p).

We also supply **PHILIPS and KORTING COLOUR TV TEST EQUIPMENT**, including Colour Bar Generators, Convertors, etc.

KW EQUIPMENT, KW2000B + A.C. p.s.u., £240.00 (£2.00); D.C. p.s.u. for KW2000B, £44.00 (50p); KW 2000B only, £200.00 (£1.50); KW ATLANTA + A.C. p.s.u., £210.00 (£2.00); Remote V.F.O. for Atlanta, £34.00 (50p); VOX unit for Atlanta, £7.50 (25p); Remote V.F.O. for 2000B, £36.00 (50p); KW1000 Linear amplifier, £135.00 (£1.50); KW202 Receiver with calibrator, £140.00 (£1.50); KW 202 Matching Spkr., £8.00 (80p); KW204 Transmitter, £142.00 (£2.00); KW105 combined E-Z Match; VSWR indicator, dummy load, and ant. switch (4 outlets) 52 or 75 ohms, £36.00 (50p); KW103, VSWR and power meter, 52 ohms, £12.50 (45p); KW101, VSWR meter, 52 or 75 ohms, £9.25 (30p); KW 107, £40.00 (50p); also E-Z match, dummy load, trap dipoles, etc., etc. Details on request.

R. T. & I. ELECTRONICS LTD.

Ashville Old Hall, Ashville Road, London, E.11 Tel: 01-539 4986

AMATEUR ELECTRONICS G3FIK

BIRMINGHAM 021-327 1497 021-327 6313
MEMBER OF THE AMATEUR RADIO RETAILERS ASSOCIATION



NOW IN STOCK! The fabulous new TRIO TL-911 LINEAR AMPLIFIER. This is the complementary unit to the superb TRIO TS-515 TRANSCIEVER which is a worthy successor to the proven TRIO TS-510. The new TL-911 will, of course, also provide a first-class match electrically to the TS-510 and will fill the bill for those many TS-510 users who have at last so often a matching Linear. For full details we shall be pleased to send a complete specification upon receipt of your S.A.E. but, briefly, the TL-911 will run up to 2KW input on SSB with automatic safety devices to protect against overload or mis-handling. Independent cathode current metering is provided for each of the Final tubes and the general appearance and construction is first-class. Priced at £140.00 is a MUST for the man who wants the best in Linears. Full details of the TS-515 also, of course, upon request and the 515 is, without doubt, now the best buy on the U.K. market also at its new low price.

ALL ITEMS OF TRIO, KW AND YAESU MUSEN EQUIPMENT IN STOCK AT THE TIME OF GOING TO PRESS DESPITE THE EFFECTS OF THE DOCK STRIKE.

Interested in used equipment? We are the acknowledged leaders in this field with a stock averaging at over fifty pieces of used gear available off the shelf. We never knowingly buy second rate gear and stand by everything we sell in the used equipment line. The following is a selection of gear available at the time of going to press. (All prices shown include carriage.)

Heath HW-17A 2 Metre Transceiver. Excellent condition in all respects	£66.50
Heath HW-17A 2 Metre Transceiver. Absolutely mint	£71.50
Eddystone 750 General Coverage Receiver. Well above average	£41.50
Eddystone 840C Receiver. In exceptional condition...	£50.00
Eddystone 840C Receiver. Marginally less brilliant...	£48.00
Eddystone 940 Receiver. Late model in superb condition	£117.50
KW 2000A Transceiver complete with matching PSU	£142.50
Yaesu Musen YC-305 Frequency Counter. Demonstration model only. As new, with full guarantee	£70.00
KW160 Transmitter. Excellent condition	£19.00
Swan Model 260 Transceiver. Absolutely mint. Built-in A.C. and D.C. PSUs	£175.00
Heath GR78 Receiver. Indistinguishable from new	£60.00
Heath GR54 General Coverage Receiver. A bargain at	£31.00
TRIO TS-510 Transceiver. Absolutely new and with full guarantee. The last of our stock on the arrival of the TS-515, an unbeatable bargain at	£162.50
Heath Mohican Receiver. First class	£38.00
Codar CR70A Receiver. Brand new condition	£19.00
Heath HW-100 Transceiver. Complete with HP-23A PSU	£117.50
Heath HW-100 Transceiver. As above but absolutely mint...	£122.50
Heath HW-100 Transceiver. As above, fractionally less clean	£110.00
Eddystone KW202 Receiver complete with matching speaker. Superb	£115.00
Heath HW-12 80 Metre Transceiver complete with HP-23A. Unmarked	£66.50
Eddystone EC10 Mk. II Receiver. Very recent, indistinguishable from new	£69.00
KW Viceroy Mk. IIA Transmitter. FB condition	£72.50

National NCX-5 Transceiver with matching PSU	£170.00
Heath SB-300 Receiver. Fitted extra CW Filter and with matching speaker also. Nice condition	£92.50
DX-100U Transmitter. Most excellent condition. Callers only.	£45.00

WE CARRY LARGE STOCKS OF ANTENNAE, ROTATORS AND ACCESSORIES.

Hy-Gain Antenna Range		J Beam Antenna Range	
12 AVQ Vertical	£16.50	Full stocks available.	
14 AVQ Vertical	£18.50	Latest catalogue upon receipt of your S.A.E.	
LC-80Q Loading coil	£6.70		
18 AVTVB Vertical	£33.00		
THDXX 6 element Beam	£48.00	Rotators	
TH3 Mk. III 3 element Beam	£69.50	AR20	Post paid £20.40
TH3 Jnr. 3 element beam	£48.00	AR22	Post paid £25.65
Carriage extra on Hy-Gain.		TR44	Post paid £47.75
		Ham-M	Post paid £70.80
Copial Clocks			
All items at competitive prices.		Sansei	
Illustrated leaflet on receipt of your S.A.E.		SE-406 Mini SWR/Power Bridge	£3.80
Medco Filters		Wightraps	
The best on the market.		Standard Pairs	£2.90
FL50A and FL75A B/Lee Connectors	£6.00	Hamgear Equipment	
FL50B and FL75B, PL259 Connectors	£6.50	Preselectors, Convertors and Calibrators available from stock. Details on request.	
FH40 High Pass	£2.10	G-Whip Antennae — All ex stock. Details on request.	
Shure Microphones		Genuine Amphenol Plugs	
21 Hand Mike	£5.75	PL259	Post paid 30p
44 Desk Mike	£13.00		

Southern Agents: J. H. Associates Ltd. (Ieff Harris G3LWM), Cricketfield Lane, Bishops Stortford, Herts.

ELECTRON HOUSE, 510-514 ALUM ROCK ROAD, BIRMINGHAM 8

Radio Shack Ltd



London's Amateur Radio Stockists

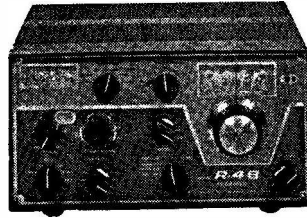
Just around the corner from West Hampstead Underground Station

R. L. Drake's Magnificent 4B

T-4XB Transmitter and R-4B Receiver



T-4XB £238-00
AC-4 p.s.u. £51-00



R-4B £230-00



MS-4 £10-80

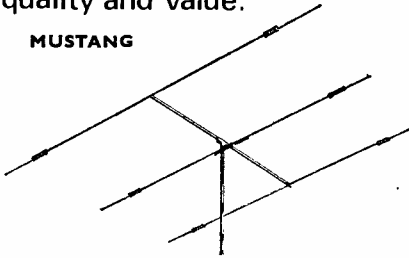
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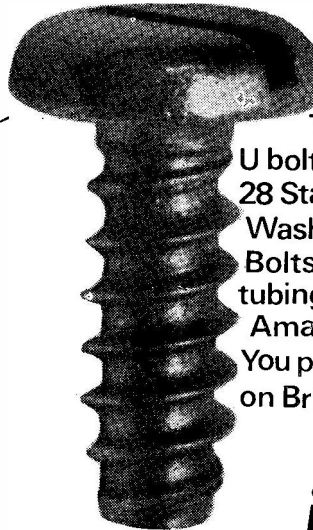
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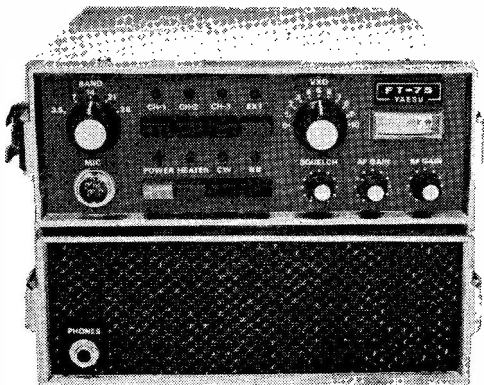
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A 10-80m. SSB TRANSCEIVER for ONLY £99 (carriage paid)



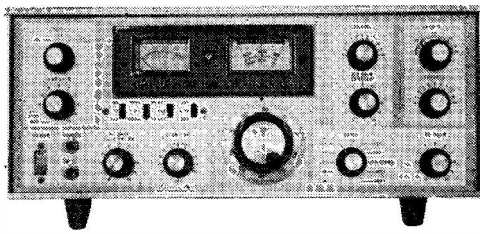
This latest addition to the ever expanding YAESU range is a real winner! Having tested it we can say the receiver side is very good and output power was not less than 15w. R.M.S. on any band. Operation could not be easier! You simply select the band, press the channel button and talk!

SPECIFICATION :

- Receiver :** Sensitivity : 0.5µV for 10 dB, S/S + N.
Selectivity : 2.3 kHz (−6 dB), 4.5 kHz (−60 dB).
Audio o/p 9 1-8w.
- Transmitter :** Modes: SSB or CW. Power : 20w. p.e.p.
Carrier suppression : better than −40 dB. at 1,000 Hz.
Unwanted sideband : better than −40 dB.
Response : ± 3 dB., 40-2,700 Hz.
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Size : 210w. x 80h. x 300d. m.m. Weight : 3.8 kg.
Current drain : AC DC
Standby 50w 1.4 amp.
Heaters on 50w 3.5 amp.
Transmit 80w 5.5 amp.
Microphone included and 4 crystals (1 on 80, 40, 15 and 10m.)
Our FT-75's have an extra crystal on 14200 and other frequencies normally in stock for our customers are 3737, 3780, 7050, 7080, 14140, 14275, 21300, 21400, 28490 and 28600 MHz. Standard crystals fitted are 3760, 7060, 14200, 21350, 28550.

FP-75 £21.50 You are welcome to test the FT-75 at Totton

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NOW BEAT THIS FOR VALUE! 35p per watt! Even cheap kits cost 88p per watt! The FT560 operates SSB/CW on 10m-80m, at 560W p.e.p. i/p and has the following features: Built-in AC supply, VOX, 25/100 kHz crystal calibrators, WWV to check the calibrator, 1 kHz read-out on all bands and receiver incremental tuning. A CW filter can be fitted as an extra.

SPECIFICATIONS

- Maximum Input Power :** 560 W PEP SSB, 500W CW.
- Sensitivity :** 0.5 Microvolt for 20dB S/N (SSB 14 MC).
- Selectivity :** 2.3 kHz (6dB down) 3.7 kHz (60dB down) six pole crystal filter nominal shape factor 1:6 : 1. Optional 600Hz CW filter is available.
- Frequency Range :** 3.5 to 4, 7 to 7.5, 10 to 10.5 WVVV, 14 to 14.5, 21 to 21.5, 28 to 30 (Megahertz).
- Unwanted Side Band Suppression :** 55dB down (at 1000Hz).
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- Distortion Products :** More than 25dB down.
- I.F. and Image Ratio :** More than 50dB down.
- Frequency Stability :** Less than 100Hz drift in any 30 minute period after warm-up.
- Audio Output :** 1.5 watts, 350-2200Hz, 8/600 Ohm impedance.
- Power Source :** 117 or 234 volts A.C. 50/60 Hz.
- Dimensions :** 15½" wide, 6½" high, 13½" deep.

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FT-75 Transceiver ... £99.00	DC-200 DC PSU ... £46.50	FV-401 Remote VFO ... £38.00	FT-2 Auto Scanning ... £148.00
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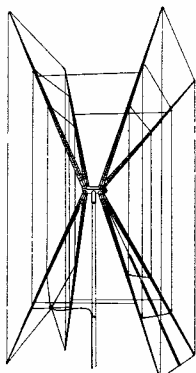
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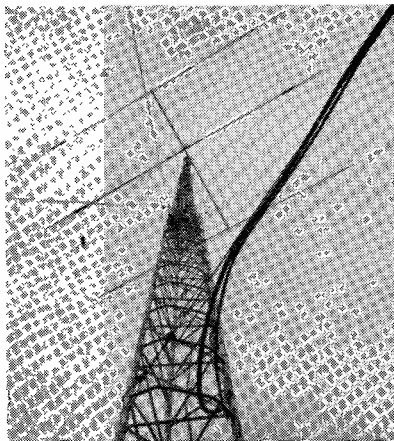
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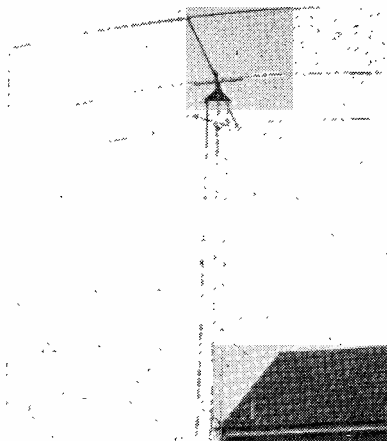


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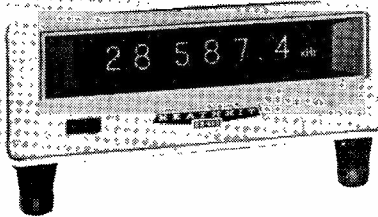
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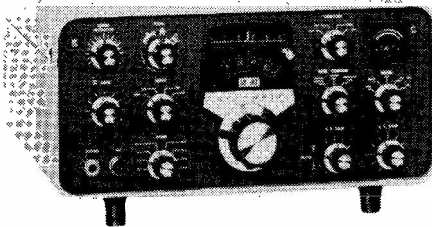
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SB-102 — the
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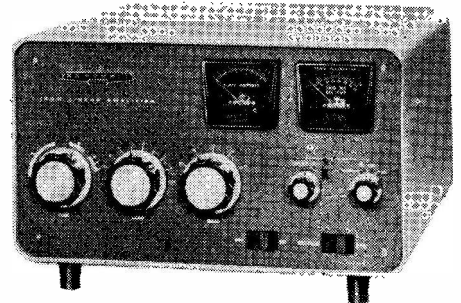
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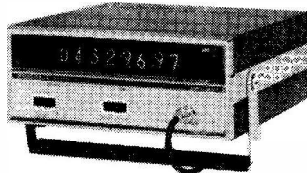
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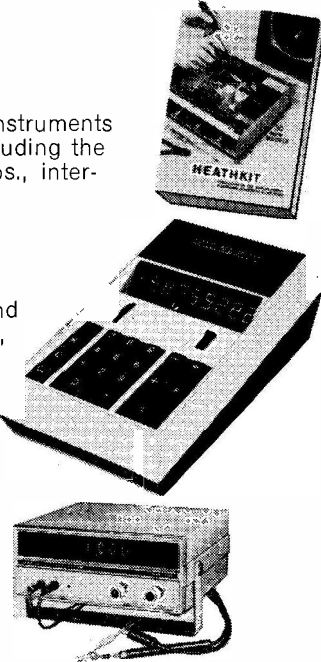
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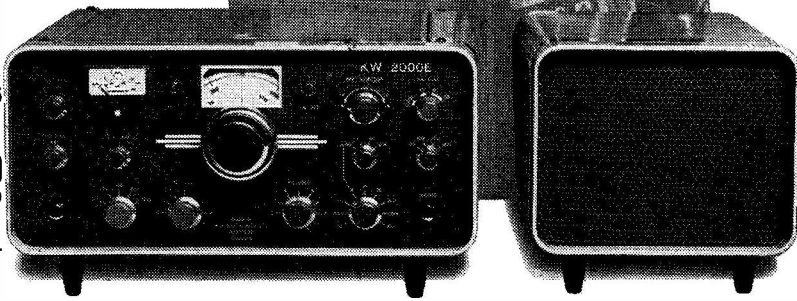
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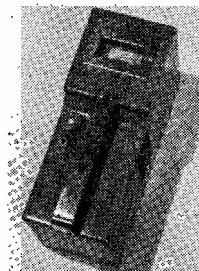
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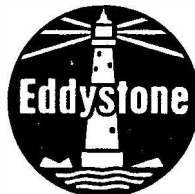
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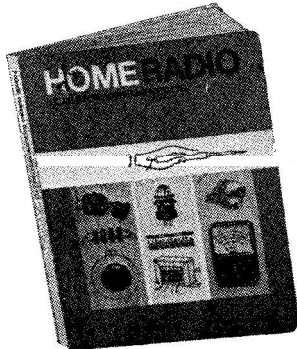
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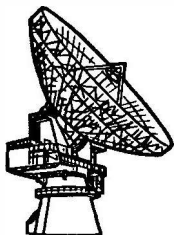
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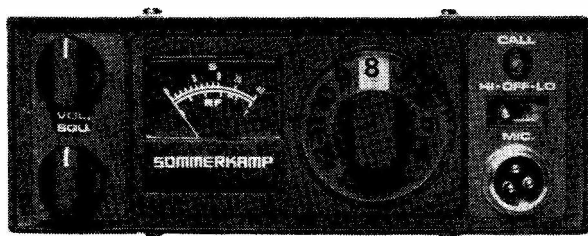
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SHORT WAVE MAGAZINE

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Vol. XXX

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The SHORT-WAVE *Magazine*

EDITORIAL

Interferences

On the larger issues of TVI it can be said that just about every AC/DC TV Rx produced in the U.K. since Hitler's War is a discreditable design in the sense that it is just not capable of coping with any form of adjacent QRM—the more modern the set, the worse it seems to be.

Luckily for us all, the UHF-only and colour receivers are out of the harmonic range of the frequencies in which we are interested—but that does not exonerate the manufacturers. They have made no effort at all to ensure that their designs are protected against harmonic interference and the effects of splash from nearby transmitters. Certainly, the BBC and the G.P.O. itself, with their high-power transmitting stations—to say nothing of numerous military installations around the country—face the same problem, for they are themselves creating much TVI for viewers within local range!

But the BBC and the Ministry are *The Authority* and can say, blandly, "Sorry, we can do nothing about it". And the viewers have to lump it, whereas the licensed radio amateur—taking every conceivable and reasonable precaution—can be bullied and badgered from pillar-to-post because a few TV-viewers in the neighbourhood with obsolete Ch. I receivers can set up a moan with the Post Office.

Surely, what the National Society should now be doing is tackling TVI as a matter of principle vis-à-vis the set manufacturers, the Post Office and the BBC/ITA and not attempting to deal with individual cases on a piecemeal basis—these cases are legion, anyway.

The VHF/UHF spectrum is now so wide and so heavily occupied that most transmissions are mutually antagonistic from the receiving aspect. Nobody can expect, as of right, a "clear frequency"—and that goes for the TV viewer as much as for anyone else.

Within their own bands, radio amateurs have had to accept the QRM factor for years, as a matter of course.

Austin Fox, G6FO.

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

LAST time out, in the preamble we mentioned G3ORP and his troubles. Readers will be interested to know that, for one reason and another, it is at the time of writing possible to say that considerable progress is being made with his TVI problem, the firm concerned and the Post Office giving him a great deal of co-operation—indeed, G3ORP's difficulty could by now be a thing of the past.

* * *

Business goes on as usual, as it must, although with not much help from the forces of Nature, not to mention the high level of man-made etheric pollution. However, we soldier on, looking forward to better times and better years as the sunspot *maxima* improve.

Ten Metres

You and I may never even check it these days; but there are those among the faithful . . .

G3NPB (St. Ives) has stuck rigidly to Ten for all his QSO's for the past two years, using a KW-2000A and Mosley ground-plane $\frac{3}{8}$ -wave high. David reckons that 10m. is rarely dead, but often unpopulated—lots of stations hearing nothing and then going off to another band; a CQ can make all the difference. G3NPB has had over 100 contacts this last month, at various times of day, with short skip continuing often to midnight, and the odd bit of DX interspersed among the locals, such as—with GMT times in brackets—CR6(19.36), 9Q5(20.40), VK(11.00), OA4(22.00), WAI(20.48), UA9(09.32), 7Q7(17.16), ZC4(19.20), 9J2(12.23), 9Y4(21.35), WA8(23.24), JY(09.40), WB0(21.29), CR7(19.05), ZE(12.50), ZS(15.40), CR4(17.00) and a PY at 20.30. In addition, there is a net in West Cornwall every Monday evening from 21.30 clock, around 28-570 MHz—and, as G3NPB says he has worked over to GW on ground-wave, the range locally should be greater than is often supposed.

G3LEQ (Knutsford) is another faithful fellow, with enthusiasm to back it. He and a few more around the area use 28.6 MHz for their local net, and have often been called by short-skip Europeans—indeed, on one evening it was their pleasure to have UP2PBI *join* the net, rather than just hit and run. Another getaway was CR6JT.

G3RFG (Henlow) seems to have connected his CW mainly to the short-skip on Ten—he hooked DJ5WO, F0AHY/FC, I5MIK, OE3FFA, RQ2GCU, SM0EKY/4, SM5BNX, SM5CXO, UK5OAB, UR2IO, UY5XF and YV1GST (hardly short-skip!), while LU3AU and PY3AU slipped through his fingers. An interesting one heard was SM6PU calling CQ, and "QSX 70"—one wonders if anything was coming through on Four.

G2DC (Ringwood) has a question mark alongside his 28 MHz column—from which we must deduce just what he thinks of it all. However, we can make a shrewd guess at his feelings when all that appears in the log is Eastern Europeans. As for G3DCS (Ipswich) he is quite emphatic—*Nil!*

G4AMJ (St. Ives) is another of the little colony of Dx'ers in West Cornwall—it must be the air, or something!—and he reckons G4AMT has given up trying to catch him. As for Ten, his CW raised 9H1CH, ZC4BI, ZE1DN and CR7FM, while the SSB settled with F0AFV/FC, 5U7AX, UA9CBO and some Europeans.

That great solar flare which hit the bands on August 4 did conditions quite an injury—G3ZAY (Orpington) sat in his shack writing to this piece on the 5th, at which time there was *not a thing* audible on Ten or Fifteen, and a few shaky first-hop EU's on Twenty. On the night of the 4th, even 20m. sounded like Eighty on Sunday mornings, with all the true short-skip GI, GM, GW and EI at S9. However, it goes to show we should always be equipped for as many bands as possible—the VHF

chaps were rewarded by an Aurora manifestation. And it pays to watch the WWV forecasts.

Fifteen

Good in parts. That SSB station at G3ZAY seems to have had quite a time on Fifteen, with such as 5H1LV, FB8XX, VQ9R, VR4EE, VK9JW, VK9AC, VK9MH, HS4AFD, 9M2CW, 9M2DQ, 9V1RE, 9M8WUW, ZD8RW, ZD8TS, DU2EL, CR3KD, 8P6CSJ /4 (the Scout Jamboree), lots of JA's and JY9GR.

G4AMJ likes his bit of brass-pounding, and this was the way he managed his contacts with FL8MM, 9L1JT, PY's, CR7IZ, Novice W's (always interesting QSO's and a great thrill for them), SM4CIM/OH0, JY6AS, CR5AJ, VQ9R, LX1BJ and UK8IAA. On the other hand this guy is an all-rounder, so he had SSB talk with 8P6CI, CE3AQW, UG6AO, OY3H, 5VZJS, 9Q5GR, CR7RA, A2CAB, 9G1DU, HB0XKI, TU2DD, 7X7G, 7X7Y, ZD8RW, F0AHC/FC, A2CAO, HS1AHA, LX1BJ and PY1BOL.

The G3DCS report for this time seems to be all on the CW theme, with the SSB comparatively neglected; thus, CW it was that accounted for FP0AA, YN1MO/W4, VP2VAU, 9L1GC, WB8ABN/HC1, HI3PC, KP4DLY, VP9L/P, FM7AD/FS7, PY1DVG, CP7GM and VE2BUP/3.

Those nice early-morning openings reported by G2DC last time round seem to have become less potent; and through the day the band has been full of European signals making life grim—but in the evening time—say 1800-2100z—the band livens up and is well worth a look-see. Jack made his number with CR4AG, CR5AJ, CR7CN, CX7BBB, EP2TC, HL9OV, JF1ATN/ATN (plus a lot of other JA's), KA6EE, KP4DLY, KX6AA, TU2BK, UJ8AR, UL7GN, UL7GW, UA0GF, UD6AM, VP8LR, ZS1ANT, ZS5AX, ZE3JO, 3D6AX, 4S7NG, 5T5CJ, 9M2LN, all W call areas and VE1-3.

Station of J. Cooper, G6CP, 9 Moor Lane, Eastfield, Scarborough, who is active on Top Band and operated as remote talk-in for the Rally there on July 16.



Another CW man is G3RFG, who rarely if ever is heard on Phone of any sort. Stan managed to get tangled with the JA's, and as a natural result his list contains no less than fifteen of them, but there was still time for him to latch on to VK6SA, WB8KNZ and WN2CUJ.

One of the achievements of G3ZPF (Dudley) has been to generate a new, wind-resistant—he hopes!—aerial for Ten and Fifteen. This seemed to work satisfactorily, and contact was made with CE3ABZ, CE3AGU, CE3OE, CE3ACA, VQ9R, VQ9W, VQ9MI, 9Q5IA, 9L1VW, 5Z4NQ, 9J2SS, FL8DJ, 8P6AJ, PJ2MI, OD5BA, ZD8TS, HB0XKI, CR6OH, ZE1CW, ZE1BP, HK3BGB, YV4AGP, VU2MX, OA4SO, KZ5AA and 5H1LV.

Some Comments

G8FSO (Wakefield) sounds an odd sort of call to be reporting to CDXN; but Dave was a SWL of the “proper” sort before he came to G8-dom, and so knows what it is all about. He writes to say that he, too, heard the QSO your conductor mentioned last time regarding G3UGK and his views on Linears. However, unlike your scribe he *knew* who it was—the chaps all being his locals, and members of the same club. It must have been a chuckle.

How nice to hear again from a correspondent long silent—a letter from ZS6ZE, otherwise G3LZQ. John has three years to get through out there in ZS and so has set himself

up with decent aerials, particularly for the LF's. There is a W8JK on Forty, and a Hy-Tower with extra loading to cover 40, 80 and 160 metres. Top Band out there is 1930-1970 kHz, and the need for split frequency operation has resulted in pretty switching between the Swan and Collins transceivers. The TH3 for the HF's is also up and perking again. John has his favoured frequencies—7000 to 7005, 7022, 7088, 3508 and 3795 kHz are the spots to look for him.

Another letter from a long-silent correspondent, namely G2HLU (Reading), gave much pleasure to us all here. Harold mentions that a couple of years ago he obtained a planning permission for his proposed beam installation, but is still, for lack of the time, soldiering on with his W3DZZ trap inverted-Vee aerial.

A welcome to a potential, rather than actual—as yet—correspondent, in the shape of G4BIE (Coventry); Les was at the time of writing still engaged in mortal combat with a “G2DAF-type” Tx, but will be writing again once he has his breath back!

Support for that August *Editorial* about CW comes from a not-unexpected quarter, namely G2DC. However, Jack links it—and here he has a point—to the fact that so many chaps are “appliance operators”, if only because they feel building is beyond their ken. As G2DC says, a novice can build a CW rig and get on the air to work the Continents and

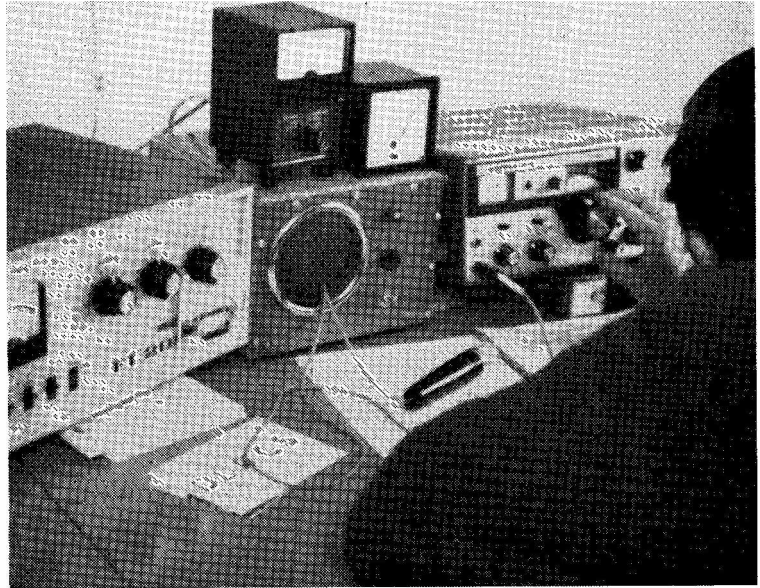
get a feel for amateur-style operation—they then can go and buy their appliances, knowing full well what is needed of the operator to drive them and, equally, know when the bought box is playing-up and maybe radiating bad signals. As G2DC sees it, this is a vital part of learning to be a qualified amateur—with which your conductor must agree, with the proviso that since a superhet receiver and an SSB transmitter are comparable to so close a degree, he rather fails to see the argument that it is beyond an amateur to build his own today. Try asking, for instance, G3TLJ, who took up radio almost at retiring-age, and learned to *design* and build, with the best of them, SSB rigs, Linears, or whatever.

Twenty

Early in the morning was ever the best time to hit the DX trail, as G3LEQ now re-affirms, he having got out of bed to prove it. Quite a bit of good DX was worked.

We have quite a dossier from W6AM (Long Beach) this month. Don had a party for G3KPO to meet the locals out at that fantastic Rhombic Farm which keeps W6AM Top of the List. W6AM sent a copy of a letter showing just how far he is prepared to go for the sake of being able to stay at the top of the tree—apart from donations, through three different sources, W6AM phoned about 40 people to alert them that VK9JW was in fact operable and he worked the expedi-

An Amateur Radio exhibition station at Husby, near Flensburg, Schleswig-Holstein, showing the HF-band layout, with the hand of DK4LB on the transmitter knob.



BRIEF DX DATA

Call	Details
VR1AC	Has been heard on 14202 kHz, around 0630z. Future calls in British Phoenix Isles will be in series VR1PA, VR1PB.
VK9JW	He made 11,200 QSO's from Mellish Reef, but was seriously out-of-pocket on the expedition—help appreciated.
A4...	New block of callsigns, issued to Sultanate of Oman to replace MP4M series.
FB8XX	Heard around 14110 SSB, 0545z, or 3792 kHz from 2200z on.
FB8ZZ	Seems to prefer early evenings on 14.1 to 14.2 MHz, and mainly active at weekends.
C21TL	Often around 14180-14190 kHz SSB, 1000-1300z and on Sundays from 0500. QSL's to Ken Matchett, P.O. Box 32, Nauru, Pacific Ocean (Zone 31).
JT...	Zone 23. JT1AA is on Twenty CW, around tea-time in U.K.
UAØNT	Zone 19. Usually on 14215-14225 kHz around 1200-1400z.
VR6TC	Tom Christian is understood to be in Auckland, New Zealand, for hospital treatment to his leg. He may be there for some time.
VU...	VU Net. 14140 kHz, SSB, 1600z on Mondays, Wednesdays, and Fridays. Also try Commonwealth Net 21354 kHz, 1500z; G3LQP is usually involved in the net.

tion on three bands SSB and four on CW. (W6AM might be in his seventies but he is missing club meetings because he is at evening classes!) The contacts now: We have mentioned VK9JW already, but there were also, on Twenty, C21TL, CR7IK, F0ØCS, XV5AC, XW8DO, PYØWH, and UA1KAE/1, BV2A, 3D6AF and PTØMI. Here is a dedicated DX man, who knows it all and has the gear to cope.

G3ZLP (Bristol) was yet another who was struck by the solar flare on August 4—although, as he has been taking a holiday, he has made up for it with more activity, mostly CW to a ground-plane, with an HW-100. Worked were W1-4, W6, W8, VE1-3, PY1, 2, 5, 7; LU2, 7, 8; 9L1CG, ZD8DL, ZE2KV, JA8AA, ZB2CL, EA8AI, EA9EO, 4M5A, ZM2CD, ZM4NH, VK5QB, HS4AGN, FM7AD/FS7, SM4CIM/OHØ, FØAHY/FC, OY1R/A, UA9's, UAØ's, OX3QI, VK2MT, HI8FED, EL9AEL, 9K2BQ and ZS6QD.

GW3ZQN (Cardiff) and your scribe had a half-QSO on Top Band a few nights back, the half-QSO being in the main due to noise generated by a colour-TV at the GW end! Simon can go on Eighty and Twenty but has rather left them alone, apart from W's and a missed XV5AC in Saigon.

G2HKU (Sheppey) has discovered a new form of QRM—when he was working VEØMD (the ship being off FP8 and in heavy fog) the operator, who by the way was VO1AW, was in terrible trouble trying to copy through the noise of the ship's fog-horn! Otherwise, he had SSB contacts with W7ITK and XP1AA in Greenland, plus CW to HP1IE, K6VX and VK3AHQ.

In Peterborough, G2NJ still goes on working on his /MM collection and recently added, on Twenty, OH1RA/MM, outward bound to Rio de Janeiro, Santos and Buenos Aires. FØAHB held the home call PAØIF; in Quiberon he was paddling the key as part of his holiday activity.

CW for G4AMJ amounted to EL9A, YV, 4M5A, FPØBG and other South American stuff, while his SSB booked in VP9's, 9Y4's, CE's, TI2RT, ZP5NH, ZP5CF, WA6JZL/T12 and CE2FB/MM.

Most of the time at G3DCS was spent on Twenty CW, which yielded UK2AAB, LU9EGB, OX5AT, LU9DCF, VE3BHZ, FPØAA, VP2VAU, KØNCS, FM7AD, UV3RD, UP2BAI, HI8FED, UL7GI, 9H3G, G6ZY/CN/M, FM7AD/FS7 and CE3ED—all nice DX.

The earlier part of the month was the best, opines G3ZAY, writing

in the midst of the radio blackout. His favourite band is *not* Twenty—but he still looks at it on occasion, this time picking up SSB contacts with YK1AA, FL8BC and UJ8AJ.

Lots of W's (all of them in the harder call areas), also VE1-3 and 7, VK's, XE, PY, seem to be G3RFG's contribution to the fun—Stan is selective about his W's, working different call areas on different bands—perhaps a way of injecting an element of operating difficulty.

A thing that was noticed by G3ZPF (Dudley) on 20m. was that there could be an unusual number of true short-skip openings, giving areas like GW, GM and GC at up S9+, for, say, thirty minutes at a time, then dropping out in mid-sentence. (The manifestations seem to tally with evidences of lifts on 144 MHz.) With his new aerial up, David managed a sniff of RF from 4S7AB, CR7IZ, LU8ECM, 5Z4IP, FY7AE, VQ9ID, 5Z4KL, 5H3R, HB0AZX, ZD3D, CN8GG, 7Z3AB, OD5ET, YV5TN, C31FG, C31CD, 9H3ITF, HZ1SH and XW8DY.

Perhaps the only correspondent to notice an improvement on Twenty this time is G2DC, who found a slight one on the long path to Oceania during the pre-breakfast period. The W6/W7-VE7 activity at the same time has reduced somewhat, to the point where one had to turn the beam on them to make them S9, but they were still there and workable. The best time for VK/ZL and the Pacific has been around 0700z. The CW contacts extracted from the

hours of listening included HP1IE, KH6RS, PY1ZAR, lots of PY's and LU's, VP2VAU, VK2-7, VK8ZZ, 5W1C, all W call areas and VE1-7.

Perhaps our last comment on the state of the art on Twenty should be left to G2HLU, who, keen DX'er though he may be, has to take it as work and other outside-interest QRM allows—for the first time in who - knows - how - long, Harold managed to get on, on three successive evenings, and picked up a new country each time, by way of FY7AI, UG6AG and UM8QAA. So it can't be as bad as we think!

Contests, Awards & DX-Peditions

The Lowestoft Club sponsors a series of awards, namely the "Norfolk Broads," the "Norfolk and Suffolk," and the "Worked British Fishing Ports," the last of which seems to be quite a tough number. Details in full can be obtained from G3XSK, who is custodian and *QTHR*.

In the Netherlands is the town of Woerden, which was granted its municipal rights 600 years ago. The local Lions Club, and the Radio Club, have sat down and thought about a "different" award; they will run PA600 on all bands, HF and VHF, from September 15 to 16th, 2300 to 2300z. The vote will go, regardless of band, to the station which makes the *most interesting contact*; in addition, every amateur in Woerden will, between 1-4-72 and 16-9-72, use the special-event QSL

card. Further details of this from J. G. Visser, Lions Club International, Woerden, Netherlands.

DX-Pedition: This is the season for the holiday ones, and first on the list is G4ABQ, who reports that he, along with G3TUT and G4ACP, are going on a monster trip round West Scotland between August 23 and September 8. Their schedule is: August 23, *Holy Island*; August 24-25, *Islay*; August 26, *Jura*; August 27, back to *Islay*; August 28-29, *Arran*; August 30, *South Kintyre*; and August 31, *Luig*. Operation for the remainder of the spell will be in North-West Scotland, sites still open to be considered. All operation will be on 160, 80 and 40 metres.

From Somerset, we have a plain-tive enquiry from SWL Carter, who wants to know what has happened to the regular QSO's between G3ZEM, G3YUV, G3YXM, G3XVY and G3XXQ, among others—well, partly at least, we have an answer; G3YXM writes in from Leicester to say he and several others will be /P in Southern Scotland for about a week starting on September 2, with Top Band, 80m., and maybe 15m.—nothing settled as regards which counties, but they will be on each night from somewhere rarish, operating as a DX-Pedition.

* * *

Now to the *big stuff*. We have to hand the results of the 1971 *CQ WW CW Contest*. The single operator all-band Europe award went to G3FBX. G3HCT is placed on the leader-

Gailt Hamilton, VE3EUP, has been operating as 5A3LV, 5Z4LV and 5H3LV (the latter being his base station) for some five years. Here is his set-up at Dar-es-Salaam, Tanzania, where he has a Drake 2C, HW-101 with external VFO and an FL-DX200. Antennae are a two-element 3-band Quad at 50ft. and a full-size Yagi for 40 metres. He is at present QRT for leave in Peterborough, Ontario.



Reporting the HF Bands

board for 21 MHz (single-band), and GM3YOR/A came fifth on Top Band in the same category. We can say, too, that we "had a hand" in the Caribbean victory because 8P6DR is G3RWL. Congratulations to all these stations for their good work.

Now to mention the 1972 CQ WW DX Phone Contest, running 0001 October 28 to 2359 October 29, and the CW leg at the same times over November 25/26. Rules are the same as in previous years—points score 3 for a different continent, one for your own contact, none for your own country, although such contacts could count for Zone or country multipliers. The multiplier is the sum of the Zones and continents worked on each band, using the *Zone list*. All the details from, and logs, to CQ WW DX Contest, 14 Vander-venter Avenue, Port Washington, L.I., N.Y., USA 11050, from where you can also, in exchange for a suitably stamped s.a.e. or IRC's, obtain official log forms or summary sheets.

Finally, an award from Algeria, the DDAIA for working 7X7 stations—Europeans and Africans need five, America three, other continents but two, with reports of

338, or 33 or better. Ten (!) IRC's and the appropriate list to ARA Awards Manager, B.P.2, Algiers.

Eighty & Forty

Somewhere about here is the point where your scribe realises he will have to be careful if he is to get it all into the space.

W6AM badly wanted to make it with VK9JW on Mellish Reef, and in his efforts worked VR1AA on CW, who told VK9JW Don was calling on 3802 kHz. Then there was a CW QSO with ZK2DX on both Eighty and Forty.

G3LEQ had his highlight of the month when he hooked C31FG on SSB for a new country; also the DX Net has been listened to on Eighty, albeit G3LEQ says—or rather implies—he has little patience for the waiting sometimes involved in the DX Net procedures.

Just about everybody must have landed C31FG on the LF Bands. Yet another one to mention him is G2HKU, who got a contact on SSB, as well as OY7JD on Eighty; CW

on that band gave UH8CS, UV9AX, VP2AAA. Then Forty SSB accounted for C31FG, CT2BG, VK2AVA, VK7GK, ZL2AUJ, ZL3SX, while the CW end came across with G6ZY/CN/M, UK9CBD, VK3MR, VP2AAA and 4U1ITU.

Oddly enough, the same day as the postman brought his copy of *SHORT WAVE MAGAZINE*, G2NJ worked ON4TA and told him of his mention in this piece—ON4TA replied he was still only using one watt. Just to rub his point home, the ON4TA/G2NJ QSO was a solid half-hour ragchew contact, with none of your rubber-stamp nonsense about it.

G4AMJ made one trip to Eighty, and one to Forty—the result in each case was C31FG. Not much more time was spent on these bands either by G3DCS, whose CW accounted for UQ2GCN on Eighty and UA1KM and UP2BP on Forty.

A rather different tale came from G3RFG; Stan found VE2ED and PY2FGZ on Eighty CW, while Forty came up with CM2CL, K8NYG, VE3BTJ, W1DM, W1HRJ, W1IET/1, WA2TUJ, W3DQZ, W3TMZ, WA3QDH, WA3RBM, W4BRK, W8TGG, WB8BJF and WB9AYN.

The static level on Eighty made that band less interesting for G2DC, who worked only W1-4 outside the confines of Europe, albeit ZL4IE did

COUNTIES TABLE

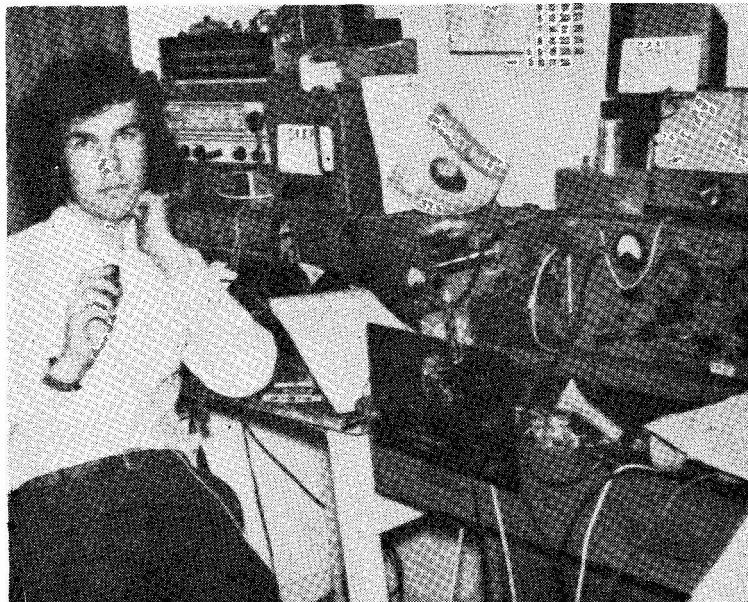
Callsign	TOP BAND		Total Score
	Counties CW	Counties Phone	
GM3YOR	66	33	99
GW3ZQN	29	57	86
G3VLX	33	41	74
G4ASV	2	56	58
GW3WSU	—	53	53
G3YPT	44	8	52
G4ALG	31	17	48
G4AXP	—	43	43
G3DCS	14	—	14

This Table will run till December 31, 1972. Starting date January 1, 1972. Any mode goes.



At the Northern Mobile Rally in May, visitors were greatly interested in this array of home-constructed equipment shown by members of the Otley Radio Society.

Station of R. G. Harris, G4APV, 6 Chestnut Avenue, Lutterworth, Rugby, Warks., who was first licensed as G8FEN last August, becoming G4APV in October '71. Having started on two metres, activity was transferred to Top Band, though with rather disappointing results using a 19 Set. While much is still done on Two with excellent U.K. coverage from a good site, the station is being brought up to SSB standard for the other bands.



tell him that from ZL, the path to Europe still opens every morning, but appears to be tried by very few G stations. As for Forty, here again the early mornings were the most productive, despite the QRM and QRN, say around 0615-0645z when VK/ZL and virtually any part of W may show up—a short period indeed, but at about VK sunset time. CW QSO's were made with F0AHY/FC, HC1KP, PY2EXD, VK2AUG, VK3MR, VK3XB, VK7GK, ZL4PO and W's right across W1-5.

More Comments

G3WZD (Hassocks) says he knows he has fairly severe TVI, with fifteen Band I aerials within 150 feet, and his barefoot KW-2000; but Duncan was a bit annoyed one Sunday recently, after waiting till all the local lights had gone out, to try a new aerial on Fifteen, to come on, raise a W, and then—at almost midnight—have someone banging on the door and complaining that “it was a bit much to have his TV viewing interrupted.” Still, after the neighbour had departed, the W was still there and the contact could be completed. At the moment, the acquisition of one of those “mangle” type roller inductors has provoked thoughts of a multi-band ATU for the 60-foot wire aerial in use. One cannot help but feel that here is a case where an

active attempt at clearing the TVI would do more for good relations than actually going QRT—most neighbours who know how difficult it is to get a callsign feel a bit guilty about stopping the amateur from his rightful occasions.

A change of heart by the licensing authorities has meant that stations in the Isle of Gozo will now be allocated calls in the 9H4 series as from August 1st. Cards for the 9H4's can go either to the 9H1 Bureau, or to 9H4H, who is QSL manager for the Gozo Club. Call-signs have been changed as follows: 9H1T is now 9H4A; 9H1M is 9H4B; 9H1CZ 9H4C; 9H1DA 9H4D, 9H1DB 9H4E; 9H1DF 9H4F; 9H1DG 9H4G; 9H1DH 9H4H, 9H1DI 9H4I; and 9H1DM becomes 9H4J, the call of the Gozo Technical Institute.

G4AMJ is het up about QSL cards. His big beef is that so many DX cards are far too big for normal-sized Bureau envelopes—he has had one ten inches long and Terry, G4AMT, a couple over a foot in length! How the blazes can one expect such a thing to arrive in any but creased condition unless it is packed in stiffened envelopes! G4AMJ also wants us to run a “QSL'er of the month award,” to give a bit of praise where due to DX stations who send out fast cards,

often by airmail, and never seem to be publicly praised for their efforts.

G2HKU has a gripe about power usage. Ted feels the inroads of the 560-watt transceivers has really done some damage—not many of the chaps on CW will keep such a box down to the legal 150 watts, he surmises, citing the state of the LF Bands as a point. Of course, Ted knows his onions here, as for years he was forced to be QRP with either batteries and a wind-charger or DC Mains, and he believes he had more fun when 100 watts was *real* QRO. He has a point: But your scribe would think the trouble is not with the DX'ers handling such potent transmitters but with the run-of-the-mill operator who uses it quite unnecessarily for purposes which the DX'er would call “local ragchewing.” The point we are trying to make is that a DX hunter may have a big signal but to work the DX he has to be able to put it in the right place—a knack the non-DX chaps seem to lack, possibly from not practising it. Listen to the mob calling on Top Band to GM3SVK, for instance, and see who gets there *tidily* with no upset to anyone; and who makes a bedlam of the channel till he has been worked off to get him out of the way! And, after all, it is easy on counties, because you can hear both ends of every QSO, almost

On a completely different angle, G3YRR, in the course of his letter remarks on the way the "amateur spirit" is still in evidence. Charles has a cousin in Sweden, who was seriously ill, and SM3DMP went to see him and found out how he was faring. Then, when he was on Twenty looking for G3YRR, G3MCA rang Charles from London just to tell him to get on the band for SM3DMP. A good show, to put it mildly. Another one of G3YRR's contacts with SM-land is SM2FRA, in Lulea, who is completely blind, but has had several hundred contacts with his TS-510 since he got it Christmas Day.

Top Band

W4WFL wrote at the last moment to let us into some bits of news and views; from his own point of view, he has been pretty inactive, but on one of his few forays on Top Band, he worked EI9J for a new country.

G3LZQ, in the course of his letter, says he will be listening on Top Band

this season, with his ZS6ZE call, so will the hopefuls please look for him between 1930 and 1970 kHz. It's a very difficult path!

A Top Band "first" falls to be recorded, by way of W1BB's very valuable "grapevine" service. DU1GF, DU1OR and DU1DL joined forces to put DL1PAR on 1805 kHz. The effort was worth it, for on May 13 they worked KR8CF, KR8AG, KR8EA, followed by several JA's, and to prove it was no flash-in-the-pan they repeated the trick on following nights. Yet another new country on Top Band.

GM3YOR (Kirkcaldy) presses on with the accumulation of counties for the table, and bagged some new ones both on CW and SSB, although he is still somewhat stuck for Armagh, Tyrone, Brecon, Montgomery, and Alderney for his all-time score.

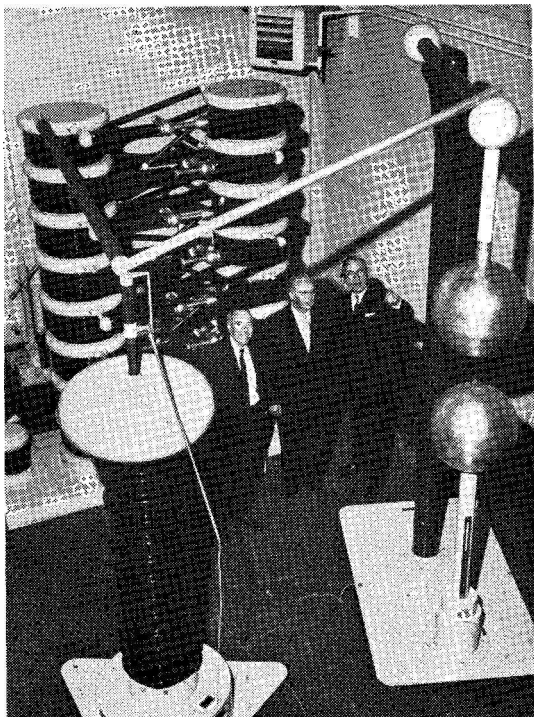
GW3WSU is a taciturn sort of chap—he has just his entry in the Table for this time. Not so G4ASV (Knaresborough) who runs a Mk. I K.W. Vespa, in conjunction with a

Trio 9R5-9DS and a 160 footer ended. Your scribe is not surprised to hear Mike saying he is finding it hard going to raise his score above 58 on SSB due to lack of activity—there seems to be a lot less DX-peditionary zeal of late summers. But they will come again, in due course.

On to G2HKU, who seems to have been a mite more active on 160m. of late. He has SSB contacts to record with DA2XO, DL5XF and PA0PN, and his CW carried to DA2XO, DJ0MR, EP2BQ, GM3VBT and 4U1ITU. The EP2BQ contact resulted in a fast QSL, which indicated he will be maintaining his activity until late 1973, when he returns for keeps to his home in ZL.

Sign-Off

That, kind folks, is about the lot for this time, apart from the Tables, for which we are always glad to see entries. The deadline for next time is **September 12**, addressed CDXN, SHORT WAVE MAGAZINE, BUCKINGHAM. 73.



Not, as you might think, a futuristic film set but the 800 kV lightning and switch-surge generator started up recently at Heriot-Watt University, Edinburgh, and designed for research and teaching in the field of electrical insulation and low-temperature work at high voltages.



"... don't understand your report of distorted speech ..."

COURSES FOR THE R.A.E.

Further to the listing on p.364 August SHORT WAVE MAGAZINE herewith a further tabulation of R.A.E. Courses notified to us since then.

It should be mentioned that some of the larger Technical Colleges and Evening Institutes have their own system of course numbering, which may seem at variance with our familiar "Subject No. 55, C. & G."—not to worry, it is still the same course and the same examination and where the local course numbering is different we show it here in brackets.

All interested in the R.A.E. should read the notes on p.364 of the August issue, where much essential information is given.

- Bangor, Co. Down:** At the Further Education Centre, commencing early September, with C. Billington, G3WSS, as course tutor. Details and enrolment particulars from the Principal, at the Centre.
- Barry (Glam.):** At the College of Further Education, Colcot Road, starting 7.30 p.m. Sept. 26 (Theory), same time Sept. 28 (Morse and Practical), the one fee covering both classes. Enrolment at the College during week Sept. 11, prospectus on application. D. H. Adams, GW3VBP, Elect. Engr. Dept.
- Bath:** At the Technical College, Room 121, commencing Sept. 20, enrolment Sept. 7 and 8th, instructor P. A. Bubb, G3UWJ, *QTHR*.
- Birkenhead:** At the Technical College, Borough Road, on Thursday evenings, lecturer L. Roberts, G3EGX, *QTHR*, or apply Hon. Secretary, Wirral Amateur Radio Society, 31 Withert Avenue, Bebington, Wirral, Ches.
- Birmingham:** At the Lea Mason Centre, Lee Bank Road, Birmingham 15 (Tel. 021-622 2350), starting on Sept. 18, running Mondays, Wednesdays and Thursdays, 7.0 to 9.0 p.m., Theory and Practical, also Morse instruction, fee £1.70 inclusive, or 85p for juniors under 18. Course instructors: J. Broomhead, G3NCX, and G. Farrance, G3KPT. Station G3ZQW on the air for practical work.
- Brighton:** At the Technical College, Pelham Street, apply Office of the Faculty of Engineering, Richmond Terrace, asking for Course (No. 765), City & Guilds Subject No. 55. F. R. Canning, C.Eng., M.I.E.E., G6YJ, will be in charge.
- Cannock Chase:** At the Technical College, on one evening a week, starting in September. Apply Dept. of Science and Engineering, at the College.
- Canterbury:** At the College of Technology, details on application. Lecturer D. J. Bradford, G3LCK, *QTHR*.
- Chatteris, Cambs.:** At the Evening Centre, Cromwell School, Wenny Road, Wednesday evenings 7.15-9.15 p.m., starting Sept. 20, enrolment at the School evening Sept. 13, course under the guidance of D. G. Arigho, G3NVM, and P. W. Corner, G3SPK.
- Crawley, Sussex:** At the College of Further Education, one evening a week, enrolment Sept. 11-13. Details from G. Bowden, G3YVR, 51 Leighlands, Pound Hill, Crawley (Tel. Pound Hill 3253).
- Dudley:** At the Technical College, enrolment Sept. 11. Lecturer J. Raby, G8RF, *QTHR*.
- Dundee:** At Kingsway Technical College, Old Glamis Road, Thursdays 6.30-9.0 p.m., Morse and Theory with some practical work, also operating GM4AAF, course instructor F. Baxter, GM3VEY, for the fourth consecutive year. Enrolment during September and further information from the College.
- Glasgow:** At the College of Nautical Studies, 21 Thistle Street, C.5, on Tuesday and Thursday evenings, 7.0-9.30 p.m., starting Sept. 12. Enrolment same evening, fee for course £3.00, juniors under 18 free. Classes cover Theory, Licence Conditions and Morse, no previous knowledge assumed or required. This is a long-established and successful course.
- Grantham, Lincs:** At St. Hugh's Secondary School, Dysart Road, Monday and/or Tuesday evenings, starting September 11, 6.45 p.m. Class for beginners and those taking R.A.E. in December. Course tutor A. Ellis, G3PJR. Enrolment first evening or enquiries to Grantham College for Further Education, Sept. 4-5.
- Heanor, Derbys:** At the College of Further Education, Ilkeston Road, Wednesdays 7.0-9.0 p.m., starting Sept. 27, enrolment Sept. 7-8, evenings.
- Hull:** Class to be organised by the Hull & District Amateur Radio Society, starting Friday, Sept. 8. Details from Hon. Secretary, 4 Chester Road, Wold Road, Hull, HU5 5QE.
- Knottingley, Yorks.:** At the Castleford & Pontefract Institute of Further Education, Knottingley High School, on Wednesdays 7.0-9.0 p.m., enrolment evening Sept. 15. Course instructor A. E. Ashby, G3HCW, 22 Rossiter Drive, Knottingley.
- London (Acton):** At the Technical College, opp. Town Hall, on Wednesdays 6.30-9.0 p.m., enrolment Sept. 4, course starting Sept. 20. Ring the College 992 3248 for details. Instructor W. E. G. Dyer, G3GEH, hon. secretary Acton, Brentford & Chiswick Radio Club.
- London (Holloway):** At the Holloway Institute, Whittington School, Highgate Hill, N.19, commencing Sept. 25, 7.0-10.0 p.m., lecturer B. C. Bond, G3ZKE, enrolment evenings Sept. 18-22, at the Institute, or enquiries to G3ZKE, 86 Agar Grove, Camden Town, N.W.1.
- London (Hounslow):** For details apply Adult Education Office, 2 School Road (Tel. 01-572 0698).
- London (Merton):** At the Technical College, Morden Park, London Road, on Wednesdays 7.0-9.30 p.m., starting Sept. 18, enrolment evenings Sept. 11-13.
- London (Wembley):** At the Evening Institute, Copland School, High Road, enrolment Sept. 11-14, evenings, for classes starting Sept. 18, 7.0-8.0 p.m. (Morse) and 8.0-10.0 p.m. (Theory), with A. Bayliss, B.Sc., C.Eng., F.I.E.E., G8PD, in charge. This successful course has been running for many years.
- Loughborough:** At the Technical College, Radmoor,

Tuesdays 6.0 to 9.0 p.m., Morse and Theory, commencing Sept. 19, fee £4.65, enrolment evenings Sept. 11-13, course tutor D. R. Doughty, G3FLS.

Manchester (Openshaw): At the Technical College, Whitworth Street, starting Sept. 26, 6.45 p.m., enrolment Sept. 11-13. Instructor A. B. Langfield, G3IOA, *QTHR*—enquiries to him or to the College.

Newport, Mon.: At the College of Further Education, Nash Road, starting Sept. 11 at 7.0 p.m. Enquiries to G. B. Packer, GW3UUS, 3 Robertson Way, Newport.

Princes Risborough, Bucks: At the Adult Education Centre, County Secondary School, Merton Road, evenings Monday and Thursday, enrolment Sept. 5-6, 7.0 to 9.0 p.m., fee for course, commencing Sept. 18, £3.00, instructors R. Whiting, G3POF and S. Ford, G4ACV (Morse, Thursday evenings).

Scunthorpe: At the College of Technology, Kingsway, commencing mid-September. Enrolments/enquiries to Secretary, at the College, as soon as possible.

Sheffield: At Crosspool Adult Education Centre, Darwin Lane, Sheffield, 10, starting on October 4, enrolment

during week Sept. 25. Details from J. Bell, G3JON, *QTHR*, or ring 732333 (*office hours*), 367774 (*home*).

Weston-S-Mare: At the Technical College, evening classes start week of Sept. 11, Tuesdays and/or Thursdays, depending upon support and requirements, Beginners or Second Year. The College runs station G3WTC. Information from L. G. Truman, G3VHO, 33 Farm Road, Weston-super-Mare, Somerset.

Wolverhampton: At Ounsdale School, Wombourne, on Wednesdays 7.0-9.0 p.m., starting on Sept. 13. In charge R. W. Tomkys, G3NOW, *QTHR*.

Because most classes will be well under way before the October issue of *SHORT WAVE MAGAZINE* appears, there will be no point in our publishing further lists. Readers not catered for in the listing here or on p.364, August, should apply for information either to the local office of their Education Authority (quoting "Subject No. 55, City & Guilds") or to the hon. secretary of the nearest Amateur Radio club, who may be able to help in getting a course started at a nearby Technical College or Evening Institute.

SPECIALLY ON THE AIR

On the subject of QSL's for GB Special Event stations, touched upon recently under this heading, we are asked to make it clear that organisers concerned should send large s.a.e.'s, with callsign and date(s) of operation clearly marked on the *outside* of the envelope, to: C. Turner, G8NL, 56 Sunny Bower, Tottington, Bury, Lancs, BL8 3HL, who has made himself responsible for dealing with cards for these stations. It will enable him to clear many outstanding QSL's.

This applies to all stations we have already listed in this space—and no doubt to many of last year's as well!

ZB2MED, September 2: Sited on the Rock of Gibraltar, run by the Gib. Amateur Radio Club to form part of Military Exhibition Day, working 20m. SSB only. A special memento will be sent for all QSO's.—B. Grainger, ZB2CC, WO's Qtrs., Europa Point, Gibraltar.

G3CAR, September 2: For the annual Wycombe Show, organised by the Chiltern Amateur Radio Society, operating on all bands 10-80m., AM/CW/SSB. Contacts will be confirmed by special QSL card, and visitors welcomed for the occasion.—A. C. Butcher, G3FSN, 70 Hughenden Avenue, High Wycombe (24835).

GB3PP, September 4-9: By Preston Amateur Radio Society for Preston Guild Week, working HF bands 10-80m.—G. W. Earnshaw, 12 Withy Parade, Fulwood, Preston, Lancs, PR2 4JN.

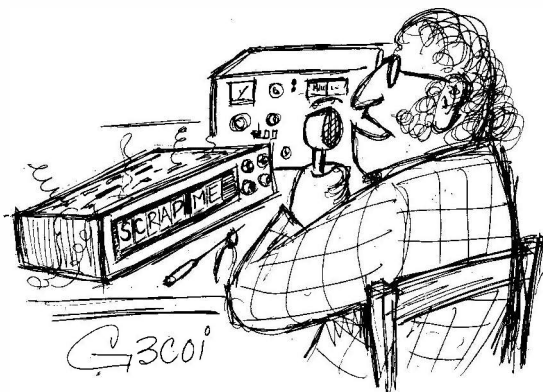
GB3SAF, October 7: Put on as a demonstration station for the 62nd Leicester Scouts annual Autumn Fair. It is hoped that operation will be on 160-80-20-2m. simultaneously, with SSB. Special QSL cards are being produced.—D. Pick, G3YXM, 9A Long Lane, Billesdon, Leicester.

SOME BOOK ORDERS DELAYED

Because of the dock strike, the replenishment of stocks of certain of our American titles, maps and such, has been delayed. Though despatches from the U.S. were made before the strike started, they cannot now be received till some weeks after normal working is resumed, due to the immense back-log of goods in transit or awaiting clearance at the docks—though at the moment of writing a settlement of this corroding dispute is in sight.

SHURE SERVICE FACILITIES

These are now to be found at 12 West Street, Bromley, Kent, BR1 1RF (*Tel. 01-464 7521*), where improved facilities have been made available for Shure Microphones.



“ . . . the digital read-out here is playing me up a bit . . . ”

* * * **THE MOBILE SCENE** * * *

NOTES AND PICTURES AND THE CALENDAR

This is a "between-period" for this feature, because some of the bigger Rallies had not yet come off at the time of writing and, on the other hand, there had hardly been time for reports to reach us of those that had taken place since the last piece in this space.

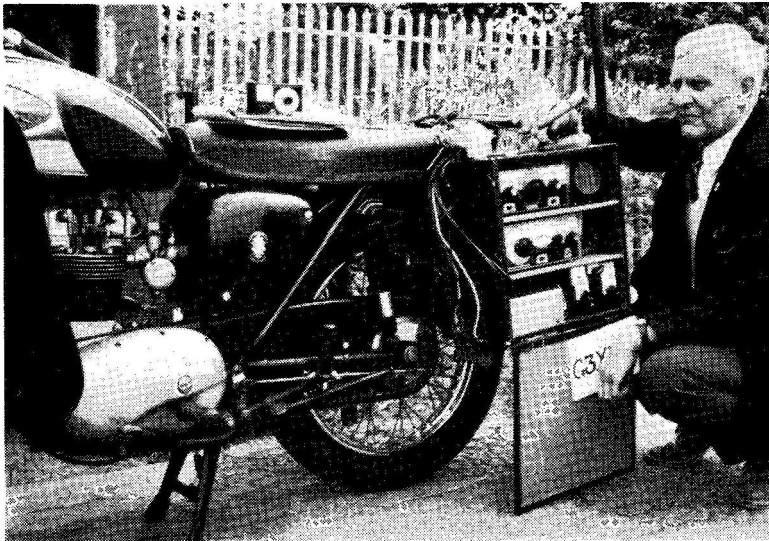
The number of U.K. operators licensed for mobile continues to increase, there now being some 3,450 /M permits extant. The proportion of G8/3's remains about the same, around 20% of the whole, and most of these are on two metres, using either halo's or 5/8-wave spikes.

According to our list, there are five events to go, as follows:

August 26-27: Stratford-on-Avon Radio Club Mobile Rally at the National Agricultural Centre, Kenilworth, Warwickshire, which offers splendid facilities for an event of this kind. As the Rally will coincide



On the left here is Mrs. Edna Cooper, G3UGO, very active in the affairs of the Cornish Radio Amateur Club; and on the right G8EPK from St. Albans, on the occasion of the Cornish Rally on July 9.



G3XHA with his motor - cycle mounted rig at the Scarborough Rally on July 16. He acted as relay for Top Band talk-in station G6CP, at his home QTH.

General view of part of the car park when the Cornish Radio Amateur Club held their Mobile Rally at Truro.





Impression of the gathering for the Cornish Mobile Rally on July 9, when the raffle was being drawn—the general ambience suggests that they had a pleasant day for another very successful occasion.

with the National Town & Country Festival and the Stoneleigh Transport Carnival, there will be plenty of interest for the whole family—including a vintage car and motor-cycle display, working steam-powered machinery, and all the other attractions of an Agricultural Show in the heart of England. A special HF-band station GB3TCF will operate in the Crendon building. Further information from: M. J. W. Webb, G300Q, 14 Townsend Road, Tiddington, Stratford-on-Avon (5973), Warwickshire. Should be a very nice day out.

August 27: Mobile Rally at Kimberley Barracks, Deepdale Road, Preston, offered by the Preston Amateur Radio Society for 12 noon till about 5.0 p.m.,

with talk-in on 2m./160m. Ample free parking, refreshments and licensed bar. Details: G. W. Earnshaw, G3ZXC. 12 Whithy Parade, Fulwood, Preston, Lancs., PR2 4JN.

September 10: Thanet Mobile Rally at the King George Park, East Cliff, Ramsgate, a pleasant site above the sea, sheltered and well tree'd.—N. Cramp, 10 Downs Road, Ramsgate, Kent.

September 24: Harlow & District Amateur Radio Society annual Rally at Magdalen Laver Village Hall, as in previous years. For details: V. Heard, 106 Vicarage Wood, Harlow, Essex.

October 1st: Peterborough Radio and Electronic Society



Jim Fish, G4MH, of the Amateur Radio Shop had an attractive stand at the Scarborough Mobile Rally, Burniston Barracks, on July 16.

The master-minds behind the organisation for the Scarborough Rally—left to right, G3KS, G3VAN, G3JBR and G8KU. They put on another very good show.



Rally, to be held at Walton School, Mountstevan Avenue, Peterborough, 11.0 a.m. till 5.0 p.m., with talk-in by G3QS on 1980 kHz and G8FFC on 145.00 MHz. Entrance fee of 10p will also cover price of raffle ticket.—A. H. Jackson, 57 Peterborough Road, Castor (353), Peterborough.

IARU REGION I MEMBERSHIP FACTS

According to the August *Region I News* (compiled and produced by Roy Stevens, G2BVN) the West German Amateur Radio Society (DARC) has emerged as the most powerful member of the group, with 13,700 licensed members. Next comes the RSGB, with 9,164 members holding AT-station licences. A puzzling statistic is the figure attributed to the U.S.S.R.—with a total membership of 110,000 in their RSF, they claim only 8,250 licensed amateurs! (This is probably due to the fact that the numerous “Klubs” have many unlicensed members permitted to operate “under supervision”.)

All Societies have a considerable SWL content, so total membership is always larger than the number of licensed members.

Since the total of U.K. licences now in issue is of the order of 17,500, the RSGB return shows that some 8,300 British amateurs are *not* members of the Society (nearly as many as *are* members!)—and these are latest available figures.

POWER FROM SUNLIGHT

Power supplies for space vehicles and satellites—and indeed for any electrical or electronic equipment in inaccessible places (such as repeater stations in difficult country) are conveniently obtainable from sun-powered batteries of solar cells. A sufficient number of cells, in the appropriate circuitry, can be used to charge a conventional storage battery to bridge periods of darkness or bad weather when the sun itself is not at full power.

The *Mullard* BPX33 solar cell is a good example. In full sunlight it will give a few tens of milliwatts. The



Radio amateurs all! At the Scarborough Rally, left to right, G8FRP, then at centre Carol Rogers who took the last R.A.E., with her mother, G8FQU, right. Nice going and good luck to them all for the Morse Test!

BPX33 is rated to give a maximum DC output of 57 mW under “outer space” conditions—that is, with an irradiation of 100 mW per sq. cm. *in vacuo*. The conversion efficiency is rather better than 10%.

Though these figures are not in themselves very impressive, in the first place the input energy is free and secondly, batteries of solar cells can be built to provide a really useful and reliable power source. For example, the *Mullard* BPX33 has been used successfully to power earth satellites (5920 cells) and strato. balloons (44 cells) for telemetering equipment. In a particular configuration of this sort the open-circuit voltage was 13v. and the short-circuit current 320 mA—all for nothing (except of course the primary cost of the cells). One hundred of BPX33 weigh only one ounce!

From “*Mullard Bulletin*”, July 1972.

ZL-SPECIAL COMPRESSED FOR TEN METRES

INTERESTING PRACTICAL DESIGN

At the present juncture in propagation conditions, it might well be thought that a beam specially designed for Ten could be a waste of time—however, things will improve on that band, it does open occasionally, this beam is easy to build, takes up relatively little space and it is an interesting project both constructionally and in the experimental sense.

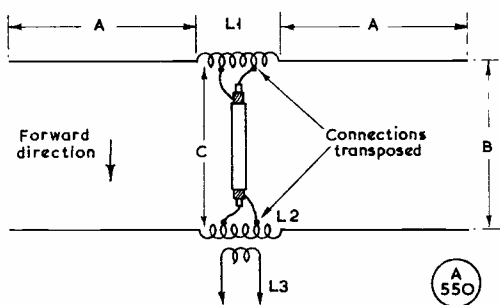
It is based on the "ZL Special," discussed first in SHORT WAVE MAGAZINE many years ago. It has been widely copied and described since, often with an imperfect understanding of how it works.

The "ZL Special" is inherently gainy because it is a two-element arrangement with *both* elements driven, making it quite unlike any other array involving parasitic elements. Using the correct dimensions and proper matching, the elements are driven 135° out of phase, and up to 6 dB gain can be expected in the aimed direction. The feed-point impedance is around 70 ohms.

For the HF bands the main disadvantage is that it cannot easily be made rotatable—however, it can be made bi-directional by flopping the elements over, *i.e.* simply by swinging the array through 180° on its longitudinal axis. It is thus that it is often used on 15 or 20 metres.

It seemed probable that a compressed version of the "ZL Special" would do well on ten metres and (because of its reduced size) could be made rotatable in azimuth in the usual way. The notes following describe such an array.

Compressed beams are those in which the elements are loaded with inductance (meaning a coil at the centre of each element section) to reduce the overall physical size, or over-hang. Thus, a Compressed ZL-Special is (or should be!) a high-gain beam with a reduced over-hang. While from this it might appear that inductance could be



Layout of the beam described in the article. For the 10-metre band, dimensions are: A, 66in. for both arms in each section; spacing distance B, 42in.; C, length of phasing line, 44½in. The loading coils L1 and L2 are each 10 turns of 16g., 1½in. in diameter, with a three-turn feeder coupling winding L3 on L2. The length of L1 is 2in. and of L2, 3in., these being finally adjusted (by squeezing in or pulling out) as explained in the text. The phasing line, which must be transposed as indicated, is tapped on one turn either side of centre for each coil L1, L2.

substituted for element length to bring down size still further, in fact, this is not possible beyond certain limits because more inductance means sharper tuning, *i.e.*, reduced band-width.

General Arrangement

This is based on the conventional "ZL-Special," using tubing elements as described in the December, 1956, issue of the *Magazine*. The layout and dimensions for the 10-metre band are shown in the sketch herewith. Elements are of ½in. dural tube. Link coupling could have been used for the phasing line, but direct coupling was tried to avoid the complication of having two link adjustments at the feed point. It is important to use semi-airspaced coax of good quality for the phasing line in order to obtain the correct velocity factor; in fact, any such coax with a V/F better than about 0.75 is suitable. Feeder connection is simply a matter of using a 3-turn link to couple direct into 72-ohm twin feeder. Note that the phasing line has its connections transposed.

Construction

The mechanical arrangement of beam systems is always a matter of individual preference. However, some details of the design as tested may be helpful. As a "ZL-Special" can be of very light construction, it is mounted on a wooden framework shaped like an "H," with narrow cross-pieces at each end to eliminate any tendency to whip. The arms of the "H," on which the elements are mounted, are four feet long; thus, each element is supported for about one-third of its length. The main cross-piece is mounted on the mast, at the point of balance.

Insulation of the elements is by using short lengths of ½in. dia i.d. polythene tubing, slid on to the elements as a force-fit and clamped to the wooden supports. This method of mounting facilitates matters if the elements have to be adjusted. All electrical points should, of course, be mechanically sound, extra well soldered, and coated with a poly. adhesive, followed by a liberal application of *Bostik* for water-proofing.

Adjustment

For best results, some adjustment is necessary because the inductance of the loading coils is quite critical. Sliding the elements in or out from the ends of these coils alters the resonance point, and a calibrated GDO will be found very useful in getting the adjustment just right. However, by taking the dimensions as given here, this variable should be largely eliminated. For the final setting-up, an SWR indicator should be used on the feeder line, the beam then being "tuned" for minimum attainable standing-wave ratio over the area of the band to be covered.

Band-width can be increased by altering the inductance values of the loading coils, in such a way that the difference between them is increased. This can only be done up to a point, beyond which the whole system becomes mis-matched. A typical weakness of compressed beams (on any band) is that the use of too much inductance makes them more frequency-conscious. However, a band-width of anything up to 800 kHz should be attainable at 28 MHz; outside this limit, the efficiency begins to fall off quite steeply—which, inci-

dentally, is the proof that the system is working the way it should. If it appeared flat over a very wide frequency area, it would be a sure sign that it was non-resonant, and therefore not in any way "gainy."

As shown here, the beam should cover about 28·100-28·900 kHz and with the dimensions given can be set up in this range, which is quite sufficient for normal use of the 10-metre band from the U.K.

Results

The set-up as tried out is by no means a perfect example of a beam installation! To avoid any possibility of conflict with the local authority (amenities, and so forth), it is discreetly situated between neighbouring houses, at a height of only 20 feet. (It is too near guttering and other earthed surfaces, and the get-away is only partially clear).

Nevertheless, running a mere 30 watts input and operating almost entirely in competition with the week-end QRM, very satisfactory and consistent DX results have been obtained. During a recent phone contest some 40 contacts were made with Europe, Africa and North America in only a few hours' operating. Analysis of the reports showed 21 at S9, ten at S8, three at S7, one at S6 and five at S5. Naturally, results would be very much better if full power could be used, with the beam well up and in the clear all round.

The general design could, of course, be scaled up for the 21 or 14 MHz bands. An interesting thought is that a 21 MHz version would have a *physical* size about that of a normal 28 MHz beam (a span of 16 feet or so) and yet should, and almost certainly would, have a performance considerably better than a full-sized two-element parasitic array for 15 metres!

ITEMS OF INTEREST

In the BBC's Sunday-afternoon TV feature "The Young Idea" on August 6, they had an Amateur Radio item which, as usual, was introduced with a lot of nauseating guff about "hams", and that. However, in the event it turned out to be a very convincing and well produced showing of a normal QSO on two metres between G8DYJ (Yeovil, Som.) and G8DXS (Harlington, Doncaster). In spite of the rather vapid comments of the interviewer, these two operators, both youngsters, did very well and they can be assured that the piece as presented on the air was a credit to them and to Amateur Radio.

* * *

The latest listing shows that the Nigerian Amateur Radio Society has a total of 59 members—of these, only 25 are actually in Nigeria, of whom but seven hold local 5N2 licences. The hard worker for this little Society is Eric Lomax, 5N2ABG, P.O. Box 68, Kaduna, Nigeria, who produces each month a *Newsletter* that would do credit to a much larger organisation.

* * *

While the Radio Amateur Invalid & Bedfast Club (RAIBC) is widely looked upon as a charity in the field of Amateur Radio, actually the organisers and

prime movers (G3LWY and G3ESR) prefer to regard it as therapeutic rather than charitable. In this, they are quite right. It is Amateur Radio that gives RAIBC members an active interest outside their four walls and makes possible personal contacts that otherwise they could not possibly enjoy. Hence, what Mrs. Frances Woolley, G3LWY (who has devoted many years to the RAIBC cause) welcomes is not so much charity but help, in whatever form it may be given—either in cash, good usable equipment (*not* old junk that doesn't work) and offers to become supporters by the mere undertaking to visit RAIBC members. Her address is: Woodclose, Penselwood, Wincanton, Somerset, saying what you could do to help and enclosing an s.a.e. Remember, she is a busy woman with her own family commitments.

* * *

The group down at Barry Tech. went in big on the matter of providing—as a "first-day issue" for philatelists—a cover franked Flathom Island to commemorate the original Marconi-Kemp experiments in those parts in 1897, to prove that wireless communication could be established across water. It was first intended (by the Ministry) that the stamp design would be at the 7½p value. Apparently, without any notice to anybody, except the Press on August 1st, it is now the 9p stamp that is to be the commemorative label issued on Sept. 13, in accordance with the notice on p.369 of our August issue.

* * *

The latest financial report of the Institution of Electrical & Electronics Technician Engineers—a little-known body now in the first few years of its existence—is very interesting. With a membership of about 14,000 (approximating to that of the RSGB) it shows a surplus of income over expenditure of £12,000+ for the year. Members of the RSGB, soon to be presented with their own annual accounts, might well ponder this, because these accounts will show another loss on operations, to be added to the large deficit of some £10,000 incurred over the last three years. The total RSGB loss will be in the region of £12,000, or just about what the I.E.E.T.E. has gained in one year's working! We would expect that some questions will be raised at the RSGB's annual general meeting in December—if there is time after the interminable presentations and picture-taking.

* * *

There has been some learned discussion recently on the phenomenon of weak voices of unknown origin being found recorded on magnetic tape—indeed, a book has even been published on the subject. Richard Shear-gold, G6RS, 32 Badminton Road, Maidenhead, Berks., SL6 4QT, is very interested in this topic and would like to hear from serious-minded readers who would care to join him in a research project. (Enclose an s.a.e. when writing.)

*Part III of "Frequency Modulation" is held over because of pressure on space.
It will appear next month.*

LOW VOLTAGE PSU

UP TO 500 mA AT VARIOUS
VOLTAGES, STABILISED

R. A. PENFOLD

THIS is a mains operated bench power supply, which gives six switched voltages ranging from 6-24 volts. The output is well smoothed, and stabilised. A maximum continuous current of 500 mA is available at all voltages. A current meter to monitor the output is incorporated. The unit has proved to be extremely useful when experimenting with transistorised circuits.

Circuit Design Considerations

The usual method of stabilising an LV supply rail is to use a zener diode, as shown in Fig. 1. This is a shunt-type regulator. At the operating voltage of the zener diode, and above, its impedance will be very low, while below the operating voltage it will exhibit a very high impedance. Thus, as the supply voltage is increased, the effective impedance of the zener will decrease, and the voltage across it will remain relatively unaltered.

While this system is perfectly adequate when low powers are involved, if it were to be used in a bench supply, a great deal of heat would be generated in the zener diode and the mains transformer would be constantly under full load.

The most common way around this problem is to use a circuit of the type shown in Fig. 2(a). This is a series stabiliser. R_x and $D1$ stabilise the base voltage of $Tr1$, which is connected as an emitter-follower. The emitter voltage of $Tr1$ will be about 0.65v. less than the base voltage, and will therefore also be stabilised by $D1$. An emitter-follower results in a very low impedance output, and can therefore supply the high currents required. The minimum possible load is placed on the mains transformer, and consequently a minimum amount of heat is generated. However, at low voltages and high currents, $Tr1$ does have to dissipate quite a high power.

One way of using this circuit in a multi-voltage supply would be to replace $D1$ by a series of switched diodes of various voltages, as in Fig. 2(b). But this is rather an extravagant way of doing things, and the circuit shown in Fig. 2(c) gives a continuously variable output which is equally well stabilised, and only a single zener diode is required. A voltmeter is needed to monitor the output voltage.

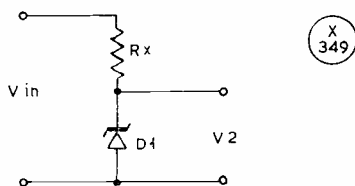


Fig. 1

Fig. 1. Zener diode used as shunt regulator.

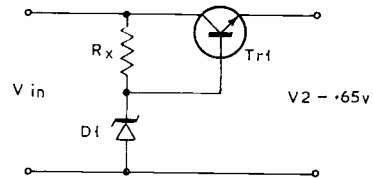


Fig. 2(a)

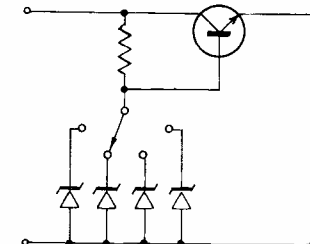


Fig. 2(b)

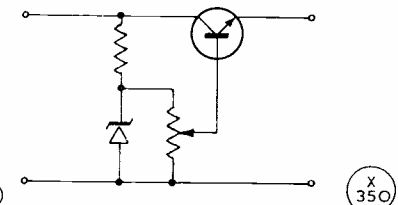


Fig. 2(c)

Fig. 2A. Emitter-follower used as series regulator. Fig. 2B. Multi-voltage regulator with an emitter-follower series regulator. Fig. 2C. Fully variable series regulator using single zener diode.

Final Circuit

Since the power supply which was required was mainly to be used in the development of battery-powered equipment, and occasionally for supplying small power amplifiers, etc., it was felt that a switched attenuator giving preset output voltages would be of more practical use than a potentiometer, as used in Fig. 2(c).

Fig. 3 shows the circuit which was finally devised. The output from the mains transformer, $T1$, is given full wave rectification by $D1-D4$, and the resultant pulsed DC is smoothed by $C1$, while $R1-D5$ give a stabilised voltage (27 volts). $Tr1-Tr2$ are connected as a Darlington pair. The extra transistor is necessary because the current gain of the 2N3055 (and most other transistors with a similar power rating) is just too low to allow it to be used alone.

Resistors $R2-R8$ form an attenuator which produces voltages at the base of $Tr1$, giving voltages at the emitter of $Tr2$, of 6, 9, 12, 15, 18, and 24 volts. $R2-R8$ should have a tolerance of 5% or better; $D5$ should also be 5% tolerance.

At very low output currents, $Tr1$ and $Tr2$ do not operate correctly, and the output voltage would be rather lower than at higher currents. $R9$ is therefore required in order to ensure that there is always sufficient output for correct operation of $Tr1$ and $Tr2$.

$M1$ is optional, and is used to monitor the output current. This was found to be a very useful feature.

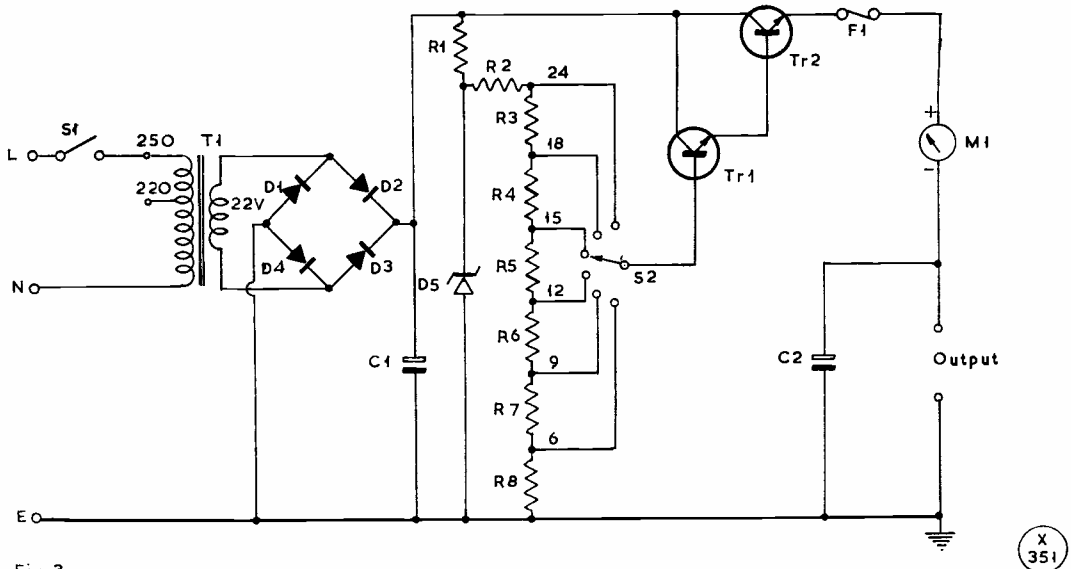


Fig. 3

Fig. 3. Circuit of the Unit discussed in the text.

Table of Values

Circuit of the PSU, Fig. 3

C1 = 1000 μ F, 50v.w.	T1 = 22v. 500 mA
C2 = 1000 μ F, 25v.w.	mains trans-
R1 = 680 ohms, $\frac{1}{4}$ w.	former
R2 = 270 ohms, $\frac{1}{4}$ w.	F1 = 500 mA
R3, R8 = 1200 ohms, $\frac{1}{4}$ w.	Tr1 = 2N2926, or similar
R4 = 470 ohms, $\frac{1}{4}$ w.	Tr2 = 2N3055, or
R5 = 560 ohms, $\frac{1}{4}$ w.	similar
R6 = 470 ohms, $\frac{1}{4}$ w.	S1 = SPST toggle
R7 = 560 ohms, $\frac{1}{4}$ w.	S2 = 6 way 2-pole
R9 = 47,000 ohms, $\frac{1}{4}$ w.	rotary
D1-D4 = 100 p.i.v. at 1A.	M1 = 500 mA f.s.d.
D5 = 27v. 1.5w. 5% zener diode	moving coil

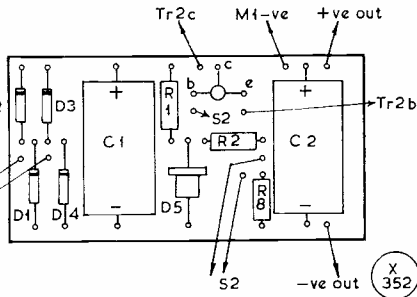
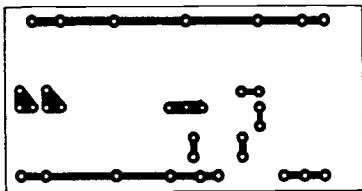


Fig. 4

Fig. 4. Suitable printed circuit board for the PSU, R3-R7 are mounted on switch S2.

prototype all the small components were mounted on a printed circuit board. For anyone wishing to use this method of construction, a diagram of this board is shown in Fig. 4.

A 10 x 7 x 2½ in. aluminium chassis, inverted and fitted with a base plate, which then becomes the lid, can be used as a case for the unit. (A mains transformer less than 2½ in. deep is needed if it is to fit in the case). Tr2 requires a heat sink, and the rear panel of the case can be used for this. As the case should be earthed, Tr2 must be insulated from the case by a mica washer. With any different method of construction, it should be ensured that Tr2 has adequate heatsinking. It should be mounted on a substantial piece of aluminium or copper, and well ventilated (preferably fitted on the outside of the case or chassis).

There is more than ample space for M1, S1, S2 and two output sockets on the front of the case.

Transistors other than the actual types shown will be suitable in the circuit. Any small current *n.p.n.* silicon type can be used for Tr1 (BC108, 169, etc.). Tr2 can be replaced by any *n.p.n.* transistor with a P_{tot} of 80 watts or more and a V_{ce} of 40 plus (BDY20, BD130, etc.).

The fuse should under no circumstances be omitted, as Tr2 could easily be destroyed if the output is short circuited for any length of time. C2 gives a final smoothing to the output.

Construction

The layout of the unit is by no means critical, and any desired method of construction can be used. On the

STRAIGHT RF AMPLIFIER FOR SEVENTYCEMS

DOUBLE-TETRODE PA WITH DRIVER STAGE

THE Mullard QQV02-6 double tetrode is of very modest dimensions, is exceedingly easy to drive as a straight-through PA stage, is readily available and exhibits excellent efficiency up to nearly 500 MHz.

In view of these compelling characteristics, a 70-centimetre transmitter power stage utilising one of these valves was constructed and has proved itself a very worth-while piece of equipment.

The unit was designed to be operated from an existing two-metre rig, but almost any 2m. o/p stage giving RF above a watt or so would be entirely adequate.

In order to utilise the QQV02-6 to its fullest capacity, it was decided to run "straight through." It was necessary, therefore, to employ a tripler stage between the 2m. exciter and this double-tetrode PA stage. The tripler stage was mounted on the same chassis as the PA.

Owing to the low drive requirements, an ECC91 was more than adequate to drive the output stage and this, acting as a push-pull tripler, was "unity coupled" to the PA grids. This method of coupling tends to be somewhat inefficient, but that was quite acceptable in this instance owing to the adequate over-drive available. (It also has the advantage that the number of tuning coils is reduced.) Should sufficient drive not be available, an improvement could be effected by ensuring that the grid loop resonates with the input capacity of the QQV02-6. This will give considerable gain.

Very low screen voltage is recommended for the PA valve, this being obtained from the HT rail *via* a dropping resistor, or from the modulated supply in the case of 'phone operation.

The final anodes of the PA are series tuned, as this ensures greater efficiency. The output capacitance of the QQV02-6 is, however extremely low, and should the half-wavelength lines prove an embarrassment (by reason of their physical dimensions) a quarter-wave line would still be acceptable.

Power take-off is obtained through a standard coax

outlet on top of the chassis, by the usual hairpin loop. A series capacity is provided here, C9, to cancel the reactance of the loop, and improve power transfer. Foam polythene TV-type coax is used and a material reduction in cable losses can be effected.

Pilot lamps can be used as a dummy load, but care should be taken to terminate the co-axial correctly, if the lead is more than a few inches long.

Construction

The unit can be constructed on a 24g. brass sub-chassis, bent in the form of a "U" 12in. by 2in. with sides 1in. high. The sub-chassis is contained inside a 5in. x 17in. standard chassis to provide an appearance match with existing two-metre gear. (This actual method of construction has no significance!)

The whole unit was built, and in fact, all the development work was done, using the brass sub-chassis alone.

All connections to the unit are brought out through the sides of the "U" *via* feed-through insulators, except those requiring by-passing, which are made with capacity bushes, the latter item being very effective owing to their low internal inductance. The brass sub-chassis was first drilled for the tuning condensers, and, using it as a template, corresponding holes made in the larger chassis. Using the tuning condensers as temporary bolts, the unit was assembled inside the large item and both the valve holes and attachments made in conjunction. This ensures that the items will mate. Only four bolts were required to attach the two chassis together, almost sufficient attachment being obtained from the various components.

The output of the existing two-metre Tx was 300 ohms, and this was fed to the push-pull input coil through two p.t.f.e. feed-through bushes, and connected to the coupling coil of insulated wire inter-wound amongst turns of L2. Drive can be varied by adjusting the linkage of this coupling.

The input coil L2 is tuned by a split stator micro-condenser, and bias for this tripler stage is obtained from

Fig. 1. Circuit of the 70-centimetre tripler-PA unit described in the article. The RF output valve is a Mullard QQV02-6, and the general layout arrangement is shown in the under-view photograph. Dimensions for the loop inductances are given in Fig. 2, and all values in the table herewith.

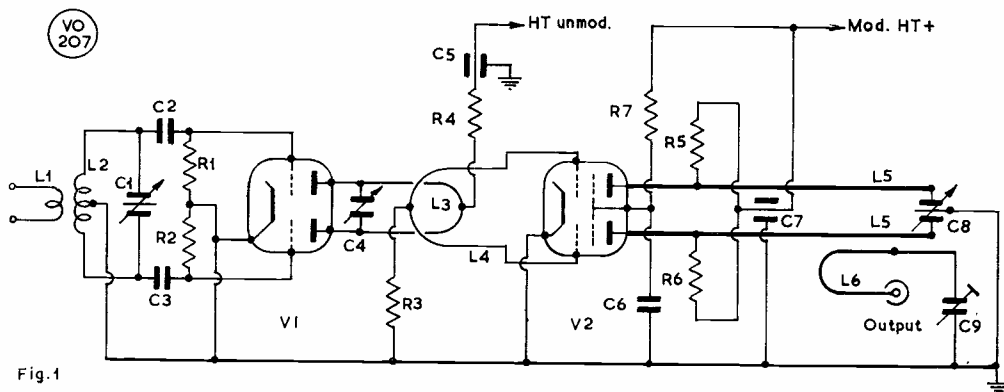
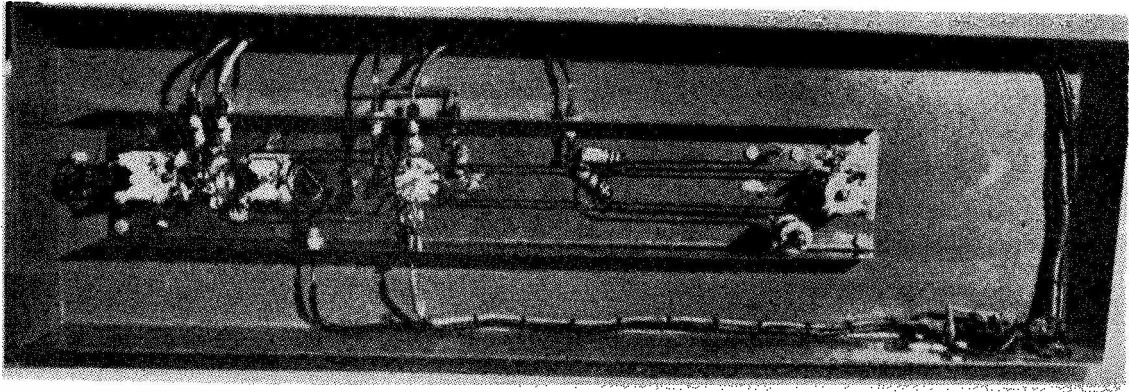


Fig. 1



the grid leaks, as shown in Fig. 1.

The anode circuit of this valve is a quarter-wave hairpin loop which, being very tightly coupled to the final grid, is rather broadly tuned. The tuning control for this stage is for similar pattern to C1, but most of the rotor and stator plates are removed. The modified condenser covers the tuning range quite adequately. The grid circuit following, being well damped by grid current, is broadly tuned by the input capacity of the PA valve, and has no tuning control. Screen supply for this stage is obtained *via* a feed-through capacity and dropping resistor R7 from HT +, note being made of the low HT rail voltage that is permissible.

The anode circuit of the PA is series-tuned by another microdenser, C8, the capacity of which might seem somewhat large to those unfamiliar with this mode of operation. The stator vanes of this condenser are at HT potential, and care should be taken to avoid them taking up any metal swarf, otherwise the HT will be shorted to chassis; the rotor is of course at earth potential, and therefore quite safe to handle from the top of the chassis.

The HT feed for series tuning is supplied at the voltage node and in this case the 2,200 ohm resistors

Under-side view of the 70 cm tripler-amplifier with the 430 MHz half-wave PA section on the right; the elements for L5 (see Fig. 1) are 6in. long. The valves are ECC91/QQV02-6, and the internal-chassis size for the unit is 12in. by 2in., with a 1in. drop—see text.

R5, R6, are acting as voltage droppers and also as RF chokes. This is necessitated because the HT rail allowed for the QQV02-6 is only 175 volts, but has the advantage that the “chokes” are truly aperiodic, and will obviate any ringing troubles. They also act as safety resistors, should an abnormally heavy HT demand develop.

The coupling loop is short and stiff enough to be fitted *in situ* without any additional anchorage, this being accomplished by wiring the hairpin directly between the output socket and the series capacity, which is sweated to the side of the brass chassis, giving excellent rigidity. The output loop is adjusted in place such that it runs parallel with the half-wave lines, with a spacing of

Table of Values

Fig. 1. Circuit of the 70-centimetre PA

C1 = Eddystone Type 551*, 25 x 25 $\mu\mu\text{F}$	C8 = Eddystone Type 552*, 25 x 25 $\mu\mu\text{F}$
C2, C3 = 15 $\mu\mu\text{F}$ disc ceramic	C9 = Philips 2-8 $\mu\mu\text{F}$ trimmer
C4 = Modified Eddystone* Type 551, 3-rotor 2-stator each section	R1, R2 = 33,000-ohm, $\frac{1}{4}$ -w.
C5 = .001 μF feed-through bush	R3 = 22,000-ohm, $\frac{1}{4}$ -w.
C6, C7 = .001 μF sub-min. ceramic	R4 = 1,500-ohm, $\frac{1}{4}$ -w.
	R5, R6 = 2,200-ohm, $\frac{1}{4}$ -w.
	R7 = 5,600-ohm, $\frac{1}{4}$ -w.
	V1 = ECC91, Mullard
	V2 = QQV02-6, Mullard

COIL DATA

- L1 = 3 turns insulated flexible PVC, interwound with L2.
- L2 = 4 turns 18g. on 3/8in. diam. former, centre-tapped.
- L3 = Hairpin loop, see sketch Fig. 2 for dimensions.
- L4 = Hairpin loop, see sketch Fig. 2 for dimensions.
- L5 = Half-wave line: 18g. tinned copper, spaced 5/8in. centres, 6in. long, toed in at V2 anode pins.
- L6 = Suitable hairpin loop for L5, see sketch Fig. 2.

Note: *The Eddystone variables suggested can of course be substituted by any other VHF low-loss types of similar capacity values.

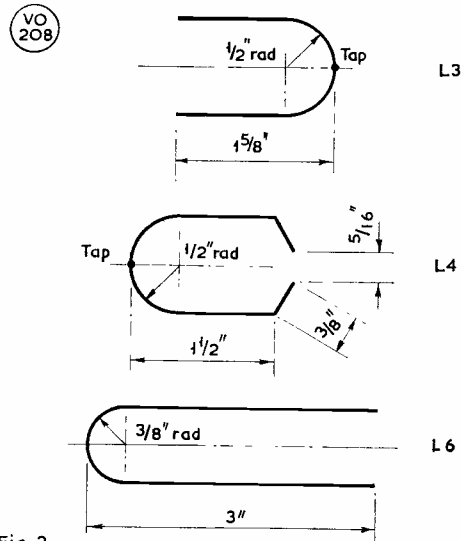


Fig. 2

Fig. 2. Dimension details for the hair-pin inductances for the 430 MHz tripler-PA unit. The wire specified is 16g. enamelled copper.

about a quarter inch.

Tuning and Setting Up

The unit was designed to be reasonably foolproof, as difficult or "fussy" adjustments are always a curse in the VHF field.

Anyone in possession of a grid dip meter for both 70 cm. and Two will experience no difficulty in setting up. The grid dip meter immediately available extends to 180 MHz only, and in consequence the 70 cm. section lengths were arrived at by cut-and-try. Having established suitable dimensions for the latter (as given in the Table of Values, p.417) no trouble should be experienced.

The input circuit was tuned right up "on the nose" using the grid dip meter. Check can be made using the grid current as an indication. The two grid leaks should be strapped together, and by-passed to earth, before being led away to a 0.5 mA meter, connected between their "cold" ends and chassis.

Using this method, connect heaters, and tune C1 for maximum grid current in V1. Open the bottom end of R3, and insert meter between bottom end and earth; be sure to by-pass the "earthy" end with a .001 μ F ceramic or miniature mica condenser. Tune C4 to give maximum grid current to the PA with HT on V1 only.

Solder R5 and R6 approximately in position, and clean a good inch of wire either side the connection.

A 60 milliamp. pilot bulb may now be connected to the output socket, and reduced HT applied to PA

plate-and-screen. Adjust C8 for maximum output, and having done so, carefully touch an insulated handle screw-driver along either line to establish a point where *no* flickering of the lamp occurs. This point is the correct *voltage* node, and may vary from model to model. Once this is found, the HT should be taken off, the resistors R5 and R6 resoldered at this point, and the HT reapplied. Unless the tapping point happened to be right first time, slight readjustment of C8 may now be necessary for maximum output. Check back over the previous stages (using the output lamp as indicator) to counteract any slight final trimming necessitated by removing the grid meters, and reinstating the grid leaks. In other words, after making a fundamental adjustment, tune all through.

The 60 milliamp. bulb can now be replaced by a 6.3 volt pilot bulb, and full 175 volts applied to the PA. It should be noted that this figure is the actual plate voltage, checked at the RF end of R5 and R6. A much more usual HT rail voltage is employed, but account must be taken of the drop in these two resistors.

The dummy load 6.3 volt pilot bulb should light quite brightly; a further increase in brilliance can be effected by trimming out the pick-up loop inductance with C9. The transmitter is then ready for testing on an aerial.

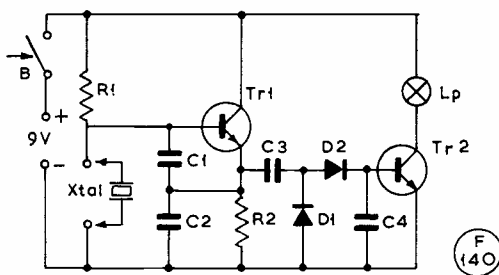
Field strength checks against a target field strength indicator show that the RF output is superior to much more ponderous gear consuming many times the current.

CRYSTAL CHECKER UNIT

THE device to be described has appeared in several Continental radio magazines without anyone claiming any particular originality for it. It is a useful gadget for the work-bench, is easy to build and has obvious practical value.

The circuit diagram requires little explanation. With the xtal in the holder and the 9v. supply connected as shown, the button "B" is pressed. If the xtal functions, an RF voltage appears at the emitter of Tr1, rectified by D1-D2 and applied as DC to the base of Tr2, which is then cut "on" and the lamp L lights. If the xtal is defective, obviously nothing happens.

The Colpitts circuit will oscillate readily with the



Circuit of the Crystal Checker. Values can be, for C1, C3, .001 μ F; C2, 100 pF; C4, .0047 μ F; R1, 33K; R2, 1K; D1, D2, 0A81; Tr1, Tr2, 2N708; Lp, 12v. 40 mA.

values of component shown, but for higher-frequency xtals it may be advisable to use a BF224 at Tr1 in place of the 2N708. A 6v. 40 mA lamp may be used in place of the 12v. type, and in this case a resistor of 220 ohms should be connected in series with it.

The tester can be made up in quite a small case with various types of xtal holder mounted and wired in parallel.

Two words of warning: Many xtals are designed to work into a capacity of 30 pF, which this is not, and so the frequency finally generated will probably differ slightly from that marked on the case. Do not, therefore, try and use the checker as a frequency standard. Secondly, the device gives no indication of activity of the xtal—the lamp is either on or off; it is essentially a go/no-go indicator.

A.H.D.

USEFUL NEW CATALOGUE

The firm of Tronic Sales, Ltd., Buckwell Place, Wellingborough, Northants., NN8 4LR, offers, for the price of 6p, an interesting catalogue of Electronic Accessories, listing such items as small parts, cabinet fittings, knobs, connectors, jack plugs and sockets in great variety, resins, fuses and fuseholders, etc., etc. One-off prices are given and there are useful discounts for quantity orders.

BRITISH AMATEUR TELEVISION CLUB

The secretary is now J. J. Rose, Pinchbeck Farm House, Mill Lane, Sturton-by-Stow, Lincs. The BATC journal is *CQ-TV* and their convention is on Sept. 16 and not as shown on p.366, August.



SHORT WAVE LISTENER
FEATURE

By Justin Cooper

RESONATING AN AERIAL—NEWS,
VIEWS AND QUERIES—THE
TABULAR MATTER AND HPX RULES

AERIALS again this time, but maybe from a different point of view. For the chap with the end-connected bit of wire, the best he can do is to get an ATU working, and make the absolute very best earthing system he can. Now, what about the chaps who run dipoles, or verticals, or the trapped-dipole, so-called—how can they be sure the aerial is giving of its best?

The object of a resonant aerial is to present a resistive load to the feeder at the desired frequency, that resistance to be the same as the characteristic impedance of the feeder used for the aerial. Feeders come in impedances of 50, 68, 75, 90 ohm coaxial types, and 75, 150, and 300 ohm flat-twin, and the aerial will be designed to one of these, the word "aerial" in this context including any matching section, harnesses or stubs on multi-element arrays.

In order that we may be sure we are all working correctly, the test gear needed is fairly simple, given we accept that we can only obtain indications and not measurements off resonance. We need to make up a suitable RF Bridge, such as the one at p.19.9 of the *Radio Communication Handbook*, or the "Impedance Bridge for Coax Lines" featured on p.562 of the 1971 *ARRL Handbook*. A Reflectometer or "Monimatch" of the type popular with the transmitting clan is not very suitable as it needs a transmitter to drive it. We also need a Grid Dip Oscillator or signal source.

Let us assume you have made and erected a coax-fed dipole for 14 MHz. Couple the bridge to the GDO through a short length of coax terminated in a two-turn link which slips over the GDO coil. Plug the aerial into the other socket of the bridge, which we are assuming has been calibrated by means of resistors as dummy loads, beforehand. Checking always with the receiver—and frequency-meter if necessary—measure the impedance on the feeder at 25 kHz intervals from 14 to 14.4 MHz; the receiver should spot any "pulling" of the GDO due to loading. Plot the impedances on a graph against frequency, on which you have drawn, in red, lines to represent 75 ohms, 150 ohms and 37.5 ohms, these being the values for 2:1 VSWR (on a 50 ohm system, your lines for 2:1 VSWR would be at 100 and at 25 ohms, and so on). You may find that the area between the 2:1 lines covers only 14.0 to 14.1 MHz within the band, but includes 13.9 MHz upwards; this means your aerial is low in frequency and needs a bit trimming off, equally at each end of the span. Now try again; your plot should show the point nearest the 75 ohm line around mid-band, and as much as possible of the band within the 2:1 limits. Once you have done this, you have your simple dipole tuned up. However, you may have some

form of "matching circuit" up at the top of the feeder where it joins the aerial proper—if this is so, you now start adjusting the matching device, to obtain a situation where the mid-band SWR is not just nearest to 75 ohms, but actually touches it. The latter adjustment may interact a trifle with the first one, so keep trying till you get the best compromise. It may be found that in order to get the greatest bandwidth between the points of 2:1 VSWR—our outer lines on the graph—some compromise is necessary in the matching circuit.

A final point. You cannot expect to get a large bandwidth from a dipole. A maximum frequency excursion of five per cent is about right, unless one is prepared to forget it is a dipole and use it in conjunction with a suitable ATU.

Talking of feeders, another point to bear in mind is that the VSWR you see in the shack may be very much less than the VSWR as measured at the eye of the aerial, the difference being entirely due to the effect of losses in the feeder—so don't "swear by" that old length of coax you've had by you since 1945, until you have tried replacing it with a bit of good new stuff!

The Letters

Most of the preamble this time was inspired by the long and thoughtful letter from *M. Newsome (Stillington)*, covering various topics. Perhaps the two most important are his proof of your old conductor's oft-repeated assertion that an attenuator is more value than a preselector. As Malcolm properly puts it, it is *signal-to-noise* ratio that matters—just amplifying both signal and noise to a higher level makes for greater likelihood of additional spurious responses becoming evident. His other one is a point over which your conductor has been somewhat chary of commenting, namely the deliberate jamming tactics carried on at the top end of Eighty. Not so obvious is the question of what to do about it—the answer is to keep a log of the deliberate jamming over weeks, make

NEW HPX LADDER

(Starting January 1, 1972)

SWL	PREFIXES	SWL	PREFIXES
PHONE ONLY		PHONE ONLY	
O. L. Cross (Bexleyheath)	499	P. Barker (Sunderland)	323
M. Kitchener (Hitchin)	456	M. North (Bristol)	317
N. Gerdes (Basingstoke)	427	K. M. Rogers (Ullesthorpe)	312
P. Newman (Thame)	395	R. Smye (Parkgate)	302
A. West (Herne Hill)	385	A. K. Milner (Grantham)	252
A. Williams (Stockport)	377	W. McFaul (Londonderry)	243
Mrs. R. Smith (Nuneaton)	372	M. Winiberg (Penzance)	230
R. Philpot (Shenfield)	364	R. Jones (Caerphilly)	216
B. Stone (Penzance)	358	R. C. Jones (Reigate)	210
J. Gravel (Burry Port)	338		

Listings include only recent claims. Starting score, 200. Rules as for HPX—see Panel.

tape-recordings of the goings-on, and send them all to the Ministry. It is understood that at least ten people are known to have acted in this way already—the more the merrier!

J. Cowan (Rochford) seems to be getting on quite well with his Marine Radio training course, and may be at sea by the early part of next year. John wants to know just what a phone-patch is—this is an operating procedure which is legal in the States and one or two other places (but *not* in the U.K., for amateurs) which connects the rig to the telephone, usually by way of a hybrid transformer so both send-and-receive are catered for. Usually, the operator has to be at the rig and manually switch from “receive” to “send” or back, but some can be used automatically in conjunction with the Vox.

The Trio 9R-59DE and R.219 are the receivers in the shack of *M. Cuckoo (Herne Bay)*; Mick has been going through all his old logs and finds he can now make a claim for the All-Time. Incidentally, there seems to be some misunderstanding on the part of one or two readers about the 1972 Table—the *maximum* score on that one is 500, and at that point the entry is automatically transferred to the All-Time; that is the time to add to the 1972 total all the ones heard before then, if you are an old-timer to that degree.

B. Stone (Penzance) has moved, to a house whose previous owner was also an SWL—hence, he has landed a CR-100, Joystick and some other accessories to add to the shack collection, which already included a KW Viceroy ready for “licence day.”

D. J. A. Noakes (Cranbrook) now has a 9R-59DS, to add to his Murphy 62B, Pye Seafarer, not to mention a Halson whip and Emsac converter into the car-radio for Top Band. At the moment, Sam’s main activity is reading through ten years of back numbers of SHORT WAVE MAGAZINE! *Phew!*

S. Wessely (Sheffield) has been all but QRT since last Christmas, partly through 0-Level studies, and partly due to the EC-10 playing up; however, both problems are things of the past so for a while Simon can enjoy life.

On to *J. J. H. Sparkes (Trowbridge)* who, here too, seems to be having some trouble with the receiver—a 9R59DS which has been crackling violently on all bands but particularly 1.8 and 14 MHz, to the extent that he has returned it to the agent for rectification—the aerial meanwhile coming down for overhaul. One hopes this was in fact the cause of the trouble, and not the appalling amount of static which has plagued the bands of recent weeks.

Another one with Rx troubles! *H. Alford (Burnham-on-Sea)* has sent his Eddystone EA-12 back for a going-over so for the moment he is rather stuck with a home-brew receiver which has determined it will not play. Taking the philosophical view, SWL Alford reflects that mending the beast will at least while the time away!

What the heck is an “AA3NE” demands *C. Verstage (Old Basing)* among other questions—certainly not an amateur, probably one of the American MARS stations, as operated by amateurs over there, for traffic-handling and similar purposes.

Like father, like son. *R. Smye (Parkgate, Wirral)* must have got the bug from his father, who is having

HPX RULES

(1) The object is to hear and log as many *prefixes* as possible; a prefix can only count once for any list, whatever band it is heard on.

(2) The /M and /MM suffixes create a new series; thus G3SWM, G3SWM/M and G3SWM/MM all count as prefixes, and, where it is known to be legal, /AM also.

(3) Where a suffix determines *location*, the suffix shall be the deciding factor, thus W1ZZZ/W4 counts as W4. Where the suffix has no number attached, *e.g.* VE1AED/P/SU, VE2BUJ/P/SU they are arbitrarily counted as SU1 and SU2 respectively, and the same holds good for similar callsigns.

(4) When the prefix is changed both the old and the new may be counted; thus VQ4 and 5Z4 both count.

(5) The object is to hear *prefixes*, not countries, thus there is no discrimination between, say, MP4B- and MP4AK- which count as one prefix.

(6) Only calls issued for Amateur Radio operation may be included. Undercover and pirate callsigns will not be credited, nor may any MARS stations be claimed.

(7) G2, G3, G4, etc., all score separately, as do GW2, GW3, GW4, etc., and in the same way K2, W2, WA2, WB2, WC2, WN2, all count separately even though they may be in the same street.

(8) Send your HPX list, in alphabetical and numerical order, showing the total claimed score. With subsequent lists, it is sufficient to quote the last claimed score, with the new list of prefixes, and the new claimed total. Give your name and address on each sheet, to “SWL,” SHORT WAVE MAGAZINE, BUCKINGHAM, if possible to arrive before the SWL deadline for that particular month.

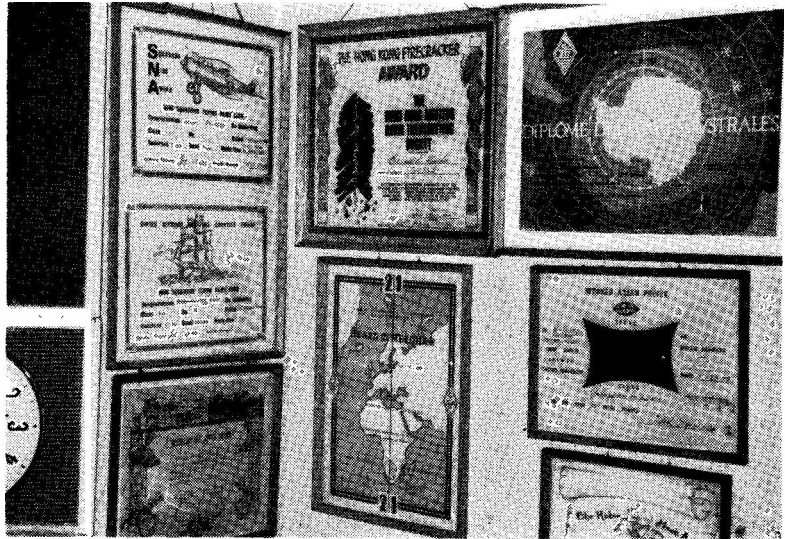
(9) Failure to report for two consecutive listing, *i.e.* four months, will result in deletion from the Table, although there is no objection to a “Nil” report to hold your place.

(10) **Starting Score 200.** Phone Table is mixed AM/SSB, with a separate CW Table. No mixed Phone/CW Table, nor will AM-only or SSB-only entries be accepted.

(11) Lists will be based on those shown in the current *Short Wave Magazine* list of Countries and Prefixes, dated January 1972, and with the current edition of the *DX Zone Map*.

NOTE: The *DX Zone Map* costs 85p and includes the latest Prefix List—see p.365, Aug. *Prefix List* alone, by countries, prefixes and zones, alphabetically both ways, costs 23p. Prices are post free. Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, SW1H-OHF.

B. F. Hughes, 65 Flag Meadow Walk, Worcester, holds more than 100 SWL awards—remarkable! Here are just a few of them.



fun with a Joystick and KW-2000B. Good!

K. M. Rogers (Ullesthorpe) seems to have divided his time between 20, 15, and 2 metres. Ken has a young son who has to have a share of the rig, so they now have a dual-outlet box for the phones—the youngster is just 3½ years old, which makes him about our youngest ever!

All this wanting to know! *R. Philpot (Shenfield)* is curious about the meaning and derivation of HPX; H for Heard and PX for Prefixes—in a similar manner the transmitting chaps have an equivalent called WPX.

Is C31FK genuine, wonders *M. Kitchener (Hitchin)*—yes, in Andorra. Mick finds himself still without a ZL in the log, and reckons he will have to get up a little earlier.

E. W. Robinson has been on the splurge in *Bury St. Edmunds*, to become the proud owner of an FR-50B. Among his collection of Prefixes this time, we note he has been catching up on the odder and rarer Europeans.

Who is Alan, who is he? Alan comes from Spring View and has controversial views on allowing G8/3's "who would do anything for a new band" to use Four. To which your J.C. would reply "Anything? It's easy enough to book a Morse Test. That will give you *lots* of new bands!"

P. Barker (Sunderland) has added a Codar T.28 to his Trio JR-310 and ATU—and there are serious thoughts of building a two-metre receiver.

Most interesting—*A. Glass (Plymouth)* has been listening, he says, on 21 kHz! It must be all these receivers—Bert has now got the latest JR-310 in the shack. On a different, and more serious note, he comments on having to sit for an hour or more at a time on a DX pile-up even to hear the DX station for a moment, and the confusion caused by the DX operators who use BK and omit their own call-sign for most of their QSO's. True, of course, but to work 'em at a rate of more than one a minute is impossible on SSB and very hard on CW unless the DX operator cuts his over-length absolutely to the bone, and the pack does the same.

A cry for Help! *N. Bingham*, at 87 Hawthorn Avenue Carrickfergus, Co. Antrim, has a Pye Cambridge, high-band model, and would appreciate hearing from anyone who can give him data on conversion to Two Metres—he has the original circuit as a starter. Letters on this to Noel, direct, please.

* * *

O. Cross (Bexleyheath) was at Bognor Regis for his holiday and managed to make contact with the lads at Chichester. Owen also mentions one of the few "open" SWL contests, namely the Cray Valley affair, which this time is down for 1800 on September 23 to the same time on the 24th, times GMT or Z of course. Details from, and entries to, R. A. Treacher, 392 Rochester Way, Eltham, London, SE9-6LH.—and, as an incidental, would that other SWL contests would deprecate the practice of sitting on a powerful signal and logging one after the other of his contacts; Cray Valley reckon that twenty of these on the run is time to cry "enough," and any more in the string won't count. After all, there is a knob on communications receivers marked Tune.

A note from *G5BB (Potters Bar)* finalises the story of JY4AH/AM, as he now signs; Alf had a QSO with him and gets the airborne gear to be the Collins 618T/2 transceiver, and the fin type aerial of the same concern, six feet long and fed through an ATU.

For the past three months, *J. Dunnett (Mons)* has been using an 0-V-1 receiver, until his own came on from Luton—and now he has the AR-88, it is being pressed into service to take the BBC World Service, as the local MW BC stations of the BBC are all inaudible there. The letter includes Jim's last scoring from Luton, and says he will not bother with phone from Mons.

A pat on the back from *T. Rootsey (Ilford)* to his long-suffering XYL for typing out his scores and sorting out all the rough notes into a fair copy for inclusion in HPX—we second the motion, as Terry's entry is always clear and readable. On a different line, Terry has pro

posals for revision of HPX, carefully thought-out ones—so much so that we won't comment in the piece but will meditate with a possible view to action.

M. North (Bristol) finds himself shortly moving to Bath which pleases him not; but on the other hand the new place is 500 feet a.s.l., which should be good in the VHF context, so a beam, converter, and mast are in the offing, although all of them will have to go in to the loft space.

* * *

An unusual sort of query comes up from *R. Carter (Blackburn)* who heard OL8DYD on *Twenty!* Although the OL call is only available on Top Band and Two, perhaps the OK's like ourselves, have some local ruling that allows these calls to be used on, say, club gear, under supervision—if not, then we would regretfully have to write him off as a pirate. Perhaps someone has more detailed knowledge of the OK licensing arrangements and could clarify?

D. Rodgers (Harwood) has made considerable progress with his CW—he got up to about sixteens, and then made that vital discovery that as soon as you start to copy “in arrears by a word” the speed goes up still more, even though you now have time for dotting i and crossing t.

On to *P. L. Newman (Thame)* who has been finding all the bands suffering the summer doldrums, although Top Band has had its good moments, such as GM3VPE/P from Sutherland—a good 500-mile haul for daylight, but in evening time.

A first entry comes in from *W. McFaul (Londonderry)* who uses a home-brew receiver covering just our bands and no more; it was completed about five months ago, as a first building project. The only limitation now is that the aerial is not quite all the heart could desire.

Despite his noise problem on the LF Bands, which seems to get worse rather than better, *H. M. Graham (Harefield)* still gets on all bands. Ten yielded only 9G1BY, a hefty signal on anotherwise dead band. On Fifteen the catch of the month was undoubtedly VQ9MC



“... manual for this Rx cost me 30p plus £2 packing and postage ...”

HPX LADDER

(All-Time post war)

SWL	PREFIXES	SWL	PREFIXES
<i>PHONE ONLY</i>		<i>PHONE ONLY</i>	
S. Foster (Lincoln)	1269	D. A. Shepherd	
R. Shilvoek (Lye)	1240	(Brierley Hill)	635
J. Singleton (Hull)	1129	A. Judge (Bishops Stortford)	621
T. Rootsey (Ilford)	1123	W. B. Taunton (Meopham)	618
A. W. Nielson (Glasgow)	1122	B. Thomas (Pontefract)	615
J. Fitzgerald		Mrs. S. Singleton (Hull)	615
(G. Missenden)	1062	J. Woods (Woodbridge)	590
K. Kyezor (Perivale)	979	C. Lancaster (N. Ferriby)	571
I. Brown (Newtonabbey)	954	J. R. Cowan (Rochford)	565
G. S. Taylor (Rugeley)	950	K. C. Webb (Reading)	553
W. Edwards (Tadworth)	938	C. K. Verstage (Old Basing)	547
A. Mercer (Wigan)	914	J. Iredale (Liandudno)	545
R. Carter (Blackburn)	909	J. Dunnett (Luton)	541
M. Quintin		R. Bence (Cardiff)	538
(Wotton-u-Edge)	882	J. W. Jarvis	
H. Alford		(Rickmansworth)	533
(Burnham-on-Sea)	857	M. Cuckoo (Herne Bay)	529
B. Hughes (Worcester)	856	L. Thomas (Castletford)	518
D. Rodgers (Bolton)	847	H. Stephenson	
N. Henbrey (Northiam)	806	(Newcastle-on-Tyne)	509
N. Askew (Coventry)	798	L. A. S. Poole	
S. Proud (Letterston)	791	(London, N.21)	504
M. Fisher (Bradford)	778		
K. Plumridge		<i>CW ONLY</i>	
(Southampton)	770	A. Glass (Plymouth)	852
J. H. Sparkes (Trowbridge)	764	J. Dunnett (Luton)	684
G. W. Raven		G. Proud (Letterston)	640
(London, S.E.13)	758	W. B. Taunton (Meopham)	539
H. M. Graham (Harefield)	713	J. Halden (Newcastle, Staffs)	492
W. Bingham (Carrickfergus)	708	T. Rootsey (Ilford)	379
M. Williams (Sleaford)	704	T. Rootsey (Ilford)	379
A. Holland (Malvern)	702	A. Rowland (BFPO 53)	374
P. L. King (Emsworth)	693	R. Mortimore (Cardiff)	306
E. Robinson		D. Rodgers (Harwood)	302
(Bury St. Edmunds)	687	D. J. Lockwood	
E. Parker (Hove)	685	(Sharlston Common)	212

Starting score 500 for Phone, 200 for CW. Listings include only recent claims. Rules for HPX—see Panel. DX Zone Map and latest Prefix List, 85p post free, from Publications Dept., Short Wave Magazine, 55 Victoria Street London SW1H-0HF.

in the Seychelles for a new country, with the 14 MHz top spot going to 5V7YH. As for 40m, there was reward there too, by way of W90TF/TF, who provided a new country and zone.

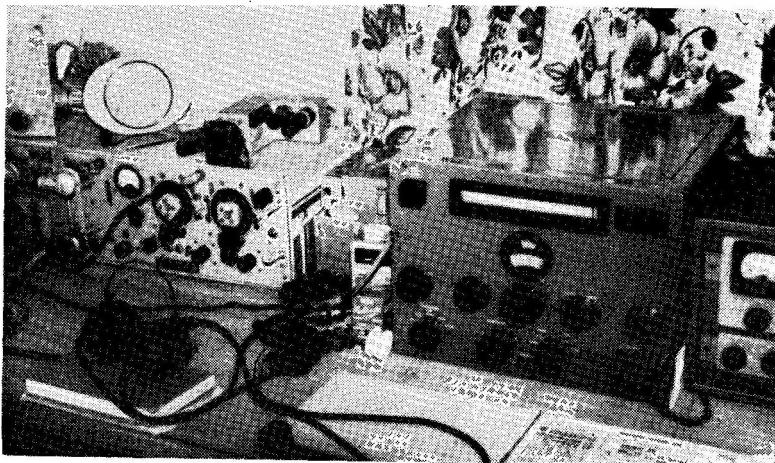
A. West (Herne Hill) has “found” 144 MHz, and by the sound of his letter, your J.C. suspects he likes it so much he will stay on the band.

R. B. Ratcliffe (Rugby) falls into an odd category, as, although he is licensed for all bands as G4ACY, the Tx gear will only cover 160 and 80 metres. Hence, most of the time is spent SWL'ing on the HF's with a 9R-59DE receiver. Among the catches, we notice 9M8WUW on Fifteen, and on Twenty, FM7WD, VK, HK's, JA's, HC1EH, 9K2AM and 9K2CM/W2, PY's on CW and various others—glad to hear the CW mode is still being used!

No rig on holiday, bewails *C. Lancaster (North Ferriby)* who as a result is finding prefixes hard to come by. On a different tack, Chris amused your old scribe with his description of his reaction to a thunderflash during an ACF camp—takes J.C. back to his soldiering days, indeed!

On now to *A. Judge (Bishops Stortford)* who has all but completed his converter for 144 MHz, and has a dipole up ready for the locals, who are pretty active on the band. However, Tony also has it in mind to “do something” about the aerials, with things like

The SWL station operated by N. Gerdes, 4 Elmwood Way, Basingstoke, Hants., who started with the 19 Set Rx (left) and has since progressed to a CR-100 (centre) with a G.209 (edge immediate right) as main receiver.



Quads and Delta-Loops in mind.

A. W. Nielson (Glasgow) has finally sent his KW-77 off to the makers for repairs, and has a medal for their speedy response—it left Glasgow on Thursday by Securicor and was back there by the following Tuesday! However, the aerial situation is still not sorted out, as there are thoughts of moving QTH to be considered and it hardly seems worth the effort.

Well, well! J. Fitzgerald (Gt. Missenden) only threatened to go on Two a year ago—and here he is actually operational and with 38 counties and 7 countries already booked in! What is more, John threatens to join the R.A.E. class this autumn, which should at least keep him out of mischief during the week in North London.

A little note on the whys-and-wherefores comes from W. B. Taunton (Meopham), who spends an hour in the morning and another in the evening at the rig; he heard, in the period under review, 36 new ones in the morning, and 45 in the evening, and the band breakdown shows 39 on Fifteen, 32 on Twenty, and 10 on Eighty Metres.

L. A. Poole (London, N.21) has a problem—he is thinking about a receiver for the shack, and is torn between the KW-202, the Yaesu FR-400, and the FR-50 from the same stable—it all boils down to a question of you pay your money and you take your choice!

The Others

Space having run out on us—again!—we must end by acknowledging all those who sent short notes of scores only, or whose letters were not mentioned in the body of the piece. These include R. Prosser, Harwich; W. Edwards, Tadworth; M. Quintin, Wotton-u-Edge; G. W. Raven, London, S.E.13; N. Gerdes, Basingstoke; B. Thomas, Pontefract; P. L. King, Emsworth; B. Hughes, Worcester; M. Fisher, Bradford, 9; L. Thomas, Ferryfryston; Mrs. R. Smith, Nuneaton; Mr. and Mrs. Singleton, Hull; N. Askew, Coventry; J. Halden, Newcastle, Staffs; D. A. Shepherd, Kingswinford; R. Shilcock,

Lye; J. Woods, Woodbridge; T. Gravell, Burry Port; and A. W. Nielson, Glasgow.

All that remains now is for your old J.C. to say that he waits eagerly for the next lot of mail in to the piece, with its store of news, laughter, solemnity or whatever, not to mention the HPX scores. The deadline for all this is to arrive by first post on **Tuesday, September 26**, addressed as ever to "SWL," SHORT WAVE MAGAZINE, BUCKINGHAM.

CALLSIGN ALLOCATIONS

From the latest issue of *Region I News*, we get it that in future the Sultanate of Oman will use callsigns in the A4A-A4Z prefix series, and Bangladesh will have S2A-S3Z. The South Vietnam authorities have recognised XV5AC as an amateur station permitted to work world-wide—so this clears up that situation.

AUGUST DISTRIBUTION DELAYED

Because of a "sympathy-stoppage for the dock workers" at one of the main London depôts, bulk delivery of the August issue of SHORT WAVE MAGAZINE was refused there for two days. As this hold-up ran inconveniently into the week-end July 29-30, there was a cumulative delay to their retail branches of at least four days. This meant that we were assailed by letter, telephone and telegram accusing us about the alleged "printing delay", apparently the excuse given by some bookstall managers for an inability to deliver ordered copies. (Marvellous, isn't it!) Needless to say, the fact is that there was no delay here and the August Magazine was printed off and ready to go, dead on time, as it always has been for the last 20 years. If you cannot get a copy locally when you expect to see it, the alternative is a direct subscription (£3 for 12 issues, first-class posting) or a 25p P.O. to us a couple of days before publication, always the last Friday in the month. Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, SW1H-0HF.

OPTO-ELECTRONICS

NOTE ON SOME INTERESTING DEVICES

DIGITAL display meters and frequency counters are the "in" things these days. Many of them use the well-known "Nixie" tube as the display element, but this involves a high (250v.) supply in addition to the low-voltage lines for the associated IC's and transistor circuitry. A more elegant solution is, therefore, to make use of the opto-electric devices which are now available to the amateur at reasonable prices. These may be classified into two main groups—light-emitting semiconductor diodes (LEDS) and liquid crystals.

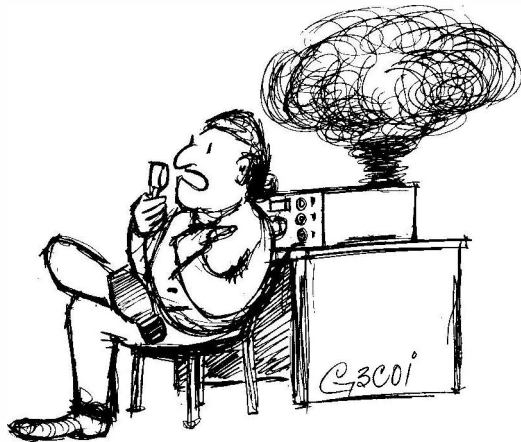
LEDS

LEDS are *pn* junction diodes that radiate in the visible, or in the infra-red, portions of the spectrum when biased in the forward direction. There are three main types: Gallium arsenide phosphide (*GaAsP*) diodes emit visible light, while gallium arsenide (*GaAs*) diodes emit near the infra-red, and the light is invisible. Both of these types emit from the junction and the radiation appears in the form of a thin, flat beam. Gallium phosphide (*GaP*) diodes are transparent, and emit visible red light in all directions.

These LEDS may be used, therefore, either as sources of light for detection by semiconductor sensors, or as displays in digital meters. The *GaAs* diodes, in particular, have many applications where a linear transfer is required, since their radiation corresponds closely to the response curves of silicon photo-diodes and photo-transistors. For display purposes, single diode, visible light emitters, are used for panel lamps and indicators, and arrays of diodes for digital numeric and alphanumeric readouts.

Liquid Crystals

Similar effects are achieved with liquid crystal displays which are available in the same numeric and



"... running the rig rather gently now as it's just out of guarantee..."

alphanumeric configurations as the solid-state modules. The display elements each comprise a thin layer of normally transparent liquid crystal material between two electrodes. When an electric field is applied, the material becomes turbulent, reflecting and scattering ambient light in order to produce visible displays even in high ambient light environments. They have the advantage of extremely low power requirements.

Optically Coupled Devices

These devices incorporate both radiation source and sensor in a single package and so provide means of switching between two circuits which require to be electronically isolated from one another. They are thus suitable as replacements for reed relays, among other applications. The radiation source is normally an infrared light emitting diode and the sensor a photo-diode, photo-transistor or photo-Darlington, with a typical insulation between input and output of 20,000v. at 1 pF.

Cost

The expression "reasonable prices" has been used and as a guide to what *is* reasonable, the Minitron 7-segment indicator Type 3015F is £2 compared with the £1 for the Nixie tube, but against this must be set the provision of HV power supplies for the Nixie, whereas the opto-electronic devices may, in most cases, be run from the same supply as the IC's.

A.H.D.

REGION I HF BAND PLAN

The internationally agreed Band Plan for Region I can be summarised as follows, all in MHz: For CW only, 3-5-3-6; 7-0-7-04; 14-0-14-1; 21-0-21-15; and 28-0-28-2, with spot frequencies for RTTY, plus or minus a few kHz, of 3-6, 7-04, 14-09, 21-10 and 28-10. The segments 3500-3510 kHz (CW) and 3790-3800 kHz (Phone) are specified for inter-Continental or DX working.

Phone sectors are effectively the remainder of all these band areas, *i.e.*, 3-6-3-8, 7-04-7-10, 14-10-14-35, 21-15-21-45 and 28-20-29-70 MHz.

It would be a fine thing if all AT-stations in Region I, which covers most of Europe and Africa, would keep within these limits, agreed by the 40 member-countries concerned.

We certainly endorse this Plan as being equitable, practical and in the interests of all concerned.

S. G. BROWN and RACAL ELECTRONICS

The Communication Division of S. G. Brown, Ltd., a firm well known and long established as manufacturers of headphones and microphones of the highest quality, has been acquired by Racal Electronics, Ltd., Bracknell, Berks., also much concerned in the communications field. The S. G. Brown profits for last year amounted to £107,000 and the consideration for purchase is about £1m. in cash, from the Racal Group's own resources. (These figures show how strong both firms are in the electronics field.) They will continue to operate from their existing premises.

AS was to be expected, many operators have commented on the results they achieved during the July openings—and some very fine DX there was!

For the sidebanders on two metres, the choicest morsel was probably LA6OI/Z who was at 5 & 9+ over much of the country on July 16/17 and still at good strength in the North by July 21. (For those who haven't met a /Z from a Scandinavian station before, it has the same significance as our /A.) The Norwegian mentioned that the next time he goes to Larvik on holiday he will take some high power 70 cm. gear with him. He could receive U.K. stations, but a couple of watts output prevented him from making other than crossband QSO's. G8CIW (London) reports contacts with G18AYZ/P in Co. Antrim and with GM4AFN/P on July 19; as late as July 29 he was working GM8BWW/P (Moffat) and GM3NJW/P in Roxburgh. An unexpected contact for your scribe occurred on the morning of that same day while he was minding his own business chatting up a few of the local French lads, and was called by HB9AOF/LX (QRA DJ11f), which pushed up the country score for this year by one. The week July 13/21 saw GM, PA, DL, OZ, EI, F, GW and LA in the log of G3NHE (Sheffield), with the best DX as SL6AL in QRA HS33e, a distance of some 1,100 kms.

On AM/FM, GM8BRM/P up in Aberdeenshire was a consistently good signal in the South for much of the period, as was GM3WIG/P, who was running just 1½ watts from Roxburgh, a fact which gladdened the heart of G8AGL in East Yorkshire, whose locals were beginning to comment about his persistent calls for a GM contact. GM3KML/P had over 20 QSO's with PAØ while running 1½ watts only, and GM3YOE/P (Eyemouth) had much the same sort of result running comparable power.

Gary Parkhurst, G3TOZ, settled in Marsham, Norfolk, after his return from VE, had quite a ball on Saturday, July 15, including QSO's with LA9T, GM8BRM/P and LA7AJ. G3XSK notes that LA9T was so well received in East Anglia that it looks as if he qualified for a "Norfolk & Suffolk award" in some two hours of operating.

G3BW (Whitehaven, Cumberland),

having worked his first Continental station quite recently, added to the countries score for the Tables by knocking off a few OZ contacts on July 20/21, but couldn't quite make it with the SM's, and a *leette* of the smile on his face disappeared when he heard his friendly rival GD2HDZ working one. Bill noticed what appeared to be a considerable amount of ducting at this time, as stations only a few miles apart were copying the DX at widely differing signal levels.

G3PQF in Hampshire seems to have heard a lot of the DX but was unable to work it (TVI!) and puts in a plea for those Northern stations who invariably tune from the "top end down," to spare a thought for the dawn-chorus of rock bound stations at the LF end of the band, and to vary the tuning sequence accordingly. G3OHH (Mow Cop, Staffs.) reports that the openings to Scandinavia between July 19-21 were only spasmodic, lasting perhaps a couple of hours at a time, but this did not prevent G8BCG in Manchester from making a solid contact with a PAØ in QRA EQ65d, which is a fair haul.

Four Metres

First indication of an improvement in 4m. conditions was the enhanced reception of the Sheffield and Sussex beacons, in the South and North respectively, on July 9 (GB3VHF and GB3GEC were at normal levels at the time). GD2HDZ made it with G3RWM (Birmingham) and with G3VQS (Southport) that day, and G3HBG in Surrey was also copied well in the Midlands. GC3WMR/P from Jersey also made some good DX contacts late in the month, among the best being with G3TSJ (Oldham) and G3ZVK (Dudley).

Generally speaking, however, Four Metres did not yield the good DX experienced on the higher frequencies.

Seventy Cm.

This band also showed quite a lift for much of the time. As early as July 13, GB3GEC was at 5 & 7/8 with G3OHH (Staffs.) and GB3SC was 5 & 9 in the South. The GD2HDZ contact on this band with OZ9SW was certainly a honey, as were the contacts between GM3UAG (Aberdeen) and G8BYV in Norfolk and G8ATS and G3BCA, both in Suffolk. G3BYV also made it with

VHF BANDS

A. H. DORMER, G3DAH

OZ9SW. The extract from the G3BYV log shows contacts with Derby, Suffolk, Essex, Kent, London, Cambridge, Leicester, Northumberland, Yorks., Lincoln, Notts., Aberdeen, Flint, Beds. and Worcs.—which gives a pretty fair indication of conditions.

GM8BDX (Duns, Berwick), made his first-ever 70 cm. Continental contacts with PAØ and DL. About the same time that he had his best (OZ) contact, GD2HDZ also had his shortest with GD8DBO/P, and the interesting point here is that as Arthur is the only GD regularly active on 70 cm. in the Island, he had to wait for a visitor before he could work GD!

23 Centimetres

This band also exhibited enhanced propagation with GB3LDN copied at good strength over a wide area. For example, G3BYV in Norfolk reports reception at 5 & 9 for several evenings over the period July 12-18, during which he had QSO's with seven different counties. Incidentally, he would like to arrange skeds with any GM station as he has a good take-off in that direction and, given a bit of height and adequate e.r.p. from the North, he reckons he might make it.

G3COJ was able to get several accurate measurements of the GB3LDN beacon frequency, and confirms it as 1297.895 MHz at 1330z on August 2. Slight variations have been observed, but these are con-

sistent with normal xtal ageing. However, recently the keying has become faulty, the very reduced shift making copy difficult, so if you log GN3DWM it is probably the Kent beacon!

Aurora

For those who can monitor WWV and so receive their broadcast warnings of "SID" (Sudden Ionospheric Disturbance), or for those who listen to the BBC World Service programmes, the auroral activity of August 5-6 will have come as no surprise. Both these sources were predicting severe interference with HF-band traffic on August 3-4 and, indeed, 15m. and 20m. were just about dead shortly afterwards. For those who cannot monitor these broadcasts, a check on solar noise can provide an indication of unusual propagation. For example, the solar noise on 2m. at 1730z on August 4 was 12 dB above normal.

First indication of *Ar* activity on two metres came on the Saturday morning at 0030z in the South, but somewhat earlier in the North. At this time, GW3NNF and GW2HIY, both in Anglesey, were 56A and several very strong PAØ were also audible on both the CW and SSB channels. By 0130z SM, OZ and DL were all coming through, but nothing was heard from further afield, although a PAØ was heard in contact with UR2. The effect disappeared at 0155z in the South, but it is reported that it continued until about 0300z in Scotland.

The second phase, if such it were, appeared on the Saturday afternoon at about 1520z in the South. Once again SM, OZ, PAØ and DL were prominent signals, and this time the GM's were also there. GM3UAG in Aberdeen and GM3FGJ (Edinburgh) were particularly strong, although some of the regulars such as GM3GUI, GMEOJ and GM2DRD were not heard. This phase terminated just after 1600z.

To sum up, one would say that it was surprising, in view of the magnitude of the SID (a large group of sunspots just south of the Sun's meridian) that the Aurora was not more productive of really long-haul DX.

General Comment

Two British stations were heard calling "CQ Aurora" on AM. This

THREE BAND ANNUAL VHF TABLE

January to December, 1972

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		TOTAL pts.
	Counties	Countries	Counties	Countries	Counties	Countries	
G5DF	34	3	58	7	27	2	131
GD2HDZ	15	4	76	10	19	5	129
G3DAH	21	2	52	13	27	4	119
G3NHE	—	—	62	13	25	2	102
G8CUT	—	—	52	10	27	3	92
G3OHH	37	5	25	4	14	2	87
G2AXI	23	2	39	7	12	1	84
G8BXX	—	—	45	5	27	2	79
G3YRH	—	—	41	9	18	6	74
G8FUI	—	—	50	6	12	2	70
G3BW	—	—	60	8	—	—	68
G3FIJ	10	2	38	6	9	3	68
G8CIW	—	—	56	10	—	—	66
G4ALN	—	—	35	5	18	3	61
G8CBU	—	—	39	6	10	2	57
G8BKR	—	—	40	5	9	2	56
G3RAF	—	—	46	6	—	—	52
G8ERM	—	—	47	5	—	—	52
GW8FKB	—	—	42	8	—	—	50
G8DWT	—	—	44	4	—	—	48
GM8BDX	—	—	34	6	4	4	48
G8AGL	—	—	34	4	—	—	47
G8FAG	—	—	41	4	—	—	45
G8FIH	—	—	41	4	—	—	45
G4AJE	—	—	36	9	—	—	45
G8FKL	—	—	38	4	—	—	42
G4AVX	—	—	37	4	—	—	41
G3EKP	13	6	16	2	1	1	39
G3POF	—	—	31	8	—	—	39
G3DAO	—	—	32	6	—	—	38
G8EMS	—	—	34	3	—	—	37
G8DYK	—	—	30	7	—	—	37
G8COG	—	—	32	4	—	—	36
GW3CBY	1	1	21	5	4	2	34
G8BMD	—	—	23	4	—	—	27
G8FNH	—	—	20	2	—	—	22
G8GBH	—	—	19	2	—	—	21
GM3ZVB	—	—	16	3	—	—	19
G3MEW	—	—	14	4	—	—	18
GW8FTQ	—	—	13	2	—	—	15
GM3IBU	—	—	13	2	—	—	15
G4AZK	—	—	10	2	—	—	12
F6BQH	—	—	7	3	—	—	10
G8FSO	—	—	6	3	—	—	9
G8DBX	—	—	6	2	—	—	8
G8FVI	—	—	7	1	—	—	8
GW8CGH	—	—	5	2	—	—	7

These Tables go through to December 31, 1972. The Three-Band Annual shows claims to date for the year commencing January 1, 1972. Claims should be sent to: "VHF Bands," SHORT WAVE MAGAZINE, BUCKINGHAM, as they accrue.



Taken by G3DAH in the Club room of George Watson's College, Edinburgh —left to right: GM3BJF, GM3YOK, GM3BCD, GM3ZVB, GM3ZVL and GM4AIS. GM3YOK is now president of the University of Manchester Radio Club and was leader of their recent expedition into Scotland. Others on the trip, seen here, were GM3ZVB, GM3ZVL and GM4AIS.

just is not on, gentlemen. Try CW or SSB. One SSB operator would have had more contacts had he cut his calling speed down by 75% or so and kept the mike gain down to normal level. As it was, the combination of these two factors made him pretty well unreadable, even when, after the aurora had finished, he was *still* calling CQ and was then a normal trope. signal! On a personal note, G3DAH was a little surprised to get a report of 559/A from a DL!

During the aurora of June 18, G3COJ (High Wycombe) had contacts on 4m. with G3OHH (Staffs.) and G3NEO (Sheffield). He found that the four-metre notes were appreciably clearer than on two metres, and quotes an American report that the notes on 432 MHz sound like "keyed noise".

Note for the diary: A check for *Ar* on 2m. and 4m. at the end of August and beginning of September might be profitable.

Beacons and Responders

Both GB3DM and GB3ANG are having keying troubles and transmit constant-amplitude carriers. The "Wrotham Ripple" is still with us. But many favourable comments have been made about the excellence of the keyer at GB3SC. This is a solid-state job, and was designed, built and donated by Brian Coleman, G8AZU. HB9HB was off the air between July 25 and August 8.

Several reports have come in of reception of the *Gibraltar* beacon,

ZB2VHF, on 4m. G4AAW (Sutton) copied the signal at lunch time on July 10, as did G3ZYR and G3ZZA. G3MD heard it at S9 on July 19, and G3EKP reported reception on July 26, along with some Spanish CW, although his tape recording indicates trouble with the keying. G3OBD/M in Dorset received ZB2VHF on July 28 at 5 & 9 and comments that the ZB2 station is not now operational due to lack of an antenna relay. (That surely wouldn't stop most of us?) There has also been trouble with the antenna itself, but this has been rectified. All in all, it looks as if the Sporadic-E season has been no quieter than usual—it's just that the signals haven't been there.

It seems that the launch of *Sonde N5* will take place as planned and reported last month. One new fact about this transponder has come to light: The telemetry on 146.0 MHz will transmit the heart beats of a rat! (Not quite sure of the purpose for which this particular experiment is designed!)

Latest information on *Oscar VI* predicts a launch on a *Nimbus-E* satellite during November this year—possibly on the 22nd. Other parameters as reported on p.235 of our June issue.

Mike Seal (Cuxton, Kent) sends along a very interesting tape of reception of the *ATS-3* satellite, which is stationed over South America at a height of some 22,000 miles, and which is doing FM voice tests every day for 15 minutes

starting at 1700z on a frequency of 135.6 MHz. The equipment used for reception is an 8-ele 2m. beam and the usual converter and Rx. This certainly represents good DX by any standard for such simple equipment. Perhaps other readers would care to have a go. The address is M. F. Seal, 188 Bush Road, Cuxton, Kent, for further details—all based on G3HMO's recent articles in the *Magazine*.

The Scottish Scene

GM3OXX managed six of the Perthshire "Munroes" during his mammoth attack on these giants (*see* p.298, July issue) and had over 300 two-metre contacts and two on 70 cm., both accomplished on his 2m. beam! He did not climb on the last day of his trip as the weather turned really sour, and George is too experienced a mountaineer to take risks.

Two new two-metre mobiles are being heard regularly in S.E. Scotland: GM3GIG, who is no stranger to the band, and GM3OLK who has recently returned from VU. GM6SR is now back on the air after his recent illness, but operating times are restricted by doctor's orders, and Syd hopes that his old friends will keep in touch.

Four 2m. beacon signals are now received regularly in the South-East of Scotland — Durham, Angus, Thurso and Strabane, the latter providing an exceptionally clean signal. (Well done, that beacon-

keeper!) The 70 cm. beacon at Sutton Coldfield was well received by GM3FYB in Dunfermline during the recent opening, and this at a time when GB3VHF on 2m. was inaudible. Unfortunately, an attempted contact between GM3FYB/G3DAH was unsuccessful.

As a variant on the theme of DX'ing on the amateur bands, GM3VTB and GM3VQC in the Glasgow area have been DX'ing on the TV bands, and have enjoyed considerable success with very simple equipment. During a QSO with the former, it was learned that pictures were received from Iceland recently, a distance of more than 800 miles. He remarks that TF3VHF on 2m. was not audible at the time. With a simple dipole antenna, he has now logged more than 14 European (exclusive of the U.K.) stations and would like to exchange information and swap notes generally with others interested in this aspect of radio. You can reach him *QTHR*.

Contests

Propagation during the 70 cm. contest of July 23 was abysmally poor. One could tune the band towards the end of the event and not hear a single signal. G8APZ/P on Dartmoor seemed to have been able to dig up a few reasonable DX contacts, and GD2HDZ, who was passing 030 towards the end, must have done the same, but by and large, it would appear that the scores will be very low for a contest of this type at this time of the year.

The Grafton Radio Society are organising a VHF (2m.) contest on September 16 on the lines of their Top Band event which has operated so successfully for so many years. To be known as the "G2CJN UHF/VHF Cup Contest", it is open to individual stations only, and details are available from G3KEB, *QTHR*.

Another such event is offered by the Colchester Club, over October 14-15, midnight to m'night, covering 2m.-70 cm.-23 cm., all modes and open to all including SWL's, scoring one point per km. (no duplex contacts allowed) and separate log for each band. Details from the hon. secretary, Colchester A.R.C., 26 Pondfield Road, Colchester.

Forthcoming events are VHF NFD, September 2/3, with the IARU contest running concurrently, and

the BARTG VHF RTTY contest during September 16-24.

DX-Peditions

A team will be in Pembroke between August 28-30. Callsign on 2m. will be GW8AFH/P, CW on 144.06 MHz and AM on 144.2. Callsign on 4m. will be GW3VPS/P, with CW/AM on 70.28 MHz. Times: 0700z to 0730z and 1900z onwards.

The University of Manchester Amateur Radio Society expedition to Islay/Jura for the July 2m. contest was dogged by bad luck of one sort or another. Right at the start, while they were still in the Kilsyth Hills, the generator packed in with a blocked exhaust valve, and this necessitated repairs at Stirling which held them up for a day. This was followed by battery trouble which persisted until they actually got to Islay. Here, site problems were encountered, and in the end they had to abandon the Jura trip and accept a second-best location on Islay which, in conjunction with Rx breakdowns, meant that their contest results were disappointing. However, dampened though their ardour undoubtedly was, they seem to be a resilient bunch of chaps and a return visit, with certain organisational changes, is planned for next year—and they did learn a lot!

VHFCC Awards

Apologies to Bill Raybould, G8FUI, whose claim for membership of the VHF Century Club should have been reported last month. Bill lives in Dudley, Worcs., and gains Award No. 154 for his operations on 2m. First licenced in February, 1972, he started off with 25 watts to a QQV03-20A using the Pye Ranger boot-mounted job, but has increased this to 40 watts. The Rx is the AR88D with a home-built FET converter, and the antenna a 10-ele beam at the 540ft. a.s.l. site which is a bit screened to the North and East. He has been on 70 cm. since May with 8 watts to a QQV03-20A tripler and an 18-ele Parabeam, but this will be replaced shortly by a 46-ele job. QSL return rate is about 50%.

Award No. 158 goes to G8FEP (Stoke-on-Trent). Paul started on 2m. in August 1971, but has been handicapped in completing his 100 contacts by the fact that the 6/6 beam is fixed in a Southerly direction,

although future plans call for it to be re-erected at 40ft. on a couple of scaffold poles and made fully rotatable. He is at 650ft. a.s.l. with a good take-off in all directions. A variety of transmitters has been used—from a Pye Ranger to the current F3 rig with 80 watts input to a QQV06-40A, a Garex converter and Eddystone S.640. Paul would like to pay tribute to G3EHM (a very well-known call on 2m.) for all his help in getting him started.

Oliver Doley, G3BRA (Berwick-upon-Tweed), gains Award No. 159. He has been active on VHF since the early days and remembers well the old 56 MHz band. He mentions the opening on that band in April, 1948, of which he managed to take advantage by the expedient of cutting the 28 MHz Tx PA coil in half so that it doubled to five metres, and connecting it to the 132ft. long wire! The Tx now in use on 2m. is a BC-522 and the Rx a transistorised, home-built job tuning 2-4 MHz as the IF of the valve converter. The beam is a 4/4 slot, but with the neighbouring hills going up to 500ft. less than one mile away, the QTH is badly screened to the North. Most contacts are over 50 miles, since the local amateur population is very limited. Oliver has RTTY on 2m., but the only contact to date has been with PAØ, so if you are looking for Northumberland, here is your chance. He can receive on 70 cm. and has had crossband QSO's with GM8BDX in Duns and with OZ.

Three-Band Annual Tables

As a starter to the comments on the Tables this month, thanks go to all those who responded to the appeal to include a note of the new totals when sending in claims. This has made things a lot easier and will have an even greater effect as the numbers in the Tables increase.

Welcome to all the newcomers—particularly those outside England of whom one would like to see many more. As GM3IBU remarks with his entry—"It is time that a few more GM's entered the lists". GW8FKB has made a good start with a total of 50 on 2m. only, and this has included some nice DX to Scandinavia from Anglesey, which is a fair old haul. Of course, he would like to see more beams being turned more frequently towards Anglesey and

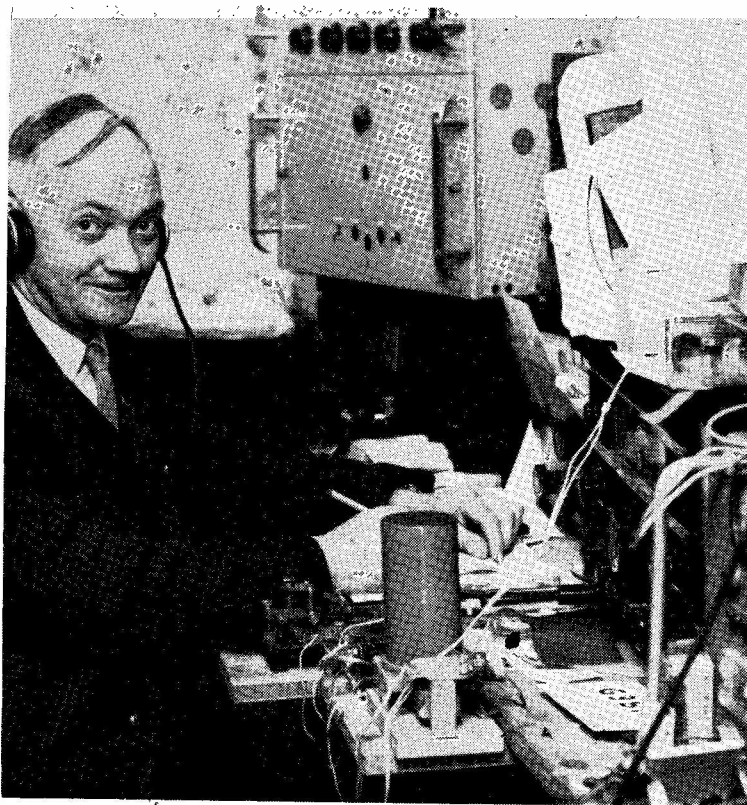
wishes that more AM stations would listen on frequency after a CQ call. GW8CGH of Bridgend, starts off his first-ever claim with a list of counties and countries worked during the July contest when he was using an FT-2F, a Microwave Modules converter and a *halo* at 18ft. from the bottom of the valley in Bridgend. Here is one station which would benefit from a repeater! He has commenced regular 2m. operation again, so we should be hearing a bit more from him and, undoubtedly, his score will increase rapidly now. G8FSO has had his operating time curtailed drastically by exams., but has increased his score from 6 to 9—and if you look at that mathematically it represents an increase of 50%!

Most claimants attribute the substantial increase in their scores to the openings in July, and it is to be expected that there will be further increases next month in the Countries Worked totals when the tally of auroral contacts is included.

Happenings

The Woburn Mobile Rally on August 6 drew a large attendance in spite of some awful weather. The venue was well signposted (from Exit No. 13 on the M1) and the VHF talk-in stations on 2m. and 4m. were kept busy answering calls from incoming mobiles. A sign of the times was the double (AM and FM) installations for the 2m. talk-in station and, from what G3DAH heard on the mobile calling channel they were needed! The marquee (all 9,600 sq. ft. of it) was the largest ever used for this event, and gave much more space for both exhibitors and visitors, to the relief of both. Some 23 traders were showing a variety of wares and enquiries elicited the fact that, on the whole, they were doing better than last year. The purchasers seemed satisfied also! Altogether, a very successful and pleasant event.

The Lowestoft and District Amateur Radio Club have introduced a new Award, to be entitled "Norfolk & Suffolk Award", which will be available for VHF men working fixed stations within those counties. A rather complicated scoring system has been devised, but full details are available from G3XSK, *QTHR*.



G3BRA, Oliver Doley, 25 North Road, Berwick-on-Tweed, Northumberland, started on VHF back in the old five-metre days, when we had that band in 1948. A recent applicant for VHFCC, he has worked most of the active GM's and is nowadays regularly on two metres—see further notes on page opposite.

News Items

The Scottish VHF Convention takes place on October 1, in Glasgow this year; tickets and full information from GM3EXX, *QTHR*. (Hotel accommodation can be arranged.)

Both G8COG of Birmingham and G3MEW of Portsmouth should be on 70 cm. in the near future, '3MEW being encouraged by his results to date on 2m. He notes, as so many of us must, that it is remarkable where all the stations come from when there is an opening! He is still available for skeds during normal working hours, *QTHR*, with s.a.e. pse.!

G3PQF of Farnborough can now offer 4m. from Hampshire. G8FSO,

now on 145.8 MHz most evenings from Wakefield, Yorks., endorses the opinion that the A/TV boys will have to get their thinking caps on if they want to radiate high quality, PAL colour, with audio, in what is left of the 70 cm. band, since this really requires 12 MHz or so if no vestigial sideband filters are in use, and 8 MHz if they are. (He wrote to the Ministry about all this but got a bit of a dusty answer.)

Deadline

Deadline for the next issue is **September 8**. The address for news, views, claims and comment remains: "VHF Bands", *SHORT WAVE MAGAZINE*, BUCKINGHAM. Cheers for now and 73 de G3DAH.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for October issue: September 8)

(Please address all reports for this feature to "Club Secretary", SHORT WAVE MAGAZINE, Buckingham.)

PERHAPS we should remind all Club Secretaries that now—or before!—is the time to look out all the tackle to be used on MCC this year—the dates being **November 4-5**, and the rules much as in past years. Every year some group or other succumbs to the wiles of Finagles Law; someone forgets to bring the receiver, or they get there and find the feeder has fallen off the aerial which in its turn is out of reach without a special ladder which is not available, or some such disaster. Make sure before the day, and save your Hon. Invigilator's tears!

Seriously, though, MCC through the years has been flean and well-fought, and an event for the Club to look forward to—we hope it will be so again this year.

Rules, procedure and Identification List will appear in the October issue, due out on September 29.

Your conductor being no good at geography has this time allocated Clubs to areas by strict reference to the major squares of the National Grid; and some very interesting results this has had, as the reader will no doubt observe for himself.

Westerlies

Here comes our first surprise—**Stoke-on-Trent** is in the area. The lads here have Hq. at 2A Racecourse Road on a Thursday evening, where there is a two-metre station, with a gainy aerial, which is used on most Club nights, signing G3GBU—at the moment with members' gear, but soon with club-owned tackle.

Hereford seem to have Fridays book at the Civil Defence Hq., Gaol Street, Hereford, where they are certainly going to be on 1st and 15th; however, they like the hills which are so near to them, and often go /P, so if you want to meet them on one of the intermediate dates, you had better ask the hon. sec.—see Panel, p.431.

Now to **Yeovil** where they get together in the Youth Centre, Park Lodge, 31 the Park, every Thursday evening. In the way of formal programme, the September one is given over to a tape-lecture, on the 28th, the subject being (at the time of their letter) not yet decided.

Bristol University are in recess, but activity will start again soon—any intending members are asked to get in touch either with G8CVS, as Panel, or G3WGD, before or at the start of the new term.

At **Cornish** the topics for the meeting of September 7 will be "Radio and Major Disasters" by G3FWG, which will be followed up by a question-and-answer

session. The place, as usual, will be the SWEB Club Room, Pool, Camborne.

* * *

A most interesting experiment has been carried out by the **Swindon** group in connection with their Club Project affairs. G8AVG stayed at home and the rest shot off to Savernake Forest, where they used "project receivers" and either halos or 5/8-wave whips. G8AVG then radiated a reference signal at 5 watts of AM output, gradually reducing the power until the Savernake chaps lost him in the noise. At —58 dB measured, relative to 5 watts (—62 dB as measured over the air by G8ETD) the output was *fifty micro-watts*, and the 5/8-wave whips were just finding the carrier—down further to five micro-watts, and the halos were still saying R3 S3! When one considers this is a path-length of better than fifteen miles, it gives food for thought about the power really needed for local QSOs, and an instructive as well as pleasant evening out for the chaps who had built receivers.

Very much an evening of nostalgia for the **Torbay** group on September 30, when they have a session on slides and films of various activities the Club has been involved in recently.

No doubt about the organisation at **Rhyl**, where the written programme carries through to *June 1973*. For the September 12 session, GW3MZY takes as his subject "Receivers." For details on the venue, and so on, we must refer you to GW3YIH, as given in the Panel, p.431.

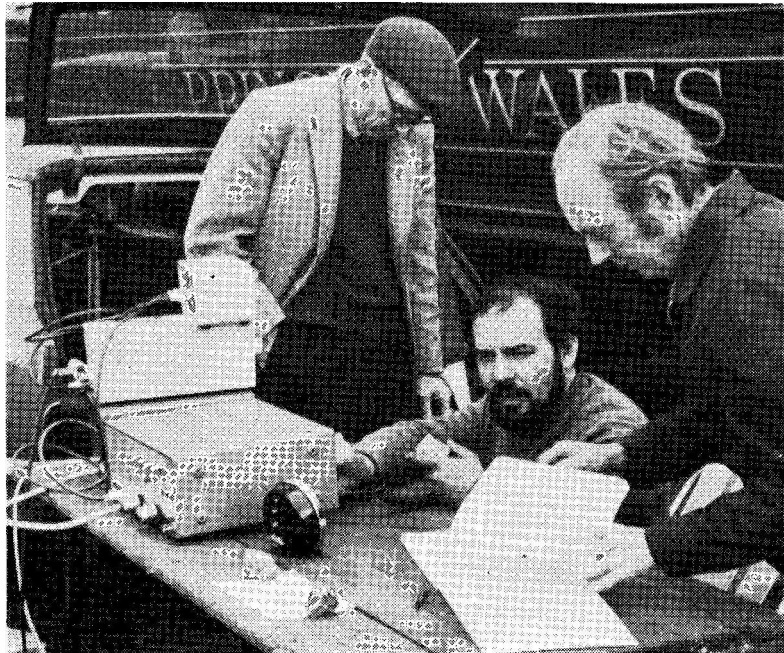
Nationals

More nostalgia, this time on the front page of the **R.A.F. ARS** newsletter, which recalls fifty years of the Service's No. 1 Radio School. In addition there are comments and views, notes on members, and details on the supply of VHF transmitting and receiving gear, plus many other things. Ex-R.A.F. types could do well to become members, by writing to the Secretary, as in Panel.

RAIBC has its *Radial* every month—no doubt about it, both members and supporters can see, through the pages of this newsletter, just what goes on, and where the help goes, whether in money or time and effort.

Now to **British Rail** whose current newsletter is one of the best they have put out for many a day, what between the WA5VFW holiday saga, some information about G.W.R. preservation activities, some jokes, and personal news. Details obtainable from G3ILC, the hon. secretary.

On July 9, about a dozen of the Stourbridge group went to the Bridgnorth station of the private Severn Valley Railway for a run out by steam train, signing GB3SVR both fixed and from the train. More than 100 contacts were made on 20/80m. In this picture are G3ZUL operating, with G3ZYT and SWL Wright.



A.R.M.S. looks after the interest of the /M operator, by way of *Mobile News* each month, covering various activities and interests related to the business of the /M on the air.

Up North

First we must go to **Thornton Cleveleys**, from which group we have sad news, in that their popular chairman, George Moore, G3WFY, has joined the Silent Keys. He will be much missed on the Fylde coast, not least for his regular turns on the Slow Morse which does so much to help the newcomers. As for the Club details can be obtained from G3ZYE, address in the Secretaries' Panel.

At **Hull**, in addition to the weekly meetings, they ask us to mention their Annual Open Night on October 20. The September doings sound something like this: On the 1st, G8EAH will initiate them into the business of micro-waves, and on the 8th, G3LIQ talks about Quad aerials. G3SSA has his part to play on September 15, his topic being those Semiconductor things; this leads to a visit, on the 22nd, to the Applied Physics Dept. of Hull University. To round off, the theme on the 30th is "Building in Earlier Days" by G2ABR.

Manchester University will, hopefully, be running a demonstration station in a room on the top floor of the Students Union during the first week of term. The group hopes to set up some visits this year, and Morse and RAE tuition is available. In the panel, we show the Manchester University address, but *until term starts*, letters should go to G4AZA at 89 Upper Road, Kennington, Oxford, OX1-5LW.

Derby must be one of the most active clubs in the country. September 6 is a Surplus Sale; the 13th a film on

Aerials, to be followed by a discussion; then on the 20th there comes the monthly D/F practice night, followed by a talk on Voltage Stabilisers by G3VLF, with demonstration material set up; and on Saturday, September 30, comes the annual day trip to London, with seats booked to see "Show Boat" at the Adelphi. In addition, Mondays are now reserved as Activity Nights at which the members can do odd jobs or just have a good old natter.

Tuesday, September 12, is the date set for **Bury and Rossendale**, for another look at Amateur Television, this time the conventional sort rather than Slow-Scan; G3SXC comes from Blackburn to give this talk and demonstration.

It is nice to hear from **Tyneside** that the membership is creeping up steadily; they help it along by a very good newsletter and Hq. at the Community Centre at Vine Street, Wallsend, where they are to be found on Monday evenings.

Another new formation comes in at this point to ask a special mention. This one is at **Wigan**, where a steering committee has been set up to get things ship-shape. For the details, we refer you to G8DPE, who is acting as Secretary till things are organised—his QTH appears in the Panel, p.431.

Does any Club still wish to borrow the two W1BB tape-and-slide talks? This question is posed by the custodian, G3MDW, who doubles as hon. sec. of the **Northern Heights** group, still to be found at the Peat Pitts Inn, Ogden, Halifax. August 30 is down for a pea-and-pie supper—always a popular event—and on September 13 there is a Junk Sale. Further details can be obtained—as can details of the W1BB lecture dates—by contacting G3MDW, as Panel.

[over

Midlands

Nottingham break in here to tell us they now have their TA-33 beam for the HF bands, and 6-over-6 for 144 MHz erected at Hq., so G3EKW should be heard more often; Sommerkamp tackle covers the HF bands, but the two-metre gear is still a-building. On the programme front, things are a trifle in the air, but provisionally it looks like September 7, a Forum; September 14, a lecture, either on Basic Teletype or Digital Frequency Counting; September 21, a natter-cum-activity night; and on September 28, comes whichever lecture of the two already mentioned has not been given. All this is at Sherwood Community Centre, Mansfield Road.

There are two separate parts of the **South Manchester** empire; the VHF side, who have a shack to meet in at Greeba, Shady Lane, Manchester 23, each Monday evening, and the main group, to be found at the Sale Moor Community Centre, Norris Road, on Fridays. The programme for the main meetings is started for the month by G3FNM, talking about some current topics,

while on September 8, the hon. sec. will tell of all the tricks of design and production of printed circuit boards. On September 15, Mr. D. Hyde looks inside capacitors for the members' benefit, and on the 22nd someone conducts a contests review. That leaves the goodies to be disposed of, on September 29. Visitors are welcome to any of these, also VHF group meetings.

Talking of goodies, one of the best in the way of Club magazines your scribe has seen of late is that put out by the **Spalding** chaps. The date of their next meeting is September 22, but the venue and the subject are as yet unknown—they will be announced on the Club net, or if you don't know the net details, get in touch with G3VPR—his address appears in the Panel below.

Stourbridge had an unusual attraction recently; they took some gear and themselves to the Severn Valley Railway and set up shop on the station, and also on the train itself. Although some contacts were made from the train, the majority were from the station, where they were pleased to find some interest being shown in Amateur

Names and Addresses of Club Secretaries Reporting in this issue :

- ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London, W3-8LB.
 A.R.M.S.: N. A. S. Fitch, G3FPK, 40 Eskdale Gardens, Purley, Surrey, CR2-1EZ.
 BARKING: A. P. Foss, G8EAY, 73 Coolgardie Avenue, Chigwell, Essex (01-500 6034).
 BARRY COLLEGE: D. H. Adams, GW3VBP, 49 Colcot Road, Barry, Glam.
 BASINGSTOKE: P. Sterry, G3CBU, Ashley, Orchard Road, Salisbury Gardens, Basingstoke, Hants.
 BEDFORD: J. Bennett, G3FWA, 47 Ibbett Close, Kempston (2427), Bedford.
 BISHOPS STORTFORD: E. P. Essery, G3KFE, 17 Ascot Close, Parsonage Lane, Bishops Stortford (2501), Herts.
 BRISTOL (University): J. E. Jenkinson, c/o 26 Blenheim Drive Oxford, OX2-8DG.
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 BURY & ROSSENDALE: F. S. Burnett, G3RSM, 13 Rhiwlas Drive, Bury, BL9-9DD, Lancs.
 CAMBRIDGE (University): M. Atherton, G3ZAY, Emmanuel College, Cambridge.
 CHILTERN: P. J. Perkins, G3OUV, Loakes House, Loakes Park, High Wycombe.
 CORNISH: P. King, Nirvana, Comprigney Hill, Truro (4788), Cornwall.
 COVENTRY: C. Jaynes, 20 Belgrave Road, Wyken, Coventry, CV2-5AY, Warks.
 CRAY VALLEY: P. F. Vella, G3WVP, 78 Hurst Road, Sidcup, Kent.
 DERBY: F. C. Ward, G2CVV, 5 Uplands Avenue, Littleover, Derby (21931), DE3-7GE.
 DUNSTABLE DOWNS: C. G. Powell, G8BPK, 1 Wenwell Close, Buckland Wharf, Aston Clinton (600), Aylesbury, Bucks.
 ECHELFORD: V. W. Higgs, G3VWJ, 205 Commercial Road, Staines (57201), Middx., TW18-2QT.
 EDGWARE: A. J. Masson, G3PSE, 62 Coldharbour Lane, Bushey, Herts., WD2-3NY (01-950 6827).
 HARROW: R. H. Medcraft, G3JVM, 134 Dulverton Road, Ruislip Manor, Ruislip (38726), Middx., HA4-9AG.
 HEREFORD: S. Jesson, 181 Kings Acre Road, Hereford (3237).
 HULL: Mrs. M. F. Longson, 4 Chester Road, Wold Road, Hull, HU5-5QE, East Yorkshire.
 MANCHESTER (University): Hon. Sec., Amateur Radio Club, University Union, Oxford Road, Manchester, 13.
 MID-CHEESHIRE: A. Greenwood, G3SIQ, 83 Ash Road, Cuddington, Northwich, Cheshire.
 MIDLAND: N. Gutteridge, G8BHE, 68 Max Road, Quinton, Birmingham, 32 (021-422 9787).
 MID-SUSSEX: E. J. Letts, G3RXJ, 87 Meadow Lane, Burgess Hill (3552), Sussex.
 NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax (44329), Yorkshire.
 NORTH KENT: M. Lee, G4BAL, 46 Harman Drive, Sidcup.
 NOTTINGHAM: S. F. Claringburn, 49 Fernleigh Avenue, Westdale Lane, Nottingham, NG3-6FN.
 PURLEY: A. Frost, G3FTQ, 62 Gonville Road, Thornton Heath, Surrey, CR4-6DB.
 R.A.F.: Sqn/Ldr. C. F. Setwood, R.A.F.A.R.S. Hq., R.A.F. Locking, Weston-super-Mare.
 R.A.I.B.C.: Mrs. F. Woolley, G3LWY, Woodclose, Penselwood, Wincanton, Somerset.
 RHYL: F. A. Cobb, GW3YIH, Mon Reve, Towyn Way, Abergel, Denbighshire.
 SHEFFORD: A. Sullivan, G2DGF, 12 Glebe Road, Letchworth, Herts.
 SHIREHAMPTON: E. J. Davis, G3XSY, 72 North View, Westbury Park, Bristol (33284), BS6-7PZ.
 SILVERTHORN: A. Mitchell, G3YJZ, 6 South Road, Edmonton, London, N9-7JH (01-804 8074).
 SLADE: J. Drakeley, 186 Conway Road, Chelmsley Wood, Birmingham, 37.
 SOLIHULL: A. W. Bagley, G3XPY, 266 Warwick Road, Olton, Solihull (021-706 3688), Warks.
 SOUTH BIRMINGHAM: R. J. Thompson, 23 Fox Hill, Selly Oak, Birmingham, 29.
 SOUTHDOWN: A. Seabrook, G3ZQB, 6 Harebeating Gardens, Hailsham, Sussex.
 SOUTH MANCHESTER: D. Holland, G3WFT, 7 Alcester Road, Sale, M33-3GW, Cheshire.
 SPALDING: R. Harrison, G3VPR, 38 Park Avenue, Spalding, Lincs., PE11-1QX.
 STOKE-ON-TRENT: R. G. Procter, G8CRS, 8 Birch Road, Bignall End, Stoke-on-Trent, ST7-8LB, Staffs.
 STOURBRIDGE: B. Powell, 17 Mill Road, Cradley Heath, Warley, Worcs.
 SUTTON & CHEAM: J. Korndorffer, G2DMR, 19 Park Road, Banstead, Surrey.
 SWINDON: D. R. Durham, 3 Dobbin Close, Covingham Park, Swindon, Wilts.
 THORNTON CLEVELEYS: R. Bellerby, G3ZYE, 4 The Cop, Fleetwood, Lancs (Clevelleys 6826).
 TORBAY: Mrs. G. Western, G3NQG, 10 Truro Avenue, Hele, Torquay, South Devon.
 TYNESIDE: G. Lowdon, 21 Winifred Gardens, Wallsend (627878), NE28-6EF, Tyneside.
 VERULAM: H. Young, G3YHY, 93 Leaford Crescent, Watford, Herts., WD2-5JQ.
 WAKEFIELD: M. Stokes, G3ZXZ, 4 Thornleigh Avenue, Thornes, Wakefield.
 WARRINGTON: D. Catherwood, G3ZRN, 9 Summerville Gardens, Grappenhall, Warrington, Lancs.
 WEST KENT: H. Richards, 17 Reynolds Lane, Tunbridge Wells, Kent.
 WEST MIDDLESEX: J. Hedges, G3MMQ, 35 Ferrymeade Avenue, Greenford, Middlesex.
 WIGAN: V. Brooks, G8DPE, 8 Sutherland Road, Worsley Mesnes, Wigan, Lancs.
 WORCESTER: B. Jones, G8ASO, 12 Woodside Road, Larkhill Worcester (29208), WR5-2EG.
 YEOVIL: D. L. McLean, G3NOF, 9 Cedar Grove, Yeovil.



This picture is of the Thornton Cleveleys (Fleetwood) Amateur Radio Society in the projects laboratory of Rossall School. Receivers for 160m. are under construction and a Top Band Tx design is in hand.

Radio. As for the routine meetings, we have to pass you on to the Secretary, address as in Panel, opposite.

At Worcester, at the time of their writing, they were rather pre-occupied with the Mobile Rally which was to be coming off a few days later; as a result, practically all the normal matter has been squeezed out for want of space in the newsletter. This being so, then all we can do is to suggest that if you want information you get in touch with the secretary, G8ASO, as Panel.

An important announcement to members and prospective members or visitors to Slade concerns the evening of September 22, when, because of the limitations on size of the room, the entry will be by *ticket only*. These are free, from C. N. Smart, 110 Woolmore Road, Erdington, Birmingham. The reason is that this particular date is given over to Mr. Evans of Heathkit, who will be talking about and demonstrating the superb Hi-Fi the Heath gear can produce. Earlier in the month, on September 8, is the normal meeting at Church House, High Street, Erdington, when G3MVT talks about the basic principles of SSB Transceivers.

As usual there are two evenings reserved by the Solihull chaps; the first is for the informal pint of bitter, from 2100 onwards at the Malt Shovel, High Street, on September 5. The formal proceedings come on September 19, at the Manor House, High Street, Solihull, when, provisionally, there will be representative of the MinPosTel people to talk about such matters as licence conditions, and answer members' questions.

One of the "model letters" to this piece comes from Coventry, whose hon. secretary can combine all the essentials with a turn of wit, too. This month, he tells us that the night when the Club station is active at Hq. is September 8; G2DRW presents "Stan's Quiz" on the 15th, and the beginners are looked after on the 22nd. As for the 29th, it is a Natter session, with plenty to natter about ready for that vital AGM on October 6.

A familiar "fist" appears from a different quarter; G3ZAY acts as secretary of the Cambridge University Club, and says their first meeting of term will be on October 10, at King's College, 8.15 p.m. It is hoped there will be a speaker organised for this evening; later ones will include Bill Lowe, talking about Yaesu, and Dud

Charman doing his thing on Aerials—of the latter, one can truthfully say "his thing" is one of the most popular and effective talks in the U.K. Amateur Radio context.

Southerly Places

Here we can kick off by mentioning Bishops Stortford, where they are having an Open Evening, members and YL's, all gathered to hear the story and slides presented by 9J2KP, home on leave from Zambia, who as G3UKP was a member of this group. This comes on September 18, and replaces the arranged RAEN talk.

Advance warning is given of the Barking group's second constructors' cup competition, on November 9 at the new Hq., Westbury Recreational Centre, Westbury School, Ripple Road. Judges will be G3FZL, G3BZG and G3TDR. Incidentally, we are asked also to note that, until further notice, meetings will continue at the old place in Gascoigne School, Morley Road.

Silverthorn will be having their annual field weekend, from August 25 to 28, at Mission Field, Lambourne Road, Lambourne End, where GB3SRC will be welcoming their visitors.

G3VMI is being put to work by the Shefford crew this month—he is Quizmaster on September 7, setting up a station on the 14th, and talking about the amateur licence on the 28th. His only relief is by G8AKT, who takes as his topic the matter of working Mobiles.

"Shuffle the deck and lay the cards in different order" was the word at Bedford last month, thanks to holiday changes and a chance to con a visitor, G3WGV, to talk about his IC transceiver. Thus, for the current month

MAGAZINE CLUB CONTEST

November 4-5

Rules, operating procedure and identification lists will appear in the October issue, due out on September 29.

All Clubs expecting to participate should start putting their plans in hand now. This is essentially an all-members event, with the real competition from within any Club's own zone area.

G2CLP has September 14 for his delayed talk on Transmission Lines, while G3SME discusses Power Supplies, Short Cuts and Short Circuits on the 21st. The 28th is a tape talk by G2UJ, leaving September 7 for the rig to be fired up at Hq.; and on Sunday, September 24, there is an extra, by way of a D/F contest. Hq. is at the Dolphin, Broadway, Bedford.

Echelford Newsletter starts off with the vital information that the Club has Hq. at St. Martin's Court, Kingston Crescent, Ashford, Middx., on the second Monday and the last Thursday of each month. The *Newsletter* contains a tailpiece by G3SAZ, pointing out how much easier a novice can get to learn enough to pass RAE, if he does a bit of home-construction, not from a kit, but alone, and works out for himself why it fails to work, before altering it so it does "perk." How true he is, and how many RAE students who have failed the exam. would have passed had they had this advice!

Looking at the **Harrow** newsletter, the first thing your scribe went to was the back page, and there he read that negotiations for a new Hq. are at an advanced stage; so it would be a good thing, if you plan attending, to contact the secretary first.

The club which used to be known as *Greenford* is proposing to "do a Phoenix," and will be re-organised and run under the name of **West Middlesex Amateur Radio Club**; this will give less of a parochial look to the name, and the new committee are hopeful that hordes of new members will present themselves for admission at the Community Centre, Oldfield Lane, Western Avenue (A40), Greenford. We wish them the best of luck in their attempt to revitalise the group.

On now to **West Kent**, who have their corporate being at the Arts Centre, Monson Road, Tunbridge Wells, on Fridays, September 8 and 22, starting at 1930 clock. Details from the secretary—see Panel, p.431.

The Cheshire Homes, Le Court (near **Basingstoke**) fête, was attended by the local chaps, who report they had a great success, working three other Cheshire Homes on Eighty. First and third Saturdays from September onwards is the form here, the meeting place being Chineham House, Shakespeare Road, Popley, starting at 7.30 p.m. sharp.

If you go to the Town Hall of St. Albans, find the Council Chamber, and go in, on the evening of September 20, you will find G2FLB addressing the members of the **Verulam** club, his subject being the recent Trans-Arctic Expedition in which he and some other British amateurs were involved.

At **Dunstable Downs** all sorts of interesting things happen. September 1, naturally, is all spent on VHF/NFD matters, but on the 8th, Ron Ham and Terry Cooper will be talking about Cause and Effect in the Radio context. The 10th is down for a VHF D/F Hunt, and on the 15th at Hq. is a "Between Week," as is the 29th. September 22 is a construction contest, and—your scribe likes this touch!—October 6 is given over to an "Idiots' Construction Contest."

At **Chiltern** the intention is to have purely informal sessions till September is out; the dates of these are September 12 and September 27, the venue being, as always, the Ernest Turner factory at High Wycombe.

The third Tuesday is the meeting night for the

SHORT CLUB NOTICES

CLUB NAME	HEADQUARTERS LOCATION	MEETING DAY MONTHLY
Acton, Brentford & Chiswick	66 High Road, Chiswick, W.4	September 19
Barry	College of Further Education	Not quoted
Bristol (Shirehampton)	Not quoted	Fridays
Cray Valley	Congregational Church Hall, Court Road, Eltham, S.E.9	September 7, 21
Edgware	Watling Community Centre, 145 Orange Hill Road	September 14, 28
Mid-Cheshire	Winsford Comp. School, Grange Lane, Winsford	Wednesdays (AGM, 20th)
Midland	Midland Institute, Margaret Street, Birmingham, 3	September 19
North Kent	Congregational Church Hall, Chapel Road, Bexleyheath	September 14, 28
Purley	Landsdowne Hall, Landsdowne Road	September 12, 26
South Birmingham	Hampstead House, Fairfax Road, Birmingham, 31	September 6
Southdown	Victoria Hotel, Latimer Road, Eastbourne	First Monday
Southgate	C.D. Hut, Bowes Road	September 14
Wakefield	Not given	September 5, 19
Warrington	Alford Hall, Manchester Road	September 5, 19

N.B.—In each case the Secretary's name and address appears in the Panel on p.431.

Sutton and Cheam crew, in their Hq. at the Harrow in Cheam. September 19 this is, and it is to be entertained by G3GHN, who will be talking about VHF/UHF.

Mid-Sussex have plenty on their hands; apart from the club meetings at Marle Place, Leylands Road, Burgess Hill, on September 7 and 21, they are also making regular visits to Chailey Heritage, where some of the crippled children have successfully assembled a 144 MHz receiver. Reverting to the main meetings, G3JMB has the first one, to talk about Postal Mechanisation, and the second one is a visit to Brighton to see it in action.

Final

That's the lot for this time. Deadline for next month is **September 8**, certain, and the address is, as always, "Club Secretary," **SHORT WAVE MAGAZINE, BUCKINGHAM**. Meantime, enjoy your Bank Holiday.

Note: Closing dates for the next few months are **October 6, November 3 and January 5 (1973)**. No date is given for December because our January 1973 "Clubs" space will be given over to the detailed report on MCC.

For the current issue, five Club reports and four Newsletters were received too late for inclusion. While we much regret having had to omit them, as frequently explained it is just not possible to take in late reports—except to list them as "late", which we would not wish to do. We regularly give dates well forward so that reports intended for publication can be prepared in good time.—

NEW QTH's

This space is available for the publication of the addresses of all holders of new U.K. call signs, as issued, or changes of address of transmitters already licensed. All addresses published here will be reprinted in the U.K. section of the "RADIO AMATEUR CALL BOOK" in preparation. QTH's are inserted as they are received, up to the limit of the space allowance each month. Please write clearly and address on a separate slip to QTH Section.

DA4BO, 24023090 L/Cpl. Onions, G. R. (G8FCO), SHQ. 4 Sqdn., 22nd Signal Regt., B.F.P.O. 107.

E1ICJ, N. S. Martin, 110 Avondale Road, Killiney, Co. Dublin. (Tel. Dublin 855674.)

G3ECP, J. E. Brown, Manor Cottage, 2 The Maltings, Alconbury, Huntingdon, PE17 5DZ. (Tel. Woolley 369.) (Re-issue.)

G4BEJ, E. A. Siggers, 15 Woodleigh Road, Sutton Coldfield, Warks.

G4BET, Redifon Telecommunications Ltd., Broomhill Road, London, SW18 4JQ.

G4BGR, J. A. Deans (5Z4NT), 125 Stafford Road, Caterham, Surrey.

GM4BGS, S. Liddell, 5 Essenside Avenue, Glasgow, G15 6ED.

G4BHD, T. H. Goldsworthy, 24 Rose Cottages, Camborne, Cornwall. (Tel. Camborne 2183.)

GM4BHH, G. P. Matthew, 2 Birchwood, Invergordon, Ross-shire.

G4BHK, D. N. Wills (ex-G8DCC), 271 Kempshott Lane, Basingstoke, Hants, RG22 5LZ.

G4BHO, J. H. Robinson, 174 Rushby Place, Letchworth, Herts, SG6 1SH.

G4BHP, G. T. Benwell, Post Office, Tunley, Bath, Somerset, BA3 1DZ.

GM4BHU, D. A. Aitkenhead, 512 Perth Road, Dundee, DD2 1LW. (Tel. Dundee 65676.)

G4BIE, L. G. H. Mobley, 46 Beech Tree Avenue, Tile Hill, Coventry, Warks., CV4 9FF.

GW5RMA, W. R. Milroy (ex-3W8D), Little Birches, Cilcain Road, Pantymwyn, Flintshire.

G8FDY, J. Swatman, 35 Fredrick Road, Gorleston, Great Yarmouth, Norfolk.

G8FON, Redifon Telecommunications Ltd., Broomhill Road, London, SW18 4JQ.

G8GEU, C. A. Crick, 25 Bencombe Road, Purley, Surrey, CR2 4DR. (Tel. 01-668 5685.)

G8GFW, J. Douglas, 14 Thropton Avenue, Benton, Newcastle-upon-

Tyne, NE7 7NB, Northumberland.
G18GFP, C. Crawford Marshall, T.D., F.C.I.S., A.R.V.A., 23 Hopefield Avenue, Portrush, Co. Antrim.

G8GFX, G. H. Emblen, 39 Montayne Road, Cheshunt, Herts. (Tel. Waltham Cross 27520.)

CHANGE OF ADDRESS

E12W, H. L. Wilson, P.C., 9 Had-dington Lawn, Glenageary, Co. Dublin. (Tel. Dublin 804645.)

E19CD, J. W. Welch, Deerpark Lodge, Ravensdale, Dundalk, Co. Louth. (Tel. Dundalk 2538.)

G2CGQ, P. B. Archer, 1 Hawarden Avenue, Morecambe, Lancs.

G2CVO, F. H. Osborn, Mount Echo, 54 Firs Chase, West Mersea, Colchester, Essex.

G3FTA, P. J. Tucker, 4 St. Margarets Road, St. Leonards-on-Sea, Sussex.

G3KPS, F. A. Smith, 53 Oakleigh Road, Worthing, Sussex.

G3NPA, G. W. Anderson, 9 Gunnis Close, Park Wood Estate, Rainham, Kent. (Tel. Medway 35070.)

G3OHP, M. J. Winter, The Chimes, 9 Higham Road, Cliffe, Rochester, Kent.

GM3PKV, H. R. Thornton, 15 Rockland Park, Largs, Ayrshire. (Tel. Largs 4329.)

G3PQY, J. Lawrence, 2-A Hall Road, Cottingham Road, Hull, Yorkshire, HU6 8SA. (Tel. Hull 400656.)

G3SCG, R. F. Partridge, Kilbrannan, Branston Lane, Tatenhill, Burton-on-Trent, Staffs, DE13 9SA. (Tel. 0283 62835.)

GM3TBV, W. H. Vann, 3 Sherbrooke Avenue, Glasgow, G41 5AA. (Tel. 041-427 1337.)

G3TML, T. H. Lloyd (ex-9LITL), 72 Henley Green Caravan Site, Wyken Croft, Coventry, Warks., CV2 1HT.

G3VFB, A. R. Matthews, 17 Spencer Road, London, S.W.11.

GW3WEQ, C. Collins (ex-G3WEQ), 38 Gwalia Villas, The Castle, Den-bigh.

G13XBA, J. T. Worrall (DL2AH), 40th (Ulster) Signal Regt. (V), Clonaver Park, Belfast, BT4 2EY. (Tel. Belfast 653264.)

G3XSL, G. S. Harris, c/o Decca Contractors (SA) (Pty) Ltd., P.O. Box 17, Noordoewei, South-West Africa.

G3YRW, J. A. Van Walwyk, 12 Cambridge Road, Hounslow, Middlesex, TW4 7BS.

G3YUV, G. F. Gray, 4 The Cedars, Sunderland, SR2 7TW, Co. Dur-ham.

G3YWH, F. Hill, 45 Preston Old Road, Blackpool, Lancs, FY3 9PR.

G3YWN, K. Birchall (abroad).

G3ZAI, D. Jennings, 42 Grays Lane, Downley, High Wycombe, Bucks.

G3ZNS, R. Mortimer, 4 Laburnum Court, Sandsacre, Bridlington, Yorkshire.

G3ZRQ, D. Maxfield, 40 Fegg Hayes Road, Stoke-on-Trent, Staffs, ST6 6RA.

G4AWF, D. V. Wilson, 37 Goodshaw Avenue, Pleckgate, Black-burn, Lancs.

G8BTS, Mrs. H. A. Anderson, 9 Gunnis Close, Park Wood Estate, Rainham, Kent. (Tel. Medway 35070.)

G8CRI, B. K. Middleton, Kent House, Lincoln Road, Welton, Lincoln, LN2 3JA.

G8DFA, D. C. Hyde, Willow Stores, Holt Road, Langham, Norfolk. (Tel. Bingham 264.)

GW8EHR, D. B. Davies, The Crossways Diner, Church Road, Burry Port, Carm. (Tel. Burry Port 792.)

G8FAO, M. B. Tunau, Television House, P.O. Box 250, Kaduna, Nigeria.

G8FCO, G. R. Onions (DA4BO), 11 Amanda Road, Glen Parva, Leices-ter.

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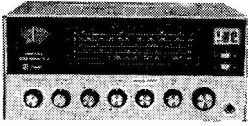
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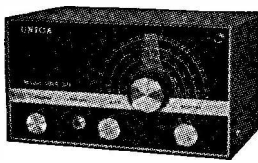
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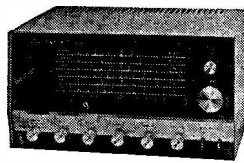
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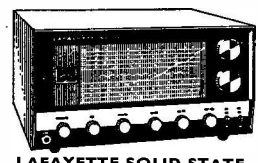
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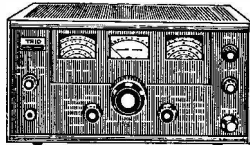
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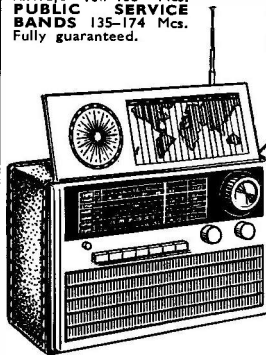
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SALE: Labgear LG-300 CW Tx, coverage 80-10m., VFO, 813 PA, good condition, less PSU, £12. Japanese bug key, £2. Londex aerial relay, with plugs, £1.50. All carriage extra. — Davies, GW3YUC, 5 Wern Street, Penywnern, Dowlais, Merthyr Tydfil, Glam. CF48 3NG.

SALE: Heathkit SB-301 receiver, AM/CW filters, recent works overhaul, very good condition. £90. Froggatt, G3XRU, QTHR. (Tel: Shelsey Beauchamp 208).

FOR SALE: Hammarlund SP-600JX receiver, a rare bird, 20-valve double conversion, coverage 540 kHz to 54 MHz in 6 bands, table cabinet, superb performance and construction, £110. (Cost £526 new, and purchased from G3FIK). — Evans, 1 Pennybryn Way, Newport, Shropshire.

SALE: KW-2000A with AC/PSU, recently checked by makers, £150 or near offer. K.W. trap dipole with 100 ft. co-ax cable, £5, Shure 201 mic., £3. Buyers collect. — Ring Watson, Farningham 2239 (Kent).

SELLING: Geloso VFO 4/102, 80-10m., £8 or near offer. 813 bases, 50p each. — Osborne, G3YMG, Coastguard Station, Trevoise Head, Padstow, Cornwall.

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FOR SALE: Drake 2B receiver, excellent condition, £85, Pye "Vanguard" 2m. transceiver, Tx/Rx on 145 MHz, S-meter, new all silicon mic. compressor/amplifier, self-contained with modified front panel, £40. — Cooper, G8EKA, QTHR. (Tel: Crayford 28915).

SELLING: Hallicrafters S36A, coverage 27-143 MHz, £15. K.W. Vanguard Tx, 80-10m., £25. K.W. E-Zee Match, £5. Eddystone EC-10 Mk. II, £50. All in good condition, carriage extra. — Grigg, G3PRX, QTHR.

SELLING: ST-700 SSB Tx, 2 years old and last entry in log book 5/10/71, £60 or near offer. (Going QRT). Buyer collects. — Davidson, GM6TF, 7 Gaberston Avenue, Alloa, Clacks., Scotland.

WANTED: AT5, T28, 12M/S, 12R/C, cables and circuits, etc. Will collect 100 miles. — Tindal, G3VLQ, Flat 51, 203 Wensley Road, Reading Berks.

FOR SALE: Modified 19 Set Rx, accessories, spare valves, circuits. £8. s.a.e. for details please. — Dunstan, 16 Lincoln Road, Tuxford, Newark, Notts.

SALE: Lafayette HE-30 communications receiver. coverage 550 kHz to 30 MHz, full amateur band-spread including sideband, as new, £26.—Markham, 46 Avon Road, Scunthorpe, Lincs.

SELLING: Pye 703 base Tx, working on two metres, 24 watts input, complete with crystal, £12. Also K.W. E-Zee-Match, only 7 months old, £10. — Axford, G4AQZ, Dorfolk House, Landermere, Thorpe-le-Soken, Clacton, Essex.

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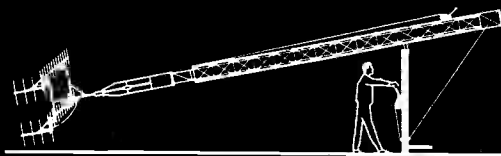
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SALE: Star SR-550 double-superhet receiver, amateur bands only, 160-10m., ANL, switched selectivity, manual, first class condition, **£30**. Will deliver London area before September 5.—Ring Gilkison, 01-850 2216 (London).

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EXCHANGE: Latest Heathkit SB-102 transceiver, SB-600 speaker, as new, FOR Sony CRF-230, or high-grade tape, hi-fi or photographic equipment.—Shipsey, 37 Williamwood Drive, Glasgow G44 3TQ. (Tel: 041-637 3772).

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WANTED: Irish SWL urgently requires circuit, handbook or any other information on Eddystone S.640 communications Rx. Loan or purchase.—Manix, 2 Blacquiere Villas, Phibsborough, Dublin 7, Eire.

WANTED: Any information on B.4631 UHF receiver; can photo-copy and return if necessary.—Lee, 190 Chaldon Way, Coulsdon, Surrey.

WANTED: Compact modern general coverage marine receiver; VLF/HF, and 15 kHz to at least 22 MHz preferred. Good price paid. Also Sell or Exchange mint Eddystone 940.—Rash, G3MQU, QTHR. Tel: Diss (0379) 2875, Norfolk.

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SELLING: Cossor 1035-DB Oscilloscope, £35.

WANTED: R.216 receiver. Please state price and condition.—Fletcher, Sunnyside, Hawkbatch Farm, Bewdley, Worcs.

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WANTED: Communications receiver, coverage 0.5-30 MHz, e.g. Eddystone 830/7, 880/2 or 940, Plessey PR-155, Racal RA-217 or others.—Lewis, 12 Digby Mansions, Hammersmith Bridge Road, London, W.6.

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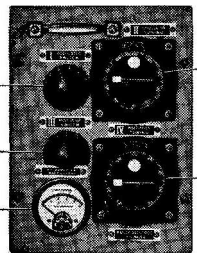
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WANTED: Transistor two-metre converter, having IF 28 to 30 MHz. Also 100 kHz calibrator, small oscilloscope and Command Rx BC-453.—Handy, 105 Humber Avenue, Coventry (22201), Warks.

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