

4/-

The
SHORT WAVE
Magazine

VOL. XXVII

JULY, 1969

NUMBER 5



WORLD WIDE COMMUNICATION



- High power SSB Transceiver
- Extremely good audio (crystal filters fitted)
- Mobile and fixed station
- Operation on all amateur bands from 10 to 80 metres

Write for full technical specification

Other KW Products:

- KW Antenna Switch (3 position)
- KW E-Z Antenna Match Unit
- KW PEP Meter
- KW Match SWR Indicator
- KW Low-pass Filters
- KW Trap Dipoles
- KW Balun
- KW Dummy Load
- KW Q Multipliers



Write for illustrated detailed specifications on other KW Equipment including the KW 2000B ; KW Vespa Mark II ; KW 201 ; KW 1000 and our list of KW Tested Trade-ins.

K. W. ELECTRONICS LIMITED
 1 HEATH STREET, DARTFORD, KENT
 TEL.: DARTFORD 25574. CABLES: KAYDUBLEW DARTFORD

G. W. M. RADIO LTD.

RECEIVERS. RJ475. 2-20 Mc/s. Large slow motion dial, etc., with original power unit for 12 volts D.C. or 230 volts A.C. Less connecting cables, all connections marked, £11, carriage £1. B40 still available 640 kc/s. to 30.5 mc/s. ready to operate from 230 A.C., £22/10/-, carriage paid. A few AR88 for callers, from £35.

METERS. 2 1/2" round 500 ma, 3 1/2" square Moving Iron 100 volts, 3 1/2" square Moving Coil 5 ma calibrated 0-400 amps., 15/- each post paid. Oblong 6" x 4 1/2" 250-0-250 Microamps calibrated 2.5 volts, 750mV, 50mV : Oblong 6" x 5" 500 Microamps calibrated 1 volt, 3 volts, -12 to +2 dB, 35/- each, post paid.

FIELD STRENGTH METERS 100 to 150 mc/s, complete with telescopic aerial, 1 ma meter, etc., 35/-, post paid. **COSSOR 1035 Oscilloscopes,** £15, carriage 30/.

WEATHER FORECASTING EQUIPMENT. Rainfall gauges, consisting of copper funnel, collecting bottle and measure with chart for year, 30/- . Wet and Dry bulb Hygrometers with relative humidity charts, Centigrade, 24/- . 8 day Thermographs readily available charts, £7/10/- . All post paid.

HIGH SPEED BRIDGES 12D/2 apart from Teleprinter uses these have the following high quality components. 200-250 volts A.C. transformer 250 and 400 full wave H.T. two chokes and 2 5U4 rectifiers. Two 807 and eight other valves, three 2" square Ma meters. Compact 19" rack mounting case, £3, carriage paid.

VALVES. New 807 and 5U4, 6/- each, post paid. 6 for 23/-, post paid. 813, used, filaments tested, 15/-, post paid.

FIELD TELEPHONES. Type "F" tested and working, £5, pair post 10/- . **AERIAL VARIOMETER TUNERS** for 19 set, 15/-, post paid.

HEADSETS for 19 or 22 set with microphones, used 10/-, post paid.

LIGHTWEIGHT MASTS. 10 x 3ft. screw-in sections plus 14ft. collapsible whp insulator, which can be fitted at base or top of 30ft. sections (i.e. 14ft. whip 30ft. high or 44ft. vertical) set of guy ropes, pickets and ground spike, 65/-, carriage paid. Packed measures 3' 6" x 7" dia. in canvas case.

RACAL RA17. Aerial trimmer capacitors 220pf, 5/-, post paid.

All Receivers and Test Equipment are in working order at time of despatch. Carriage charges quoted are for England and Wales only.

Telephone 34897

Terms Cash with order. Early closing Wednesday.

40-42 PORTLAND ROAD, WORTHING, SUSSEX

Echelford Communications

32 FELTHAM HILL ROAD, ASHFORD, MIDDX
Ashford 55265 up to 9.30 p.m. any day

The new 2 metre rig the "ECHELCOM 2" will be available in mid-August, however for those of you wishing to see one before then, come and see one either at the shop or the Worcester rally, Upton-on-Severn on July 13 where they will be available for your inspection.

We now have in stock the Danavox Stetomike as reviewed in the April issue of Radio Communication. Mike impedance is 2.5k and the 'phones are 2k other phone impedances available, an S.A.E. will bring full details. The QRK is only 8 gns.

Also in stock —

- | | | | |
|------------------------------------------------------------------------|------|----|----|
| TAYASU MOBILE WHIPS | £ | s. | d. |
| HALSON MOBILE WHIPS | | | |
| J-BEAMS, mainly 2 metres, plus many fittings | | | |
| TRIO TS500 SSB rig, complete with VFO 5, mike, PSU, etc. | 225 | 0 | 0 |
| CODAR PSU's, PR30X, RX10X, etc. | | | |
| DENCO COILS : | | | |
| Transistor types (6d. each P.P.) | each | 5 | 6 |
| Valve types (6d. each P.P.) | each | 5 | 0 |

JACKSON CAPACITORS—S.A.E. for new lists.

Many books, including RSGB Publications, SW Magazine Great Circle map, etc.

SECOND-HAND ITEMS

- | | | | |
|-----------------------------------------------------------------------------------------------------------|-----|----|----|
| TRIO JR500S, receiver, mint condition ... (10/-) | £ | s. | d. |
| NATIONAL NC 2.40, receiver with P.S.U. (15/-) | 22 | 10 | 0 |
| LAFAYETTE "Starlight" transmitter ... (10/-) | 20 | 0 | 0 |
| MARCONI FREQUENCY COUNTER —TF1345 with converters TM5951 (100 Mc/s.) and TM5952 (220 Mc/s.) | 250 | 0 | 0 |

Other industrial measuring equipment available.

ALAN WHEELER, G3RHF

COME RAIN—COME SHINE THIS IS ANTENNA-TIME

SOME ANTENNA PRICES

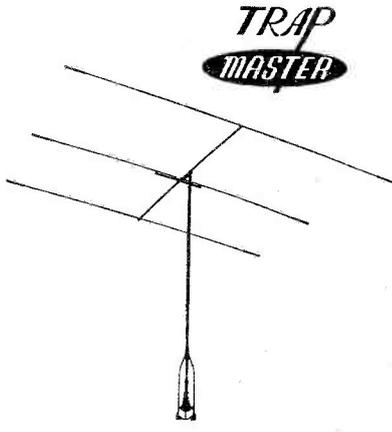
| | | | |
|-----------------------------------------------------------------|-----|----|---|
| ELAN. 2 band 3 elements | £23 | 0 | 0 |
| TA-33 Jr. 3 band 3 elements | £27 | 5 | 0 |
| TA-32 Jr. 3 band 2 elements | £19 | 5 | 0 |
| TA-31 Jr. 3 band dipole | £11 | 11 | 0 |
| V-3 Jr. 3 band vertical | £8 | 5 | 0 |
| A-310. 10 metre 3 elements | £18 | 3 | 0 |
| A-315. 15 metre 3 elements | £19 | 16 | 0 |
| V-4-6. 4 band vertical | £17 | 0 | 0 |
| TD-3 Jr. 3 band trap dipole | £6 | 15 | 0 |
| RV-4. 4 band vertical | £18 | 0 | 0 |
| MP-33. 3 band 3 elements | £33 | 15 | 0 |
| A-92-S. 9 elements 2 metre... .. | £8 | 0 | 0 |
| Classic-33. 3 bands 3 elements | £55 | 0 | 0 |
| RD-5. SWL amateur bands | £7 | 15 | 0 |
| SWL-7. SWL broadcast bands | £7 | 15 | 0 |
| RV-4RK. Roof mount for RV-4 | £10 | 15 | 0 |
| D-4BCa. Base loading coil for V-4-6 for 80 metres | £9 | 5 | 0 |
| TA-33 Snr. 3 bands 3 elements | £52 | 0 | 0 |
| Lancer Mobile. 80-10 metres | £44 | 0 | 0 |
| TW-3X Jr. 20, 40 and 80 metre vertical | £8 | 0 | 0 |
| VTD-3 Jr. 3 band vertical for difficult locations | £9 | 18 | 0 |

Carriage and Insurance extra.

Send for HANDBOOK/CATALOGUE containing full details and prices of Antennae and technical information, 35 pages 2/6 refundable on purchase of an Antenna.



V-4-6



ELAN



V-3 Jr.

NEW : AVAILABLE JUNE/JULY THE MOSLEY "MUSTANG"
10, 15 and 20 metres, 3 element beam, 2 kw rating. Designed and manufactured in England. Full details later. Price £33.

Mosley Electronics Ltd. 40, Valley Road, New Costessey, Norwich, Norfolk Nor. 26K
Telephone: Costessey 2861, orders onl

J. B. LOWE

50-52 Wellington Street, Matlock, Derbyshire

Tel.: Matlock 2817 (2430 evenings)

And lo, there will be a wailing and a weeping and a gnashing of teeth (and them with no teeth can gnash their gums), Sommerkamp have standardised the FR-500. No more optional extras. In many ways this is a very good thing—I hate this business of a basic price and them “two-bitting” you to death with extras you just have to have. Now you get the optional extras as standard (and you have to pay for them!) The standard FR-500 now has :—

1—All xtals fitted. 2—FM discriminator fitted. 3—2m. converter fitted.

and the price is **£160**. If you happen to be a VHF man and want 2m. plus FM, you are indeed chortling as the options under the old system would cost you more than **£160**. If, on the other hand, you don't want 2m. and the thought of FM makes you puke, then things are indeed tough. (Never mind, buy an Inoue instead!) Anyway, there it is lads—the factory have decided to standardise (increased efficiency and that jazz) and so some people gain while others lose. From the flogging point of view it is of course, much more attractive to quote a basic price then gently, in small print, mention all the optional extras, than to include the extras and give the true price, but if it's any consolation the extras are worth more than the increase in price, so the FR-500 is STILL top value. Mark you, Twain, I will be the first to admit that, at first glance, one hundred and sixty nicker is enough to shake the stoutest heart, but all I can say, Gentlemen, is look a bit beyond the price and see what you get for it. I myself am a bit disappointed because I was really going to shout the odds about prices—prices going up left right and centre and yet we haven't increased a price since devaluation. Sommerkamp has to go and spoil it! Although, actually if you look closely it really isn't a price increase, but obviously most guys are going to look at the price, not what you get for it, so I'll shut up and not press the point!

Anyway, what else is new? Oh, yes, what about more expansion for Lowe Electronics—about time we sprouted a bit more. Alan Whitford, down in Polegate is doing pretty well, flogging away like mad. Incidentally he is moving any time, so if you're going to visit him (evenings and weekends) it would be as well to check with me where he is. Anyway, for you lads in the deep south, he is happy to demonstrate all the stuff I flog. For you lads in the West we have just enlisted the aid of Vic Newport, G3CHW, 38, Huckford Road, Winterbourne, Bristol. (Winterbourne 3086 or STD 04-547 3086). Now Vic, as you Westerners know, is a pretty genned-up kiddo when it comes to Electronics, so if you want to see the stuff I flog and play with it, trot along and see Vic. He's one plenty busy fella though, so best give him a call first. Very handy for S. Wales too, being just off the M4, so no need for you Westerners to travel enormous distances to see the latest and best—Vic has it in stock and is ready to snatch the loot out of your hot, sweaty little palm. He will of course, like Alan and like me, have all the Sommerkamp line—FR-500, FL-500, FT-150, FT-500 and may possibly by the time you read this, have the FT-250. I have a few coming, but these have been snatched by the lads who know what's what, and I don't know when the next lot will come, (anyway, I want one myself!) Also of course, the Inoue line—an excellent Rx (all transistor, bags of FET's, 9 mc/s. xtal filter, AC or DC p.s.u. built-in) for **£85** or the whole works, Rx, Tx and p.s.u. for **£180**. And of course, all the other stuff I flog.

SUNDRIES :

| | |
|--------------------------------------------------|-----------------|
| Low impedance padded headsets | £2 5 0 |
| Tech. TE65 VTVM, complete with R.F. probe | £16 10 0 |
| Hansen, S.W.R. Bridges | £3 10 0 |
| Katsumi EK-9X keyer, 5-30 w.p.m. | £7 15 0 |
| Bug keys | £4 0 0 |

All the lovely new stuff can also be inspected at Alan Whitford's, G3MME, 37, Chestnut Drive, Polegate, Sussex. Telephone No. Polegate 4659, evenings and week-ends, or Vic Newport, G3CHW, 38, Huckford Road, Winterbourne, Bristol, Winterbourne 3086, STD 04-546 3086, for those who can't get over to Matlock. If you can't get over to either Alan or myself, send me a s.a.e. and I'll send you my latest lists.

POSTAGE : PLEASE ALLOW LOTS FOR POSTAGE, WE WILL REFUND ANY EXCESS.

73, The Bandit, VE8DP/G3UBO.

CW Monitor, the output relay has a spare contact for Rx muting **£7 15 0**
VHF/UHF 50 ohm dummy loads (new surplus) **£2 10 0**

Tubular trimmers, either $\frac{1}{2}$ -5pF or 3-15pF 1/- each, 10/- doz. Feedthroughs, 1000pF screw type, 1/- each, 10/- doz.; disc ceramics, .001 3/6 doz., .01 5/- doz. Standard coax sockets, 1/- each, standard coax plugs 1/4 each. Plugs (OCTAL, B7G, B9A) 2/6 each. Electrolytics, brand spanning new can types, complete with mounting clips, 100mF 350v. 5/6 each : 100-100mF 350v. 6/8 each : 100mF 450v. 7/2 : 40-40mF 500v. 7/3 : 100mF 500v. 7/9. 100-100mF 450v. 13/2 : Silicon rectifiers, current manufacture, not surplus, not seconds, you can rely on these. SE-05 1000piv 500mA 4/6, panel indicator lamps for standard lilliput bulbs, red or green, 2/6 each, switches, jack plugs, miniature tantalum electrolytic $\frac{1}{4}$ W sub miniature metal oxide resistors, etc. PL259 plugs 5/- each. 100kHz crystals, series resonant, very accurate to mil. spec. **£2**. 300 ohm ribbon, 6d. yard.

NEW SURPLUS resistors, most values from 2d. each. Capacitors from 2pF to 150mF from 2d. each. Mica trimmers, 1000pF 1/- each, 2,800 solid dielectric variables, ideal top band loading. Morse key with buzzer, 15/- . Teisco DM-501 dynamic microphone, high impedance, **£2 15s**. Converters, 21 mc/s. or 28 mc/s. I.F. out 5 mc/s., **£7 10s**. 2m. Converters 28 mc/s. I.F., **£10**.

SPECIAL : COLLINS V.F.O.'s, 2.0-4.2 mc/s. readout to 5 cycles, phase locked from 100 kc/s. xtal (in oven) and divider chain. No drift, 22 valves. The ultimate VFO complete with p.s.u., **£35**.

SPECIAL : 30mHz LOW PASS FILTER (British made). The filter comes in 3 types, FL50A, 50 ohm impedance with Belling Lee sockets, **£4 10s**. FL50B, 50 ohm impedance with SO239 sockets, **£5**. FL75A, 75 ohm impedance with Belling Lee sockets, **£4 10s**.

SSB

TRIO's TS-510 Brings Ultimate Performance



TRIO's TS-510 is the definitive instrument especially engineered for complete "SSB ERA" function. It's a high power, high stability product of imaginative design that fully lives up to the renowned "TRIO" name. Extremely stable VFO, a new development that is built around 2 FET's and 13 transistors, guarantees stable QSO's during entire use, an accurate double-gear tuning mechanism and a linear tuning capacitor produce a 1 kHz direct reading on all bands. There's easy tuning in of SSB signals because the TS-510's frequency coverage has been compressed to 25 kHz for one complete rotation of the dial. Sharp cutoff for both reception and transmission is achieved by a sharp factor frequency filter built just

for this 510 series model. Combined with the TS-510's superb features are the distinctive, top quality PS-510 (Power supply and speaker) and VFO-5D (Variable frequency oscillator). With an AC power supply that operates a built-in 16 cm speaker, the PS-510 has been created as an exclusive companion instrument for the TS-510. It can be installed at any location with the PS-510 because the power supply is regulated on or off at the TS-510. The VFO-5D can match the TS-510 in performance and design. Its reading accuracy is unusually high since a double-gear dial covering 25 kHz per revolution is also used, as in the TS-510.



the sound approach to quality—

TRIO

TRIO ELECTRONICS, INC.
TOKYO, JAPAN

TO: B.H. Morris & Co., (Radio) Ltd. SW
Send me information on TRIO COMMUNICATION
RECEIVERS & name of nearest TRIO retailer.

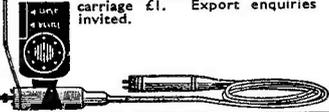
NAME _____ AGE: _____

ADDRESS: _____

TRIO KENWOOD ELECTRONICS S.A. 160 Ave., Brugmann, Bruxelles 6, Belgium
Sole Agent for the U.K. **B. H. MORRIS & CO., (RADIO) LTD.** 84/88, Nelson Street, Tower Hamlets, London E. 1, Phone: 01-790 4824

AIR/SEA TRANS/REC. RESCUE

Compact V.H.F. Trans./Rec. Fits in the pocket. Consists of Mike/Speaker, amplifier, aerial, transmitter and receiver. Were made to operate up to 100 miles depending on terrain. Operates from dry batteries. Completely self-contained. Cost Govt. over £50 each. Regulations state must not be operated in U.K. so please mention "For Dismantling purposes only" when ordering. Price £2.10.0 each, p. and p. 10/-. Two sets for £5, post free. Four sets £8, carriage free. Bulk sale of 10 sets £15, carriage £1. Export enquiries invited.



AIRCRAFT POLICE BAND BROADCAST REC.

Listen to the thrills of aircraft, pilots and airports at work. Also Civil Depts., Fire and Ambulance services. Also taxis, Gas and Electricity services. Ideal for receiving 2 metre amateurs. Gives super reception within the range of all transmissions. A fully transistorised receiver covering 97-147 mc/s. VHF broadcasts. Robust attractively finished metal cabinet size approx. 7 x 7 x 4in. Operates from a 9 volt internal battery. Speaker or Earphone output. Price only £8.19.6, carr. and insurance 10/6.

RECTIFIER SALE

All 6/12v. D.C. output. Full wave bridged. 4 amps. Brand new manufacturers surplus. Only 4/6 each, p. 1/6. Two for 10/- post free.

MINIATURE MOVING COIL SPEAKERS

1 1/2" dia. Only 3/6 each, p.p. 1/6. Two for 8/6, post free.

MORSE PRACTICE OSCILLATOR SET

Complete with "Hints on Learning morse" manual. Fully Transistorised, 19/6, p. and p. 3/6.

WHIP AERIALS

One foot interlocking sections. Only 2/6 each. Four for 7/6, p. and p. 2/6. Eight for 15/-, post free.

WE BUY ALL TYPES OF SCIENTIFIC & ELECTRONIC EQUIPMENT AND TEST GEAR

Please send details of anything you may have for sale. An offer will be made by us by return. S.A.E. please.

TOP BAND SPECIAL

These excellent superhet radios were made for the Govt. by a famous manufacturer. Octal valve line up. Freq. coverage brings in Top Band amateurs, Marine Stations, etc., etc. Slow motion tuning. Built-in power pack for 6 volt operation, but easily modified for mains use. Robust cabinet with self-contained high quality speaker. As new. Few only price £4/19/6. Carriage and insurance 10/-.

Mail orders to:

GLOBE SCIENTIFIC LTD

Dept. SW26.
38 BRIDGE END, MEADOW LANE, LEEDS 1.

RUN YOUR 19 SET TX and RX FROM A.C. MAINS

We manufacture a brand new unit ready to operate all 19 set Trans./Rec. direct from the mains. Complete with full leads and connectors. Contained in a handsome steel cabinet. With full instructions. Price £6/10/-, carr. and insur. 10/-. Mains unit to supply 19 set Receiver section only. Self contained in a cabinet as above. Price £4/10/-, carr. and insurance paid.

MINIATURE B.F.O. UNIT

A miniature fully transistorised tunable B.F.O. that will be a valuable addition to any receiver. A compact unit with single hole fixing that will fit anywhere. Ideal for all ex-Govt. and commercial receivers. Complete with installation instructions, 49/6, post free.

No. 19 SET ACCESSORIES

19 Set control boxes. Brand new and boxed, 10/-, p.p. 2/6. 19 Set headphones and mike. Not new but working, 7/6 per pair, p.p. 4/6. 2 sets for £1, post free. R.F. amplifiers. No. 2 Mk. III. Only £5/10/-, carr. 10/-.

TANNOY MIKES

As new. Ideal for mobile or P.A. work. Only 9/6 each p.p. 4/6.

MATCHING P.S.U.

For R.1132 and 1392 receivers. Only 59/6 each. Carr. 10/6. Brand new in makers cartons.

R.F. AMPLIFIERS No. 2 Mk. III

Increase the output from your 19 set TX. Price only 79/6 each, p.p. 10/6. Few only.

HANDBOOKS and MANUALS WANTED ON ALL BRITISH and AMERICAN WIRELESS EQUIPMENT. TOP CASH PRICES PAID. W.H.Y.

N. W. ELECTRICS

52 GT. ANCOATS STREET
MANCHESTER 4

061-235 6276

G3MAX

EDDYSTONE RECEIVERS AND COMPONENTS, DENCO, REPANCO, etc.

RACAL RA.17. Tuning Heart. 2 to 3 Mc/s. Conversion to 100 Kc/s. Film Strip Scale. Calibration to 1 Kc. Geared tuning mechanism. Ratio approx. 20/1 with fly wheel, brake, etc. Die cast construction. 6064 Osc. 6BE6 Mixer. All units tested before despatch. Excellent condition. In makers packing, £12. Carr. £1.

R.A.F. Modulator Ex. TRI986 VHF Transmitter. EF92-EL91-P.P.6C4. Circuit supplied, 15/-, post 4/6.

'S' Meter. 200 u.A. Scaled 0-200 marked in 'S' points +20+60 dB's. 2 3/4" dia. 2 3/32" mounting hole, 30/-, plus 1/6 postage.

Coaxial Relays. 'Londex' 24v. D.C. 70 watts. RF at 200 Mc/s. Supplied with 3 plugs (ex-cable), 22/6, plus 2/6 postage.

PL259 Brand New. Plug and socket, 8/- pair, post 1/-. Plug, 5/6. Socket, 3/6.

RF24. Bandswitched Converter. 20 to 30 Mc/s. Pre-set frequency. Excellent component value. Contains: 15, 30pf Philips trimmers, ceramic switch, 1-pole 5-way, 3-bank, 3 5/8 x 1" ceramic formers, 3 SP61 valves, 2 5/8" Aladdin formers, standoffs, etc. The complete unit for 17/6, post paid.

High Voltage Transformer. 340/340 Twice 2.5 kV at 500 mA DC when used with Doubler, or 1.25 kV with bridge. Size: 8" x 7" x 5 1/2", carriage 10/-. This also has 2.5 kV at 6 mA for CRT.

CRT. Monitor Tube. 3" E3G1 with base and screen, 25/-, P.P. 4/6.

BY100 Rectifiers, 5/- each, P.P. 1/-; 10 for 45/-, post 2/6. Electrolytic Capacitors. 10 for 37/6, post 4/6. Minimum capacity 50 mfd. 3 kV working when used in series.

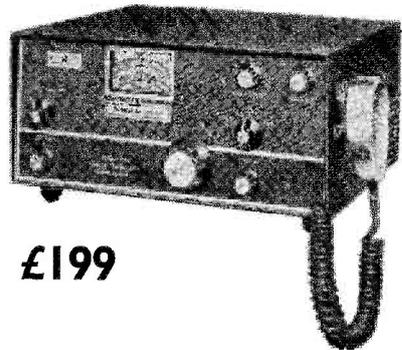
We welcome all enquiries however small

Business hours: 9 a.m.-6 p.m. Tuesday-Saturday
CLOSED ALL DAY MONDAY
Stamped addressed envelope please, for list and any inquiries.

G3SMI

SWAN Cygnet

**A 5 BAND 260 WATT SSB
TRANSCEIVER WITH BUILT-IN
AC AND DC SUPPLY AND
LOUDSPEAKER**



£199

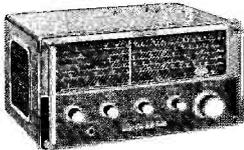
The new Swan Cygnet is a complete SSB transceiver, with self contained AC and DC power supply, microphone and loudspeaker in one portable package. The Cygnet features full frequency coverage of the 10, 15, 20, 40 and 80 metre bands with a power input rating of 260 watts P.E.P. in single sideband mode, and 180 watts CW input. A crystal lattice filter at 5500 Kc is used in both transmit and receive mode, and provides excellent selectivity with a 2.7 Kc bandwidth at 6 dB down. Superior receiver sensitivity of better than 1/2 microvolt makes it easy to pull in those DX signals, and with the Cygnet, if you can hear them, you can work them. Audio fidelity is in the well known Swan tradition of being second to none; providing smooth, natural sounding voice quality. The Cygnet is temperature compensated on all bands, featuring solid state oscillator circuitry with zener regulation which permits wide variation in supply line voltage without frequency shift.

Unwanted sideband suppression is 45 dB, carrier suppression 60 dB, and distortion products are down approximately 30 dB.

The new Cygnet is designed to provide efficient, high quality communications in the 5 most commonly used amateur bands. Its low cost is a tribute to Swan's well known techniques in value analysis, and simple, direct circuit design. Above all, these techniques lead to a high degree of reliability and foolproof performance. Dimensions are: 13" wide, 5 1/2" high, and 11" deep. Weight is 24 lbs.

The transceiver comes complete with AC and DC input cords, and carrying handle; thus making it the most versatile and portable set on the market, and certainly the best possible value.

PETER SEYMOUR LIMITED, 410 BEVERLEY ROAD, HULL, YORKSHIRE Tel.: 41938



GEORGE FRANCIS G3TWV

FULL SERVICE FACILITIES ON KW, EDDYSTONE, SWAN, TRIO.
The same excellent service as given by us for last 11 years.

FRANCIS for EDDYSTONE

| | | | | | | | |
|-------|-----|-----|-----|-----|------|----|---|
| EB35 | ... | ... | ... | ... | £66 | 13 | 4 |
| EC10 | ... | ... | ... | ... | £53 | 0 | 0 |
| EA12 | ... | ... | ... | ... | £195 | 0 | 0 |
| 830/7 | ... | ... | ... | ... | £295 | 0 | 0 |

Diecast boxes and dials in stock.

FRANCIS for KW ELECTRONICS

| | | | | | | | |
|----------------|-----|-----|-----|-----|------|---|---|
| KW2000A | ... | ... | ... | ... | £232 | 0 | 0 |
| KW Vespa | ... | ... | ... | ... | £135 | 0 | 0 |
| KW201 | ... | ... | ... | ... | £110 | 0 | 0 |
| New KW Atlanta | ... | ... | ... | ... | £250 | 0 | 0 |

FRANCIS for TRIO

| | | | | | | | |
|------------------|-----|-----|-----|-----|-----|----|---|
| 9R-59DE | ... | ... | ... | ... | £37 | 15 | 0 |
| JR500SE | ... | ... | ... | ... | £61 | 0 | 0 |
| Matching Speaker | ... | ... | ... | ... | £4 | 7 | 6 |

FRANCIS for JOYSTICK

| | | | | | | | |
|----------|-----|-----|-----|-----|----|----|---|
| Standard | ... | ... | ... | ... | £4 | 15 | 0 |
| De Luxe | ... | ... | ... | ... | £5 | 19 | 6 |
| 3A Tuner | ... | ... | ... | ... | £3 | 12 | 6 |
| 4 Tuner | ... | ... | ... | ... | £4 | 4 | 0 |

Eddystone Diecast Boxes always in stock.

A good range of meters is available up to £19 10s.

BRITISH MADE MORSE OSCILLATOR. Transistor, only needs Morse key and battery, 49/11; with pitch control and earphone socket, 59/11.

No order too small. Goods dispatched by return, postage extra.

93 Balderton Gate, Newark, Notts.

Tel. 4733; after 6 p.m. 2578. Dialling Code 0636.

FRANCIS for SHURE

| | | | | | | | |
|-----|-----|-----|-----|-----|-----|---|---|
| 201 | ... | ... | ... | ... | £5 | 0 | 0 |
| 444 | ... | ... | ... | ... | £10 | 0 | 0 |

FRANCIS for PARKAIR ELECTRONICS

| | | | | | | | |
|------------|-----|-----|-----|-----|-----|----|---|
| Skybandit | ... | ... | ... | ... | £23 | 10 | 0 |
| Concorde | ... | ... | ... | ... | £17 | 15 | 0 |
| 2 metre Tx | ... | ... | ... | ... | £80 | 0 | 0 |

FRANCIS for COAX CABLES

| | | | | | |
|------------------|-----|-----|-----|---|----|
| 52 ohm, low loss | ... | ... | yd. | 2 | 3 |
| 52 ohm, ordinary | ... | ... | yd. | 1 | 10 |
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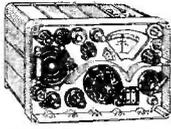
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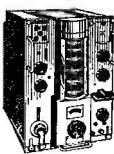


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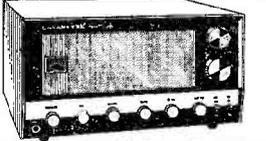
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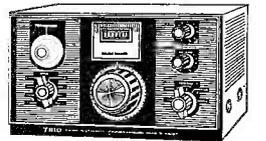
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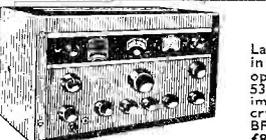


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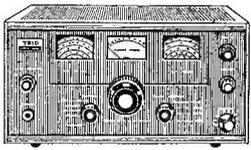
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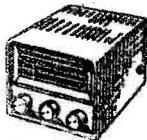
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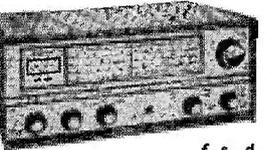
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(GB3SWM)

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The SHORT-WAVE Magazine

EDITORIAL

Exhibition? *Over the last two or three years, there has been a growing tendency to regard the regular Amateur Radio Exhibition in London—by whatever name it might be called—as having become something of an anachronism. That is to say, that while it is always interesting as a Convention occasion, it has lost much of its relevance as an exhibition of technical interest to the radio amateur.*

While the equipment manufacturers' stands have been decreasing, the numbers have been kept up by letting in firms and organisations which, in any true sense, can only be regarded as being on the fringe of Amateur Radio. And some of them, obviously, could only be there at all because they are supported by public money.

For the last two or three years of the London Exhibition, there has been not much really new for the radio amateur visitor to see. Indeed, this is hardly surprising, for even the largest firms in the radionics industry are not able—having regard to the time, expense and effort involved in design, development and prototyping—to produce and show new equipment every year. It is one of the reasons why the larger trade and technical exhibitions are now staged every other year—it gives them time to develop the next generation while catching up on orders from the last showing.

In the strictly Amateur Radio context, it is an expensive business for the relatively small firms in our field to lay on a five-day stand (for most serious exhibitors, the work starts the day before the show opens) and to keep it fully staffed for the whole period. In these days, no sort of exhibition in London can ever be cheap, and a considerable volume of real business needs to be done to justify the expense and effort involved.

It is significant that an entirely different state of affairs obtains at the larger Mobile Rallies and one-day convention events, now usual up and down the country. For them, trade support is enthusiastic. Of course, participation is much cheaper and these events draw a large radio amateur attendance (almost all of whom are potential customers), so that the volume of business done is proportionately greater, and the effort becomes correspondingly more worth while.

On all the evidence, it would seem that the time has now come to re-think the present situation as regards an annual Amateur Radio Exhibition (on the pattern of recent years) in London. It would seem better, both from the point of view of the trade and the visiting radio amateur—who, it must be remembered, has to pay to come in, and for many of whom a long and expensive journey is involved—either to have a four-day Exhibition on the present lines every other year only, or to substitute it by a real Amateur Radio Convention, over a long week-end. This could be laid on in one of the larger London hotels specialising in such gatherings—there are several of them, constantly advertising the facilities and amenities they can offer—with a small trade exhibition strictly confined to those firms and organisations operating directly in our field. And, of course, such an occasion would also be the opportunity for organising the social events associated with a Convention of Radio Amateurs.

*Austin Forsyth,
G6FO.*

TOP BAND WITH THE SOMMERKAMP FT-100

DESCRIBING A PRACTICABLE
MODIFICATION,
PROVED SUCCESSFUL,
TO A POPULAR TRANSCEIVER

J. E. SKETCH (GW3DDY)

THERE are now a large number of these very fine transceivers in this country, coverage being 80 to 10 metres. Most amateurs, having acquired at some cost this commercially-made equipment, are naturally reluctant to alter or interfere with the original design. Nevertheless, there is a constant wish to be able to operate on what was the "local" band, 160 metres, but now that SSB is with us and is ever increasing, this local pattern no longer applies—many will have noticed the distances over which SSB signals can be heard or worked on Top Band. Having obtained a Sommerkamp FT100 some little time ago, which gave a very good account of itself on all the bands for which it is designed, there was this constant wish at GW3DDY to be able to turn a switch and be on Top Band with it.

After much cogitation as to how this might be done, the following were the conclusions: It would be quite in order to add 160-metre coils, with necessary capacitors, take out existing wave-change switches from the coil pack, fit new switches with extra contact positions, make considerable changes to the printed circuit (involving the heterodyne crystals and switches), change the PA coil, and possibly the PA and loading condensers! This would result in correct L/C ratios and would satisfy all the critics—but it would obviously involve a tremendous amount of work, might tend to interfere with present performance and, above all, it would radically alter the original design, which would not meet with the approval of the majority of present owners. So this method was rejected, not unnaturally.

The Approach

With the "correct" way ruled out, it was decided to attempt a successful result by using a compromise conversion. As the Sommerkamp has an extremely efficient receiver section, it was thought that by a bit of padding of the RF tuning condensers, Top Band might be brought within range. If this was successful, working on the theory "if you can hear 'em, you can work 'em," then it might not be too difficult to make the transmitter section work along the same lines.

Proceeding in this manner, a suitable heterodyne oscillator was constructed, the aerial and output sections of the RF transistor stage were padded up and, at once, there was the familiar Loran, and other friendly or unfriendly beacon signals of Top Band. The results were so impressive that the conversion was at once made a permanent feature of the writer's FT100.

Before describing the actual conversion details, it

would be helpful, for those who do not know how the transceiver performs, to give a short description of the circuit details. This will enable a better understanding of the necessary conversion. On 80 metres, the 3.5 mc. signal is received at the aerial, fed into the RF transistor circuit, amplified and then passed to the 1st (receiving) mixer. A local heterodyne oscillator is working on 9220 kc; this also is fed into the 1st Rx mixer; the result of these two signals mixing produces an output of between 5220 kc and 5720 kc, depending on the frequency of the 80m. signal on tune. This mixer frequency of between 5220 kc and 5720 kc is then passed to the 2nd Rx mixer. The VFO works between 8400 kc and 8900 kc; this beat is also fed into the 2nd Rx mixer, and the mixing of these two signals produces the IF at 3180 kc, which passes through the lattice filter, is rectified and audio amplified, and so to the speaker—all as per Fig. 1.

Procedure

The modifications which are necessary are as follows: First, note that the chassis is 12 volts *negative*, contrary to the usual practice (in transistor radio design) of positive to chassis. Upon examination of the circuit, it will be noted that the heterodyne oscillator TR102 (FT100 and FT150) is an n.p.n. type 2SC372, in which the collector is positive with respect to the emitter. A 7 mc oscillator was constructed on a small paxolin board and fitted between the VFO and the preselector tuning condenser, with a change-over switch between and below the plate and loading knobs on the panel. This switch performs the following functions: It disconnects the output of the existing heterodyne oscillator; connects output from new 7 mc oscillator instead;

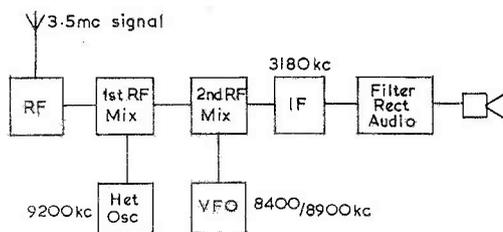


Fig. 1

R
517

Fig. 1. Block diagram to show operation of FT-100 on 80 metres.

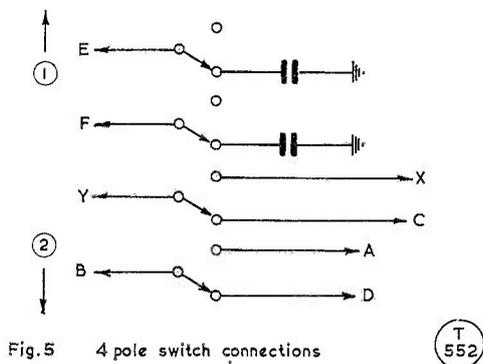


Fig. 5 4 pole switch connections

Fig. 5. Switch connections for Top Band operation with the modification described by GW3DDY. For normal operation (10-80 metres) switch is in posn. 1. For Top Band, leave FT-100 band-switch at 80m. and move new switch (above) to posn. 2. Connections are: E, preselector condenser, Fig. 4; F, ditto; Y, HT + 6/9 volts, Fig. 3; X, HT + feed to existing heterodyne oscillator; C, HT + feed to new 7 mc het. osc., Fig. 2; B, input to mixer, Fig. 4; A, output from existing het. osc., Fig. 4; and D, output from new 7 mc het. osc., Fig. 2.

sections. (Some variation may be found in these values on individual Transceivers.)

Fig. 3 shows the base of the Transceiver and in the left-hand section, near to the band switch knob, will be seen, on the printed panel, a marking 6 or 9 volt (FT150 or FT100). This is the HT supply to the heterodyne oscillator. The printed circuit copper should be scraped away between points X and Y, and two insulated wires soldered to these two points and fed up between the printed panel and the front panel, ready for connecting to the new change-over switch. Point Y is HT and point X is the HT feed point to the existing heterodyne oscillator.

In Fig. 4 will be seen a wire which runs from Point A to point B—this is the RF output feed from the heterodyne oscillator to the mixer. This wire has to be removed from point A and a new wire soldered to that point. This pair of wires is then taken up to the new change-over switch ready for connection. Now fit the 4-pole change-over switch on the panel, between and below the PA and loading condensers, and connect up as shown in Fig. 5. In Fig. 6 is shown the arrangement of the additional items for conversion.

Top Band Tuning

Now a word regarding the 7 mc crystal to be used; The only one the writer could obtain, at ex-Gov. prices, was 7390 kc. This brings the 160-metre band in between 600 and 800 on the red scale. Referring to the short description given of the circuit function, the 1st Rx mixer frequency is between 5220 kc and 5720 kc, so that if a 7 mc crystal is selected and one wishes to know the coverage with this crystal, deduct either 5220 kc or 5720 kc from the crystal frequency and this will give the frequency received at the aerial. For example, taking the crystal frequency of 7390 kc used by the writer, if you subtract 5220 kc from 7390 kc this will give 2170 kc for the HF end of Top Band; taking 5720 kc from 7390 kc will give 1670 kc for the LF end of the band. Therefore, this crystal will give full coverage of Top Band from

1800 kc to 2000 kc. If one wants to start tuning from 0° or 500 on the red scale, careful selection of the actual crystal frequency would achieve this. Remember that 500 on the red scale represents 8400 kc VFO frequency and 5220 kc 1st mixer frequency. Also that 0 on the red scale represents 8900 kc VFO and 5720 kc at the 1st mixer.

Transmit Side

Once the Transceiver has been made to operate satisfactorily on "receive," the hardest part is over. The writer found on switching to "transmit" that it worked at once without any alteration. The output was low, but there was a steady signal on 160 metres. It was found that there was ample output from the driver stage and it was not necessary to apply any padding condensers to the driver tuning condenser. But the PA coil did require an increase in inductance, so 53 turns of 24g. were wound on a lin. former. This was fitted to the back panel of the Transceiver, at right angles to the existing PA coil, there being just enough space above the anodes of the PA valves. This coil was connected in series with the 80-metre end of the PA inductance. A switch was connected across the coil, so that it could be shorted out when Top Band is not required. The PA tuning condenser resonates at mid-way position with ample coverage for the loading condenser.

Results have been excellent, stations in the Channel Islands and the North of Scotland having been worked on 160 metres from this location (South Wales) with conversion as described here. Do not overlook the radiated power output, which has to be cut down to 26 watts p.e.p. in order to comply with the licence regulations for Top Band. This can be done in many ways, such as reducing the final HT volts, lifting one of the cathode leads and running on one PA valve, and also being careful with the final drive and loading.

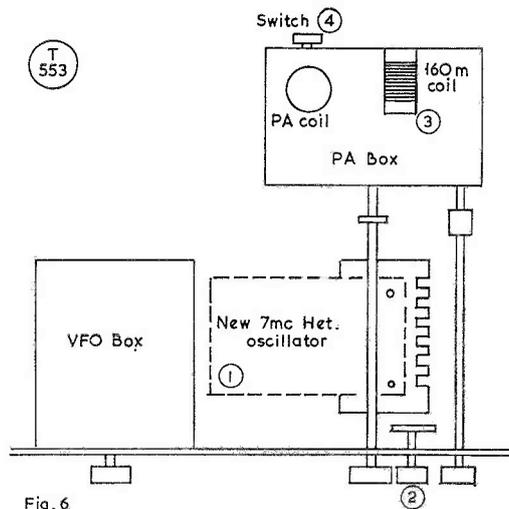


Fig. 6

Fig. 6. Diagram to show how the FT-100 Top Band modifications are taken into the existing layout. (1), new 7 mc heterodyne oscillator; (2), change-over switch, see text; (3), 160m. PA coil, in series with 80m. coil; and (4), shorting switch, see text.

DESIGN FOR AN AMATEUR-BAND RECEIVER

MORE ABOUT THE "BHIM-TAL" — FURTHER CIRCUIT DETAILS AND DESIGN CONSIDERATIONS — THE CA-3020 MODULE

Part II

D. A. HOLLINGSBEE (G3TDT)

CARRYING on from p.218 of the June issue of SHORT WAVE MAGAZINE, we come now to the section including the 2nd Mixer, VFO and IF amplifier.

A receiver can be likened to a symphony orchestra in the sense that a poor or indifferent performance by any section can completely upset the output as a whole. The "first violin" of a receiver is undoubtedly the local oscillator or VFO. Here a performance as near perfect as possible is essential and although many hours have been spent on this part the author is still not satisfied. The original design was a two section Vacker/FET oscillator that gave an excellent *sine* wave with a flat output. Unfortunately, it proved very difficult to adjust to the precise coverage required and for reasons not determined, the 2N3823 developed distinct suicidal tendencies. These transistors are still expensive so a close look was taken at as many published transistor designs as were available. The outcome was, as is often the case, a variation of the Colpitts—W3JHR—Vacker—Seiler configuration (see Fig. 6).

Stability is the first requisite and five or ten minutes after switching on this oscillator will hold a 15-metre SSB signal for an indefinite period. Quite frankly, the author is not in the habit of working either in the 'fridge or the linen cupboard, let alone dashing madly between the two, so no dramatic temperature curves have been prepared. Sufficient to say that when the lady of the house throws wide the window to clear the pipe smoke,

then the tuning stays put. However it *is* sensitive to supply voltage variations and a well stabilised supply is essential. The dissatisfaction that remains is with the purity of the output where some third harmonic distortion is evident. The experimentally-minded constructor may like to try a wide-band tuned circuit between the collector and load resistor, with a link output, or alternatively, wire it as a band-pass circuit across the output between split DC blocking capacitors.

The buffer/amplifier that follows the oscillator has been introduced in the first stage of the receiver and the output is of low enough impedance to permit several

Table of Values

Fig. 4. The 2nd Mixer and IF Amplifier

| | |
|------------------------|-----------------------------|
| R1, R7 = 1,500 ohms | C7 = .04 μ F |
| R2 = 10,000 ohms | C13 = 50 μ F, 15v. wkg. |
| R3 = 100 ohms | C14 = .001 μ F |
| R4 = 120 ohms | Tr1 = 3N141, RCA |
| R5 = 8,200 ohms, oxide | IC1 = CA-3005, RCA |
| R6 = 2,700 ohms, oxide | IC2 = CA-3012, RCA |
| R8 = 1,500 ohms, 5% | FL = Brush Type |
| R9 = 2,000 ohms, 5% | TL-2D5A |
| R10 = 56 ohms | T1 = See Fig. 3, p.215, |
| R11 = 47 ohms | June |
| C1, C2, | IFT1 = See text |
| C4, C15 = .01 μ F | IFT2, |
| C3, C8, | IFT3 = Standard transistor |
| C10, C11, | formers IFT trans- |
| C12 = 0.1 μ F | formers |
| C5, C6, | RFC = 10 μ H RF choke |
| C9 = .05 μ F | |

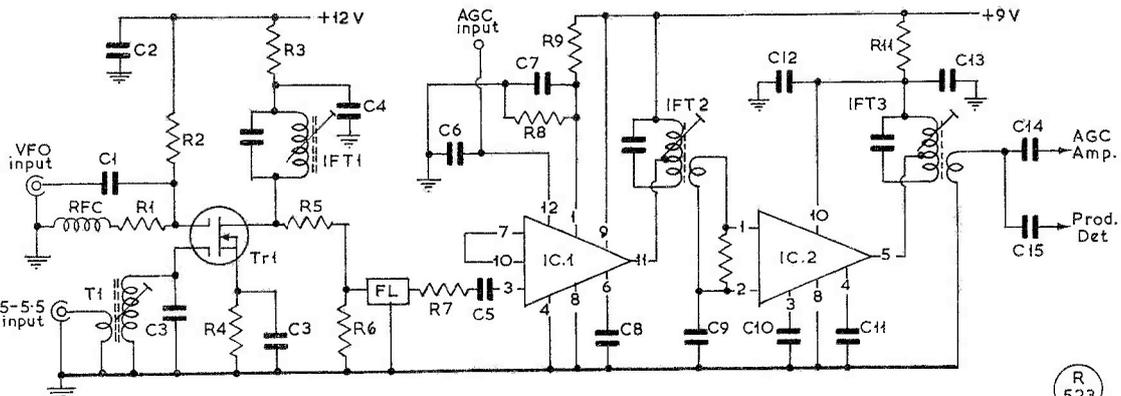


Fig. 4. Second Mixer and IF Amplifiers

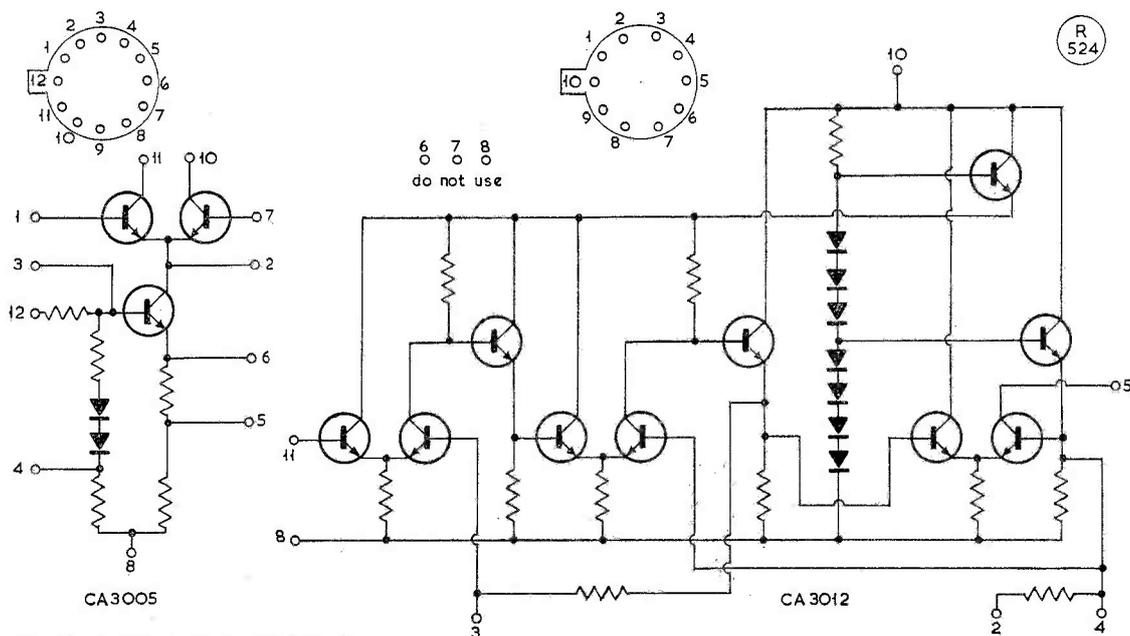


Fig. 5. Detail of Integrated Circuit

inches of coax feed to the second mixer. Obviously, it should be as short as possible but the ability to spread things out a little is a very useful feature when planning the mechanical lay-out.

The second mixer employs the identical transistor (3N141) and components as the first mixer. In this case the output is at 455 kc and one section of a conventional valve type IF transformer is used. This does not need to be an exceptionally high-Q type and the item used in the prototype was a Series 1 *Electroniques* with one section removed. This is no longer available but almost any transformer with a fixed capacitor between, say, 50 and 150 μF should work as well.

The *Brush* filter likes to look into a load of 2500 ohms, although the narrow-band version used is not as critical as the wider band variety. The system adopted presents an almost true resistive load, which is the ideal situation, and comprises the 2700 ohm resistor (R6) in parallel with the series combination of 8200 ohms (R5) and the impedance at the mixer drain. A disadvantage of this method is the potentiometer effect of the two resistors and the noise introduced by the resistors. In practice, the power lost is negligible compared to the gain available and the noise can be reduced by using metal-oxide resistors for R5 and R6. The calculated noise figure is less than a micro-volt which is some 40 dB down on a similar aerial signal. From manufacturer's figures, it would seem that a high-stability resistor would be about five times higher (worse) and an ordinary carbon type could show twenty times the noise. Most metal-oxide resistors are constructed in the same way as wire-wound resistors, with a spiral element. At 455 kc the inductance is negligible, with a side advantage that it does tend to clip high-frequency

transients such as static pick up.

Of course, the filter can be matched in by other means and one such that has the blessing of *Messrs. Brush* is to series tune the IF transformer and to match the filter into a capacity divider. In other words, replace R5 and R6 with capacitors such that the filter sees a capacitive reactance of 2500 ohms. In this case, R6 would become a condenser of about 150 μF and R5 be replaced with such a value as to equal that required for resonance. Some experiments have been carried out, but the time available did not permit them to be brought to a useful conclusion. An interesting approach would be to use an *Electroniques* transformer type SI/TXF/455 in a double-tuned arrangement with, maybe, modification to the tapped C's.

The input and output impedances of the *Brush* filter are identical, but the load presented by the first IF amplifier, an integrated circuit type CA-3005, was difficult to calculate. Consequently the value of R7 was found by what is known in advertising circles as "extensive research" but in more accurate terms could be described as "suck it and see."

The CA-3005 is an extremely versatile circuit. As well as an RF amplifier it can be used as a balanced mixer, product detector or a self-oscillating mixer. The circuit diagram, Fig. 5 above shows the resemblance to that other famous RCA product, the 7360 beam pentode. In point of fact it would be possible to design a complete receiver or SSB transmitter round a chain of these integrated circuits, with something a bit more potent for the output stage. For the purpose of this receiver the IC has been wired as a cascode amplifier, although it is possible and perhaps more efficient to use a differential configuration with a push-pull output. This would

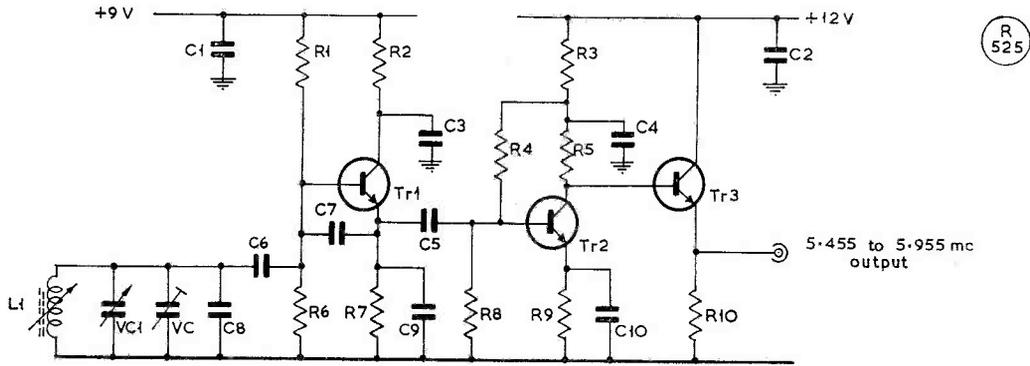


Fig. 6 VFO and Buffer

require a special centre tapped transformer that was not available.

The AGC terminal wants a 1 mA source and cut-off occurs at about 2.4 volts. Maximum gain is at a full 9 volts, but in practice 6 to 7 volts is the usable maximum.

The second IF amplifier is the main gain stage with some 70 dB capability and employs another IC, this time a type CA-3012. There is more gain than is really required and unfortunately it is not practicable to apply AGC. Second thoughts suggest that two further stages using the CA-3005 would be a possible alternative. These could be coupled with double-tuned transistor type IF transformers such as the *Electroniques* T11/455 and AGC could be applied to as many stages as needed.

No apology is made for the continued suggestions for possible improvements nor is any guarantee given that they will in fact be improvements. As emphasised in the introduction, this is an experimental project!

Product Detector and C I O

The output from the second IF amplifier is split two ways. One output feeds the ACG amplifier, to be described later, while the other goes to the product detector. The CA-3005 makes a fine product detector and could be used, but the two-transistor version used in the prototype has, in the opinion of the author, a superior performance. As far as can be ascertained, it was originally described by H. T. McAler in the October 1960 issue of *Electronic Industries*. The version used is based on a design by Daughter, Hayward and Alexander in *QST* for May 1967. It is balanced detector with a common collector connection for the two transistors—see Fig. 7, p.282. The bases and emitters are cross-connected, with the result that if a signal is fed to one of the bases, then one transistor is connected as a common emitter circuit while the other is in the common-base configuration. As one system gives an inverted and the other a non-inverted output, the net result at the mutual collector point is zero. However, with a signal on both bases the sum and difference frequencies appear at the collectors and the difference is selected by the conventional low-pass filter net work.

It was not considered that the number of AM stations using the bands merited the provision of a separate

Table of Values

Fig. 6. The VFO and Buffer

| | |
|------------------------------------------|---------------------------------------------|
| R1 = 12,000 ohms | C7 = .0012 μ F, poly-styrene |
| R2 = 680 ohms | C8 = 47 μ μ F, NTC ceramic |
| R3 = 56 ohms | C9 = 680 μ μ F, mica |
| R4 = 6,800 ohms | C10 = .01 μ F |
| R5, R7, R9, R10 = 470 ohms | C1 = .001 μ F, feed thru. |
| R6 = 10,000 ohms | C2 = .001 μ F, feed thru. |
| R8 = 3,300 ohms | C3, C4 = .01 μ F |
| C1, C2 = .001 μ F, feed thru. | C5, C10 = 180 μ μ F poly-styrene |
| C3, C4 = .01 μ F | C6 = 180 μ μ F poly-styrene |
| C5, C10 = 180 μ μ F poly-styrene | Tr1, Tr2, Tr3 = 2N2925, 2N2926, etc. |
| | VC1 = 50 μ μ F, variable |
| | VC2 = 30 μ μ F, pre-set |
| | L1 = 2 μ H, 15 turns 22g., 0.6in. diam. |

detector. Instead the CIO input to the detector is grounded to AC, so that Tr2 acts as a simple buffer. This is not very efficient and requires about six microvolts of aerial signal for a 10 dB signal-to-signal-plus-noise ratio. This is adequate for Top Band or the early morning 80-metre net, not to mention the UA3 stations on Ten. Needless to say it would be a simple matter to switch the IF output to a conventional diode detector if top quality AM reception is required.

Carrier Insertion Oscillator (C I O)

Matching crystals are no longer obtainable with the *Brush* filter but the manufacturer will supply all the data necessary to order from the recommended supplier—*Brookes Crystals, Ltd., Cornhill, Ilminster, Somerset*. However, in the end an LC oscillator was designed that has proved both stable and reliable but this is not to say that a crystal would not be better and perhaps essential for the proposed companion transmitter.

A simple feedback circuit was chosen and as a tuned oscillator had to be used, it was decided that a panel trimmer would be worth while. In operation, this has been justified, so much so that when a crystal is installed, some form of trimmer will be incorporated. The problem in this case was the old one that there was no room for the essential screening box at a point where it was convenient to bring out the panel control knob. The problem was solved by using a variable capacity diode so that a standard potentiometer could be mounted on the panel. (This method is often used on domestic VHF tuners and

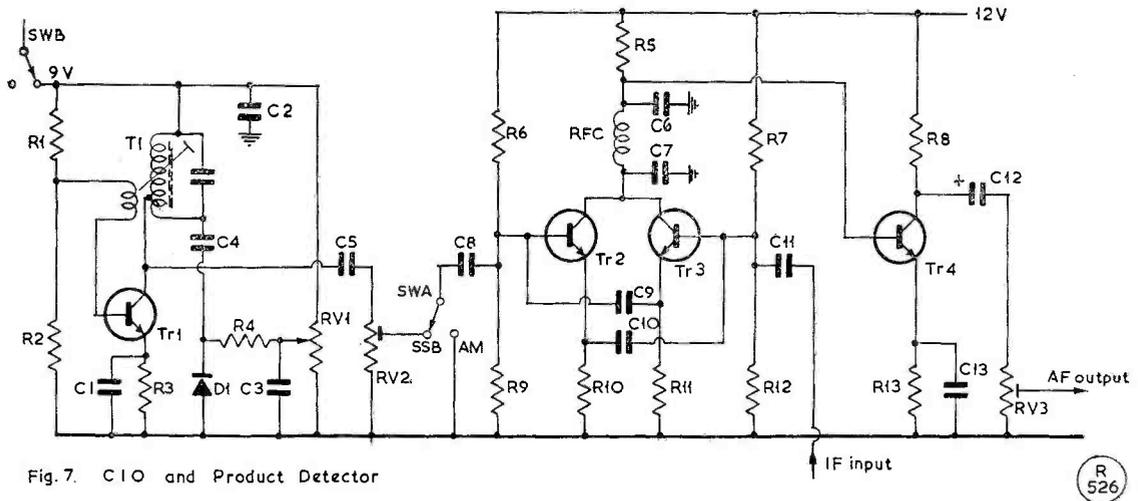


Fig. 7. CIO and Product Detector

R 526

is very reliable.) All the general-purpose diodes show a change in self-capacity with applied voltage so it is not essential to use the rather expensive BA110—an OA202 seemed to work as well, but no long-term tests have been made. A buffer was originally fitted between the product detector and the oscillator but was found to be unnecessary. Unlike the old BFO system, a product detector does not require a high injection voltage.

CW Filter and Audio Amplifier

The audio output stage, Fig. 8 on p.283, is based on the RCA integrated circuit type CA-3020. This is by no means the only integrated output module available and differs from most types inasmuch as an output transformer is required. This is not a disadvantage except from a constructional point of view; the now more usual Class-B capacitor-coupled circuits are very prone to failure if the speaker leads are accidentally shorted and special precautions are needed when switching to 'phones. Also they make excellent detectors and will pick up any modulated signal that happens to be available. (One Chapel organ had the unfortunate habit of reproducing the fruity language of a local radio taxi.) Fortunately, the CA-3020 requires a transformer very close to a standard design intended for a pair of OC81's, so that in the prototype a Radiospares type T/T7 has been used. A ten-ohm resistor is fitted across the output, which is wound for a three-ohm speaker, and this provides some protection from any switching transients, as well as a load when using high-resistance headphones.

Internally, the CA-3020 comprises seven transistors, 11 resistors and three diodes, as Fig. 9. All capacitors are external so although a bandwidth of 6 mc is available, by the selection of suitable coupling and feedback capacitors it is possible to tailor the output to suit any particular application. In this case it has been set to cover from about 250 cycles to 3 kc, the low-frequency figure being determined by C11, C6 and C8. It should be remembered that electrolytic capacitors have a manufacturing tolerance of up to plus 100% of the nominal

Table of Values

Fig. 7. CIO and Product Detector

| | |
|----------------------------------|-------------------------|
| R1 = 47,000 ohms | Tr2, |
| R2 = 10,000 ohms | Tr3, |
| R3, R10, | Tr4 = 2N2925, BC148, |
| R11 = 1,000 ohms | etc. |
| R4 = 100,000 ohms | RV1 = 25K lin. poten- |
| R5 = 5,600 ohms | tiometer |
| R6, R7 = 22,000 ohms | RV2, |
| R8 = 1,500 ohms | RV3 = 10,000 ohms, pre- |
| R9, R12 = 2,200 ohms | set |
| R13 = 4,700 ohms | T1 = Transistor type IF |
| C1, C2, | transformer |
| C3, C4 = .001 μ F | (Weyvad) |
| C5, C8, | D1 = BA-110 variable |
| C9, C10 = .01 μ F | capacity diode. |
| C6, C7 = .005 μ F | (S7.C.) |
| C11 = C15 of Fig. 4 | RFC = 2.5 R.F. Choke |
| (p.279) | SW, |
| C12, C13 = 10 μ F, 15v. wkg. | A & B = 2-pole, 2-way |
| Tr1 = BC103, etc. | switch |

value and should *not* be used for C6 and C8 unless they can be selected. If in doubt, drop to 0.5 and 1.0 μ F.

The output available is a little over 500 mW and can be extended by using the output transformer to drive a further Class-A stage, if required. Distortion at the average listening level is about 3%. As the bias resistors are brought out it is possible to add a very simple squelch circuit by grounding terminal 11 with a transistor switch. Virtually any transistor will suffice as cut-off occurs as soon as term. 11 drops below 3 volts. The CA-3020 is an extremely versatile module and further information can be obtained from the data sheet, RCA File No. 238, and the companion application note ICAN-5320.

The audio filter has appeared many times in various guises and this version was, like the product detector, spotted in *QST* for May 1967. In turn, credit is given to J. F. Delpech and *Electronics* of March 1965. The frequency of the peak is determined by the ratio of R4 and R5, assuming the use of the recommended capacitors. The prototype was set to peak at about 900 cycles but

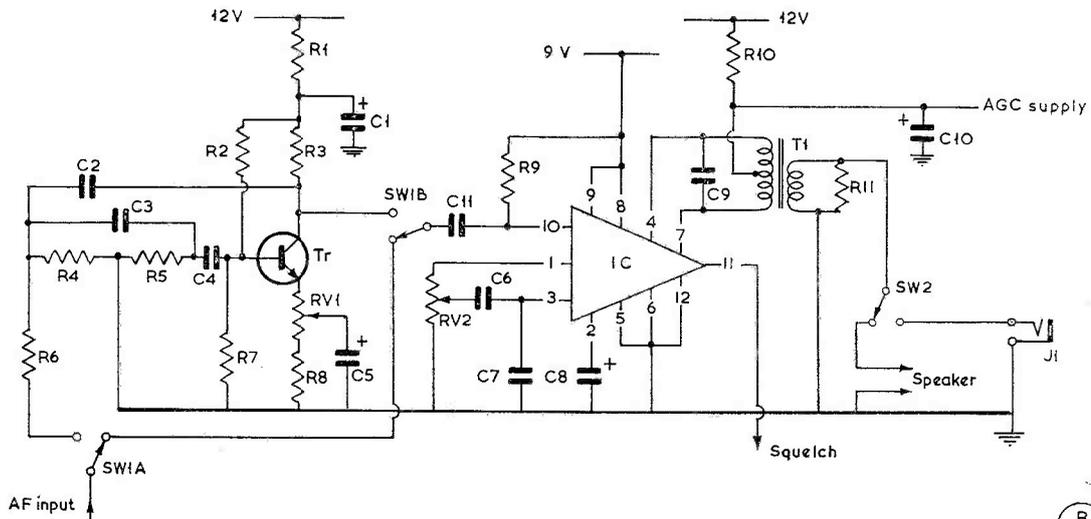


Fig. 8. CW Filter and Audio Amplifier.

R 527

as all components are 10% tolerance types it is unlikely to repeat. However, it is not much trouble to replace all or part of R4 and R5 with a potentiometer which could be left in circuit or replaced with selected fixed resistors. It could be that the circuit will "take off" with the selectivity control at maximum. In this case a resistor should be fitted between the emitter and RV1. The control range can be extended by increasing the value of RV1. Any adjustments must be made with all parts *in situ* and leads more than an inch or so long must be screened.

Although the CA-3020 requires a nine-volt supply it is fed from the 12-volt line to prevent modulation of other stages. There is a secondary use as the decoupled feed point is taken as a reference for an audio-controlled AVC system. As far as the author knows this method of automatic control is completely new and will be described

Table of Values

Fig. 8. CW Filter and Audio Amplifier

| | |
|-----------------------|-------------------------|
| R1 = 120 ohms | C9 = 0.2 μF |
| R2 = 22,000 ohms | C10 = 150 μF, 15v. wkg. |
| R3, R6, | C11 = .02 μF |
| R7 = 10,000 ohms | Tr1 = 2N2925, 2N2926, |
| R4 = 15,000 ohms | etc. |
| R5 = 3,900 ohms | IC = CA-3020, RCA |
| R8 = 4,700 ohms | T1 = Output Trans- |
| R9 = 510,000 ohms | former; Pri. 65 |
| R10 = 150 ohms | + 65 impedance |
| R11 = 10 ohms | (see text) |
| C1 = 16 μF, 15v. wkg. | SW1 = 2-pole, 2-way |
| C2, C3, | switch |
| C4 = .01 μF | SW2 = 1-pole, 2-way |
| C5 = 100 μF, 6v. wkg. | switch |
| C6* = 1 μF | J1 = Open phone jack |
| C7 = 0.1 μF | RV1 = 200 ohms, linear |
| C8* = 2 μF | RV2 = 5,000 ohms, log. |

Note: *Capacitors C6 and C8 must not exceed stated values by more than a few per cent or speech will be distorted.

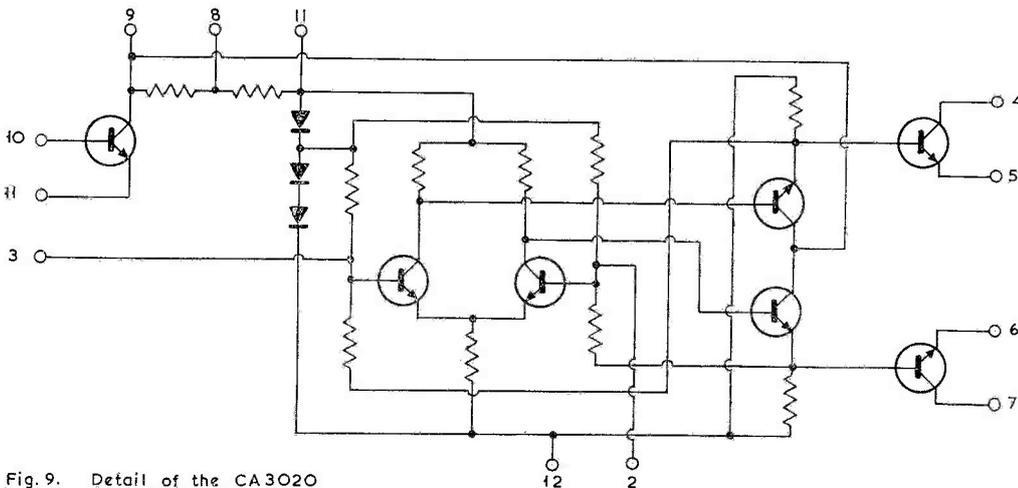


Fig. 9. Detail of the CA3020

R 528

in detail later. If the prospective builder has no interest in CW the filter will not offer a lot of advantage. With a little care in construction and use, a bandwidth of 50 cycles is possible but results are not as clean as a properly designed crystal and phase control; on the other hand it has the advantage of a good 20 dB gain at the selected frequency.

(To be continued)

INTERNATIONAL LONDON COMPONENT SHOW

FOR the first time, the R.E.C.M.F. London Component Show at Olympia, May 20—23, went international, with some 75 foreign companies exhibiting, which, with the 360 British firms taking part, meant an increase of some 40% in the total number of stands compared with previous years.

Although, fairly obviously, the Show was directed towards the professional, there was much of interest for the radio amateur, and even some items which were within his price bracket! Among new products which fall into that category, the following were noted:

Greenpar Engineering were showing a new attenuator kit with "Series N" interfaces, which gave 1 dB to 44 dB attenuation up to 4 Gc at a maximum VSWR of 1.2. They have also introduced small dummy loads at 50 or 75 ohms, capable of handling 12 watts continuous or 50 watts intermittent power up to SHF. Any required terminations can be supplied, or alternatively, the standard Greenpar kit of interseries adaptors can be used to provide the desired match. Prices are reasonable.

J-Beam Engineering introduced their new 70 cm. multibeam. This has eleven elements, a gain of about 12 dB and a front/back ratio of 25 dB. Models are likely to become generally available in about two months time and the cost will be under £10. They are also marketing the "Stolle" beam rotator with transistorised circuits for the feedback of location information to the indicator. Price complete is £18 10s. and it looks sturdy enough to carry all but the heaviest arrays.

Heathkit had a display of their new test equipment, most of which is fairly well-known now, but of particular interest was the OS-2 portable oscilloscope, which replaces the more familiar OS-1. It has a 3in. tube with access to the Y-plates, which makes it suitable for the direct observation of RF waveforms; the Y-amplifier frequency response extends to 3 mc. At £25, this looks good value for money.

Two interesting publications were available from the *Mullard* stand. "Power Rectification with Silicon Diodes," which gives all the design information required for PSU's using these devices, and the *Mullard* "Practical Planar Guide," which lists their products by application, and gives all the relevant data on them. Both are available on request to the firm.

West Hyde Developments Ltd., had their full range of "Contil" cases on display and were also showing a very useful tool for cutting those awkward holes in metal. It is virtually a "nibbler," and any hole, circular

or irregular, can be cleanly punched out. At 59s. 6d. this looks a good buy, since it can substitute for a multiplicity of the more familiar chassis punches.

The *Eddystone* stand had an interesting selection of their products, including the 830/7 general-coverage communications receiver and a number of the small parts for which they are well known. *Painton's of Northampton* have for long been highly-specialised suppliers to the industry of small parts in the category of switches, resistors, attenuators, potentiometers and the like, and are constantly adding to their range.

The old-established firm of *Jackson Bros.*, who were manufacturing variable condensers before the last War, are still in the same business, with an impressive range of air-spaced capacitors of all sorts, from the large transmitting type to small VHF variables, with or without slow-motion drive; they also have some very nice dial assemblies.

New solid-state devices, including IC's, were too numerous for individual mention, but all manufacturers have catalogues available on request.

All in all, a very interesting and worth-while Exhibition.

A.H.D.

OBITUARY

We very much regret to have to record the passing of the following radio amateurs:

—G2APW, Arthur Narraway, of Oswestry, Shropshire at the age of 67, following a heart attack. Interested in Amateur Radio for the past 50 years, his AA licence was issued in 1936. He was active on the LF bands till shortly before his death.

—G2DFX, John Evans, of Eynsham, Oxford, in his 65th year, as the result of a heart attack. Licensed AA/2DFX many years ago in Monmouth, he was keen on the LF bands. On moving to Eynsham, he was the local pharmacist and was about to retire when he died.

—G2DVD, Leslie Rimmington, of Billingshurst, Sussex, after a short illness. He also started with an AA licence and became well-known on the air in the post-war period.

—G3DDO, Norman Routledge, of Poynton, Cheshire.

—G3FCY, Charles Norman, of Hull, at the age of 53, after a heart attack. He was well-known locally as an active member of Hull Radio Society, and on the air as a DX signal on two metres—for years, he kept a nightly schedule with G6NB.

—K5QWZ (ex-G5XV), Robert Pearce, of Oklahoma City, in the local hospital, after a long illness. He emigrated to the States from Liverpool in 1953 and had planned to return to the U.K. on retirement.

—VE2AFB (ex-G8RN), Russell Baron, in Montreal, who was an emigrant to Canada from Beckenham, Kent.

Our sympathies are offered to the families, relatives and friends of G2APW, G2DFX, G2DVD, G3DDO, G3FCY, ex-G5XV and ex-G8RN.

ONE WIRE FOR ALL BANDS

SIMPLIFIED BUT PRACTICAL APPROACH TO MULTI-BAND OPERATION

F. G. RAYER, A.I.E.R.E. (G3OGR)

SOMETIMES circumstance seems to make just those bands which cannot be worked the ones of most interest. Given good dipoles for 80 and 20 metres, idle tuning will reveal a long-chased country calling CQ on 15m. If an aerial is available for 15, Ten will suddenly be full of DX. Cutting the 20m. dipole down for 10 will undoubtedly coincide with the beginning of the best period Twenty has enjoyed for months. Meanwhile, 40m. will be full of South Americans at 5 & 7—while old Bill, whom one has missed chatting with for a year, will be heard nattering away at least three evenings a week on Top Band.

One solution to all this is to have an end-fed wire, which will put out a signal of some kind on any band. Forgetting all about SWR ratio, impedance, minor and major lobes and directivity; dB gain towards Tristan da Cunha; TVI, and various other vital considerations, we can encourage ourselves with the knowledge that we can feed *any* length of wire effectively with nothing more elaborate than an inductor and variable capacitor.

Old Bill might readily agree in part with Terman, and hint that our joy is likely to increase almost as the square of an increase in aerial height. But instead of calculating it all, we can simply decide to put up the longest piece of 14g. or 7/26 wire we reasonably can, as high as circumstances allow. For our conscientious records, we may note that we have 91ft., 22ft. high one end and 28ft. at the other, or whatever. Or, instead, simply look for a surplus coil or materials to make one. It best has stout wire and separated turns to which tappings can be soldered. An old transmitting type variable capacitor is also needed. (Though wide spacing is not needed for low power.)

Because we may have high power on any band from 10 to 80 metres, but will have only low power on 160m., and also need more inductance and capacitance for the latter, it is generally better to have a separate loading unit for Top Band only.

For 10 to 80 Metres

Fig. 1 is the whole circuit. The coil can well look like the PA tank for an 813, 2/6146, or similar RF stage. If to be wound, 26 turns of 16g. on a 2½in. diameter ribbed former, occupying 3½in. of winding length, will do. (And the former can be obtained from *Home Radio, Mitcham.*)

To begin, plenty of tappings are needed. These may be at one turn intervals for the first ten turns or so, expanding to 2-turn, 3-turn and 4-turn intervals towards the end where many turns will be in circuit. Short wires,

soldered on and selected with a clip, can be used, and subsequently reduced in number only to those found to be needed (unless you expect to change the aerial).

The variable capacitor is probably around 100 μμF to 250 μμF. A small chart with number of turns in use and dial reading is useful. A relatively short piece of 75-ohm or other coax goes to the transmitter. The "earth" is a spike, buried wires, or whatever we have.

If operating circuits switch the coax to the receiver, tune the latter to a signal in the wanted band. Open the variable capacitor. Begin with no turns in circuit, increasing turns until the S-meter rises to its best reading, and commences to fall. Go back a turn or two, and rotating the capacitor should peak the signal. This adjustment for the Rx may well be near that wanted for the transmitter.

For transmitting, we can use any of the methods old Bill would advocate.

(1) Proceed as with the receiver, but this time bring in turns until adjusting the variable

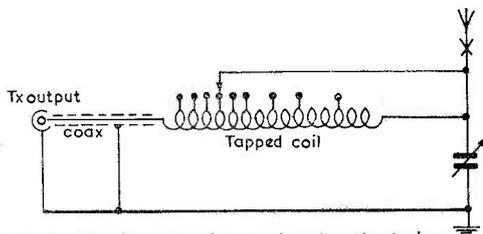


Fig. 1 Circuit for feeding random length of wire

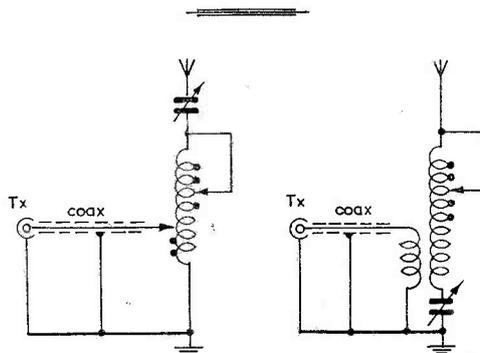


Fig. 2. Two circuits for Top Band.

capacitor allows the PA to be loaded to usual input,

(2) Run the Tx into a 75-ohm or similar dummy load, and adjust the matching unit until the aerial is providing somewhat similar loading,

(3) Place a standing-wave ratio indicator in the co-ax and adjust for minimum reflected power. This may well be near zero,

(4) Put an RF meter at X (in the aerial) and adjust for maximum aerial current, not forgetting this will vary widely as it depends on aerial length and frequency, as well as power,

(5) Check with another station, if QSB permits.

There are actually seven other ways, but these should do! When the aerial is relatively short in terms of a half-wave, or is around an odd number of quarter-waves, an RF meter may show considerable aerial current. If the aerial is about one or more half-waves, there will be little current but a neon bulb approached towards the

lead should glow—which is why the down-lead or lead-in ought to be insulated and clear of people and things.

Top Band

Supposing that the aerial will be well under a half-wave on 160 metres (which is probable, as a half-wave on 1.9 mc is around 250ft.) the Top-Band only loading unit can probably be either circuit of Fig. 2. The coil is about 70 turns of 20g. wire, side by side on a 1in. tube, and the capacitor can be 500 $\mu\mu\text{F}$ or larger, receiver type. One clip on taps shorts out turns. Another allows a few turns at the bottom to be used as primary in an auto-transformer style arrangement. To begin with, about 10 turns between transmitter and earth can well be a good starting point. A separate winding of insulated wire can be used instead, and allows the capacitor to be earthed, also as Fig. 2.

Adjustments can be as already described. A dummy load for 6 watts or so of RF is easily made. Four 1-watt carbon resistors will do for some minutes; six will take 6W. For around 75 ohms parallel combinations are 4x300 or 4x330, or 6x450 or 6x470 ohms. For series use 5x15 ohm will do.

BOOK REVIEW

RADIO AMATEUR'S HANDBOOK

(by ARRL, 46th Edn., 1969)

ONCE again we have the pleasurable task of reviewing this year's edition of what has for long been known as the "Radio Amateur's Bible." The 1968 edition was notable for a change in editorial direction, and this year the effect of the work of Doug DeMaw, WICER, on it is even more noticeable. The number of transistor and FET diagrams appearing in the earlier chapters is a good indication of the extent to which the new broom is modifying and altering the whole outlook. As an example, the chapter on Receiving Systems shows valve, bipolar transistor and FET mixers, and an integrated-circuit IF amplifier. The FET preselector is new, as is the beginner's receiver using a single FET plus audio IC. The "Mighty-Midget" receiver is new, as also is the advanced six-valver, which is based on the famous WIDX HB-67.

For the first time, there is a Top Band rig of a power-level and simplicity which could well become the favourite first-transmitter construction project for newly-licensed G stations. Many people have expressed interest in the project of building an SSB exciter with transistors—most of the raw material in the form of circuit details appears this year (with the valve circuits alongside) for balanced modulators, the filter section, balanced mixers, and so on.

A transceiving converter for 160 metres will be of interest to the many using rigs not adapted for operation on this band. There is also an FET converter for use /M with the normal car radio as IF strip, and a mobile transmitter using transistors throughout.

And so one could go on—but enough has been said

to indicate that much more than usual has been changed in the 1969 edition, as indeed occurred in 1968. It is fair to say that anyone with a copy of the *ARRL Handbook* earlier than 1968 would find it completely different, almost to the point of being unrecognisable. However, the old high standard is still there and, as always, the *ARRL Handbook* is, in its 1969 form, an indispensable addition to the library of any active amateur taking a serious interest in the techniques of Amateur Radio.

E.P.E.

EDITORIAL NOTE: The 46th (1969) Edition of the *ARRL Radio Amateur's Handbook*—of more than 700 pages, covering the whole field of Amateur Radio, fully illustrated and indexed (and including 52 pages of up-to-date advertising)—costs 50s. in paper back, or 60s. library edition (hard back), and is obtainable post free ex-stock on receipt of order from: Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.



"... chairman will now transmit his address ..."

TRANSISTOR POWER SUPPLY

PRACTICAL DESIGN TO GIVE 80 WATTS OUTPUT

P. J. FINCH, B.Sc. (G3PST)

IN the early days of transistor circuit design, applications were limited by power and upper frequency limit. These limits no longer apply—except in extreme cases, and where the combination of both high power and high frequency is required.

With the highly-rated transistors now available there comes the problem of the associated PSU. To supply 80 watts of power to a modulator at 10 volts, a current of 8 amps, is required. When such large currents are to be drawn from a power supply unit it is difficult to achieve satisfactory regulation and a low ripple-content in the output waveform. The problem can be greatly alleviated by increasing the supply voltage to 40v. so that the maximum input current to the modulator is only 2 amps. Modern transistors which have collector-emitter breakdown voltages well in excess of 40 volts are available, and designing circuits which employ these transistors will bring many advantages.

The stabilised supply described here will deliver an output of about 40 volts at 2 amps with good regulation and a low ripple content.

Zener Stabilisation

The circuit shown in Fig. 1 can be used to stabilise moderately low currents. If the maximum dissipation of the zener diode is P_z watts and the zener breakdown voltage is V_z , then the maximum output current is a little less than P_z/V_z amps. This is because the current through the resistor is essentially the same at all outputs. When the output is zero, all the current through the resistor passes through the zener diode. By using current amplifiers a lower-power zener diode may be used and the stabilisation improved. The circuit of the power supply is shown in Fig. 2.

Circuit Description

Assume that the output voltage has increased for some reason. A fraction of this positive error is fed via

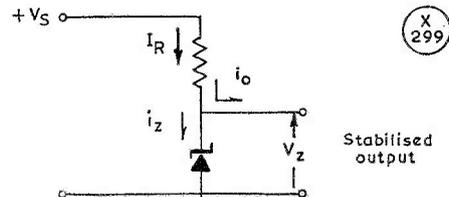


Fig. 1

the potentiometer (R3, R4, R5) to the base of Tr3. This causes Tr3 to conduct more heavily, as the emitter is held at a constant potential by the zener diode, D1; the voltage drop across R2 is, therefore, increased. This reduces the potential at the base of Tr2 with respect to its emitter. The base drive to Tr1 is, therefore, also reduced, increasing the series impedance of Tr1 to the output current. The voltage drop across this increased impedance returns the output voltage to its correct value.

The capacitor C3 was included to suppress a 10 mc

Table of Values

Fig. 2. Circuit of the Power Supply Unit

| | |
|-----------------------------------|----------------------------|
| C1, C2 = 900 μ F, 100v. | D2, D3 = Rectifier diodes, |
| C3 = .047 μ F, 50v. | D4, D5 = 50v. 2 amp. |
| C4 = 1 μ F, 25v. | T1 = Mains transformer, |
| C5 = 10 μ F, 50v. | 50-volt |
| R1 = One ohm $\frac{1}{2}$ w. | F1 = Fuse, 2 amp. |
| R2 = 4,700 ohms, $\frac{1}{2}$ w. | Tr1 = Fairchild BU100, |
| without current | or Texas 2S024 |
| limiter, or 3w. | Tr2 = Mullard 2N1893 |
| with cct Fig. 5 | Tr3 = Texas 2N3707, |
| R3 = 1,800 ohms | 2N3704 or |
| R4 = 1,500 ohms | similar |
| R5 = 4,700 ohms | |
| D1 = 24v. zener diode, | |
| Texas HS2240 | |

Note: Adequate heat-sinking must be provided—see text. Transistors may be substituted as suggested by the characteristics given in Table I, on p.288.

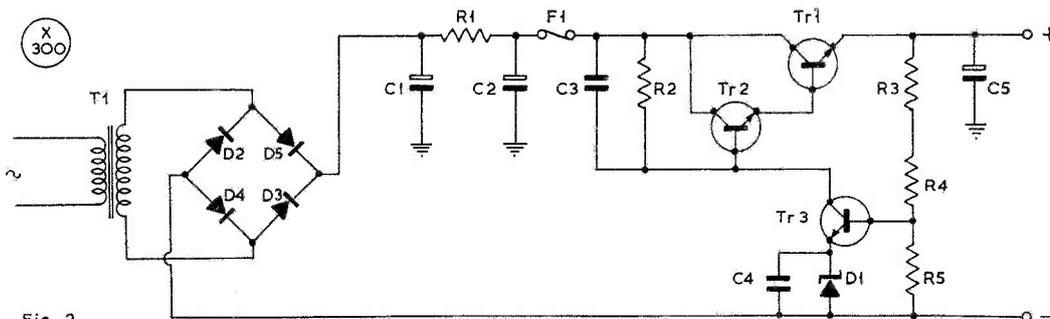


Fig. 2

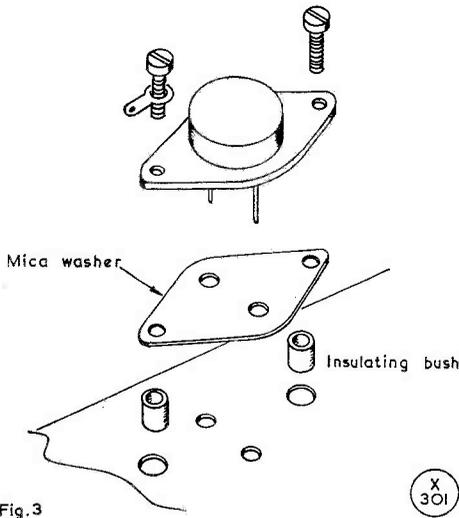


Fig. 3

oscillation which otherwise appeared in the output. C4 functions to reduce any noise introduced by the zener diode.

Construction

Most of the components for the PSU can be mounted conveniently on *Veroboard*. The series transistor Tr1 has to dissipate about 60 watts at an output current of 2 amps, so that a good heat sink is essential. The transistor can be mounted on the chassis, or any fairly large metal surface, provided a mica spacer is used to provide electrical insulation between the heat sink and the transistor, as shown in Fig. 3 above.

If a suitable transformer is not available, one can easily be constructed from a low voltage/high current transformer. The secondary winding is removed and a

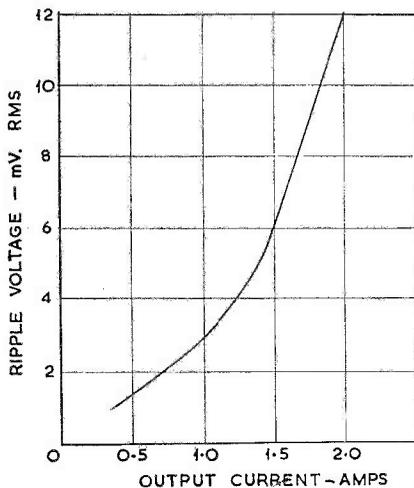


Fig. 4

X 302

TABLE I

| Stage | Vce volts | Ic mA | hfe | Ptot watts |
|-------|-----------|---------|-----|------------|
| Tr1 | 30 | 2 amps. | 20 | 60 |
| Tr2 | 30 | 100 | 50 | 3.0 |
| Tr3 | 30 | 10 | 50 | 0.25 |

Note: If the current limiter of Fig. 5 is incorporated, Vce for Tr1 and Tr2 must be at least 70 volts.

new secondary winding with more turns is put on. This can be accomplished as long as thinner wire is used for the secondary. It is suggested, therefore, that the original winding should have a rating of at least 4 amps.

Performance

When no current is drawn from the unit the output voltage is 44 volts. This voltage will vary slightly from one supply to another, due to tolerances on R3, R4, R5 and D1, in Fig. 2. If for some reason a specific voltage is required the circuit can be modified, as described later. The output voltage drops to 43 volts when 2 amps is drawn from the supply.

The variation of ripple voltage with output current is shown by the graph in Fig. 4. At no time does the ripple exceed 0.03% of the output voltage.

Component Choice

It is quite conceivable that suitable substitutions for the transistors recommended might be found in the station "transistor box." (By now, most amateurs will have a "transistor drawer" as well as a "junk box"!)

Table I herewith may help in choosing a suitable transistor by showing the minimum characteristics required. A transistor with the highest gain should be selected, as the stabilisation depends to a large extent on this factor.

Circuit Modifications

No current limiting device is incorporated in the circuit as it was designed to be an integral part of the ancillary equipment. If the supply is to be used as a power source for experimental work it is wise to include a current limiting circuit. Without this it is possible that a short circuit current would destroy at least Tr1 before the fuse blows. Fig. 5 shows a possible current limiting circuit. See opposite.

When the voltage across R on the zener is about 4 volts the thyristor will fire. This effectively grounds the base of the Tr2, which reduces the output voltage to zero. It will also be necessary to increase the rating of R2 to 3 watts. This circuit has not been combined with the supply, and should provide some interesting research for the constructor.

The output voltage could be varied by replacing R4 by a 4.7K potentiometer. The base of Tr3 is then connected to the slider rather than as shown in Fig. 2. It must be realised, however, that as the output voltage

is decreased, the voltage across Tr1 is increased and care must be exercised so as not to exceed the maximum dissipation of this transistor. As the output voltage is increased, stabilisation is reduced. Variation of the output voltage should be limited, therefore, to ± 10 volts of the nominal output voltage.

Precautions

The resistor R1 must be mounted well away from other components because of the large amount of heat generated.

As a final precaution, when the supply has been operating into its normal load for some time, feel the case of Tr1 to ensure the temperature of this transistor is not obviously too high. This is not necessary, however, if the transistor used is designed to operate safely at high temperatures.

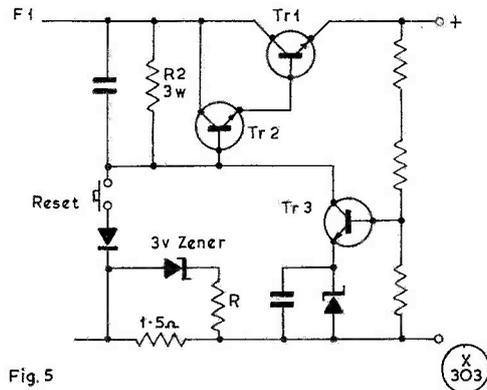


Fig. 5

STORY OF A CUBICAL QUAD

EXPERIENCES WITH THE
DEVELOPMENT OF A
VERY GOOD PERFORMER
HAVING UNEXPECTED
DIMENSIONS

G. D. WILSON (G3NUF/CX9AAN)

THE publication of details of an all-metal Quad (SHORT WAVE MAGAZINE, April '68) reminded the writer of experiments made last year at CX9AAN on a similar antenna. Here are details of experiences with a 20-metre Quad, which may be helpful to those thinking about one for the first time.

The Quad has justly earned a reputation for superb performance and for those of us who have the acreage, plus tolerant neighbours (or preferably no neighbours at all!), it is well worth a try. Looking at different designs from which to decide dimensions, it was surprising to find such a wide difference of lengths. The available literature gave from 33ft. to 35ft. 1in. for the driven element on 10 metres, and 68ft. 4in. to 72ft. on 20 metres. These represent resonant-frequency differences of something like 3500 kc on 10 metres and 800 kc on 20 metres! If all of these antennae work as well as their sponsors claim it would appear that almost anything between such limits will perform. (Consoling thought for the beginner!) However one doubts if they do, and with such variety of opinion there is the challenge to do one's own experimenting to ascertain the optimum dimensions. The interesting thing about the above-mentioned *Magazine* article is that his dimensions of the all-aluminium Quad adhere fairly close to the established standard of $250 \div mc$ feet-per-side, and yet the author makes a point of reassuring readers about the apparently high

dimensions which are in fact only a few inches longer than a well proven commercial design. High dimensions? —read on!

The self-supporting Quad at CX9AAN was made up of aluminium tubing for the horizontal sections of the loops, and the corresponding tips were joined with Litz copper wire. The tubing was of $\frac{3}{4}$ " and $\frac{1}{2}$ " diameter telescoped, and allowed for a maximum safe extension of about four feet total per loop, considered adequate for future adjustments. The dimensions were duplicated from a previous, and very successful, *Labgear* Quad, i.e., 68ft. 4in. for the driven element and 73ft. 2in. for the reflector. The extra length for the reflector was accommodated in the horizontal sides only so that the vertical wires were all the same length. The elements were mounted on, but insulated from, two 12ft. aluminium booms. (The original *Labgear* Quad had been built and erected without any grid-dipping and SWR checks.) However, with the new antenna it was anticipated that some checking and trimming would be necessary (little did CX9AAN know what he was in for!), and accordingly it was arranged that the array could be raised and lowered in a convenient position over the flat roof of the house.

First Surprise!

The first check was with the GDO and put the resonant frequency at about 15.5 mc. This was farther

out than expected and the first thing after checking the measurements was to dive into the *Handbook* to see if this could be accounted for by the different length/diameter ratio. In the writer's experience "the practice that I know is often better than the theory that I don't," and he was soon back on the roof with the GDO, little the wiser, but with the general feeling that length/diameter ratios could not account for 1500 kc. So each loop was lengthened by about four inches and the GDO tried again. There was no noticeable difference! The observation was repeated several times. Incredulous!—the GDO dial still indicated 15 mc +, whilst each loop was at least two feet longer than it should have been! (It should be added that at the same time as lengthening the driven element, the reflector had also been lengthened in order to preserve approximately the original ratio.

At this point, a thorough check was made of the GDO for false dips, calibration, and to see to what extent it was pulled when coupling it to the antenna. It is said that the Quad is a difficult antenna to which to couple a GDO. (In the writer's experience all antennae are difficult to couple to!) If you sway and the aerial sways you can get dips all over the dial. If you over-couple, the oscillator isn't where the dial says it is—but with care you can reduce this effect to better than the dial accuracy.

To cut a long story short, eventually the Quad was made resonant at 14.2 mc. Then the loops were measured. The driver was 76 feet and the reflector 80 feet, give or take an inch or two! This was so far from the expected measurements that it seemed it could never work.

It was then decided to dispense with the depressing procedure of grid-dipping and merely build and erect the antenna as per the original measurements, as in the case of the *Labgear* Quad. A few hours later, with the shiny new monster up at 60 feet the rig was switched on, expecting to bang a hole in the band. (Ever had that feeling?) During the next half-hour three QSO's with friends disclosed that the usual S9 signal was down to S5 or 6. That figured! The SWR monitor indicated pretty much the same either way and the receiver sounded as if it had been left with the dummy load on! The Quad was ignominiously dumped on the roof (they come down much quicker than they go up!) to wait for inspiration to strike once more.

The outsize version was investigated again, and the previous findings were confirmed, finishing up as before with a King-size Quad. The GDO indicated 14.2 mc as near as could be seen. The transmitter was warmed up at this frequency and arranged to be keyed from the roof-top. The coax feeder and SWR indicator were for 75 ohms. With the SWR indicator connected at the antenna feedpoint the indication was about 1.3 : 1—a good start. Adjusting the elements slightly soon made it 1 : 1.

Theoretical Considerations

Some of the factors which determine the feedpoint impedance and hence the SWR can be thought of as follows: At the resonant frequency a single Quad loop has an impedance of about 110-120 ohms, varying slightly with the height above electrical ground. Antennae can be regarded as tuned circuits, and as such, the introduc-

tion of another circuit, tuned to the same frequency, into the field of the first will absorb energy from it and thus lower its impedance.

The extent to which the parasitic element lowers the impedance of the driven element depends on the coupling between them, *i.e.*, the greater the coupling the lower the impedance. In turn, the coupling is affected by the physical distance between the elements and their resonant frequencies. From the *Handbooks* we see that at 12 feet the impedance is brought down to about 70 ohms, and at 8ft. 6in. it is about 50 ohms. If the resonant frequencies of the elements are the same there will be maximum coupling between them. Unfortunately, this is an undesirable effect as far as the *tuning* of the antenna is concerned. The F/B ratio of the array is adjusted by tuning the reflector element, thus altering the feedpoint impedance. Where there are interlocking adjustments one has sometimes to seek a compromise which will satisfy what one is prepared to tolerate in the way of mis-adjustment. This can be a vicious circle and indeed in the case where one is prepared to sacrifice a good SWR in favour of maximum F/B ratio it must be remembered that although the SWR doesn't affect the F/B ratio, the radiation from the feedline as a result of poor SWR can partially mask the efficacy of the F/B ratio.

Points on Matching

If one wants everything "on the nose" then the only solution is to introduce an independent variable such as a gamma-match (or similar) to take care of the feedpoint impedance, or variable boom length to look after the element interaction. The writer is against using any matching network because of the added complication of construction, waterproofing, and increased risk of failure to the whole system. But the best reason is that he doesn't understand exactly *how* they work! As the Quad is inherently an antenna with a feedpoint impedance easily adaptable to standard coax lines, then the extra complication seems unjustifiable. However, experiments were carried out with both the gamma and the Clemens matches, and for the benefit of those who may be contemplating trying either the results are discussed below.

The Clemens match has two adjustables and is therefore easier to set up. The series capacitor is out along the element which may be mechanically difficult. The gamma match has three adjustables which interlock to some extent and unless one is careful one tends to go in ever-widening circles, away from the desired point of adjustment! The series capacitor can be mounted on the boom and it is probably easier to make a rigid, waterproof job. Both devices seem to work well—too well, in fact, and this is where the danger lies. By accident it was found possible to get an SWR of 1 : 1 in the middle of the band, but the *resonant frequency* of the array was several hundred kilocycles outside the top end of the band! This situation looks fine on the meters in the shack but obviously the system will not be working at its best! In view of this easy trap, the obvious caution is that one must ascertain the resonant frequency of the array and match *at that frequency*. Just to make it more difficult one should remember that attachment of and adjustment to the matching device can upset the resonant

frequency of the array.

Mechanical considerations do not usually allow for the boom length to be varied for the sake of adjustment and this approach has not been tried. It would be reasonable to assume from what is already known that if one has the time and the patience it would be possible to arrive at unity SWR without a matching device combined with maximum F/B ratio *at that particular boom length*. The last few words are stressed because it is equally reasonable to assume that somewhere along the line there is a boom length that gives a maximum F/B, and that it is not necessarily a length that coincides with a 52 or 75 ohm feedpoint impedance. Despite aversion to matching networks, there had not been the time to investigate this last idea. It is hoped that the comments here may inspire someone who has and can pass along the results.

On the rooftop at CX9AAN the antenna was not rotatable and it was not possible to make a proper check on the F/B ratio. However whilst adjusting the SWR, it had been noted that alterations to the length of the reflector had only a small effect. In other words, if it was decided to adjust for best F/B ratio once the antenna was on top the tower it would seem safe to do so without disturbing the SWR beyond the tolerable limits. The antenna had been adjusted with the lower elements about four feet above the roof, but it is interesting to note that even with them resting on the roof or mounted 50 feet above the ground the frequency of minimum reflected power was identical. Before going any further, a QSO was tried, giving 59+ from a couple of thousand miles away, which indicated that it worked better than its predecessor—and provided the necessary inspiration to drag it up to the top of the tower again!

Notes on Results

The performance of the King-size Quad was superb. The most remarkable thing was the fantastic F/B ratio. (Bear in mind that as yet no adjustment had been made for F/B and the reflector, which was about 5% longer than the driver, had been adjusted to give 1 : 1 SWR.) There was no chance actually to adjust for front-to-back ratio but one doubts very much whether it could have been bettered. Scores of checks were made on the air and the F/B can be summarised by saying that if the signal (either way) did not exceed S9 on the front, in most cases it would be unreadable off the back!

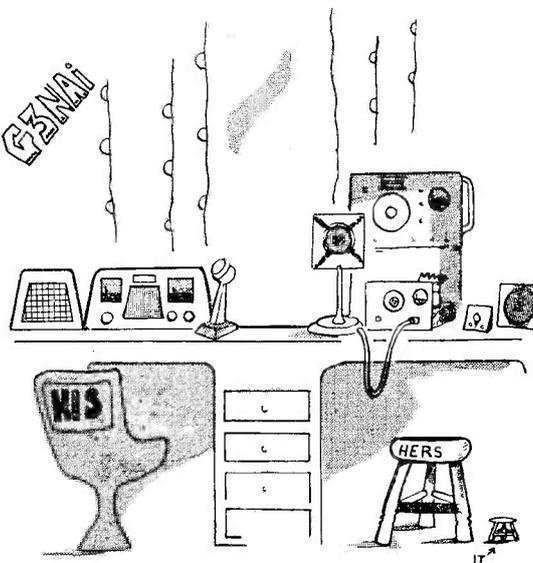
The extra lengths of the loops was made up by increasing the vertical wires. This meant that the antenna finished up by being 20 feet tall. With this form of construction the top set of elements cannot be guyed and there were fears of what the wind might do to it. Those fears were justified. After it had been up about two weeks the antenna died from Nature's causes.

From the salvage, another start was made. This time the antenna was built much wider, but shorter, in order to have less unsupported mast in the air. The same measurements were tried as a starting point, *i.e.* 76-foot driver and 80-foot reflector. The vertical height was made only 16 feet; thus, the aluminium self-supporting sections were now 22 feet and 24 feet, driver and reflector respectively, with a few inches for adjustment in the telescoped joints. The end sections were $\frac{3}{4}$ in. tubing added to the existing $\frac{1}{2}$ in. and $\frac{1}{4}$ in. sections. With the

antenna on the roof the indications on the GDO and SWR monitor were identical with the previous array, and so it was mounted on the tower. This time the performance was disappointing. On the front the antenna seemed to work pretty much as before as near as one could say. However, the F/B ratio was never better than three S-units and at times, with stations about 1000 miles or so away, non-existent. With the assistance of a local amateur the F/B was adjusted and although a maximum point was reached the F/B was no better than three S-units on his receiver.

The story is unfinished. The writer's time in CX-land was nearing an end, and the experiments were shelved for the future when the time and materials were again available. The conclusion was that the next approach would be back towards a more rigid version of the 20 feet tall Quad. This form of construction is more suited for monobanders and is thus of limited interest, but is especially attractive for 10 or 15 metres where the size is manageable, and the antenna is obviously capable of excellent performance.

These antennae and the findings on them have been discussed at length over the air with scores of amateurs and no-one has offered any helpful theories—nearly everybody expressed doubts about the writer's ability with the tape measure! The inferior performance of the 16 feet tall Quad is probably explained by the smaller stacking distance of the current antinodes, but it seems odd that the change in shape of the antenna produced such a drastic difference in its on-the-air performance as a beam, yet with no change to the GDO and SWR indications. No satisfactory explanation of the larger dimensions have been suggested and it would be interesting to hear from anyone with similar experience who may have the answer.



SPECIALLY ON THE AIR

Some further entries have been received under this heading—see p.229, June issue SHORT WAVE MAGAZINE—and at the time of going to press the revised list is as below. Any other events to take place after July 25 should be notified as soon as possible, set out in the form shown here, and addressed: Editor, SHORT WAVE MAGAZINE, BUCKINGHAM.

G3WQK, June 27-29: For the Polegate Steam Engine Rally, a station is to be put on by the Southdown Amateur Radio Society. It is hoped to operate AM/CW/SSB on all bands 10 to 160 metres, 11 a.m. to 9 p.m. daily. It is expected that there will be a high local noise level, electrical and otherwise. QSL cards are being overprinted to cover the event.—A. R. Seabrook, 6 Harebeating Gardens, Hailsham, Sussex.

GB3RCS, June 28-29: Operated by the Royal Signals Amateur Radio Society, to coincide with the annual Signals Renunion weekend. Two stations are being put on the air, to cover all bands 10-160m.—R. A. Webb, G3EKL, QTHR.

GB2MHW, June 29: Operated for the British branch of the Loyal Order of Moose, from Winscombe, Somerset, to work the Moose Convention station K9VWJ/9, Mooseheart, Illinois, U.S.A. Licensed brothers interested and able to help with equipment or operating are asked to get in touch with: Bro. R. F. Vowles, G3PFD, 14 Railway Terrace, Fishponds, Bristol (659515), BS16-4LP.

GB2HRH, June 28-July 6. For the occasion of the Investiture of the Prince of Wales, at Caernarvon Castle on July 1, station will offer SSB contacts on all bands 10 to 160m.—J. G. Evans, G3WET, 22 Sheerfoot Lane, Four Oaks, Sutton Coldfield, Warwickshire.

GB3SFW, July 6-13: Operating from the Cathedral City of Southwell (Nottinghamshire) during the Festival Week celebrations, running AM/CW/SSB on all bands 10 to 80 metres.—P. A. Scragg, G3YCT, 38 Norwood Gardens, Southwell, Notts.

G3SFG, July 10-12: Put on by the Southgate Radio Club for the annual Finchley Carnival, in Victoria Park, London, N.3. Activity will be on all bands 10 to 160m., also on 2m.-4m.—A. G. Edwards, G3MBL, 244 Ballards Lane, London, N.12.

GB3SUA, July 11-13: For the 700th anniversary celebrations of the Guild of the Holy Cross in Stratford-upon-Avon; this Guild was the forerunner of the present Borough, which was granted a charter in 1553. The station is being staged at the invitation of, and with assistance from, the Borough Council. Operation will be AM/CW/SSB on 10-15-20-80m. Organisation is by the Stratford-upon-Avon & District Radio Club, and special QSL cards will be issued.—M. J. W. Webb, G3OOQ, 14 Townsend Road, Tiddington, Stratford-

upon-Avon, Warwickshire.

G3YKY/A-G3YDV, July 12: For the Henley Grammar School fête and swimming gala, starting 2.0 p.m., stations will cover 10-160m. AM, also 20m. and 80m. SSB. Special QSL card offered, with talk-in on 80/160m. for visiting amateurs, who will be welcome.—A. P. Vincent, G3YKY, Melody House, Gillotts Corner, Henley-on-Thames, Oxon.

G3MHB, July 12: Exhibition station arranged by Bradford Grammar School Amateur Radio Society for the annual summer fair; operation to be on 15-20-40m. SSB from noon till 6.0 p.m.—D. A. Pickles, G3XVA, Amateur Radio Society, The Grammar School, Bradford 9, Yorkshire

GB2SI, July 12-13: Organised by the Sully & District Short Wave Club on the occasion of the Investiture Fête being held on the Playing Fields, Sully, near Penarth, Glam., South Wales. Operation will be on 15-20-80-160m. SSB, and visitors will be very welcome. QSL's and further information: J. Sugden, GW3SLA, 7 David Street, Coldbrook, Barry, Glam.

G3XBF, July 13: At the Dagenham Town Show, the Barking & District Radio and Electronics Club will be operating on 2-40-80-160m.—H. G. Davidson, G3FZP, 223 Salisbury Avenue, Barking, Essex.

GB3RGD, July 13: For the annual gala day of Redifon, Ltd., at the Redifon Sports & Social Club, near Crawley, Sussex. Operation is to be on 10-80m., SSB only, and all operators will be employees of the firm.—M. Bath, G3YAB, 54 Barrington Road, Crawley, Sussex.

GB2LS, July 17-19: Put on by the Liverpool & District Amateur Radio Society for the annual Liverpool Show, the station will be active on the 10 to 160m. bands. Contacts will count for the local "Worked Liverpool Award," for which U.K. operators must work 15 Liverpool stations. QSL's and details: H. James, G3MCN, 448 East Prescott Road, Liverpool, 14.

GB3SMG, July 28-August 2: On the occasion of the International Games for the Paralysed to be held in the new Sports Stadium at Stoke Mandeville Hospital, Operation will be on all bands 10 to 160m., and it is hoped to be on the air continuously from 0900 till 1800 BST daily.—G. H. Ungar, G3XIF, Stoke Mandeville Hospital, Mandeville Road, Aylesbury, Bucks.

GB3WRA, September 6: Operating from the annual Wycombe Show on The Rye, High Wycombe, Bucks., running all bands 4m. to 160m. AM/CW/SSB. Visiting amateurs will be specially welcome.—A. C. Butcher, G3FSN, 70 Hughenden Avenue, High Wycombe, Bucks.

"Short Wave Magazine" carries more paid Small Advertising than any similar periodical circulating in the U.K.—See pp.330-336 this issue.

THE MOBILE SCENE

NOTES, RALLY NEWS AND PICTURES

THE Mobile Rally season is now well under way and following its usual pattern, with good attendances and a high level of enthusiasm in the /M context.

It is interesting to find that there are more mobiles on the two-metre band than ever before—due, of course, to the fact that the G8/3's, as they become more numerous and want to get out-and-about in the radio sense, are taking to mobile operating in quite a big way. And, in many cases, they are getting very good results. (The technique of /M on VHF is just as tricky as on any other band, there being a bit more to it than just installing the gear!)

However, the 160-metre band is still the most popular, by far, for mobile working. It is also noticeable that on Top Band, aerial installations have been tidied-up considerably—and that, in the main, loading coils are being carried above roof-level (which is where they should be for the most effective radiation).

* * *

Another point of considerable significance is that some of the bigger Rallies—like Midlands, Maidstone and Derby, to say nothing of other one-day events such as the Northern Radio Societies Annual Convention in

Manchester—attract better Trade support than is given to, say the Amateur Radio Exhibition in London, which runs for several days and has been of diminishing interest during the last few years. This at least suggests that the whole basis of an expensive annual event in London needs re-thinking.

* * *

The Northern Mobile Rally at Leeds on May 18 drew an attendance of about 1,500 people, which must have pleased the organisers, the Northern Amateur Radio Mobile Society, because on this occasion their event was held on school premises—as distinct from a show-place normally open to the public, meaning that people were there strictly for the Rally. Some pictures of the occasion appear herewith.

* * *

On June 1, in fine and warm weather, there were two Rallies—that at Maidstone being noteworthy for the fact that there was a Trade show (organised by Fred Barns, G3AGP) consisting of no less than 40 stands, more than half of which were manned by companies' representatives! Held at the Maidstone YMCA centre, in connection with the 125th anniversary of that organisation, more than 150 callsigns appeared in the visitors' book, of whom about 80 were /M's—keeping the talk-in stations busy on 2m. and 160m. The best mobile installation was adjudged to be that shown by G3TXJ/M, of Rochester, Kent.

With fine Wx, plenty of space and the usual run of



Expectancy, as the numbers were being drawn for the big raffle, which was one of the events at the Northern Mobile Rally (Leeds) on May 18. About 1,500 people attended for what turned out to be a very successful occasion, organised by the Northern Amateur Radio Mobile Society. It was one of those events when the crowd was there for the Rally itself, and not just to visit some local show-place.

competitions and raffles, the Rally organisers—G3ORP, G3REM and G3YCN—are to be congratulated on a very successful and enjoyable event.

* * *

Also on June 1, the Amateur Radio Mobile Society held their annual Rally, this time at the Shuttleworth Collection, Old Warden Airfield, near Biggleswade, Beds. For this, there was no organisation at all, inspired by the findings of a questionnaire circulated to members of A.R.M.S. some little time ago. The attraction was, of course, the Shuttleworth Collection itself—vintage aircraft and cars, many of them originals. Unfortunately, there was no actual flying, which was a disappointment to many people. This was because these precious machines have to be very carefully nursed, with the

airfield well mown and wind assistance from the right direction.

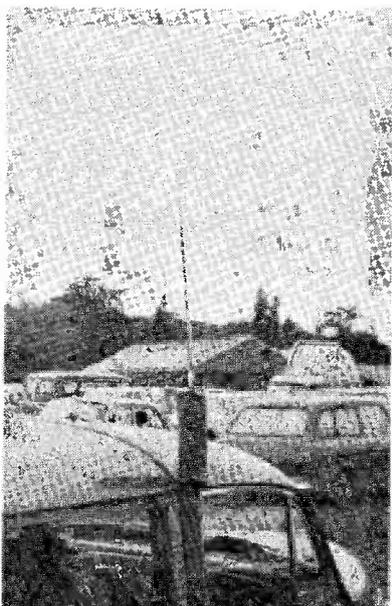
By 4.0 p.m., there were about 320 cars parked, a large proportion of them being fitted mobile. Assuming that 200 cars came actually for the Rally itself (the Shuttleworth Collection is open to the general public) with an average of three passengers per car, the attendance could be put at around 600 people, representing a "gate" in the region of £100 accruing to the Collection by reason of the Rally alone—perhaps a not unsatisfactory afternoon's result from their point of view, having regard also to what must have been the substantially increased takings in their shop and tea-bars. (On this occasion, the A.R.M.S. itself was not in any way financially involved.)

* * *

The current list for the Mobile Calendar is now as follows:

June 29: South-West of England Mobile Rally at Longleat Park, near Warminster, Wilts., the home of the Marquis of Bath, off the A.362, Frome-Warminster. Picnic beside the lovely lake, in the grounds of this magnificent house, with all its well-known attractions

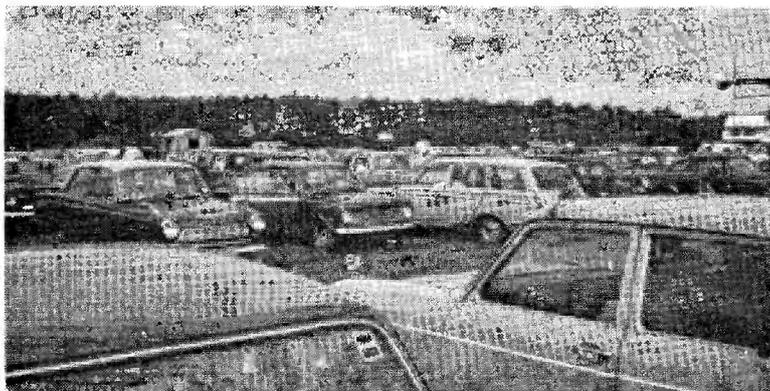
[cont'd p.296]



The base-loaded Top Band whip on Morris Traveller FK6-894C, with a firm mounting at roof level—noticed at the A.R.M.S. Rally at the Shuttleworth Collection on June 1.



Among the large number of visitors to the Northern Mobile Rally at Leeds on May 18 were, left to right: G8BPP, G8BNE, G8BNA and G3GJY.

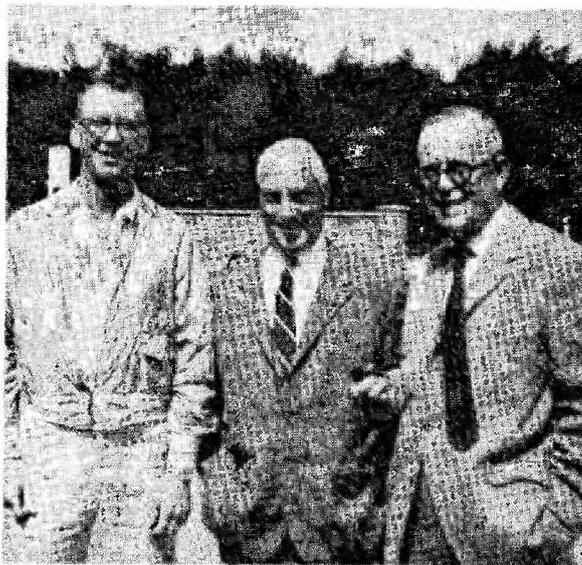


Some of the 300 cars parked for the A.R.M.S. Rally at the Shuttleworth Collection, Old Warden, Beds., on June 1. Particularly to be noted were the facts that Top Band aerial assemblies have become much neater and more hygienic, and the increasing number of two-metre halo's. This was essentially a "Club occasion" under very pleasant conditions.

For the Scunthorpe Mobile Rally on May 11—of which we have had no other report—ten members of the Pudsey & District Radio Club made a foray under their own power. Among those in this picture are: G3RAZ, G3XUD, G3YED, G8BUP, G3YEE, G3YFP and G8BWW.



Brian Grist, G3GJX, now of Guildford, Sy., was at the Shuttleworth Rally, with his wife. He will be well remembered in Hertfordshire as lately the very active hon. secretary of the Verulam Club group. His mobile rig consists of a KW-2000A into a Husler multi-band whip, all neatly mounted in an Austin 1800, TYW-914F. Under /M operating conditions, he works 10-15-20-80m. and, as well as EU's and the U.K., has DX contacts with ZL and the U.S.



Among those noticed at the A.R.M.S. Rally at the Shuttleworth Collection on June 1 were, left to right: G5AES/WA5EAT, of Wethersfield; G6LL (Buntingford, Herts.), a very well-known old timer, nowadays mainly active on VHF; and G4QU (Cuffley, Herts.). The two latter maintain a regular natter-link —on two metres.

[cont'd overleaf]

—lions, apes and the rest. Rally is to include a Trade Show, surplus equipment sale and other side-shows. Talk-in will be given on Top Band and two metres. Actual Rally site, which will be sign-posted, is beside the exit from the Lion Reserve, by the lake.—J. Thorn, G3PQE, Jessamine House, Chapel Allerton, Axbridge, Somerset.

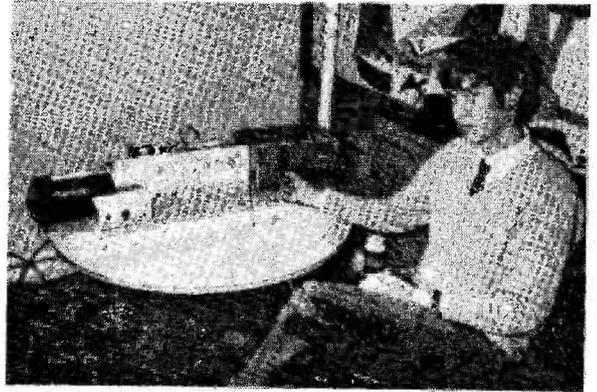
July 6: South Shields & District Amateur Radio Club's annual Mobile Rally, at Bents Park, Coast Road, South Shields, Co. Durham, opening at 2.0 p.m. Talk-in stations will be operating on 160m. and 2m. from 11.0 a.m. There will be a trade exhibition, with light refreshment available on site. Free car parking tickets can be obtained by application to: D. Forster, G3KZZ, 41 Marlborough Street, South Shields, Co. Durham.

July 6: North-East Technical College Radio Club's Mobile Rally at Colchester Zoo, signing GB3ZOO for the talk-in.—R. C. Greenleaf, G3VAG, 27 Ernest Road, Wivenhoe, Essex.

July 13: Wessex Amateur Radio Group's mobile picnic at Stoney Cross Airfield, near Cadnam in the New Forest. Talk-in by G3FVU/P on 1880 kc and G8AVE/P, 144.20 mc. It is hoped to make this a pleasant and informal get-together for anyone caring to attend.—A. G. Emery, G8AVE, Windrush, 7 Brunel Drive, Preston, Weymouth, Dorset.

July 13: At the Hill County Secondary School, Upton-on-Severn, Worcestershire, Rally organised by the Worcester & District Amateur Radio Club, venue one-mile west of River Severn, on the A.4104. Talk-in will be on 144.26 mc, by G3NUE; 70.26 mc, by G2AFD; and by G3GJL on 1910 kc. There will be an amateur RTTY demonstration and a display of model aircraft. Refreshments will be on sale and there will be plenty of cover if it rains!—R. L. Avery, G3TQD, 24 Alexander Road, Droitwich, Warks.

July 27: Pudsey & District Radio Club Mobile Rally, at Allerton High School, Leeds 17. Talk-in on all regular bands.—M. S. Gaunt, G3WGW, *QTHR*.



The neat two-metre station operated under callsign G3XAC/A, talking-in for the Northern Mobile Rally on May 18.

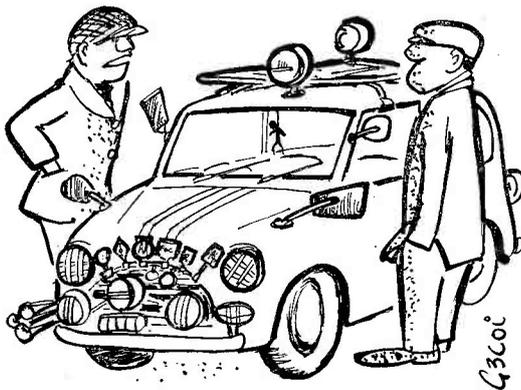
August 10; Radio picnic at the Scenic Car Park, Yelverton, Devon, organised by the Plymouth Radio Club, with talk-in by G3PRC/P on 2m. and 160m. This is intended to be an informal get-together, on the lines of previous years.—J. H. Peters, G3YDU, 43 Holtwood Road, Glenholt, Plymouth.

August 17: The annual Derby Mobile Rally, twelfth in their series of highly successful events, with an average attendance in previous years of over 4,000. As usual, the venue is Rykneld School, Bedford Street, Derby, with free admission, parking and entertainment. This will include field events, a mammoth prize draw, radio-controlled model aircraft display, grand junk sale, a band of music, and a (controlled) number of trade stands. Refreshments will be available on site. Talk-in stations, opening at 10.0 a.m., will be ready on 2m., 4m. and 160m., and it is intended also to operate a station to work DX on the HF bands. For the keen mobileer and Rally visitor, Derby is not to be missed. And even if it rains, there is plenty of indoor accommodation.—T. Darn, G3FGY, 1 Sandham Lane, Ripley (2972), Derby, DE5-3HE.

August 24: Torbay Amateur Radio Society Mobile Rally, at the Newton Abbot Recreation Ground (head for the gas-holders!), with talk-in from 10.30 a.m. on 2m. and 160m., signing G3NJA/A. Refreshments will be obtainable on the ground, and various entertainments will be offered.—D. Webster, G3LHJ, 14A Keyberry Park, Newton Abbot, South Devon.

August 24: Royal Signals and Amateur Radio Mobile Societies' Rally (open to members only) at the Royal Signals Camp, Blandford Forum, Dorset.—N. A. S. Fitch, G3FPK, Hon. Secretary, A.R.M.S., 40 Eskdale Gardens, Purley, CR2-1EZ, Surrey.

August 31: The G3VGG, Bromsgrove & District Amateur Radio Club, Mobile Picnic will be held in the grounds of Hartlebury Castle (Worcestershire County Museum) near Kidderminster, Wors. Talk-in will be given on 2m. and 160m.—J. Dufrane, 44 Hazelton Road, Marlbrook, Bromsgrove, Wors.



"... have thought of going Mobile but feel it might clutter up the car ..."

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

THE preamble last month threw up quite a bit of comment, one way and another, some pro-CW, others against—but the point at which your conductor was driving—which was the problem of getting on the air on the DX bands at all under present TVI conditions—was virtually ignored. It does seem as though those who are free from TVI on most bands cannot understand why the others are in trouble, while those who have TVI on all the bands where DX can reasonably be hunted have given up what seems to them an unequal struggle.

There is another possibility, although the commercial market at the moment does not seriously cater for it, and that is the prospect of /M DX'ing. The majority of cars in use are still arranged for positive-earth electrics, while to this writer's knowledge there is only one transceiver commercially available which is predominantly transistorised and hence reasonable in terms of battery drain when receiving—and that one is designed for negative-earth cars.

There is, of course, the possibility of using a conventional transceiver in the car, but the heavy current drain on "receive" is such that for the chap who wishes to spend his morning and evening trip to work, plus possibly a half-hour at lunch-time, on the air, the battery problems arising would be prohibitive. What is needed is a hybrid, or better, fully transistorised system with very good transmitter VFO characteristics which could be run on "receive" until a wanted DX station is heard, with just a switch to flip on the PA heaters and HT, so that a quick call and QSO can be made, and the thing reverted to receive-only until the next call can be made.

Such a rig would enable many of us to get on the air for at least brief periods when the DX is about, and since the general approach of DX stations seems to be to give the mobiles a bit of priority, it could result in quite a lot of pleasure all

round.

The Mail

Such a mixed bag this month it is very difficult indeed to know just where to start! This seems to be a time of the year when comment, preferably controversial, is more in evidence than reports of actual QSO's.

Let us take the letter from G3DRN (London, S.W.20.) first, not only because he has something pertinent to say, but because he is one of those who put back into the hobby far more than he takes out. It is on the question of QSL Bureaux and their operation that he wants to comment. Basically, he says that failure of operators to receive cards, or their late arrival, whether direct or *via* the Bureau, is simply the failure of people to get cards off promptly. While it is, on the face of it, sense, for an operator to hold his outgoing cards till he has a full envelope, it is equally true to say that if he has already promised to QSL, it is clearly up to him to send the card off pretty promptly, and not, as so often happens with the relatively inactive operator, to hold his envelope for months, until he has enough to take up the maximum weight allowable. In the same way, he should mark his envelopes accordingly if he only wants the two or three cards waiting not to be held at the Bureau until enough more have arrived to make a full packet.

Changing tack a little, G3DRN has another one to add to the already over-long list of soap-opera inanities which crop up on the phone bands. This one is the Top Band station who declared he was "QRZ the channel." As he had no idea whether anyone was in fact calling him, just what, for pity's sake did he mean—or, indeed, did he know what he was trying to say? A Very Good Question, indeed!

Showing the Flag

Around this time of year there are quite a few special-activity stations

on the air. One that springs to mind is GB3FRE, who were on, and dishing out contacts with Fermanagh to all and sundry—except G3KFE!—from Enniskillen. However, what is more important is that your conductor has had letters from both GI3OLJ and GI3WSS on the subject, and the latter did a good turn in passing on a copy of their "hand-out," which is quite the best attempt at explaining what, and why, Amateur Radio is and does, that the writer has seen in years, written very much with the casual visitor to the station in mind rather than the knowledgeable. A very good effort indeed.

Around the Bands

With the onset of summer conditions, the good trend of the earlier part of the period under review was followed by somewhat of a nose-dive on the HF bands, and at the same time came periods of very heavy static on Top Band and Eighty. At the time of writing, the Wx is such as to deter all but the keenest DX addict from even poking his nose into the shack, with a heat-wave of the sort that "memory" always makes us believe only occurred when we were young children.

DX-Peditions, and Similar Efforts

L12B is a call which was last heard on the air from the raft *Kon-Tiki*, way back; it is now active again, this time from Thor Heyerdahl's new venture, the reed boat *Ra*, from which it is appearing on 14234 kc

ALL-BAND ZONES AND PREFIXES TABLE

Starting date: January 1, 1969

| Station | Zones | Prefixes |
|---------|-------|----------|
| G3XYP | 40 | 355 |
| 9H1BL | 38 | 309 |
| G3VPS | 29 | 182 |
| G3WPO | 28 | 174 |
| G3PQF | 15 | 96 |

SSB. The plot here is that Norman, the operator, goes on 14217 kc *LSB* with his essential traffic, and then shifts up to 14234 kc USB to work stations, in accordance with a list prepared by LA5LG and W4ETO, during 1000 till 1130z. (Norman is not a licensed amateur in the true sense and cannot work CW.) Many U.K. contacts have been made with LI2B.

Another one of a similar nature, in its own way, is I11CL/MM, Commander Valli, sailing from Peru to Tahiti in a small rubber boat. The voyage is expected to take about 80 days, the gear being a Swan Cygnet to a vertical held up by a balloon, on 14 and 21 mc.

At the time of writing, Gus, W4BPD, has turned up on Des-roches again, signing VQ9/A/D. The

future plan is understood to include Etoile Cay, Baudeuse Cay, Wizard Reef, Farquhar, Aldabra, Glorieu-ses, Geyser Reef, Juan de Novo, Comoro, and on to 5R8, from whence there will be *no* operation. On to Zanzibar, returning *via* Seychelles, Chagos, Blenheim, Aga-lega, and St. Brandon. This little trip looks like being quite expensive, and donations would be appreciated, sent to W4ECI, *QTHR*.

On a much more domestic note, the Hillingdon crew will be out /P on the Isle of Man, operating Top Band and Eighty. The dates are July 28-August 7, and skeds can be arranged through G3WCB, *QTHR*.

Around the Bands — 28 mc

When conditions take a dive, it is

usually Ten which suffers most; this is reflected in the letters.

9H1BL (Malta, G.C.) found summer conditions prevalent on the band, with things quite unpredictable but one or two good openings to Africa. Not much to report either from G2HKU (Sheppey) who mentions only LU8DKA for a new one on this band, and UF6CW, both on SSB.

Only two contacts on Ten were recorded by G3XYP (Navenby), with VQ9C and ZP5CN. During the period under review, G3NOF (Yeovil) only once heard the U.S., a condition Don puts down to the Aurora in Mid-May. The W's came in on May 30, from about 1830 to 2355, when the band faded out. Signals were up to S9 from W1, 2, 4, and 8. Summing up in terms of QSOs, the month yielded HB0FM, KR6TAB, LU's, PY's, MP4BGX, MP4BHD, MP4TCZ, OD5BZ, UD6BR, ZD8JW, ZP5CN and ZS's including ZS3YK.

SIX-BAND DX TABLE
(All-Time Post War)

| Station | Countries | 28 mc | 21 mc | 14 mc | 7 mc | 3.5 mc | 1.8 mc |
|---------|-----------|-------|-------|-------|------|--------|--------|
| G2DC | 336 | 169 | 308 | 328 | 165 | 112 | 20 |
| G3DO | 336 | 199 | 234 | 329 | 90 | 83 | 9 |
| G3NOF | 313 | 177 | 215 | 296 | 34 | 39 | 2 |
| G3IAR | 221 | 126 | 161 | 193 | 91 | 73 | 12 |
| G3LZQ | 254 | 138 | 155 | 201 | 72 | 38 | 8 |
| G3IGW | 204 | 127 | 152 | 168 | 122 | 89 | 42 |
| W6AM | 348 | 131 | 140 | 347 | 116 | 54 | 7 |
| G3XBY | 154 | 86 | 105 | 88 | 55 | 52 | 5 |
| G3VDL | 145 | 59 | 105 | 101 | 53 | 31 | — |
| G3IDG | 122 | 74 | 89 | 55 | 27 | 19 | 11 |
| 9H1BL | 126 | 82 | 73 | 108 | 45 | 43 | — |
| G3NYQ | 147 | 35 | 70 | 107 | 40 | 30 | 21 |
| G3MDW | 116 | 47 | 66 | 88 | 20 | 15 | 7 |
| G3KOR | 163 | 40 | 57 | 135 | 52 | 39 | 23 |
| G3PQF | 159 | 103 | 46 | 96 | 84 | 57 | 12 |
| G3RJB | 163 | 63 | 45 | 149 | 59 | 37 | 8 |
| G3VPS | 123 | 27 | 42 | 104 | 50 | 36 | 14 |
| G3SED | 136 | 31 | 26 | 66 | 43 | 40 | 39 |
| G3EJA | 106 | 100 | 23 | 51 | 22 | 12 | 2 |
| G3WPO | 94 | 34 | 14 | 52 | 47 | 23 | 21 |
| G3WJS | 61 | — | 8 | 47 | 35 | 40 | 14 |

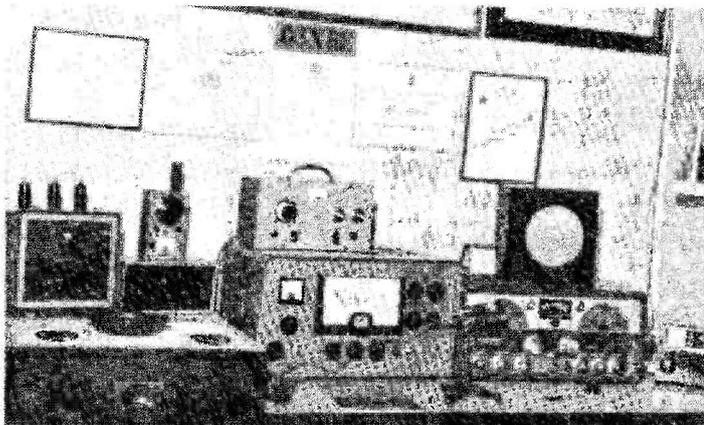
Note: Placings this month are based on the "21 mc" Column.

Sidelines

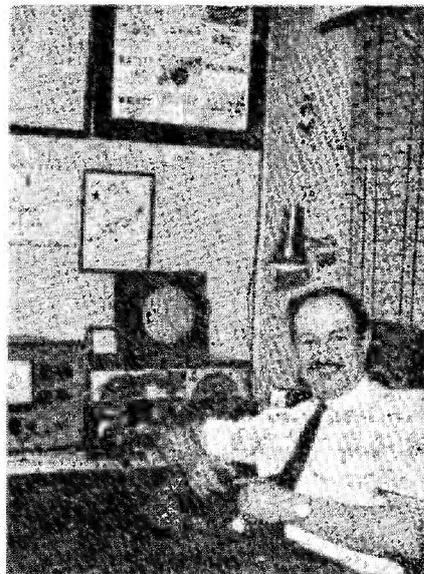
BARTG have got out the results of their 1969 Spring RTTY Contest with quite commendable promptitude; 47 entrants appear in the listings, with G3MWI running a very close second place to W2RUI, the winner. Indeed, G3MWI made more contacts in total, even though he only operated 14/21 mc instead of all five bands as did the winner. Our congratulations to both.

Sad to say, the 4W1's are off the air again, for reasons unknown, although Iain Dunbar, who will be remembered as VS9AE, says they have all put the tackle in store and are living in hopes of an early resumption.

Anyone looking for a CW contact with Ghana? Don Radley, 9G1GE writes to say he is on 21/28 mc from 1700 to 1830z Mondays to Fridays, 1400 to 1700 on Saturdays, and 0700 to 1300z on Sundays, all times being approximate and depending on Don not being given the baby to hold by the XYL! In addition, late-owls on Eighty might care to note that 9G1GE would like to arrange skeds around 0100z on Sunday mornings; write to 9G1GE, Don Radley, c/o PO Box 2, Nsuta Wassaw, Ghana, West Africa, to arrange things. Incidentally, cards should be sent direct to this address.



Station of G3XBE, Arthur Walton, 39 Oakdale Drive, Wrose, Shipley, Yorkshire, who began as an SWL as long ago as 1937, becoming fully licensed in November 1967. Starting with a home-built rig for Top Band only, he graduated through a succession of receivers to the present Hallicrafters SX-100, on the table to the right of the K.W. Vanguard. The next move is to be into SSB, now in hand. Antennae are simply an end-fed 100ft. and indoor (loft) "W8JK," fed through ATU's and carefully matched. With all contacts so far on AM, in the last 12 months 85 countries and 40 U.S. States, also VE1-VE8, have been worked. G3XBE says he now wishes he had come on the air a long time ago—nevertheless, he has found that his time as an SWL was certainly not wasted.



ZD5V is also G3UUK, and has now firmly settled into his new home, with a KW-2000A, KW-1000 Linear and a Hy-Gain TH3 beam. No operation is possible from this location on the LF bands, as it is a flat, and so John totes the gear over to ZD5T, who has dipoles and inverted-Vees for the three LF bands, until such time as ZD5T can find himself a KW-2000. Incidentally, XE2YP is the QSL manager for ZD5V, and he prefers his cards to go that way as the use of the Bureaux involves a double delay.

Another award is about. This one is for working the Royal Boroughs and Burghs, and is sponsored by the Echelford group. For all the details, and a full list of the Boroughs and Burghs, plus a list of the various classes of the award, write to G3TBS, *QTHR*. Incidentally, this one has a worthy objective—the proceeds are to go to the British Diabetic Association Research Fund.

The 21 mc Events

Let the 21 mc specialist, GM3JDR (Golspie) have first throw of the ball this time; Don found the band somewhat up-and-down, but nonetheless was quite pleased, by concentrating on CW, to work ZP3AL, PY's, OA4ED, OX3FD, LU's, FG7XX, 9Y4KK, HC2HM, UL7KKD,

UA9WJ, KP4ATS, 5H3LV, 6Y5JB, ZS3AW, VQ9/A, VQ9/A/D, KR8AG, XW8CR, UAØKAR, UW9KDH, KR6TA, 4S7's, TA2E, YA2HWI, HM1AY/XV5, ET3USA, CR6, CR7, W3AWV/YB6, MP4BHQ, TF2WLM, 7Q7RM and many others, including all W and JA call areas. For a little bit of variety, SSB was used this month to work into CP1DF, CR6GA, 7Q7WW, KV4EU, 9V1OE, 9V1PD, CR7IK, PY2TA, VQ9/A and all W and JA call areas.

As far as 9H1BL was concerned 21 mc was the star of the show, with good signals in from all over the world most of the day and frequently through the night. Among the all-time new ones on the band must be counted VS9MB and HL9KQ, albeit Alan still needs Zone 27 all-time and 26 and 27 for WAZ this year. Incidentally, 9H1BL is on tenterhooks awaiting the first Junior op's arrival, and—most unusually—hopes it cries at night, his reasoning being that this will give him a chance to get a bit of operating time in during the night. Optimist!

SSB from David, G3XYP, was used to make contact with EA7AQ, FG7XL, FR7ZL/T, VK9KY, VK9XI, VP1FR, VP5AA, VQ9/A, VS9MB, YB1BM, 4S7PB, 5H3JL, 9N1MM. As will be noted, since

his comments last month, David has at last managed to "break his duck" with Gus Browning, and has hopes of more QSO's from some of the rare places he is down to visit.

One of the snags about the conventional beam is that it usually has some minor lobes pointing upwards at a high angle, and these respond to the short-skip which has been such a menace at times during this month. G3NOF noticed these, of course, but was also taken by the variability of the early-morning conditions. One morning, at 0600, W6NCM, K6ILG, UA9AB and OD5BZ were all heard; they stayed in about an hour, and then VE8RCS appeared, but by 0830 the band was as dead as a door-nail. Early afternoons S.E. Asia has on occasion "come through the goodies" and in particular the Commonwealth Net; later North and South America, often till the small hours. Contacts were made with AP2MR, EP2BQ and FL8DG, FR7ZL/T, KH6DQ, KR6DI, MP4BGX, VK9KY, VP2AW, VS9MB, VS6AL, W3AWU/YB6, YS1WPE, ZC4AK, ZC4HS, 9M2BD, 9M2DQ, 9V1OE and 9V1PA.

From G3YDX (London, N.13) we hear that he has been giving the 15-metre band the once-over from home after his holiday trip, using an indoor dipole at 20 feet. VO1AW

provided the first contact over the water, and then followed UI8KBA, CR7IZ, ZC4AC, OD5FB, JA's, UD6AR, UH8CS, VR2EK, ZL1L, 5A2TR, G3XTJ—real DX at 100 yards!—VK3AZY, UL7KAD, TA2E, UF6KPE, 9V1OY and YA1SG, all on SSB. Then the transmitter decided to go on the blink and only produce CW; this yielded UO5FP, a couple of dozen assorted W6/7, 5LØX/MM, UF6KPE, JA's, MP4MBJ, YSIO, ZS6OS, VQ9/A, CO2BB, PY6FI and KH6COB. Transmitter being put right, a couple of SSB tests produced

TOP BAND COUNTRIES LADDER

| Station | Confirmed | Worked |
|---------------------|-----------|--------|
| <i>Phone and CW</i> | | |
| GM3OXX | 98 | 98 |
| G2NJ | 98 | 98 |
| GM3UVL | 98 | 98 |
| G3APA | 97 | 97 |
| G2HKU | 96 | 96 |
| G3SED | 93 | 96 |
| G3WPO | 88 | 91 |
| G1BWSS | 87 | 89 |
| G3WQQ | 74 | 87 |
| G3VLX | 72 | 93 |
| G8HX | 72 | 81 |
| G3XTL | 57 | 71 |
| G3WJS | 56 | 83 |
| G3RFB | 55 | 78 |
| G3IDG | 55 | 61 |
| G3XDY | 50 | 80 |
| G3XGD | 42 | 55 |
| G3XTJ | 39 | 69 |
| G3KFE | 33 | 53 |
| G3VPS | 27 | 53 |
| <i>Phone only</i> | | |
| G2NJ | 98 | 98 |
| G3SED | 91 | 92 |
| G3VGB | 82 | 93 |
| G3WPO | 77 | 84 |
| G3MDW | 67 | 82 |
| G3PQF | 64 | 80 |
| G3RFB | 36 | 47 |

(Failure to report for three months entails removal from this Table. Claims may be made at any time. Six months of "Nil" reports will also result in deletion.)

Reporting the HF Bands

MP4TAF and KV4AD just to round things off nicely.

Twenty Metres

This time it is G3XYP who has first say, with the comment that although the HF bands were so erratic he could not really complain, with eight all-time new ones added to his score. As far as the 14 mc side of things went, life was somewhat brightened by FO8BV, KW6GJ, PYØRE, UWØIE, VK9XI, ZD8RH, ZL3ABJ/C, 5W1AR and LI2B.

Now to G2HKU, who had his usual sked with ZL2KP, ZL3JQ, ZL3SE, ZL3RS, plus VK5MB, VK3XB, WIHGL/MM (on one of the *Apollo* tracking ships) DLØTD/LX, 5A2TS and HK3AUE, all around 0700.

Reverting to the question of what can be done in the way of DX under /M conditions, G2DHV mentions his recent trip to EU. PA9DHV/P managed UW9, UT5, UB6, UY5, 4Z4, W4, 5, and 6, while the following were heard: JA, JH1HDJ, VK6WT, 9H1BB, VK5BC, VE2IJ and PJ2VD. A little later, using ON8IR/G2DHV as the call, W's were worked, and VU2IAB, VK8HA, ZS6AJO and ZS6IO heard.

Alan, 9H1BL, found twenty metres open all through the night on occasions but for most of the time things were rather bad with much short-skip burying the DX.

Nice to hear again from Herb, G5QA (Exeter) who is still going strong with gear operational for all bands from 3.5 mc right through to 23 cm! That sked of his with ZL2OU has been going steadily with clock-work regularity since way back in 1936, and is now well over the 10,000 QSO's mark!

A rather pessimistic feeling for 20m. seemed to be with G3NOF at the time he wrote. Always an early riser, Don found things better on the other bands, as related elsewhere, but nevertheless managed to make contact with G2MI/VP9, HKØBKW, K6JGS/HK3, KG6DO, KH6GDO, LI2B, VK1-6 and VK9XI, W7CVD (Nevada), WA7ICG (Utah), VP9MI, 7X2ARA, 8P6AZ and 9M2VI.

K6JGS/HK3, incidentally, was one of the operators of the 1N2A station from Marco; according to him, it is an area of 500 square metres, marked out by concrete pillars, between HK3, OA and PY—although it is not noted in official Colombian records, nor shown on any map!

Forty and Eighty

Not a lot of mention of either of these, which have fallen, to some extent at least, into their state of summer doldrums. However, as Justin Cooper points out elsewhere in this issue—see p.313—there is a lot to be said, especially for those working the bands with the older types of receivers, for building up an attenuator in the front-end of the receiving system (between aerial and receiver, that is). Such a device, used on Forty with most receivers, will effect quite a marked improvement in the situation, and demonstrate that, more often than not half the "QRM" on the band is nothing more nor less than cross-modulation products. Cross-modulation comes on so suddenly with many receivers that only a few dB will be needed to clear it, and of course the receiver can then be run with RF gain at the setting for best signal-to-noise ratio—at maximum.

G2HKU looked over both bands and found HV3SJ plus GB3FRE of interest on 3.5 mc SSB, while a search on 7 mc resulted in SSB contacts with PY7AZQ and LX1EB, plus a CW QSO with 9H1BL.

Talking of 9H1BL, Alan also uses 40m., mainly into Northern Europe, and finds it excellent for the purpose, although the odd W or PY is still in evidence. As for 3.5 mc, it is favourite for working into England. That friendly rivalry between 9H1BL and G3VPS seems to have gone one stage further this month: 9H1BL says G3VPS has put up a new aerial and improved his signal into Malta so much as to prove he *must* have been feeding the old one with string—and forgotten to wet it!

Already we have mentioned the desire of 9G1GE for skeds on 3.5

FIRST YEAR OPERATOR'S LADDER

TOP BAND ONLY

| Call | Countries CW | Countries Phone | Countries |
|-------|-----------------|--------------------|-----------|
| G3XTL | 71 | — | 15 |
| G3XTJ | 59 | 52 | 13 |
| G3XVC | 37 | 24 | 11 |

Note: A first entry for this Table must be accompanied by a statement of the date of first licensing. The same country may be claimed for both CW and Phone. Placings will be by taking a different column each month; this time it is based on the "Countries CW" column.

mc; at this point it is as well to remark that the signal is 150 watts, with an AR88 as the receiver, worked into a full wavelength with the centre 60ft. up. So it will be interesting to see what happens here.

Last time out there was the problem for your conductor of having letters from G3XBY and 'XDY. Now G3XBY writes to say he is all green with envy about a card *he* has which almost certainly should have gone to Phil, G3XVY for a contact with 9Y4MM. If G3XVY cares to get in touch with G3XBY, *QTHR*, Dale would be pleased to pass the card on. A couple of new countries for the band were CR7FM(SSB) and LZ2AM(CW), with 9X5PB missed by moments on two occasions. An oddity was OK1KYS/M, worked on

CW, who claimed to be using 5 watts to a long wire . . . rather dangerous on the road, or was he just going round in circles about a central pole??

Top Band News

The June heat-wave hit this band harder even than the others, this time with static rather than lack of activity, the noise being such that anything under S9 was just inaudible when this was being written. Earlier in the month it was quite good at times in the evenings—but let the correspondents tell the story in their own way.

VK3BM writes to say that he has been getting quite a lot of SWL reports on his Top Band signals which are such as to make it pretty certain there is a pirate using his call and a lot nearer U.K. than Australia at that. The last time the VK3BM Top Band machinery was actually fired up was to work DL9KRA in March 1967, and before that his previous contact with EU was G3FPQ in March 1965, with practically no attempts between. As a matter of interest, the signal strength was almost enough for SSB although the opportunity was missed due to the peak only being for a minute or so.

Another point on which Bruce has something to say is about the generality of SWL reports coming

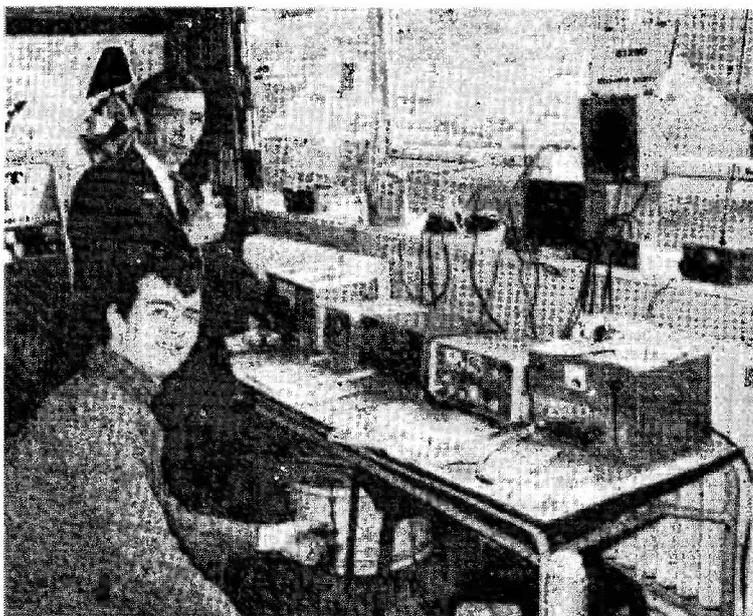
his way, which are quite certainly not genuine reception reports. They hear the chap VK3BM is working, but clearly cannot have heard him, as they make no reference to the VK3BM frequency, what was sent, or even make rude remarks about the unorthodox procedures! Such reports are rapidly filed in the wastebasket—but your scribe would add that VK3BM always comes across with a card when he is convinced the SWL *has* heard him, and gives the supporting evidence in his report. Changing tack a little, one could wish for an aerial system like Bruce's—Vec-beams for 3.5 and 7 mc at 112 feet, as a replacement for the 40-metre Quad at the same height which performed quite admirably but seemed to prefer the ground—it fell down at too-frequent intervals.

9H1BL finds that Top Band seems to have died a natural death, with nothing audible other than Loran and some fish-fone stuff, albeit he still has the ear cocked for anything of interest.

G13OLJ (Bangor, Co. Down) was, along with G13WSS, at the GB3FRE affair, as we have already remarked, and dished out many Top Band contacts for Fermanagh. John was there for four days, but then had to return home, then G13WSS went over to give the lads a hand with the show.

What is possibly even more of

Neat LF-band station layout for G3XNO/A at Moorgrange School, on the occasion of the Northern Mobile Rally on May 18. This fit-up was provided by the Otley Radio Society—G3WVD is operating, with SWL Fox in charge of the log.



interest, to those who missed this chance of a Fermanagh QSO, is that GI3TLT and GI3OLJ together will be in Fermanagh for four days during the period July 20-26 and will open up on Top Band CW just as early as may be, each evening.

Back to GI3WSS (Holywood, Co. Down) who managed one new county on CW, with GM3SSB/P for Stirlingshire. QSL's were rather better, with five more counties confirmed. Incidentally, after GI3WSS had escaped your conductor after repeated calls, G3KFE joined in to a net with G3WPO and several others, in the course of which he was bewailing his complete inability to work any GI stations. This was enough to make GI3ILV and GI3SCM join the group (both in Armagh) to the great amusement of the rest of the net. Other QSO's of interest to G3KFE were with GB3YMC, G3YDX/P (Huntingdon), G3XAR/A (a couple of miles from Land's End), GB2DCF (the Digby RAF crowd to fill in a near-by county in Lincoln), GW3DZJ (Flints) and GW3UMB (Denbighshire), to make up a reasonably successful month even if he did miss a lot more!

G3VLX (Sidcup) mentions GB2GM (Bute) and GM3NKO/P (Nairn) for new ones, and interesting contacts with GW3YGH, GM3NKO/P on Arran, PA0CD and DK1KH.

The G3VFA boys are rightly pleased at the performance of the Joystick aerial in the hands of VP2GBR, who used it to work into KV4, KP4, and PJ0, for all-time "firsts," the installation involving 50 ft. of feeder. Incidentally, VP2GBR will, by the time this is in print, be back in U.K. and operating under his home call of G3UUR.

Sounds rather as if G3XTL has found a stinker, in EP2RG/MM, worked on May 13 at 2100z. Called himself Ed and said he was off the coast of Spain. However, Chas sent off a card through the Bureau, in hopes that it might prove genuine.

Talking of pirates there is a particularly foul specimen of the breed not far from Brentwood who has been known to use CW—but only to transmit obscenities, as a change from doing so on Phone, across /M signals. The game seems to be most enjoyed when it is known there are women and children in the car. One often wonders whether these diseased minds would not be better off permanently locked away . . .

Back to counties: G3WPO (Burgess Hill) finds that his loop aerial, which is 35 feet above ground and totals 75 feet, has been getting out, so well indeed that there have been the usual bleats of "QRO" from those who know he has a K.W. Vespa. A fat lot of good it would do

to the signal putting the Vespa on full power—one would need a young BC station to make a significant difference! Of course, what makes the good signal is that the aerial is balanced about the feeder, and does not depend on an earth.

Those who are on the look-out for the odd county might do worse than listen carefully if they hear G4BC signing either /P or /M, as it is understood that he is getting around quite a lot, and intends where he can to radiate a signal from any county where it is known to be wanted.

GM3NKO/P gave G2HKU a contact from Inverness, to add to the ones he made with GB3FRE, and GB3FI on Flatholm on SSB. For a QSO out of the U.K. there was PA0PN. Ted is now standing at 96-96 in the Tables, lacking only Ayrshire and Kincardine, but just does not seem to have the luck. However, he *does* have plenty of gardening to keep him occupied . . . !

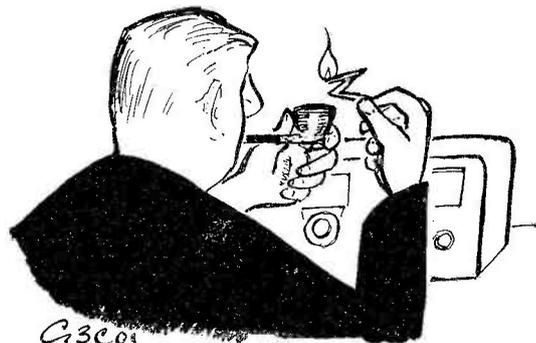
Conclusion

Which brings us to the end of another month. Deadline for next time is first post **Monday, July 7**, addressed as always to: SHORT WAVE MAGAZINE, BUCKINGHAM, with all your news, views and claims for the tabular matter. Till then, *73 es DX, de G3KFE*. (Closing date for September issue will be August 11.)

MICROELECTRONICS GLAMOUR

The glamour of microelectronics comes from its remarkable effect in reducing the *size* of electronics systems. However, the real value of micro-techniques lies in the equally remarkable effect they are having on the *cost* of electronics. For example, representative integrated circuits which were anything from 40s. to £10 three years ago now cost 8s. to 20s. only—and will probably be as cheap as a few pence within five to ten years. As the *I.E.E.T.E. Bulletin* for January rightly said "this is a real price revolution, which no electronics engineer can afford to ignore."

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"... using a Zed-match here . . ."

Our regular Book Lists include all titles of general Amateur Radio interest and cover the whole field for specialised texts.

AFTER the good two-metre opening of May 12, conditions reverted to mediocre, generally speaking, but there were faint indications of Auroral activity on the 13th and 14th. It was not until Thursday, May 15, that *Ar* contacts were possible on two metres. This turned out to be an afternoon phenomenon only, and was neither particularly intense nor widespread. DJ/DL were there, with PAØ, and SM/OZ were heard sporadically, but signal strengths were well down, and QSB widespread. Beam heading was just to the east of North. Undoubtedly, the fact that this event occurred within "normal working hours" had some bearing on the small number of stations heard, but comparison with previous aurorae confirmed that the disturbance was minor in character. Stations logged at G3DAH were: G3BHW, G3LTF, G6GN, DL7RI, DL8ID, SM7BUN, OZ9OL, PAØHVA, PAØPCD and G3YDY—and there is no suggestion that normally they do not work!

The next event of interest on two metres was the appearance of Sporadic-E signals on Sunday, May 24. This coincided with the 70 cm contest, and many operators, (including your conductor) must have missed it. However, G3SKT in Birkenhead heard HG5AIR around noon, and it is reported that HG was worked by G3IPV (Bacton-on-Sea, Norfolk), at that time. The HG5 also worked a station in Scarborough. SM7AED, OZ6OL and SM7BYU/P were reported in contact with Italian and Spanish stations during the same period, 1200-1300 BST, with signal strengths up to S9 on the SSB channel. Plotting these contacts on the map would indicate that the centre of reflection was over Germany, as was the case for the Sporadic-E opening in 1965. (The effect was even more noticeable on four metres, as is to be expected, and further news of this is given later.)

Propagation conditions during the 70 cm Contest on May 24 were poor, judged by direct observation and a tally of the reports being passed at the end. The Midlands had a very bad electrical storm on the Saturday night which caused a certain amount of havoc with G8BGX, who lost his antenna change-over relay when the

VHF BANDS

A. H. DORMER (G3DAH)

lightning struck it, and there was a certain amount of alarm at G8AUE when his mast received a charge, although fortunately no damage resulted. The storm came up from the south-west, and several operators have reported being able to work normally difficult directions by reflections from the storm centre! Activity was average, and few contacts over one hundred miles have been reported. The 1296 mc contest (which followed the 70 cm event) was also disappointing, with QSO's few and far between, and ranges low. The fact that the Contests were held over the holiday weekend must also have been a factor.

Conditions remained average with occasional minor lifts throughout the next week, which included the period of the G3BA/G3BHT expedition to GM, of which more anon, but electrical storms accompanied by static rain again marred many contacts, and it was not until the first and second weeks of June that the advancing high pressure system made its presence noticeable. Good paths North/South were established on both two metres and 70 cm during that period, with a welcome appearance on the two metre band of GD2HDZ on 145-800 mc, who was RS-59 in the South for long periods on the night of June 9. G3LQR worked SM7AGP on the 8th.

Outstanding signals on 70 cm at that time came from G8BMD (Wellington, Shropshire) and from

GW8AWS/P (Mold, Flintshire), who had 29 good contacts that night, including ON4HN at 525 km, with reports of 5 & 9 both ways. It is good to know that Arthur will again be operating from this 1800ft. a.s.l. site regularly on Monday evenings.

The North/South axis continued to be good for DX for the next few days. G2JF (Ashford, Kent) was heard working OZ9FW on Saturday, June 7. The French beacon had been audible on occasions, and GB3CTC had been at good strength at intervals. The Sutton Coldfield beacon (still keying G3SUT at the time of writing, and operating on 433-980 mc), has been received at RST 559 in the South. G8BGQ (Watford) reports reception of OZ7IGY, the Copenhagen beacon on 145-897 mc, on June 9. On that evening there was a Continental opening to the Midlands, with DJ/DL at good levels, although little was heard of them in the South. GM5YK/P (Cruden Bay, Aberdeen) gave many Southerners their first GM contact on Two on the night of June 10. His signals in Herne Bay were quite readable around the 5 & 5 mark for several hours from 1900z onwards, but no other GM stations were logged. G3JQI was heard calling SM7AED on CW on June 8, but no contact appears to have resulted, and the Angus beacon, GB3ANG (with much improved keying characteristics) was readable in the Midlands on both the Sunday and Monday nights, June 8/9th.

* * *

The best opening for DJ/DL on two metres that the writer has known for some time occurred on the night of June 11/12th, when nearly 40 contacts were made from Herne Bay, with signal strengths mostly around the RS-59 mark. Best reports were exchanged with stations in the Hamburg/Lubeck area, with little coming in from the South German districts. Contacts was also made with OZ, and it was noted that the German beacon at Essen, DLØER, was RST-579 at the time. Incidentally, readers may wish to amend their beacon frequency lists to show that the new QRG for this transmitter is 145-983-2 mc and that the beacon at Cologne is now on 144-060 mc at a power output of

only 500 milliwatts, so reception in the U.K. will be a bit difficult. The beacon on the Danish border, near Flensburg, DLØPR, is still on 145.971 mc, but the antenna beams North for 30 minutes and then South for five minutes, which explains the poor reception in this country of late.

It was interesting to observe that once again a study of the pressure charts would have shown that this opening of June 11-12 was likely. What was rather surprising was the suddenness with which it happened, the band sounding normal until around 2300z, and then abruptly opening wide. There appeared to be a sharp cut-off at the East/West German border, since no DM stations were heard, in spite of 5/9 contacts with stations very close to DM boundary. The opening was also restricted to the south of the U.K., as a check after midnight with a station in the Midlands elicited the surprising report that nothing was being heard of the DJ/DL's there. OZ6OL confirmed that he had worked OK, and heard I1 and EA during the spor-E opening of May 24, while PAØDGH reported a contact with OZ9SW on 70 cm.

G8ACN (Essex) successfully transmitted *video* on 70 cm to DL during the opening, the talk-back link being on two metres, and once the Essen Club camera is replaced (a procedure made necessary by the inadvertent application of the full negative HT to the G1 of the tube) they should be able to come up with all facilities for two-way TV on 70 cm. Seventy did not appear to be very active, although contacts were made with ON4HN, F1ALV and PAØHLA earlier in the evening, and with DC6HY/A in Hanover at 0040z on June 12.

All this activity augurs well for some reasonable conditions during the coming months—with which we can certainly do, after the appalling propagation on VHF during the last year.

DX-Peditions

GM3BA/P-GM3BHT/P: The G3BA/G3BHT expedition to GM was a great success, and the story, as seen from the sharp end by the participants, is recounted elsewhere in this issue. From the point of view of the receiving operator, results are

very mixed, alternating from the "I didn't hear them once" to the "I worked them from every location"—but one only has to look at the scores from each GM location to see that, by and large, most people got a fair crack of the whip. Operating techniques were admirable, as one has come to expect from this team, and the only change to their original plans was to make greater use of AM than had been scheduled, this to accommodate the far greater number of operators using that mode compared with the EI/GI expedition of two years ago, before the advent of the G8/3's on two metres. Violent electrical storms over most of the country during the early part of the trip made things difficult; particularly vicious was the static rain, observed by operators in the Midlands and the South predominantly, provoking, among other comments which cannot be recorded here, references to Murphy's well-known Law—which says that the worst burst of static will occur just at the moment the GM is calling you, or you are getting your report through. Several contacts were also spoiled by people either calling blind (as was obvious from the fact that the GM was working another station at the time); calling *on* the GM frequency, a practice which the DX was most anxious to avoid; or continuing to call long after the sked time if contact had not been made immediately, thereby spoiling it for the next station on the list and on the frequency. There was a marked tendency for the SSB types to crowd the calling channel instead of spreading out a few kc, and this also resulted in lost contacts. Conditions during this foray could not be described as other than average, with occasional descents into the abysmally poor. The basic signal in the South was of the order of RS-44, with spasmodic rises to 5 & 7 for minutes at a time. Many "pings" were heard on the GM signals during the storms. Generally speaking, again in the South, the early morning sessions seemed to produce the best strength of signal, as theory would indicate.

There are two main points which arise from all this. The first is that, given only average conditions but a knowledge of when and where the

other man is, and a good site at least at one end of the path, contacts with GM from the South of the country are possible more frequently than may have been supposed, on CW. Agreed, both Tom and Brian are very experienced operators, well equipped to take advantage of every trick and lift in QSB, but several contacts were heard with stations with *very* new call signs, so that is not the complete explanation. This leads naturally to the next point, which is—where do all the GM's get to during an opening? It is fairly certain that there are many GM's who pose the same question about the G's, but the observed fact remains that, at times when beacon GB3ANG is audible in the South, few, if any, contacts at extended tropo. ranges materialise. That statement is backed up by G2JF who, if anyone, should be able to make a QSO at long range. Of course, the local terrain is extremely difficult in some parts of Scotland, and this must play a significant part, but one gathers that several of the sites which the expedition used are quite accessible by road, and not all that remote from centres of two-metre activity. So perhaps a small, short-distance /P expedition by the locals during the summer months might be very rewarding? This Column has always been ready and willing to give publicity to any venture which will increase interesting activity on the VHF/UHF bands and would, therefore, like to hear from any GM operator, or group of operators, who would be prepared to organise fairly regular working on two metres with the object of promoting a greater interchange of traffic between the two countries. At least, let's give it a try.

Later: Having delivered himself of the foregoing, your conductor took time off to have a look at the two-metre band, and promptly worked GM5YK/A in Aberdeen. GB3ANG was *not* audible at the time. You can't win!

* * *

G8ASR and G3NJV will be portable from North Oxfordshire from August 18 to September 5 inclusive. They will work AM and

CW on 2-4m. and 70 cm. Further details next month.

The Hillingdon VHF Contest Group, consisting of G3WCB, G3WDX, G8AKD, G8ARA and SWL Marcham, will be operating portable on the Isle of Man during the period July 28 to August 7. They will have four metres and two metres, and possibly 70 cm also. Further details and skeds from G3WCB, *QTHR*.

Planning for the foray by the Verulam group to Wales in early August, signing GW3VER/P, is now well advanced and most of the gear has been assembled. Details of the trip, together with frequencies, were given in this space (p.171) in the May issue of *SHORT WAVE MAGAZINE*. The address for skeds remains G8BNR, *QTHR*, but the list is getting very full now, and for those looking for Welsh counties, other than on spec., now is the time to fix up date and details. G8BNR mentions also that a sked has been arranged with OE6AP(!) daily at 0600z on 144.098 mc. As the Austrian station is very well equipped for two metres, and takes off from a site at around the 10,000ft. a.s.l. mark in the mountains to the west of Vienna, a contact with him may well be possible by extended tropo. OE6AP has CW and SSB.

* * *

Mike Foster, G8AMG, will be trying two metres from some interesting locations during the period June 27 to July 4. Itinerary is as follows: June 28—*Rutland*; June 29—*Newcastle* area; June 30—*Edinburgh* (Braid Hills); July 1—*Loch Lomond*; July 2—*Wigtown*; July 3—*Lake District*; July 4—*Birmingham*. Main frequency will be 145.353 mc with a secondary of 145.56 mc, all QSO's on AM.

The Addiscombe Amateur Radio Club are off to Rutland again over August 8-10. Participating will be G3VLJ, G3GKF, G3VKI, G3WRR, G3XJO, G8CAX and G8BJG. The QRA Locator is "ZM27f," which is about two miles west of Oakham. Operation will be on AM and CW, and the frequency in the appropriate Zone. Callsign is GB2ARC/P, and there is a possibility that gear for 70 cm will be taken as well as for two and four metres.

From G3OHC comes news of his

trip to GM at the beginning of May. They arrived at Lowther Hill in Lanark on May 3, and climbed it without any trouble, but were bothered a bit by the low cloud and mist when they reached the top. However, they stuck it out until May 5, when they packed up all the gear and made the descent with 80 QSO's behind them. Best DX was G3GZJ (Redruth, Cornwall) and G6NB (Oving, Bucks) on CW, and with GW3BA/P in Welshpool and GW3OXD/P. Best contact on SSB was with G3VKV (Cheltenham, Glos.). Apart from some QRM emanating from a portable station operating near them (with which the FET converter coped quite easily) they had a most enjoyable time—so much so that they have decided on a return visit in September. The

transmitter had a QQV06-40A in the PA giving 60 watts of AM, 100 watts of CW and 120 watts p.e.p. of SSB to a 10-ele Yagi. Power was derived from a 240 volt AC generator rated at 1.3 kW which ran continuously without giving any trouble.

G8BXT/P, operated by the owner with the help of G8BMJ, G8BRH and G3AQW, was sited ten miles north of Stoke during the May contests, and a total of 87 contacts was made, including GW and GM. Plans are being finalised for a further expedition to the site during July, when it is hoped to have 70 cm gear also. Details from G3BXT, 21, Adderley Terrace, Longton, Stoke-on-Trent, Staffs.

And look out for G3VPK/P in *Antrim* during the next two-metre SSB Contest on August 4.

THREE-BAND ANNUAL VHF TABLE
January to December, 1969

| Station | FOUR METRES | | TWO METRES | | 70 CENTIMETRES | | TOTAL pts. |
|----------|-------------|-----------|------------|-----------|----------------|-----------|------------|
| | Counties | Countries | Counties | Countries | Counties | Countries | |
| G3DAH | 9 | 1 | 54 | 13 | 15 | 3 | 95 |
| G3COJ | 10 | 2 | 45 | 8 | 17 | 5 | 87 |
| G2JF | — | — | 47 | 9 | 24 | 5 | 85 |
| G8BMD | — | — | 43 | 7 | 27 | 4 | 81 |
| G8AUE | — | — | 39 | 2 | 25 | 4 | 70 |
| G3LAS | 20 | 1 | 36 | 4 | — | — | 61 |
| G2AXI | 15 | 2 | 32 | 5 | 4 | 1 | 59 |
| EI6AS | 5 | 4 | 37 | 12 | — | — | 58 |
| G8APZ | — | — | 29 | 5 | 15 | 3 | 52 |
| G3EHM | — | — | 35 | 7 | 5 | 1 | 48 |
| G3ADP/A | — | — | 32 | 3 | 6 | 5 | 46 |
| G3EKP | 17 | 5 | 17 | 5 | — | — | 44 |
| G8BJK | — | — | 34 | 6 | — | — | 40 |
| G8ASR | — | — | 32 | 4 | — | — | 36 |
| G8AUN | — | — | 29 | 6 | — | — | 35 |
| G8AYN | — | — | 12 | 1 | 15 | 4 | 32 |
| G3AHB | — | — | 20 | 4 | 3 | 1 | 28 |
| G8APJ | — | — | 19 | 3 | 5 | 1 | 28 |
| GC8AAZ/P | — | — | 22 | 4 | — | — | 26 |
| G8ARM | — | — | — | — | 16 | 4 | 20 |
| G3TDH | 16 | 1 | — | — | — | — | 17 |
| G8BJC | — | — | 11 | 1 | — | — | 12 |

The THREE BAND ANNUAL TABLE shows total claims to date from the year commencing January 1st, 1969. Claims should be sent to: "VHF Bands," *SHORT WAVE MAGAZINE*, BUCKINGHAM. Summaries by bands will be published at suitable intervals.

VHFCC Awards

There are no Awards this month, but for the benefit of new readers, the general rules for VHFCC Awards are given herewith.

There are three separate Certificates available, to operators who can show proof of having worked one hundred different stations on either four metres, two metres or 70 cm. Application can, of course, be made for more than one band if the required number of contacts has been made. Do *not* send any QSL cards with your claim—just a list of stations worked on the particular band, showing callsign, date and time. You will then be asked to forward six QSL cards selected at random from your list, and these will be used for verification purposes. If all is in order, they will be returned to you with the Certificate. Claims should be addressed only to "VHF Bands," SHORT WAVE MAGAZINE, BUCKINGHAM.

Other Activities

EME: The Earth-Moon-Earth test organised by WB6IOM for May 24 did not attract much activity in this difficult mode, but G3LTF took signals from him at 12½ dB over noise, and WB6IOM heard W5LGW. VK3ATN is hoping to have a dish up for 1296 mc shortly, and W3KR is now testing with OZ, using a 150ft. dish for two-metre reception and a 28ft. dish for transmission. Power is 300 watts. K0MQS now has eight stacked rhombics, each 700ft. long, for EME. He receives his own echoes with what he calls "75-metre clarity."

Four Metres: EI6AS (Co. Dublin) has been hearing and working Gibraltar on Four. He had a contact with ZB2BO on June 4, when reports of RST-549 and RST-559 were exchanged. The Gibraltar beacon has been running at RST 599 with him at times. Albert will be on 144-050 mc every Friday night between 2200 and 2330 local time.

G2DQ is another who got a contact with ZB2BO, on June 2, when he received RST-569 and gave RST 449. ZB2VHF was very strong at the time, but faded at 2030z. The broadcast station at Tangiers was also heard on 70.5 mc.

Inevitably, G3JHM and G3JVL

have been hearing Gibraltar on both 50 mc and 70 mc, and have noted that the 50 mc signal gives about 30 mins. warning of the opening on 70 mc—a useful pointer. Openings on the lower frequency band are far more numerous than on the higher. Incidentally, the Gibraltar Beacon on two metres will be operative shortly; details of frequency and operation will follow.

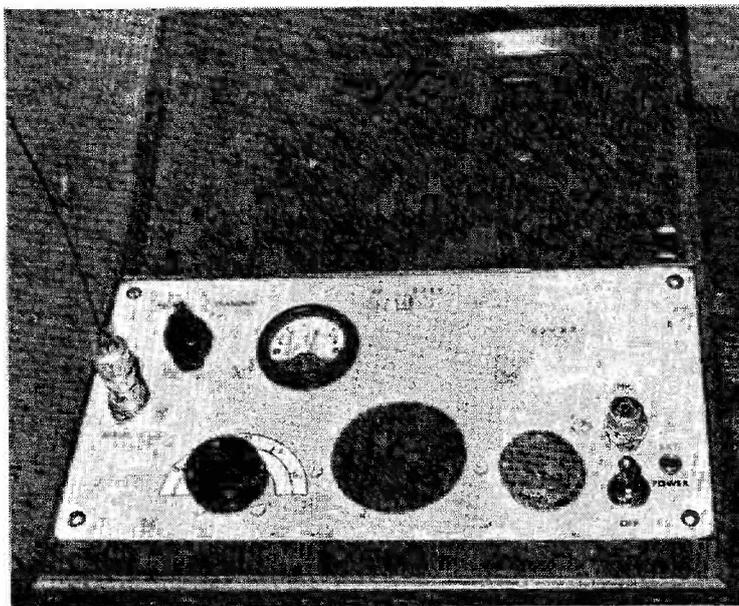
Of perhaps greater interest is the confirmed reception by TF3EA of GB3GM and EI4RF, the latter on 70.325 mc. This was on the night of Saturday/Sunday June 7/8, between 2355z and 0055z when signals were RST-579 with the antenna pointing either North or South. This unusual heading condition was probably the result of a solar flare observed on Friday, June 6, and was almost certainly Auroral E. For those who wish to try seriously for Iceland, the early morning is the best time since the critical frequency for the E-layer is maximum at the time.

It would appear that at any moment now a G/TF "First" is going to be set up on four metres. EI4RF has been heard in Gibraltar, as a very weak signal. Stations in

SM and OZ have likewise been heard in this country on 70 mc, and GB3GM has been logged in Germany.

G3SLI (Ossie of ZB2VHF fame) also worked ZB2BO on Monday, June 9. More observations on these two paths are still urgently required, and G3JHM, who is co-ordinating results, may be contacted *QTHR*, or by phone, *Worthing*, 0903-64301. For those who have 50 mc receivers, a good pointer to imminent 70 mc openings is afforded by the Naples beacon, RAI, on 49.3 mc, which has been set up specifically for Sporadic-E tests and beams on U.K. with an e.r.p. of 2 kW; 1000-cycle tone keying is used.

23 cm.: There have been a few openings on this band recently, but conditions and activity were poor for the contest on May 25. Electrical storms did not help, and this may have been the cause of the breakdown of the 70/23 hook-up procedures, which did not appear to be working, at least as far as North/South contacts were concerned. G3BNL/P was "thundered out" of his contact with G8BAV, and other stations report similarly. Even in



Interesting two-metre Transceiver, designed and constructed by G3VXZ (Maidenhead), and built into a standard metal (cash) box. The dimensions can be estimated from the size of the coax socket. The Transceiver can be operated from an external power source.

the London area, where one might have expected a reasonable level of activity, the best that G8ARM (Blackheath) could do was to work all he heard—a total of four stations. On the bright side the contact G3LQR/DJ9DL at RST-569 both ways is worthy of record.

The 1296 mc outlook is not altogether gloomy, though. G6OX has now got his converter working and has taken a carrier from G2FCA and G8ARM. G8ARB has completed his tripler for the band, and G8AEJ is busy evaluating the performance of a new diode mixer, the 1N23WE, for his converter. G8AYN has raised the antenna system, an 8/8 slot, which has increased his signal by one S-point at G8ARM. G8AOL is modifying his aerial system so that he can get his 6ft. dish up to 50ft. G8BAK and G8AMD are both building for 23 centimetres, and rumour has it that G8AKE will also be QRV on 23 cm shortly. G8AOD and G8ARM have at last succeeded in making it over the North Downs, with signal strengths at 5 & 3 in both directions. The latter has also worked G8AUE at RS-58 both ways.

... *And Above:* G8CKZ (Southampton) is building for 3 cm, and asks for information on stations who may be active on that band during the September VHF Contest. The rig under construction will have an X13 in the transmitter running up to 32 watts input, but with an efficiency of 2.5% maximum. (This is the valve which was used by both W7JIP and W7LHL during their 187-mile QSO in 1959). The converter will run a 2K25 local oscillator, with a VC2355 coaxial mixer, and the antenna is a two ft. parabola, Cutler fed. G8CKZ would like to hear from other operators interested in the 3-centimetre band who may have gear to dispose of, and who may also have the June 1954 QST which they are prepared to lend him. The address is: 54a Blenheim Avenue, Highfield, Southampton, name Nigel Curzon.

A/TV: An interesting letter from G6ADJ/T (G8AIS), gives details of his operations from Acton, London. He has now been active for some 18 months from a site 100ft. a.s.l. with a good take-off to the South and East, fair to the West, and poor to the North. The antenna is an



A recent photograph of Bill Biltcliffe, G6NB, Oving, Bucks., probably the best-known two-metre operator in the U.K. He puts a strong signal down over most of the country, and can give S9 to EU's inaudible in the sludge to the rest of us. Active on VHF for many years now, he has given a QSO to a very large number of stations new on the air. It is a matter of great interest and some importance in the present context of Amateur Radio that G6NB's gear is home-built all through.

18-element Parabeam at 35ft. for 70 cm, and an 8-element for two metres. He has a QQV02-6 in the PA on the higher frequency band, and runs positive modulation and 405 lines exclusively. Best DX to date has been with G6GDR/T at Watford and G6ARL/T. Sunday afternoon is the time to catch him. He is only 1½ miles from GB3GEC, and good reception of this beacon is a reliable guide to suitable conditions for a possible exchange of video with him. To call him on the land-line, dial 01-992 3805.

Firsts

Since the scope of the Table of "Firsts" has been broadened to include contacts via Sporadic-E and Aurora, further claims have been received. G3BLP enters the lists with HG5KDQ on two metres at 0950z on July 4, 1965, and with YU2BOP on the same day at 1033z. It is believed that YU had been worked previously by a station operating /P in Hampshire during one VHF field day, but no record of this contact can be found. It is

understood also, that II was worked before July 4, 1965, by G3MEV among others, but again no confirmation is available.

G3LTF claims the first G/LZ on two metres with LZ1DW on June 6, 1964, and the first G/OK on 70 cm with OK1EH on October 10, 1965.

News Items

There seems to be a certain amount of nonsense developing on two metres which formerly was restricted to the other bands. G8BAK has been pirated by a station using his callsign in the Basildon, Essex area, and in the same district some clown has been recording G8/3 QSO's made on VHF and retransmitting them on Top Band, with predictable results. It behoves us all to take active steps to see that this sort of thing is firmly rubbed out.

As an *addendum* to the announcement of the G2JF win in the IARU Region 1 Contest last September, it should be noted that G3BLP won the same Contest in 1951, and in 1952 it was won by G5YV—al-

though this success was accomplished under quite a different set of rules.

John Butrovich, G15ALP, whose advent on two metres was noticed in "VHF Bands" for March 1969, is now active from Londonderry on SSB and CW. So far he has had eight two-way SSB contacts, the best DX being G3CCH (Scunthorpe) at 275 miles, with signal strengths up to S8 at times. The gear consists of an HW-100 on 14 mc, through a Swan transverter running at 240 watts p.e.p. input. The antenna is an 8/8 slot-fed array at 35ft. above the ground (which is 1300ft. a.s.l.) and he is considering going to a 20-ele collinear array to get greater capture area. He would like to run skeds, and says that any time 0400-0600z would be OK. (What's the matter, John, can't you sleep?) QTH, U.S. Naval Radio Station, Dungiven, Co. Londonderry, N. Ireland.

Details about the B.A.R.T.G. RTTY/VHF contest over September 13-14 can be obtained from the Contests and Awards manager: E. Double, G8CDW, 33b Windmill Hill, Enfield, Middlesex.

Note for the error crep' in dept.:

Gerald Lander, HB9AJU/G3OOH (to whom reference was made last month) is the compiler of the IARC *Newsletter* and not the secretary of the Club—nor has he any connection with the I.T.U.

The official minutes of the recent IARU Region I meeting in Brussels have now been circulated; it seems that the proposal to substitute the GEOREF system for QRA Location received minimal support—so this matter may now be dropped as a subject for acrimonious discussion!

Midlands VHF Convention

The third Midlands VHF/UHF Convention opened in the Dunstall Suite at the Wolverhampton Race Course on the really hot day of June 14. Overall attendance was 112, a little down on last year, and 97 people dined. G3NNG, assisted by G2HIF, gave the afternoon presentation, which was devoted to a description of the all-solid-state receiver which G3NNG has designed, and which had some unusual features. It consists basically of an IF strip making extensive use of FET's, preceded by

converters for two metres, 70 cm and 23 cm, one xtal oscillator on 32 mc providing, after suitable multiplication, the injection frequency for the FET mixers.

The organising committee, led by the indefatigable Frederick Smith, G6FK, assisted by G3THW and G6UI, had done your conductor, as the representative of *SHORT WAVE MAGAZINE*, the honour of inviting him to be the Convention Chairman. Altogether, a great success as a Convention and well up to the high standard of previous years.

Contests

The dates for the Two-Metre Open Contest are July 5-6, and the 70-centimetre Portable event takes place on July 20.

Deadline

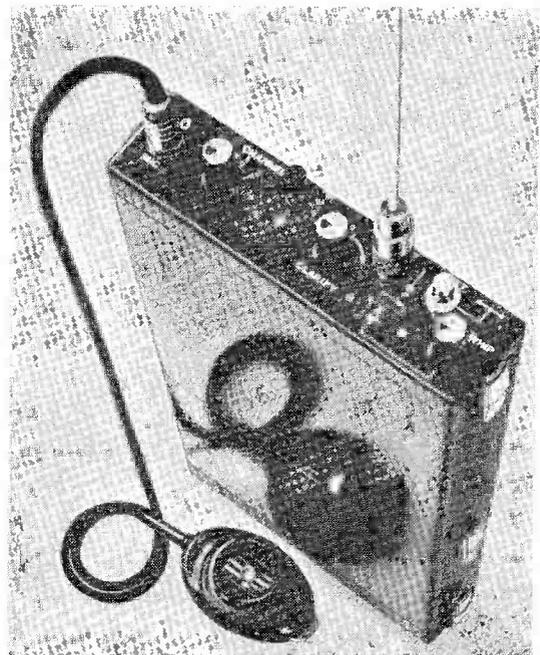
For next month's issue is **July 5**, and the address for all news, claims, comments, ideas and criticisms as regards matters VHF is, "VHF Bands," *SHORT WAVE MAGAZINE*, BUCKINGHAM. So cheers for the nonce, and *73 de G3DAH*.

LONG-DISTANCE RADIOPHONE

Shown at right is a new portable SSB radiotelephone introduced by Redifon, Ltd., specifically to meet overseas requirements for a small, inexpensive lightweight personal communications transceiver to operate over ranges greater than those normally possible with VHF, or for use in difficult country where VHF range is anyway restricted.

The Redifon PC2 measures approximately 13in. by 9in. by 2in., weighs only 7½ lb. including battery, aerial and speaker/microphone, and has but three front-panel controls. The design is all solid state, and the PC2 works off standard U2 torch cells (which can be bought off-the-shelf anywhere in the world). It can be operated with a whip Ae. carried on the front panel, or with a temporary dipole hung from any convenient support.

Designed for two-channel operation in the 2.0 to 8.0 mc range, Tx power is 5 watts, and Rx sensitivity 1 µV for a 10 dB signal-noise ratio. The PC2 has already demonstrated its versatility in East Africa, where it has been used two-way at ranges of 10 miles (with whip aerials each end) and up to 300 miles using a dipole for the PC2 frequency and base station at the other end.



TWO-METRE PORTABLE IN THE BORDER COUNTIES

SPRING HOLIDAY HAGGIS HUNT,
MAY 24-31, 1969
SOME POINTS ON PLANNING AND
ORGANISATION —
EXPERIENCES AND RESULTS

T. P. DOUGLAS, M.B.E. (G3BA)

IF you have ever been out on a VHF expedition and had some success with it, your mind always turns to the possibility of trying somewhere new, that bit more difficult than where you have been before. Readers may remember that G4LU and I covered much of Wales four years ago, and then G3BHT and I went round the eastern side of Eire and Northern Ireland two years later. Both these tours had been most enjoyable and quite successful, judging by the numbers of stations worked and comments from various sources thereafter. It was these experiences that prompted us to have another dash, round the rarer GM counties, again operating on two metres.

Basic Planning

At this point, our terms of reference for an operation of this nature should be stated. To many operators who have had only DX-pedition experience on other bands, it must seem quite odd the way things have to be "organised" for a VHF expedition—in fact, some people think that the preparations are all so much "baloney." However, to those who operate in the VHF spectrum, it is quite apparent that, for any two-metre DX-pedition to be a real success, quite considerable preparatory work *must* be done, otherwise you will be

left up a mountain talking into thin air! The basic requirement for any fairly long-distance VHF QSO is that both ends *have to be on the band* at the time concerned—a fairly obvious remark, but one quite pertinent, as it is no use calling your heart out for a GM contact if there is nobody there to work. On Top Band or 80m. probably scores of stations will be active at any one time in GM or GW or EI, and contacting them is perfectly straightforward—in other words, there is almost constant activity on these frequencies, and therefore QSO's result. But on VHF, where there is no great activity in the remote areas of VHF DX interest, we have to stimulate operation, and the easiest way of doing this is by going there yourself—not just for a holiday, but as a serious working expedition the main aim of which is to guarantee four or five hours of continuous operating each day without any "if's-or-but's," whether the sun shines or whether it rains stair rods (which it usually does!)

Another thing which baffles the HF or LF operator is that at present the vast majority of QSO's on VHF are split frequency and usually on AM. The good and bad points of this arrangement will not be argued here, except to say that because it is with us, we have to fit in with the present accepted procedures. All this means

General impression of the G3BA/G3BHT set-up for their expedition into the Border Counties. The vehicle is a Volkswagen "Caravette," owned by G3BHT—see text—and on the left is Tom Douglas, G3BA. Note his gum boots and the protective clothing, very essential when going on any sort of DX-pedition in the U.K.!



that the second golden rule for a VHF contact is to know *where* the other man's frequency lies in the band, because if we do not know this, you have only a hit-or-miss chance of hearing him when tuning quickly over some thousands of channels.

The third point which has to be borne in mind is the very important one of *aerial directivity*. Beams are universal on VHF and many are very sharp in their horizontal directivity. Obviously, to hear a weak station you must have the beam spot-on in his direction—so, in addition to all the foregoing, you have to arrange that both beams are correctly orientated as well.

It is because of all these circumstances that the *only* chance of success that a VHF expedition (which is serious in its intent) can possibly have is to organise the venture well before it takes place—with which is involved publicity and the fixing of schedules, by time and frequency.

Organisation and Equipment

Now what is involved in this organisation? The essential item of course is the apparatus to be used and the transport, and in the case of this particular *safari*, the latter was well taken care of by G3BHT's Volkswagen "Caravette," which provides self-contained comfort and space to accommodate gear into the bargain. As for the technical side, this can only be what you have, as few of us are in that happy position of being able to buy specially for expedition work. In any case, at present, there is no readily available commercial gear on the market which would do precisely what we wanted, so a slightly unhappy compromise had to be devised to meet our needs.

Our specification for transmission and reception requirements was the ability to use AM, CW or SSB, and to receive either on net channel (SSB) or on a split frequency, with the minimum of manual plug-and-socket effort. The use of SSB we considered to be essential and this being so, a proper SSB receiver had to be available and not a general-purpose Rx which was fine for CW or AM but less than optimum for SSB reception. The KW-2000A met the SSB specification easily and had the great advantage of independent tuning on reception. We also had a modified TW Twomobile with special 2N5245 FET front end and this was very convenient for AM, FM and CW reception, with the additional attractions of being small, neat, sensitive (0.8 dB noise factor) and quick to tune over the band. This now left the question of how to transmit AM as we had only a SSB prime mover and a frequency transverter/linear available. The answer was found to lie in a slight modification to the KW-2000A to permit it to run on its internal tone oscillator and then to screen modulate the 6146's in the output stage with a small external "series-gate" modulator, power for which was derived from the existing HT and bias rails inside the KW-2000A itself. This worked very well, and produced well-modulated "real" AM with a slight carrier lift to accommodate robust modulation. So thus we had a single multi-mode prime mover operating on 14 mc and being converted to 145 mc in the old faithful transverter, followed by the QV06-40A as an AB linear. Power RF levels were: 12.5 watts carrier output (quiescent) on AM, 30 watts carrier out NBFM (this was obtained by modulating the

ITT voltage on the KW-2000A VFO), and on SSB we had 60 watts p.e.p. output. CW was about 50 watts RF out but could be varied to suit conditions. The linear operated on +500 volts HT but could be switched to +1,000 volts if needed and this gave 100 watts RF in a Termaline load. A JXK converter provided the receive facility on SSB.

All the foregoing apparatus was built into a *Handy-Angle* rack arrangement which stood over the Volkswagen front passenger seat after its cushions had been removed. All gear was held in position by "twangers"—those elastic double-ended hook devices used for anchoring luggage to roof racks of cars. In practice this set-up worked very well and stood up to sudden braking to avoid stray sheep or game birds. The idea was that everything should be wired up ready-to-go, so that whenever a new site was reached, all that should be required was to run out the mains lead to the generator, put up the aerial and plug the feeder into the reflectometer.

Aerials and Power Supply

The choice of aerial had long ago been decided from previous forays and field days, and this was the ubiquitous ten-element *J-Beam* Skybeam with UR-1 feeder. The mast was four-section, six foot per section, with nylon guys, and by having guys of the right length for a given picket spacing the whole aerial system could be quite easily hoisted by the two of us, even in a high wind. An 80m. inverted-Vee dipole was also hung from the mast top for the SSB communication link with the expedition anchor men G6CW and G3OZP, a necessary arrangement to have in the event of trouble on the VHF side and to keep up-to-date on tour with any change in schedule times or additions to the already prepared list.

Now to the crucial question of how to keep the outfit powered. We had investigated and tried one or two of the well-known petrol-driven alternators but these had all been *unsatisfactory* because of poor regulation on SSB, inadequate power handling, or electrical noise. We finally plunged deeply into our pockets and purchased an *Allum Minigen*—giving 1½ kW of 240 volts AC, with nicely compounded windings to ensure excellent regulation without a trace of hash or ignition interference on any band—this was a beautiful machine and did everything we needed of it and was 100% reliable.

* * *

Having got all the gear together it had to be tested before the time we went on the tour, and this was done over the Easter holidays with one or two weak points arising and being dealt with at the time. Having done this we knew quite definitely that, barring accidents, all our gear was in a "go" condition and ready to travel North.

Publicity well in advance was an obvious must, and this was done through the usual channels—without publicity how can anyone know what you intend to do? Good as this was, it was still considered necessary to drive the point home with full details of what was going to happen, so a hundred known active VHF'ers were circulated beforehand, many of whom made definite skeds for a given date, time, frequency and mode, so that their chances of making a contact were at an optimum. The £2 spent on stamps for the hundred letters containing

operating information and sked lists was well worth the money and was an investment in ensuring that there would be people there for *us* to work! After all, there would be little or no point in doing an expedition if only a chosen few were in the know to be there at the right time. As already emphasised we do not go out just for fun, we go out to get results, and to achieve this we have to work for it.

Experiences and Results

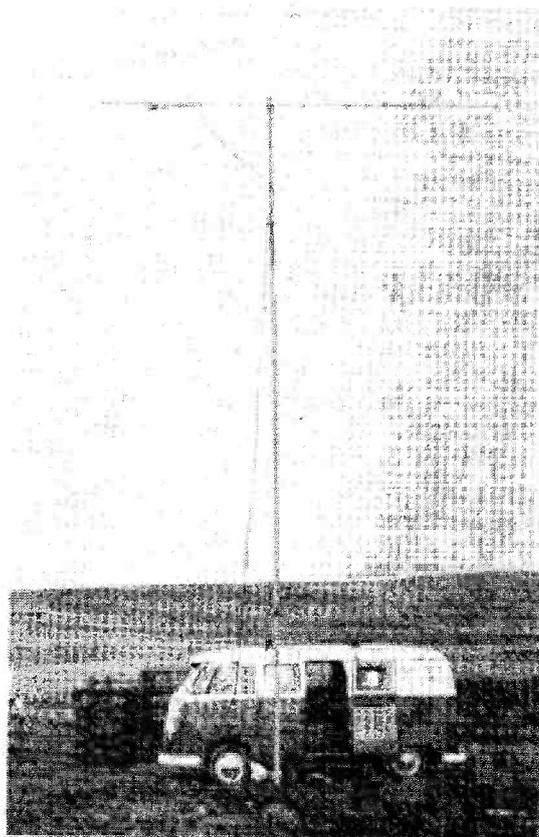
To start off the expedition, it is quite necessary to establish the fact that you *are* away and actually operating, where your frequency is, and that you can be heard by the majority of the operators whom you wish to contact throughout the tour. In our case we chose Westmorland (May 24) as the starter, operating from a site 2,400 feet a.s.l. near Appleby. Everything commenced well with bright sunshine—until we came to put up the aerial, when down came the rain in buckets, and buckets, and buckets! It rained all night and well into the next day as well. It was so bad that the vehicle got into serious difficulties on the slippery surface and had it not been for a wonderfully simple device called a “snud-mat” which we put under the driving wheels, and assistance obtained from a local BBC engineer from Skelton, we might still be there. *Moral*—be prepared for the worst, you will no doubt get it!

Apart from the appalling weather in Westmorland, radio-wise we made a reasonable beginning and had a tally of 87 contacts over five hours, one hour of which was from 0730 to 0830 in the morning when conditions are usually at their peak.

From Westmorland we went into GM proper and eventually got a suitable site in Kirkcudbright (May 25) overlooking the sea with an ideal take-off. The weather had cleared and in fact it was warm with bright sunshine, a small recompense for our dreadful first night. We netted 70 contacts in this county, several being at about 550 km., the limit for normal-propagation VHF working on low power.

Wigtown was the adjacent county and again with the sun shining we found a good site near the Mull of Galloway and chalked up 91 contacts in all. From the south-western tip of Scotland we journeyed over really beautiful rolling hill land to Southern Lanarkshire where we obtained permission to operate from a good site about 2,000 feet up—as the garage attendant said, “it’s a guid pull up the brae,” and he wasn’t kidding either! Despite the forecast of a lightning storm the wind fell and the sun shone until it set, and we operated at a brisk speed until another 91 contacts were in the log. A short journey over the hills took us to Dumfriesshire where we had a jolly good rest and “technical fiddle” to check that the gear was still on top line after its jolting up the tracks in search of that elusive “perfect” site. That night we could hear the storms to the south with the Wrotham beacon “pinging” away at every lightning flash from the Midlands. We actually saw the storm going out to sea just south of the Solway Firth, and we were thankful to see it depart. We drank a bottle of wine in celebration of beating the hundred mark and turned in with 110 in the log.

The counties we had done so far were relatively easy to put out a signal from, so we entered into the more difficult phase of the operation, and trotted off to



A good idea of how the station of the GM/VHF DX-pedition, mounted by G3BA and G3BHT over May 24-31, looked when set up in any of the eight counties from which they operated during their “spring haggis hunt” (according to G3BA, they shot it in Hawick!). The aerial was a J-Beam 10-element “Skybeam,” with its special low-loss feeder, on a sectioned 24ft. stick. Though conditions during their week out were not too good, their results overall were excellent—see accompanying details.

Selkirk to a very nice site suggested by GM3WIG who we had been working on our 80m. sessions. We set up shop by mid-afternoon and the Kent beacon was nicely there about S2/3, so we thought we were in for a good spell that evening. How wrong we were! The first half-hour was wonderful with 5 & 7’s from Kent and the South Coast, then—slam! the door shut on us! Slow QSB and shocking conditions set in as the cold front went across North England—we struggled and fumed and were very frustrated, raising a miserable 58 stations only with about two dozen “gotaway’s.”

From Selkirk on to Roxburgh where we had an almost identical good site, except that this time the front had gone through and the Kent beacon was pretty steady just above the noise. This time we scored 82 completed contacts, although the QSB caused a few DX “gotaways” again. At this point we opted to come back to England in view of the poor conditions and finish our stint from Cumberland (May 31). After being well entertained by G3BW and the Cumberland VHF gang, we had the loan of their field-day site on Bootle Fell

and had a most successful finishing session of 117 contacts.

Impressions

And now that it is all over, what conclusions can we come to? Was it worth it? Well, from our point of view very much so, thanks to all those many amateurs who took an interest in what we were doing—after all, we did have 706 QSO's in eight days! How did the modes work out? It was quite surprising to find how CW activity and usage had tailed off over the last two years. When we did the EI/GI trip we were knocking them off CW-wise 20/30 to the hour, but this time there were perhaps only 30% of our contacts using the key; of the remainder a good 50% were on AM and 20% on SSB—mind you, the SSB sessions were the slickest by far, and the 20% were worked in about 45 minutes. The increase in AM activity was almost entirely due to the Class-B Licensees; most of them were good operators with easily-read transmissions, and only a small proportion had poorly-modulated transmitters and wanted to tell us their life history! (It is very difficult trying to make a QSO every one or two minutes when the other party goes on so!) The best operators were those on CW, and most have had experience of riding the QSB and telepathic use of break-in—naturally the newer licensees do not always get the message of how to use

break-in on phone to take advantage of the “up” on QSB. On SSB things were quite chaotic to start with, but once the advantage of calling *plus* or *minus* one or two kc off the channel was explained, the sessions were quick and remarkably good for DX and the number of QSO's.

It had been our intention to use CW and SSB only for all split-frequency contacts, but results from AM stations were almost zero, so a change to AM sessions for about 20 minutes in the hour, alternating with 20 minutes of CW and ten minutes of two-way SSB, was found to be the best compromise.

Pet hates which came out of the trip were occasioned by those who gave our callsign twenty times and theirs once! Those who gave strings of calls and got tongue-tied thereafter; those who said “the *handle* here is Joe”—handles are for lavatory chains; and finally the man who called us blind on the SSB channel and spoilt several of our QSO's.

And now to the “gimmick” of the trip: Who deserves the haggis we caught in Hawick? We are unanimous that G3RMB of Coventry gets this for his patience, good operating and QRP of two watts p.e.p., which netted him a QSO in every county except two (when he was there but jammed out), all on two-way SSB.

From G3BHT and the writer, grateful thanks to all who participated in our Border travels and to those whose hospitality we enjoyed, not forgetting the good citizens who gave us permission to operate on their land.



Brian Meaden, G3BHT, on one of his operating stints during the two-metre expedition into the Border Counties, reported in the article by G3BA, herewith. They were on the air over the period May 24-31, and made more than 700 QSO's from eight counties.



“... Relax—have to come out here to swivel the beam...”

• • • S W L • • •

SHORT WAVE LISTENER
FEATUREATTENUATING THE RECEIVER — REDUCING
FRONT-END GAIN TO MANAGEABLE PROPOR-
TIONS — COMMENTS ON A HEAVY MAIL —
IDEAS, NEWS AND GOSSIP — LATEST HPX
LADDER POSITIONS

By Justin Cooper

SOMEWHAT of a change in the preamble this time, in that it seems to be about time we investigated the relative merits of preselectors, converters, and, strangely enough, attenuators—any or all of which can be put in front of the receiver in order to improve the general performance.

The parameters of the receiver which are relevant in this sort of context are the sensitivity, by which we mean its ability to copy an extremely small signal; its stability, which is a function of the local oscillator in a conventional superhet design, wherein this oscillator is tunable rather than crystal-controlled; and its cross-modulation performance, which is a measure of the ability of the receiver to continue to receive weak signals when a very large one is close by the wanted signal but outside the nominal pass-band.

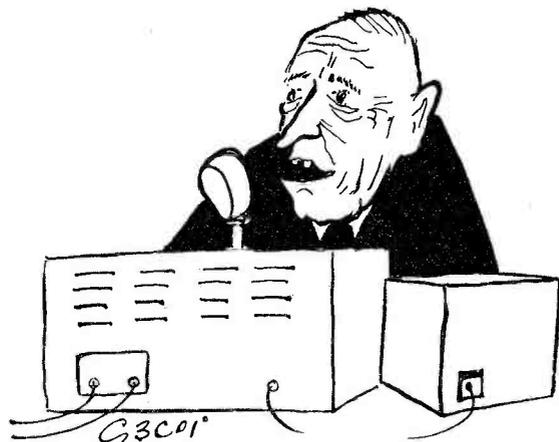
If the receiver is sensitive enough to get down to the residual noise of the first valve—the severe but quick test for this is to connect a carbon resistor of value given as the Rx input impedance, e.g. 50, 75, 400 ohms or whatever, across the aerial terminals and see whether adjusting the aerial trimmer, or RF stage tuned circuit, results in a peaking in the “sharsh” with the gains right up to maximum, the receiver being set to the highest band which it is desired to cover—then the provision of a preselector will give little or no improvement in performance, and will almost certainly *degrade* the cross-modulation performance considerably.

If the stability is acceptable on the lower-frequency bands, then the stability on the higher frequencies can often be materially improved by the fitting of a crystal-controlled converter; albeit if there is much gain in the converter, once again the cross-modulation performance will suffer. In the case of the older receivers having two RF stages, the cross-modulation performance will almost certainly be poor anyway.

The use of bipolar transistors in the receiver, as against FET'S or valves, will also result in degraded cross-modulation performance, to the point where, on Forty, for instance, it is almost impossible to read the weaker signals due to the high general noise level generated by cross-modulation products from heaven knows how many big EU signals with dirty notes.

What then is the answer? Clearly, as we have so often said in this piece, one needs to couple the aerial into the receiver through an ATU of some sort if one

is to transfer all the signal picked up by the aerial into the receiver. If a preselector or converter is already in the system, then it is necessary to incorporate some sort of attenuator between the aerial and the preselector, and, on the lower frequency bands, to be able to switch out the preselector and leave the attenuator in. The ideal to aim at is to be able to use the preselector on the quiet HF bands, but to put in enough attenuation when the bands are noisy to enable the receiver to be run at or near full gain. The writer is not burdened, thank heaven, with stability problems, and so a converter is not needed, but with the preselector the ability to vary its overall gain while still running both preselector and receiver at “full chat” makes an amazing difference to the ability to read the weak ones. In fact, J.C. has an attenuator between the ATU and the preselector, facilities for switching out the preselector, and another attenuator between preselector and main receiver, all of which are under the control of one switch. The difference in being able to run the receiver on full gain on, say, Forty, or Eighty, is quite amazing, when it comes to hearing the stations coming back. Both attenuators are made variable, as it is surprising how suddenly the onset of cross-modulation comes on, and a couple of dB of



“... Everything here is in grey wrinkle...”

attenuation in the front or between the two units makes all the difference between copying a signal perfectly with the receiver in its most sensitive condition and being completely unable to read it due to having to back off the RF gain control to the point where it is unable to resolve the wanted signal.

One can, of course, use fixed attenuators—*Belling-Lee* used to do a very useful series in steps of 6 dB, but it is preferable to make them up as switchable from straight through to some maximum value. Rather a good one appeared in *Technical Topics for the Radio Amateur* which should be easy enough to knock up in an evening. The resistors should be of the values specified, and it is suggested that to avoid any risk of them generating any extra noise, they be of the glass-tin-oxide type, such as the TR4, TR5, TR6, types made by *Electrosil*, or similar. A useful practical article on the same subject appeared in the August 1968 issue of *SHORT WAVE MAGAZINE*.

The Mail

This bug of Amateur Radio is sometimes catching, as your J.C. has personally been able to observe over the past few weeks; and thus it comes about that *Lynne Hyder* has been finding out all about Dad's crazy hobby, and catching the disease herself! She has quite a way to go to catch up yet, but makes a good start at 224 in the HPX. Father, *T. W. Hyder (Southampton)* has a fair old lead with a score of 450, and one suspects that as he is arranging switching so as to be able to compare directly the performance of the HRO and the AR-88, he is taking the lion's share of the listening time. Fie upon you, sir!

John Singleton (Hull) is really down in the mouth this month; *XYL Shelagh* has been away in hospital—hard luck, *Shelagh*—and, since she is not to go back to work, she has well and truly taken over the gear and demoted John to listening to Radio One! However, all is well that ends well, and John is using his spare time to good effect by brewing up various aerials to boost the

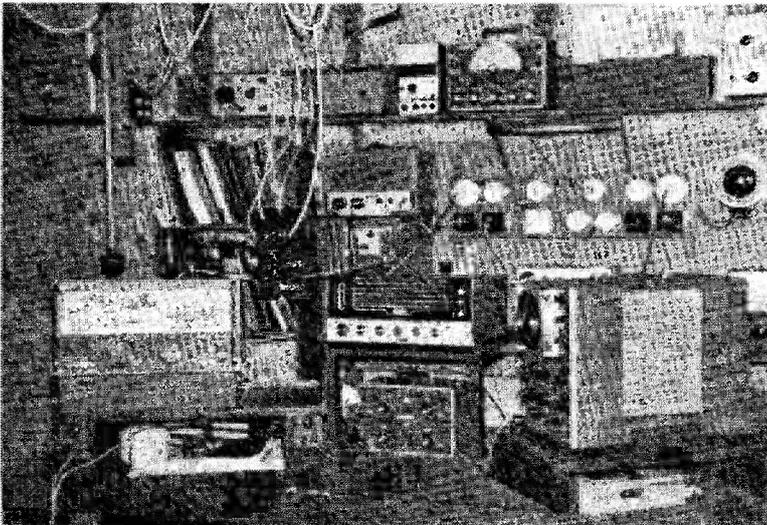
Rx signals in various directions.

Changing tack a little, we have next a letter from *M. Williams (Sleaford)* who has taken up SWL activity with all the enthusiasm of a youngster—although he is now in his fifties. Maurice wonders about the question of going in for R.A.E.—all that can be said here is that the writer knows of several who have passed and got on the air at quite an advanced age (some are in their 60's and 70's). One member of the R.A.E. course just past was indeed J.C.'s "white hope"—a hope which was sadly dashed when Bob said he was *not* actually taking the Exam, as he had already passed and had simply come to the course to learn what it was all about!

Talking of R.A.E., *L. Ward (Guernsey, C.I.)* challenges the statement that the full and correct answer to the licensing conditions question is to quote the relevant paragraphs "parrot-fashion." The point here is that sometimes the answer involves quoting bits from more than one paragraph, and so one can hardly expect to get all the marks if you do not quote all the relevant bits. It is still better to do this than to try and paraphrase the actual wording—most candidates are not too adept at words and are more likely than not either to miss out essential bits, or to twist words into giving non-existent meanings to the various clauses of the Licence. Without actually scanning a copy of Les's answer paper, it would be hard indeed to say just what went wrong—but we can say better luck next time!

Talking of luck, *W. C. Torode (London, W.C.1)* has been away for a time on unspecified errands, but (and this is the important bit) the women have been "getting at" his place, spring-cleaning and so on, with the result that his PHX list has been consigned to the w.p.b. Hard on Wally, this, especially as J.C. does not keep copies of the originals.

Luck, of course, should always be regarded as relative; quite the most cheerful note in the clip this time comes from *Jock Inglis*, up in *Alloa*, who, it may be remembered, was mentioned as being temporarily "horizontally polarised" some time back. Sad to say,



This is the station of SWL Wm. Clark, of 2A St. Swithin Street, Aberdeen, as it is today. Now 74, he is the young man you see in the picture at top right, taken in 1920. These two very interesting photographs span an interval of nearly 50 years.



The station of a radio experimenter of many years ago—actually, 1920, when this was the set-up operated by William Clark, then 24 years of age. With the exception of one ES1, two S-type valves and the accumulators, all the gear was home-constructed (which meant making the condensers, coils and resistances). The Rx format was the 1-V-1 (very advanced for those days) with swinging reaction coil, and listening was, of course, on long and medium wavelengths. Later, this station (then, as now, in Aberdeen) became 2VX, and is listed as such in our copy of the 1927 "Call Book." Later still, business and domestic pressures compelled 2VX to give up radio for a while—but since then he has come back as an SWL and now, at the age of 74, is as keen as ever. His very modern receiving station is shown at lower left on the opposite page.

after six months off duty, the medicos have decreed that he is not to go back to his old work. When it is realised that Jock has been doing the same job for 25 years one begins to realise what problems are raised. . . .

* * *

On the question of prefixes, *S. Foster (Lincoln)* takes us severely to task for denouncing DC8DC last time around; fair comment, as DC is a German VHF call—but *not* on the HF bands, which is where your scribe understood it to have been heard. Stew mentions that he found 17 new ones in about 1½ hours during the tail-end of a recent contest—all of them variations on the theme of the PR, PU, and similar, which were used by Brazilian stations for the event. Yet a third clarification comes along in Stewart's letter, and is referred to by many readers (in particular G3WET) is the use of /X and /Y on the end of YU call signs. YU2CB/X is Kruno, 15 year-old son of YU2CB, while YU2CB/Y is the XYL or YU2CB—so now we know!

Still on the question of the call signs, or rather prefixes, used by the Brazilians, mentioned in the last paragraph, *Douglas Browning (Bishops Stortford)* wants to know

how to tell who they are for the purpose of sending them a QSL card. A Very Good Question—but J.C. got around it by sending all his cards to the Bureau! Cards could be sent direct to the *PY Bureau, Box 2353, Rio de Janeiro, Brazil.*

Gripes

J.C. is a patient old buffer, not even given to cussing when his beard gets tangled in his key-contracts, but he does hate to be done out of his own little bit of time on the air. And any letters that need a direct answer *do* take time up which could be spent on the air. Some, it has been a pleasure to reply to, and a long correspondence has resulted, of benefit and pleasure on both sides—but when a chap asks for an acknowledgement of receipt of an HPX List, and does not even have the courtesy to enclose an s.a.e., then J.C. gets hopping mad! No hard feelings this time—but for Pete's sake *please* don't ask for direct reply other than through the column, unless it is something absolutely essential. The rule must remain to be that all queries which could be of general interest are dealt with only through this feature.

[over

R. A. Treacher (Eltham) spent his first few months as a BC listener, and then graduated to the amateur allocations, albeit at present he can only listen on 7 and 21 mc on his BC receiver.

The rules about HPX appear periodically in this piece, and in general seem to be pretty well understood. However, quite often people ask—as has *R. Nicholls of Narborough*—whether the full call sign or the prefix only is required in the lists you send in. The answer is one that needs a certain amount of discretion, in that enough should be available to enable us to identify the odd ones quickly and easily. Some therefore give full call signs, dates and bands (which is ideal) while others give the prefixes and mention the oddities in more detail in the covering letter. If, of course, you find an error yourself, and send in a complete new list (as has *M. Pipes of Derby*) then again keep to the normal form, but be sure to mention it as a new list.

* * *

Back to matters technical. *G. Dover (Nottingham)* seems to have trouble with the plug-in coils he is using with his receiver, in that the tuning cores seem almost bound to move with the pushing and pulling about they receive in service. In fairness, it should be said that *no* cored coil of this type is really ideal for plug-in use, but much can be done to ease the problem by providing a suitable core-locking device. One of the simplest is to slip a bit of rubber band in with the core, compressed into the thread to hold all tight when the final adjustment is made. There are various proprietary varieties of “goo” which are sold to lock cores in place; a favourite of J.C.’s is known as *Rocol 8G* core-locking compound, and has the delightful property that it does not set too quickly, so that it can be used to lubricate the threads while the actual alignment is going on—but a few days later that core will *not* have any ideas about moving!

A couple of letters from *C. Pearson (Northfleet)*, who seems to be making steady progress both technically and in HPX terms. Chris started off with a TRF receiver, and progressed to an HE-40 which has been somewhat modified; a pre-selector and ATU are also used (to the designs by G3OGR in the *SHORT WAVE MAGAZINE*), and thoughts are being turned to a really ambitious design of superhet, using about 33 semiconductors, FET mixers, and a mechanical filter—what about the article by G3TDT, now running in the *Magazine*?

Talking of receivers and ATU’s leads naturally to that other important bit, namely, the aerial. It is noticeable from the correspondence that many SWL’s put up and take down aerials with startling rapidity, and form opinions about them with only a couple of days of use. If one thinks about it, this is not a very sensible way of tackling things, insofar as if a few days of poor conditions coincide with the erection and trying out of the aerial one gets a totally wrong impression. Any aerial for the HF bands should be used for at least a period of months and then the comparison with the previous one made by careful reference to the loggings over similar periods of time on both aerials, taking into account seasonal and sunspot variations. (The professionals give months of study to these problems, combined with scale-model tests and investigations over DX distances, with all the propagation factors taken into account.)

R. Mi ler (Putney) has made up a first entry, with the

aid of a piece of wire draped around the walls of his room, despite heavy interference from a nearby works which virtually puts him out of business from 8 till 5.30 p.m. The remaining period is further shortened by the neighbour’s electric shaver! Ray is thinking that perhaps an ATU would make an improvement to his incoming signals—so it would, and so would any extra work which could be done on the earthing system, particularly on the LF bands.

These ZA pirates never seem to learn—nor do people ever learn that they are not worth working! The latest in the line claims to be “ZA1AC” and even has the effrontery to say that he has an Italian QSL manager!

A conscience is a good thing to have, but it is worrying *S. Palmer (West Wickham)*, who makes a visit each month to an uncle who has a K.W. trap dipole, a couple of B.40’s, an HRO-5, a Trio 9R59 and a panadaptor, with which to do his listening. Stephen wants to know whether the prefixes heard on this impressive array of machinery can be taken into his home-station score—but he does not say how far away his uncle lives. We would think this is a matter of conscience—if he is just around the corner, OK, but if at the other end of the country, No—but we are certainly not going to lay down any hard-and-fast rule on the subject.

* * *

Last time out we were talking about chess being played over the air; and we thought at the time someone would come up and comment on it. Sure enough, G3VDX writes to say that he and G3UMV have completed 140 games in this fashion, using 15 metres as the link. The chap who stirred it all up, *R. Allisett (St. Peter Port, Guernsey, C.I.)* is finding his time on the air rather cut down, as he is on the last run-up to all-important examinations. However, Dick has managed to find and put in his shack one of the best status symbols of all—one of those delightful chairs that swivel round, have arms, and can be tipped back without the legs coming off the floor—luxury indeed!

B. A. Smith (Ruislip Manor) returns to the fold after several years’ absence for one reason and another. Brian has an AR88D, fed from either a 132-foot wire, a 14 mc dipole or a Cubical Quad for 21/28 mc, and is able to be on the air at times when most people have to be earning their crust.

A bouquet for G3HSC’s Morse-training system comes in the letter from *D. Nobles (Isham)* who has, with its help, nearly made the required speed for the Test. His HPX score has also been more than a little helped by the addition of a folded dipole for 14 mc.

Talking of CW, a first list using this mode comes in from *Peter Wilby*; he has just moved from Ossett to Home Lea House, 137 Wood Lane, Rothwell, near Leeds, where his mother is on the staff. Peter would like to hear from kindred spirits in the area—please contact him direct at this QTH.

Another first one from *P. Sharman*, who is now 13, but has been listening on the amateur bands for 2½ years, with an HRO; the main interest is in Top Band DX, and particularly the Sideband stuff.

H. N. Plumridge (Swaythling) has been off the air for three months due to moving house, but had now got the power on to the shack at the end of the garden. He is rather interested to see just how much variation

there will be in results, as he is to put up an aerial exactly similar to the one at the old place, but transposed 90° in direction.

It is nice to have faith in the postal code—*N. Whiting (Leeds)* certainly has, because he does not even mention his home town! Neil has been somewhat inactive of late, and, although he does not say so, one suspects the problem is that of examinations. This is certainly the case as far as *I. Poole (Leeds)* is concerned. Ian, however is a bit more concerned in his letter with a report which was returned from 4K2A's QSL manager, saying that he was "only giving cards to SWL's who reported on actual QSO's." A bit off, this, as Ian says, insofar as he was reporting 4K2A calling CQ and finding no takers—a condition where the man would possibly have been wondering whether or not he was actually getting out.

Some of the hints we have given at one time and another seem to have helped *R. Waterman (Aberlady)* with his own problems. Richard has tried the effect of getting up in the morning and is completely convinced that this is by far the best time to listen. However, since the WPX contest, for which he was there for most of the time, the receiver has hardly been switched on—again because of the onset of examinations.

C. Garcia (Worthing) has a prize interference problem, in this case with the oil-fired heating boiler, which makes about three out of every ten minutes absolutely impossible on the LF bands, and wipes out anything lower than RS-58 on the HF areas. Chris has tried about everything he can think of, and pretty well removed the mains-borne interference, but is beaten on the radiation from the leads. Perhaps the quickest way to deal with such a situation is to take it to the makers, who may have come across the problem and have a fix—but it does rather sound as though the boiler is not operating as it ought. Another problem Chris mentions is the status of ZL2AFZ/C—these are ZL2's operating from Chatham Island, and are counted accordingly.

Exams are holding back *P. Smith (Chesterfield)*, but the odd extra prefix has been added. Paul finds it makes quite a difference if the long-wire is earthed down when listening on his vertical—as much as an S-point up on the DX and a couple of S-points down for the EU QRM. Incidentally, SWL Smith thinks the /A and /P stations should count separately in the ladders; not really a valid argument since the object is to hear prefixes, and not stations. However, any division is bound to be purely arbitrary and it is not really worth changing the rules at this stage in the game.

ZD5V is at the moment the chief quarry of *D. Whalley (Corsham)*. The reason is that ZD5C is ex-G3UUK, who lived in the next road, and used to boom in on the medium wave portable receiver, when he was operating on 14 mc. Sounds as though ZD5V might have been the "spark-plug" for Dave's interest in SWL-ing!

From *Hornchurch*, we hear that *S. Pitt* has had his nose firmly to the examination grindstone, but in the meantime he has found an, as yet, untraceable fault in his converter, while the B.44 used on 70 mc got so excited at hearing the first signal that the relay chattered and then seized up!

As far as *P. Schofield (Bolton)* is concerned, the

receivers in use are a Trio JR-500SE for the 3.5–28 mc allocations, plus a CR-150 for Top Band, the latter being used in conjunction with a 2N3819 preselector. There is also a Class-D wavemeter, and a selection of aerials.

Construction has been occupying the time of *N. Henbrey (Northiam)* quite a lot of late, with a view to installing gear in the car. Both Norman and *David*

HPX LADDER

(Starting January 1, 1960)

| SWL | PREFIXES | SWL | PREFIXES |
|-------------------------------|----------|-------------------------------|----------|
| PHONE ONLY | | PHONE ONLY | |
| S. Foster (Lincoln) | 1048 | W. T. Bowen (Dinas Powis) | 342 |
| A. W. Nielson (Glasgow) | 947 | H. N. Plumridge | |
| J. Singleton (Hull) | 889 | (Southampton) | 341 |
| B. Geary (Leicester) | 860 | M. Quintin | |
| G. J. Smithies (Brighouse) | 837 | (Wotton-u-Edge) | 334 |
| M. G. Toms (Ilford) | 700 | D. F. Randies (Sale) | 330 |
| J. Fitzgerald (Gt. Missenden) | 693 | M. Timms (Aylesbury) | 328 |
| M. A. Lount (Leicester) | 689 | N. Crampton (Romford) | 328 |
| C. P. Davis (Leicester) | 685 | S. Pitt (Hornchurch) | 327 |
| R. Allisett (Guernsey) | 684 | M. J. Wigg (Ferndown) | 323 |
| R. G. Preston (Norwich) | 679 | K. Kyezor (Perivale) | 320 |
| D. Skidmore (Derby) | 671 | C. Burrows (Gidea Park) | 320 |
| I. Poole (Leeds) | 667 | P. Levitt (Worsop) | 318 |
| R. Woods (Slough) | 664 | C. Price (Bolton) | 315 |
| W. Moncrieff (Hampton) | 661 | Rev. D. Brewster | |
| G. Dover (Nottingham) | 650 | (Oxford) | 310 |
| N. Henbrey (Northiam) | 647 | S. Jassel | |
| C. J. A. Morgan (Wallsend) | 613 | (Newcastle-on-Tyne) | 305 |
| D. Reynolds (Dudley) | 606 | D. Moule (Frinton-on-Sea) | 304 |
| J. P. Scragg (Stockport) | 592 | P. N. Butterfield (Wakefield) | 298 |
| L. Cunningham | | P. Taylor (Sydenham) | 297 |
| (Wath-on-Dearne) | 563 | K. Haywood (Manchester) | 295 |
| N. Whiting (Leeds) | 560 | R. Miller (London, S.W.15) | 293 |
| R. Bagwell (Frimley) | 558 | R. A. Treacher (Eltham) | 293 |
| K. Plumridge | | S. Culnane (Harrow) | 292 |
| (Southampton) | 546 | R. W. Jones (Bristol) | 292 |
| L. Harwood (Wirral) | 537 | M. Williams (Sleaford) | 291 |
| D. Henbrey (Northiam) | 521 | P. Schofield (Bolton) | 289 |
| H. M. Graham (Harefield) | 521 | D. Browning | |
| G. Aytton (Sunderland) | 520 | (Bishops Cleeve) | 282 |
| M. Pipes (Derby) | 519 | R. Hilton (Ashbourne) | 273 |
| G. Braund (Taplow) | 507 | C. R. Adams (Manchester) | 273 |
| D. Robinson (Birmingham) | 507 | P. Gould (Tiptree) | 271 |
| P. Brown (Isham) | 499 | C. Pearson (Northfleet) | 267 |
| C. Wynn (Birmingham) | 485 | J. Marchant (Sharnbrook) | 260 |
| R. Walters (Etwell) | 467 | N. P. Taylor | |
| J. E. Jenkinson (Oxford) | 464 | (North Wembley) | 253 |
| D. Palmer (Fareham) | 456 | A. Vest (Durham) | 251 |
| T. W. Hyder (Southampton) | 450 | J. Brackenridge | |
| M. Broadway (Chelmsford) | 447 | (Maybole, Ayr) | 248 |
| L. Rowland (Birkenhead) | 446 | D. J. Porter (Harrow) | 245 |
| A. Cobb (Hull) | 441 | C. Jones (Mold) | 244 |
| N. Peacock (Tonbridge) | 439 | P. Smith (Chesterfield) | 242 |
| R. C. Waterman (E. Lothian) | 437 | D. Garrad (London, S.E.23) | 236 |
| D. S. Henry (Edinburgh) | 433 | D. J. Harris (Bath) | 231 |
| K. B. Mendorf | | R. Nicholls (Narborough) | 226 |
| (Wellesbourne) | 422 | Miss L. Hyder | |
| T. J. Bucknell (St. Albans) | 422 | (Southampton) | 224 |
| A. Parker (Chesham) | 421 | G. K. Upton (Nottingham) | 224 |
| C. Shearing | | E. P. Englehard | |
| (St. Agnes, Cornwall) | 416 | (Macclesfield) | 221 |
| P. Sharran (Hayes) | 412 | Mrs. S. Singleton (Hull) | 214 |
| Mrs. G. Austin (Bearsted) | 412 | R. Mortimer (Abingdon) | 209 |
| D. Nobles (Isham) | 408 | C. Garcia (Worthing) | 209 |
| A. Pyne (Budleigh Salterton) | 401 | J. R. Martin (Christchurch) | 204 |
| J. Seddon (Manchester) | 397 | | |
| S. Cole (Newport, Mon.) | 373 | | |
| M. L. Jones | | | |
| (Leamington Spa) | 372 | | |
| D. Whalley (Corsham) | 370 | C. Harrington (Maidenhead) | 512 |
| R. Bence (Cardiff) | 367 | A. Vest (Durham) | 471 |
| S. Palmer (West Wickham) | 363 | R. Hyde (RAF, Locking) | 401 |
| J. Pullen | | G. Braithwaite (Belfast) | 360 |
| (Barton-on-Humber) | 356 | M. A. Lount (Leicester) | 340 |
| J. W. Struthers (Hawick) | 356 | R. A. Fowler (Marlow) | 338 |
| A. Wood (Husthwaite) | 354 | B. A. Smith | |
| S. Osborne (Derby) | 351 | (Ruislip Manor) | 331 |
| W. Rees (Newport, Mon.) | 347 | J. Dunnett (Preston) | 301 |
| R. Cook (Leicester) | 344 | P. Wilby (Rothwell) | 215 |

CW ONLY

(NOTE: Listings include only recent claims. Failure to report for two consecutive issues of "SWL" will entail removal from the Table. Next list, September issue, for which the deadline will be July 18.)

have raised their totals quite a bit as a result of a spot of fairly intensive listening during the recent IARC propagation competition.

Abingdon is the QTH of *R. Mortimer*, who makes his first appearance in the Tables, having started with a Mini-clipper, progressed through an Eddystone S.640, and now being the proud owner of a Heathkit RA-1, which is perking nicely after a little difficulty in getting it going.

* * *

NFD is undoubtedly one of the great events of the year for many amateurs and SWL's. *S. Culnane (Harrow)* has obviously realised this; at the time of writing he was already in the midst of a campaign with his parents to get them to permit him to remain on the site overnight.

A long first letter from *L. Cunningham (Wath-on-Dearne)* who has been an SWL for quite a while, and a reader of this piece for three years. Since he collects, as he puts it, just about everything other than bits of string—very useful for aerials when wetted!—collecting prefixes is a “natural” to him, and so the first list, which starts from as far back as January 1964, has no less than 563 in it and includes none of the 1969 crop, which have still to be sorted out. SWL Cunningham uses a 9R59 plus PR-30 preselector, and mentions with gratitude the efforts of G6LZ, G6UF and G3WLS to get him through R.A.E. and into the transmitting side.

N. Crampton (Romford) uses an EC-10 to a collection of indoor aerials and has as ancillary equipment a crystal calibrator, an S-meter, and a filter built into a 2 oz. tobacco tin. With their aid, he managed to find another 66 prefixes to give his total a respectable lift.

Appropos that famous shortage of Top Band signals from Oxfordshire, *J. E. Jenkinson (Oxford)* looked through the *Callbook* and found no less than 67 amateurs licensed in Oxon., about twelve being actually within the City boundary.

Since restarting SWL back in 1963, *H. M. Graham (Harefield)* has kept a monthly record of Zones and countries heard, among others, and also similar for each year and since restarting. From all this data, allowing for the fact that no intensive listening is done, H.M.G. is able to come to the conclusion that unless it falls very flat for the rest of the year, 1969 looks like being a very good one. To add to his joy, the elusive fault that was bothering him for so long has at last been run to earth; quite by accident, during one of the fade-outs, the mains lead at the back was touched and everything came back to life. Nothing wrong was noted, but after cutting back the leads, and remaking the connections, everything now seems to be OK and no more fade-outs. So now the problem is solved.

What an organisation! *S. Cole (Rogerstone)* had a move of QTH, and so in the process lost his HPX check list. As if that were not enough, Stephen made up another one and promptly lost that! However, third time lucky, and back he goes in the Table at 373.

A. P. Scragg (Stockport) has not had a lot of joy during the month as his receiver is out of action, and he has made the discovery that most of these “competent radio repairers” are just lost when it comes to sorting out a *real* receiver. Not surprising, Phil—your scribe knows of one well-known firm which expects its outside

engineers to service twenty receivers a day, and does not even provide them with a testmeter with which to do the job. Indeed, it is fair to say that your old J.C. has *never* seen a radio repair shop which is properly equipped for its work. With a very few exceptions, nearly all are run by people the professional trade like to call “dabblers.” There are not more than about five or six firms in this country who have the competence and equipment to service a modern high-grade communications receiver. One recalls one such receiver, won as a prize, going on the blink after a year or so with a very minor fault. The chap who owned it took it to a local repairer who looked at the thing, said it couldn't possibly ever have worked, and rehashed it into a simple single-conversion receiver, at an astronomical price. After his repair was done, a certain amateur—in fact a professional engineer—took nearly a year, with help from the makers, to put it back to rights!

Back in 1965, *A. Parker (Chesham)* dropped out of the lists, and stayed that way till fairly recently. However, Andy has come back to the game and writes in to “make his number” once again with a new entry starting from 1969. He uses a 52 Set of 1944 vintage with a PR-30 preselector ahead, to a Hy-Gain 14AVQ, which together are going a grand job of bringing in the DX.

A brand-new entrant to the lists is *Ross Hilton (Ashbourne)* who uses an R.107, and also has an RF-24 which he is revamping as a converter for the 21/28 mc bands. Yet another is *Kim Mendorf (Wellesbourne)* who has been at it for several years but has an annoying receiver fault on his RA-1. Perhaps it wouldn't be a bad idea to pop it over to the Daystrom people for a going over—the RA-1 usually comes out of their hands completely transformed, as several other readers could confirm.

The Eddystone S.640 is in use at *W. T. Bowen (Dinas Powis)* has netted him 342 prefixes since January this year, for a first entry into the tables. *Charles Morgan (Wallsend)* has a CR-150 and has had trouble with the BFO injection. He previously used a transistor receiver to give front-end injection over the first 150 kc of 21 mc, but has now altered things so that the CR150/2 BFO is capacitively coupled in to the IF of the transistor Rx, to save the chore of listening on and tuning over two dials.

No doubt about it a change in the hours at which one listens can work wonders when the score is not rising as it should; *M. J. Quintin (Wotton-u-Edge)* found this out when he changed from late night and early-morning to trying the early-evening period, plus a change from 14 to 21 mc.

* * *

C. Price (Bolton) wants to know just why it is that a vertical whip seems so much better than a long-wire on the HF bands. Basically, this is a question of the lower angle of radiation at which the vertical aerial picks up most of its energy. The relative worth of a long-wire and a vertical is very much connected with things like the height of the former above real ground—not the same as the physical ground, often—and the quality of the earthing system, as well as questions of matching the aerials to the receiver for best power transfer.

Irena Bendova, Olsany 87, Ruda nad Maravou, is a YL listener in Czechoslovakia, very interested in all aspects of SWL activity. She reads and writes English and—because it is not easy for the OK's to obtain radio periodicals from England—spare copies of any such would be appreciated for the SWL club to which she belongs.



Can anyone help? *D. F. Randles, 30 Meadway Close, Sale, Cheshire*, has an Ecophone EC-2 receiver, giving general coverage and requiring 115 volts AC/DC. If anyone has any information on this receiver, circuitry, or experience (or knowledge that may be useful), please get in touch with SWL Randles.

M. Bass (Nottingham) is bashing away at A-Levels and R.A.E., but finds time to visit the Nottingham Club, where he received a warm welcome, and recommends any SWL to join a club—hear, hear!

Over to *J. Dunnett (Preston)* who is pleased to find his AR88 still OK after the long trip from Singapore. Jim has one query in 5A3CH—sounds a little odd but could possibly be a misreading, as all the 5A calls in the current *Callbook* have a T as the first letter after the call sign.

A first, very brief note comes in from *J. McBurney (Manchester)*, who has R.A.E. and the following day starts his Tech. College exams, which between them were effective in keeping him off the air for the time being. Another very short one is from *J. Brackenridge (Maybole, Ayrshire)* who reckons he has written so much in examinations he is now lost for words!

A. Wood, 4 East View, Hushwaite, York, is rather anxious to get in touch with Stanley Vane, who used to live at Iver, Bucks. (but is believed to have since moved) regarding some R1155 receiver gen. If reader Vane should see this, will he please get in touch with Alan direct?

APIRIL is a query in the list of *A. Vest (Durham)*

heard on the bands at an appropriate time—a pretty obvious practical joker of the sort that crops up every year!

A forty-metre dipole makes quite a good skywire on 21 mc, as *S. Osborne (Derby)* has found out to his pleasure and to the profit of his score. The reason, of course, is that the aerial is a good match on its third harmonic, as in this case, but *not* on its even harmonics.

An odd situation arose for *T. Cobb (Hull)* who has a QSL card from HK4BFQ, on a contact made in September 1966. Only one snag; the sole HK4 heard by Tony on that day was HK4BQO! Doubtless a line to HK4BFQ will clear up the problem, but in the meantime the *Callbook* does not yield any clues, and so it can only be assumed that the two stations are one and the same.

Congratulations are in order to *Robert Eva (Birmingham 22A)* who is leaving us to join the happy ranks of the licensed amateurs as G8COG—and long may he enjoy his call.

Conclusion

And there, for the moment, you have it. All letters simply with entries for the HPX Table and little or nothing to comment on have been taken in, and are just as welcome as those on which we have possibly dilated at some length. Till next time, the deadline for which is first post **July 18**, addressed as ever to "SWL," SHORT WAVE MAGAZINE, BUCKINGHAM, all the very best, and may the summer static not cramp your style too much.

To ensure a regular copy, become a Direct Subscriber—45s. post free (48s. first class posting), year of twelve issues, starting any month.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for August Issue: July 4)

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

OFTEN one wonders whether clubs take sufficient care to look after the interests of the fair sex—not among the membership, so much, as among the wives and families of the members. Particularly where groups are very active, problems can arise for active members, and a dinner once a year, plus a few trips to the odd Rally—which are for most women a bore, anyway—seems small reward to an XYL who sees her man spend considerable time in the shack, and then pad off up to the weekly meeting and extra outings as well. No wonder so many contacts over the air, or discussions at the club, end up in the same way—"Must pull out now, OM, or the XYL will be complaining!"

Some of The Reports

Let us look first at those groups having no boundaries in the purely local sense, but serve a section of our fraternity, wherever they may be. The first that springs to mind here is the Ex-G crowd, keeping in touch with the "Old Country" by way of their *Bulletin*, and regular nets. All the details of this one, can be obtained from the U.K. secretary, at the address shown in the Panel. U.K. stations are especially asked to take part in the Sunday evening nets, 1900z, on 14347 kc. The "official" nets are on the first and third Sundays, but unofficial or informal gatherings on the same frequency should materialise on the other Sundays.

Now to the **Radio Amateur Invalid and Bedfast Club**, probably better known to most as RAIBC. Again, obviously, it is mostly a question of contact by way of nets; 3.7 mc approximately, Tuesdays at 1000, Wednesdays at 1400, and the Cheshire Homes Net on Thursdays at 1400. (All times are clock.) In addition, there is their excellent *Radial* each month, with news of both members and supporters. Incidentally, apart from subscriptions and donations, G3VUC has a way of disposing of used stamps to the profit of the Club. He particularly wants the foreign ones—so pass yours on to Nobby, QTHR, to help the cause.

Anyone who has been or is a member of the Royal or Merchant Navies or of those of other countries could well be interested in joining up with the R.N.A.R.S., who again have their nets to maintain the personal contact, plus many other services too detailed to go into in this piece. However, there is no doubt that Ken Randall, G3RFH, would be only too pleased to pass on the information—see Panel, p.323.

New Clubs Formed

Here we have a couple to welcome, one in GW and the other in GM. To both go our best wishes and hopes for lasting success.

To GW first, where the new group has been formed in the Sully district, with a catchment area that seems to cover both Cardiff and Barry plus Penarth! They have Hq. at Sully Bowls and Social Club, where the gang get together every Tuesday evening. For all the details, get in contact with the hon. Secretary, GW3SLA, address as Panel.

GM has always, for some reason, been rather thinly represented both by clubs and amateurs, so it is twice a pleasure to mention another new formation. This one is up in Dundee (Kingsway Technical College). Gear for a station is available, and a club licence and a club licence are in hand. Perhaps more important, the Hq. has made it possible to do a little lobbying for an R.A.E. class next autumn, and members who are potential R.A.E. types are doubly welcome as insurance that their efforts will not be in vain in that direction. It sounds as if the club is an "open" one, and it would certainly be worthwhile for anyone within reach to get in contact with the hon. sec.—see Panel, p.323.

GI, Wales and the West Country

Bangor and District members seem to have been doing quite a bit to help with the station at the Fermanagh Festival, and in the process giving much pleasure to people wanting a contact with that county; in addition the chairman and secretary have projected a DX-pedition to that county for July 20-26, operating all bands. By the time this reaches print they will also have been on for Field Day. No details are given of the regular get-togethers, but a line to GI3OLJ should resolve that particular question—see Panel.

At **Haverfordwest** in Pembrokeshire there is a local group which has Hq. at Messrs. Chas. Cook, 15 Bridge Street, where they are to be found each Tuesday evening, starting at 7.30. Once in each month a special-interest session is projected, as well as various outings, and at any of the meetings visitors will be more than welcome.

Still in Wales, **Rhyl** are still going strong, and several members recently made the grade and obtained the coveted "ticket." The form here is a monthly meeting, details of which can be obtained from the hon. sec., at an Hq. off Bridge Street, Rhyl.

Turning now to the West of England section of the pile, there is first the **Plymouth** letter to deal with; here there has been an AGM recently, and the new committee is already making advance plans for the autumn. July 1 is "a bit of a special"; G5ZT is to talk about Transverters—but the meeting will be at Harold's own home, so that he can be in a better position to show *practically* what he is driving at. This being the case, it would be no more than common courtesy to contact G5ZT if you wish to visit this particular meeting. July 15 is an Open Night at the normal Plymouth Hq.—details from the hon. secretary.

Over to **Saltash**, and here it will not be only Saltash members who will be sorry to hear that the compiler of the *Tamar Pegasus* will have to give up the editorial chair, reduce his participation in Club activities, and even cut down his time on the bands, due to health and domestic reasons. Let us all hope G2DFH may soon be able to "resume normal service." As for the group, they are still at Burraton Toc H Hall in Burraton Road, the dates to note being July 11, when there is to be demonstration of portable generators, and July 25, when the Fox Hunt starts from Hq. at 7.30 sharp.

If you find the Cricketers Arms Hotel, Windham Road, Bournemouth, you are at the Hq. of the Wessex crowd; they book the first Friday in each month and the Monday which falls 17 days later. The clubroom has recently been cleared out to make more room, and a

club station is being set up on 144 mc.

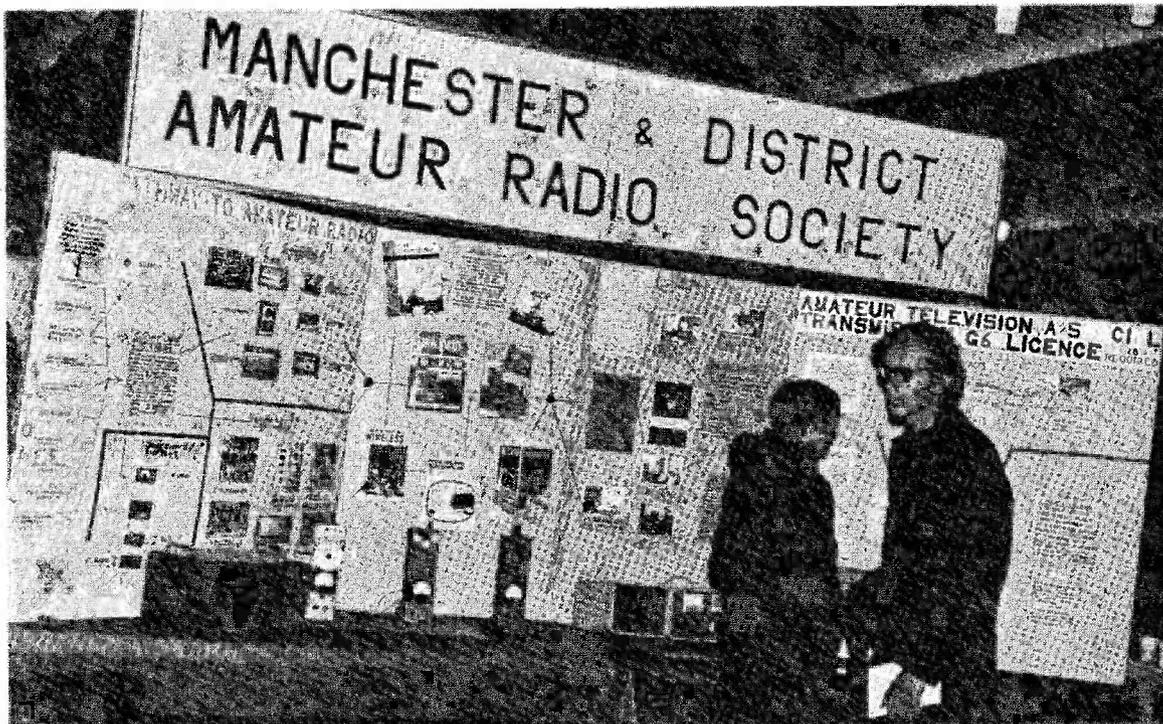
A change of tack in the lecture programme once in a while is a very fine thing, and this is just what the **Cornish** lads are doing at their July main meeting, when the main part of the session will be an illustrated talk on the "Wreck of the Association." For those with short memories, the *Association* was the flagship of Admiral Sir Cloudesley Shovell, and the finding of the wreck has caused intense interest in naval historical circles. In addition there is, of course, the Cornish Mobile Rally, at Truro on July 27.

Normally, the **Chippenham** crew get together every Tuesday at the High School, Hardenhuish Lane, at 7.30 p.m. However, in July there are a couple of variations to be noted. The *first transmission* in the Mini D/F Hunt on July 8 will be as early as 7.15. July 15 is down for a Social, which is to be held at the George and Dragon at Rowde, starting at 8 p.m.

Midlands and The North

Here the clip starts at **Worcester**, and shows Hq. at 35 Perdisswell Park, Droitwich Road. Sadly, we have all the details of the May and June activities, but have to direct you to the hon. sec. for the July doings—see the Panel for his address.

There is no mistake where **Coventry** are concerned. On July 4, G3RIR is to talk about Oscilloscopes and their uses; July 11 is a Night-on-the-Air, and so also is



The Convention of the Northern Radio Societies' Association was held on April 27, at Belle Vue, Manchester, and was supported by their ten Club Groups in the North-West, with another 15 trade and commercial stands—a fine effort, indeed. The stand shown above was one of the former and close examination shows that considerable attention to detail was given in its planning—intended to lead the prospective radio amateur from his beginnings right through to a callsign. This stand was adjudged complementary with that of the South Manchester Radio Society, and they were jointly awarded the trophy for the best member-society display in the Exhibition.



The Northern Convention at Belle Vue on April 27—and see p.321—brought in an estimated attendance of 4,000 people, who had nearly 30 stands to browse round. Talk-in stations were operated on 2-4-160m. and were kept busy all day. The business done—both commercially, and at the Club stands—was reported to be very satisfactory, and many trade enterprises have already booked a place for next year's event—which is to be on April 26, 1970, again at Belle Vue, Manchester. The N.R.S.A.—under the guidance of R. M. Clarke, G8AYD, as organiser and manager—is to be congratulated on its enterprise and foresight in making such a Convention possible for the North-West.

July 25. The July 18 date has been cancelled as it coincides with the start of the Coventry holiday period.

At the Old People's Centre, Park Road, Redditch, which is where East Worcs. congregate on July 10, the speaker will be Ralph Blackburn, G3PYR, who will also be showing film to illustrate his theme, which is "Industrial Gases."

Midland put out a most interesting *Newsletter* to its members; the copy to hand carries full details of events up to the end of June, and has part of a series dealing with the modification of various surplus TV tuners to enable operation on the amateur bands. The lads assemble at the Midland Institute in Margaret Street, Birmingham 3, on the third Tuesday in each month, unless any previous notification has been made.

Lichfield next, where a change of hon. sec. is noted in our records and the Address Panel; the lads foregather at the Swan Hotel in Bird Street, on the first Monday and third Tuesday in each month.

Two dates are ringed on the calendars of the Stourbridge members. July 1 is a lecture and demonstration of Amateur TV by Howard Parker, G6RKU/T, at Longlands School, Stourbridge. The informal, on July 15, is at Shrubbery Cottage, Heath Lane, Stourbridge.

Weekly meetings are the form at Nottingham, where the local group uses the Sherwood Community Association, Woodthorpe House, Mansfield Road, once a week. July 3 is down for "General Activities," and on 10th G8CQQ is to talk about panoramic adaptors with particular reference to their use on 144 mc. July 17 is devoted to a show of films; one of the Tokyo Olympic Games, one on Super-conductivity, and another one whose title is yet to be announced.

Also in Nottingham is the University, and this one is no exception to the rule that university and Amateur Radio activity seem to go together. Seems that various fund-raising and "persuading" efforts have been successful, and by the time this issue comes out the lads will have a nice new KW-2000B in the shack, and with it a 200 foot aerial.

Stockport next, where two meetings are organised; July 9, when G3MBQ will be talking about RAEN, and July 23 for a Hi-Fi demonstration. The hon. sec. will be able to give details on the time and venue—see Panel.

Tuesdays are the favoured nights at Sheffield, where the gathering ground is the Cross Scythes Hotel, Totley, and starting time 7.30. What do they do?—well, we hear of informal lectures, discussion, that favourite occupation of all amateurs, rag-chewing, and various outdoor activities. To find out, why not contact the secretary, G3JMV—or better still go and see!

Wirral have made their home in the former Civil Defence Hq. in Upton Road, Birkenhead, and are there on the first and third Wednesday in each month. Anyone thinking of new gear—and who isn't?—could well make a point of being present on July 2, when G3KEN will be talking about the Inoue equipment. July 16 is set aside for Roger Hatton, and his brief is to discuss the Radio Control of Models.

Every Wednesday evening at Bramley Liberal Club, Hough Lane, Bramley, the Pudsey chaps have a session. Various projects were "in the pipeline" when we had their report and are expected to have been finalised by the time this piece reaches print. However, the main pre-occupation of the chaps at the moment is their White Ross Mobile Rally, on July 27.

Dunkery Beacon, Exmoor, Somerset, was the site for the Taunton & District Radio Club's two-metre Contest station on May 4, where they had a fine time and did well—left to right: G3DTB, G3WNV and SWL Sweetman, the picture being by our old colleague of RTTY fame, G3CQE. It was from this very spot that A. J. Devon conducted some of his early /P researches on five metres, some 33 years ago—but he says he has no recollection of that well-built cairn with its plaque, which looks like a much more recent innovation. According to G3CQE, it is just as rough going to get up there now as it was in 1936!



Southern England

Unfortunately we have only the venue and the name of the Hon. Sec. for Reading, although an indication is given that forthcoming events include RAEN and a Film Show. They get together at the Victory public-house in Tilehurst, and would welcome new members—see Panel below.

There are two evenings at Echeford in July, namely July 7 and 31. Both are devoted to the same topic, and

so they are titled simply “Colour 1” and “Colour 2.” As always the place to head for is St. Martin's Court, Kingston Crescent, Ashford, Middlesex, in the hall.

There is no doubt about it, the Dunstable crowd are certainly riding the crest of the wave, at their Hq. at Chews House, Dunstable, July 4 is yet to be arranged and the successive evenings of July 11, 18, and 25 are informals because of the incidence of members' holidays.

Guildford have recently had an Annual General

Names and Addresses of Club Secretaries reporting in this issue:

ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London, W.3.
 BANGOR: J. W. Campbell, G130LJ, 48 Abbey Drive, Bangor, Co. Down.
 BISHOPS STORTFORD: A. Stanley, G3WUR, 43 Havers Lane, Bishops Stortford, Herts.
 CHESHUNT: K. Arnold, G3XMP, 21 Montayne Road, Cheshunt, Herts.
 CHIPPENHAM: P. Strand, G3UTO, Brookwell Close, Chippenham (3723), Wilts.
 CORNISH: J. Farrar, G3UCQ, Elm Cottage, Ventonleague, Hayle, Cornwall.
 COVENTRY: C. Jaynes, 20 Belgrave Road, Wyken, Coventry CV2-5AY.
 CRAY VALLEY: D. Buckley, G3VLX, 234 Halfway Street, Sidcup, Kent. (01-850 6945.)
 CRYSTAL PALACE: G. M. Stone, G3FZL, 11 Liphook Crescent, London, S.E.23. (01-699 6940.)
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 DUNSTABLE DOWNS: A. Don, G8BWZ, 51 Manor Park, Houghton Regis, Dunstable (67349), Beds.
 EAST WORCS.: R. J. Mutton, G3EVT, Summerhayes, Mill Lane, Alcester (2041), Warks.
 ECHELDFORD: M. Clift, G3UNV, 45 Fordbridge Road, Ashford (59628), Middx.
 EX-G: F. W. Fletcher, G2FUX, 53 St. Ives Park, Ringwood, Hants.
 FARNBOROUGH: B. Woodfield, G3REL, 538 Rosemary Lane, Blackwater, Camberley, Surrey.
 GUILDFORD: A. G. Coker, G3WHM, 48 Charlock Way, Burpham, Guildford, Surrey.
 HAVERFORDWEST: A. Thomas, GW3YBB, 7 St. Martins Park, Haverfordwest (2181), Pems.
 LICHFIELD: W. K. Ginder, G3NAS, 222 Whetstone Lane, Aldridge, Staffs.
 MACCLESFIELD: D. Lunn, G3LSL, 4 Farnham Avenue, Macclesfield (7903), Cheshire, SK11-8LT.
 MAIDENHEAD: E. C. Palmer, G3FVC, 37 Headington Road, Maidenhead (20197), Berks.
 MID-HERTS: H. R. Thornton, G3PKV, 43 Fordwich Road, Welwyn Garden City (23136), Herts.

MIDLAND: R. Partridge, G3SCG, 42 Maxstoke Road, Sutton Coldfield, Warks. (021-354 5921).
 MID-SUSSEX: E. J. Letts, G3RXJ, 87 Meadow Lane, Burgess Hill (3557), Sussex.
 N. E. ESSEX (Technical College): R. C. Greenleaf, G3VAG, 27 Ernest Road, Wivenhoe, Essex.
 NORTH KENT: A. Watt, G3WZJ, 67 Glenhurst Avenue, Bexley.
 NOTTINGHAM: A. Paterson, G8CQQ, 15 Bayliss Road, Gedling, Nottingham (249896), NG4-4JE.
 NOTTINGHAM (University): C. J. Doran, G3VZH, Radio Society, The Union, Nottingham University.
 PLYMOUTH: J. H. Peters, G3YDU, Treetops, 43 Holtwood Road, Plymouth (77878), Devon.
 PUDSEY: P. Conway, G3XLV, 719 Scott Hall Road, Leeds, 17.
 PURLEY: A. Frost, G3FTQ, 62 Gonville Road, Thornton Heath, Surrey CR4-6DB.
 R.A.I.B.C.: Mrs. F. Woolley, G3LWY, 331 Wigan Lane, Wigan, Lancs.
 READING: G. R. J. Addis, G3TEB, 13 Keats Close, Woodley, Reading, Berks.
 RHYL: H. Douglas, 7 Ffordre Ffynnon, Prestatyn.
 ROYAL NAVY: C/RS K. Randall, G3RFH, HMS Mercury, Leydene, Petersfield, Hants.
 SALTASH: J. A. Ennis, G3XWA, 19 Coombe Road, Saltash, Cornwall.
 SHEFFIELD: G. Easton, G3JMV, 46 High Storrs Crescent, Sheffield (64370), S11-7JY.
 STOURBRIDGE: B. Kennedy, 14 Wynall Lane, Wollescote, Stourbridge, Worcs. (Lye 3608).
 SULLY: J. Sugden, GW3SLA, 7 David Street, Coldbrook, Barry, Glamorgan, CF6-7NA.
 SURREY: R. Morrison, G3KGA, 33 Sefton Road, Croydon CRO-7HS, Surrey. (01-654 5982.)
 VERULAM: W. C. Dennis, G3NCK, 129 Colney Heath Lane, St. Albans, Herts.
 WESSEX: A. G. Emery, G8AVE, 7 Brunel Drive, Preston (3177), Weymouth, Dorset.
 WIRRAL: A. Seed, G3FOO, 31 Witherts Avenue, Bebington, Wirral, Cheshire L63-5NE.
 WORCESTER: R. L. Avery, G3TQD, 24 Alexander Avenue, Droitwich (3943), Worcs.

Meeting, with all the discussion and planning that usually goes on at these affairs. They are still getting together at the Model Engineering Hq. at Stoke Park (unless otherwise notified) and in addition have the odd joint meeting with the University of Surrey crowd. Stoke Park meetings are on the second and fourth Fridays in each month, with July 11 being given over to a final discussion on the arrangements for the High Power Field Day.

Talking of AGM's, Purley had theirs within a fortnight of NFD this year. Therefore, July is more of a relaxation after the frenzy of activity in June; on July 4 there is a Natter Night, and on July 18, G3XKW will be showing slides and talking about his recent trip to the States.

July 10 is the date for the Mid-Herts crew, when G8BNR from their neighbouring Verulam group is down to talk about SSB on VHF. For the remaining details on this one, a contact with the hon. sec. is indicated.

Farnborough use the Railway Enthusiasts' Club room at 310 Farnborough Road as Hq; here they assemble on the second and fourth Tuesdays of each month. The History of Amateur Radio is the theme taken by G3SSJ on July 8, and on the 22nd progress will be made on the club project for a 144 mc transmitter to a design and kit by G8ATK.

The AGM at North Kent has produced quite a few changes, one of which is reflected in the address panel of this piece. It rather looks like the second and fourth Thursday, at the Congregational Church Hall, adjacent to the Clock Tower, Bexleyheath, albeit at the moment it is not possible to say what is on the slate.

North-East Essex Technical College is in Colchester, and naturally enough at the moment they are somewhat preoccupied with the preparations for their Mobile Rally, on July 6, when they will be at Colchester Zoo, and, incidentally, signing GB3ZOO.

A Junk Sale and General Natter is the form at Bishops Stortford, where the group have a room at the British Legion Club in Windhill. The date? July 21.

Acton, Brentford and Chiswick use Chiswick Trades and Social Club, 66 High Road, Chiswick, London, W.4, on July 15, where they are to meet and discuss members' problems.

The Cray Valley effort for July 3 should awaken many memories, when Frank Tickner, G3XFG, discusses his first year on the air. He will be followed by a discussion on NFD. This one is at the Congregational Church Hall, Court Road, Eltham. As for the Natter on July 17, the venue is still in doubt, and so if you have no late news from the local net or whatever, it would be advisable to contact the hon. sec., G3VLX, as Panel.

For once in a while, although we have lots of information from Verulam, we lack the essential details on the July programme and dates; this being the case—and it is unusual, to say the least of it—we have to refer you to G3NCK.

Crystal Palace have July 19 booked at Emmanuel Church Hall, E. Dulwich, starting at 8 p.m. but for the first time your scribe can remember since he took over this piece, they say the "programme is still to be arranged"; but it is a fair guess that at the time of writing some moves were afoot to rectify the situation.

Friday, July 4 is the date of the next Cheshunt



GB2BVC was the callsign of the HF/DX station put on for the Northern Societies Convention in Manchester on April 27. It was operated by, from top left to lower left, G8AYD, G3SMT and SWL Randles (logging). GB2BVC made a significant contribution to the success of the N.R.S.A. Convention.

session, at the Methodist Church, which is almost opposite Theobalds Grove Station in Cheshunt. There is to be a lecture, but again we cannot give the subject, this time because there may have to be a little last-minute switching around to be done.

Maidenhead missed the deadline last time—and they have done it again! However, we can tell you they have Hq. at Victory Hall, Cox Green, Maidenhead, and the hon. sec., G3FVC, will be only too pleased if you ring him up for the latest information—see Panel, p.323.

If you live around Burgess Hill, you are in the catchment area of the Mid-Sussex group, who put out one of the best news-letters currently coming across this table each month. They assemble fortnightly at Marle Place, Leylands Road, Burgess Hill, the July dates being July 3, when G3SGA will discuss HF Filter Techniques for SSB; and July 17, when they have a real attraction in Ron Ham, who will be talking about "Cause and Effect." The month is rounded off nicely on July 31, when the shack is open up for a Night-on-the-Air.

In Conclusion

So there, for another month, you have it. Next month's deadline for news of the August doings is first post July 4—a "short" month and consequently earlyish date this time—addressed to Club Secretary, SHORT WAVE MAGAZINE, BUCKINGHAM. If you can be a little earlier, so much the better. For the September issue, closing date will be August 8.

NEW QTH's

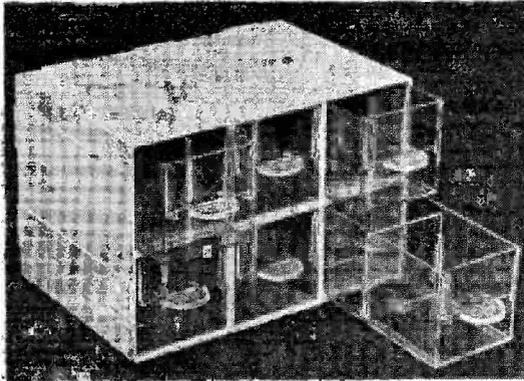
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- G3FAE**, A. B. Perry, 27 Rookwood Avenue, Chorley, Lancs. (*re-issue.*)
- GW3UWC**, Amateur Radio and Electronics Society, Students Union Society, Dumfries Place, Cardiff.
- G3XXF**, C. M. Vine, 23 Lucknow Drive, Mapperley Park, Nottingham, NG3 5EU.
- G3YAY** Radio and Electronics Society, M.I.R.A. Sports Club, Lindley, Nuneaton, Warks. (*QSL Manager G3OUQ.*)
- G3YBL**, D. A. Sargeant, 14 Box Lane, Boxmoor, Hemel Hempstead, Herts.
- G3YCU**, S. H. Glenn, Meadfoot, Pembroke Road, Woking, Surrey.
- G3YHW** J. H. Onions, Alma House, Kenilworth, Warks.
- GW3YIL**, A. D. Steinhilber, 1 Joel Park, Cwm Road, Dyserth, Rhyl, Flintshire.
- G3YJY**, P. S. Wallis, 17 Meadowside, Walton-on-Thames, Surrey. (*Tel. Walton-on-Thames 23228.*)
- G3YJK**, L. A. Bootes, 34 Springvale Estate, Downpatrick, Co. Down.
- GW3YJL**, J. L. Lawrence, 137 Charles Street, Tredegar, Mon. NP2 4AA, South Wales. (*Tel. Tredegar 2049.*)
- G3YJO**, M. Sweeting, 72 Dartmouth Park Hill, London, N.19.
- G3YJP**, D. J. Benham, 77 Baldock Road, Letchworth, Herts. (*Tel. Letchworth 6392.*)
- G3YJQ**, F. Bourne, 78 Normandy Way, St. Budeaux, Plymouth, Devon.
- G3YJY**, J. P. Kealey, 10 St. Johns Road, Wallasey, Cheshire.
- G3YJZ**, A. P. Mitchell, 6 South Road, Edmonton, London, N.9. (*Tel. 01-804 8074.*)
- GM3YKA**, J. Wiewiorka, 17 Lumsden Road, Glenrothes, Fife.
- G3YKC**, D. J. Fayers, 1 Tismeads Crescent, Swindon, Wilts. (*Tel. Swindon 5056.*)
- G3YKD**, G. C. L. Campbell, B.Sc., M.I.E.E. (*ex-G8BAX*), 55 New Cross Street, West Bowling, Bradford 5, Yorkshire. (*Tel. Bradford 22639.*)
- G3YKS**, R. Butlin, 51 Scotland Road, Market Harborough, Leics.
- G3YLC**, G. L. Groom, Le Crofts, Paradise Road, Downham Market, Norfolk.
- G3YLR**, F. R. Blake, 63 Nathans Road, Wembley, Middlesex. (*Tel. 01-904 0896.*)
- G5ANK**, D. M. Stevens, 617-B Glenn Avenue, R.A.F. Shepherds Grove, Stanton, Bury St. Edmunds, Suffolk. (*Tel. Stanton 383.*)
- G8CFZ**, R. T. Holder, 13 Essenden Road, St. Leonards-on-Sea, Sussex. (*Tel. Hastings 4089.*)
- G8CGX**, B. R. Hopkins, 34 Halfway Avenue, Luton, Beds. (*Tel. Luton 52940.*)
- G8CKO**, C. E. Tinkler, 74 Earlam Road, Norwich, Norfolk, NOR 07-G. (*Tel. Norwich 24006.*)
- G8CKZ**, N. D. Curzon, 45-A Blenheim Avenue, Highfield, Southampton, SO2 1DQ. (*Tel. Southampton 59846.*)
- G8CKZ/A**, N. D. Curzon, Taunton's College, Highfield, Southampton.
- G8CNQ**, F. T. Butler, 35 Watts Avenue, Rochester, Kent. (*Tel. Medway 45445.*)
- G8CON**, E. Mitchell, 32 Kinross Crescent, East Cosham, Portsmouth, PO6 2NR.
- G8CPG**, E. Chambers, 235 Westwick Road, Sheffield, S8 7BY. (*Tel. Sheffield 363927.*)
- G8CPS**, N. S. Williams, 63 Daventry Road, Coventry, CV3 5DH.
- CHANGE OF ADDRESS**
- G2BNY**, H. Newman, 23 Bedefield, Cromer Street, London, W.C.1.
- G2RY**, D. A. Hanley, Woodcombe, Oxbridge, Bridport, Dorset. (*Tel. Netherbury 343.*)
- G3AGT**, D. A. Corrick, 5 Paddock Close, Creech St. Michael, Taunton, Somerset.
- G3ALK**, E. J. Holmes, 7 Castle Drive, Redbridge, Ilford, Essex. (*Tel. 01-554 5824.*)
- GM3AXX**, A. M. Fraser, 58 Rigghead, Stewarton, Ayrshire.
- G3HEA**, J. U. Burke, 2 Greenfinches, New Barn, Longfield, Kent. (*Tel. Longfield 4118.*)
- G3HKQ**, L. V. Westmoreland, 7 Smeath Lane, Clarborough, Retford, Notts.
- G3IDW**, R. Reynolds, 6 Church Way, Stratton St. Margaret, Swindon, Wilts.
- G3KAW**, J. W. Maddison, Y.M.C.A. National Training Centre, Lakeside, Newby Bridge, Ulverstone, Lancs.
- GM3KDT**, I. Anderson, 12 Lawrence Avenue, Colgrain Estate, Craigen-doran, Helensburgh, Dunbartonshire. (*Tel. Helensburgh 5524.*)
- G3LNW**, J. McGuire, c/o Sgts' Mess, R.A.F. Odiham, Basingstoke, Hants.
- G3MAX**, F. Nicholls, 106 Styal Road, Gatley, Cheshire.
- G3MBA**, L. S. West, 21 London Road, River, Dover, Kent.
- G3MOT**, C. J. Lambert, Highlands, Fiddlers Hill, Shipton-under-Wychwood, Oxfordshire
- G3NFD**, N. V. Parker, 131 Turkey Street, Enfield, Middlesex.
- GW3OKM**, J. Mitchell, 2 Hillcrest, Brynawellon, Brecon.
- G3ORY**, R. G. Titterington, Elmwood, Church Farm Lane, Willoughby Waterless, Leicester. (*Tel. Peatling Magna 486.*)
- G3PER**, W. E. Delamere, 414 Heysham Road, Heysham, Morecambe, Lancs.
- G3RZP**, P. E. Chadwick, 138 Tenison Road, Cambridge.
- G3UCV**, R. C. Cartwright, 5 Manston Gardens, Leeds. LS15 8EY.
- G3WZM**, G. A. Suckling, Station House, Railway Road, Downham Market, Norfolk. (*Tel. Downham Market 2468.*)
- G3XIN**, T. J. Harris (*DL5XI*), c/o Sgts' Mess, R.A.F. Gatow, B.F.P.O.45.
- G4KG**, G. Spriggs, The Wilderness, Caps Lane, Cholsey, Wallingford, Berks.
- G8CHK**, R. S. King, B.Sc., 7 Brackley Road, Towces Northants.
- G8NY**, L. H. Luscombe, 12 Segrave Road, Folkestone, Kent.

AMENDMENT

- GD3HQR**, A. W. Anderson, 7 Howstrake Drive, Onchan, Isle of Man.

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| Shure 202 | 6 | 0 | 0 |
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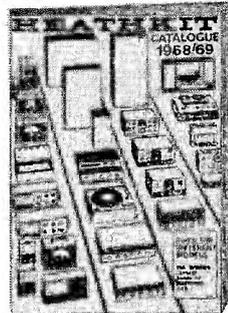
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SALE: Heathkit RA-1 receiver, with xtal calibrator, matching speaker and manual, £33. Heathkit Q Multiplier, £5. Codar PR-30X preselector, 90s. Creed 7B teleprinter, £12; Teletype printing re-perferator, £6; both these modified for 250v. AC input. Cossor D-B Oscilloscope, £18. Also a Heathkit R/C Bridge, £5.—**Davis, G3PAQ, QTHR, or ring 01-647 1561, after 6.30 p.m.**

SELLING: R.C.A. AR88D Rx, in very good condition, with two spare valves, knob tool and speaker, £43. Pair of S.G. Brown stereo headphones, at 75s. (cost £6). Also Elpico cassette tape-recorder, complete with microphone, batteries and earphone, in very good condition, price £12 10s.—**Ramsay, 12 Mayfield Road, Northfleet, Gravesend, Kent.**

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WANTED: HW-32A transceiver, also Linear, and cheap Heathkit SB-10U. Please state details, including any mods., extras, etc.—**Ledger, G3UBL, 9 Rampton Drive, Longstanton, Cambridge.**

WANTED: Withers TW-2 transmitter. **SALE**: Murphy B.40 Rx, £10. Tx for 160m., 807 PA, £10. Modulator using EL84, 25s. PSU, 250v., in 19-in. rack, 25s.—**Street, G8BYX, ring 01-660 7278 (Croydon), evenings.**

FOR SALE: National NCL-2000 Linear Amplifier, genuine 2 kW job, in excellent condition, price £200. Also brand-new Eimac 4-1000A valve, with base, £70 or near offer. (Kent.)—**Box No. 4806, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.**

SELLING: G2MA-type Linear Amplifier, 10 to 80m., 813, 450 watts p.e.p., requires approximately 6 watts grid drive for full output, with AC PSU's and spare 813, price £30, buyer to collect or could deliver to 50 miles.—**Champion, 11 Eden Way, Warlingham, Surrey. (Tel. Upper Warlingham 2493.)**

WANTED: Pair of bases for 813. **SELLING**: Home-built solid-state Electronic Key (no paddle), all new parts on printed circuit board, below cost at £7.—**Kemble, G3UYK, c/o 71 Lichfield Road, Stafford, Staffs.**

EXCHANGE or **SELL**: Star SR-700A, new in March and little used, nearest £90—or will accept Part Exchange Rx (can deliver/collect to 100 miles). **FOR SALE**: Codar T.28 Rx, unused, £11. Codar CR-70A, £12 10s.—**Snowden, Swainsea Lane, Pickering, Yorkshire.**

SMALL ADVERTISEMENTS, READERS—continued

RADIO Amateur, licensed 1957, wishes to be Agent for Dealer, on part-time basis, demonstrating and selling Amateur Equipment on commission, working from QTH in North Lincolnshire. Professional radio engineer, age late 30's, and car owner. Replies in confidence.—Box No. 4804, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Joystick, de luxe version. SALE: Heathkit DX-100U, in good condition and little used, with spare valves, price £45.—Tibbert, 397 Uttoxeter Road, Derby.

WANTED: Original operating manual for W.S. No. 19. Details first, pse.—Heslop, 4 Willow Close, Brandon, Co. Durham.

FOR SALE: Antique military wireless gear from first World War: Wavemeter forward Spark B, 45 to 105 metres, in teak case serial numbered, calibrated, with circuit on lid (the BC-221 of 1917!), size 5 ins. cube, £4. Trench receivers, 80 metres forward, regrettably without Type "R" triodes, 40s. Also copies "Wireless Weekly" for 1924-'25 and "Modern Wireless" for 1925-'26, offers? And other rarities, s.a.e. enquiries. Carriage extra all items. (Surrey).—Box No. 4812, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Eddystone 888A receiver, in excellent condition, complete with speaker and S-meter, price £55 or near offer.—Ring Coles, 01-907 6894 (London), evenings only.

FOR SALE: Canadian 52 Set, £8. WANTED: Copies "Surplus Radio Conversion Manual", Vols. I and II, by R. C. Evenson and O. R. Beach.—Fryde, 8 Baingle Crescent, Tullibody, Clackmannanshire, Scotland.

SELLING: Trio 9R-59DE receiver, in mint condition, three months old, with matching speaker and in original packing, bargain at £27.—Foster, 72 Vimy Road, Billesley, Birmingham.

DISPOSING: KW-2000A, two months old and only four hours' use, with Shure 201 microphone and K.W. E-Zee Match, still in boxes, price £175.—Ring Capell, 01-749 1863 (Acton, London).

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EXCHANGE or SALE: Eddystone 840C at £40, including carriage, or would Exchange for Eddystone EC-10 Rx, with cash adjustment either way.—Sangster, 13 Danestone Terrace, Bridge-of-Don, Aberdeen, Scotland.

SELLING: Sphinx Mk. II Tx, with microphone and Delta Control Unit, £48. Also a National HRO-5T Rx, with five GC and three BS coil packs, in very good condition, price £22.—Ring Beaton, 01-856 9145 (Kent).

FOR SALE: No. 19 Set, complete with PSU, vario-meter, connectors, manual, etc., £4. R.107 Rx, rough condition, with manual, 60s. Good Type 31 Set, 35s. Beginner's Morse Course, 12-in. record, 20s. Many other bargains, such as meters, magazines, books, etc., etc. All items carriage extra.—Saul, The Grange, Chilcompton, Nr. Bath, Somerset.

SELLING: Lafayette HE-30 Rx, modified to "G3GDJ specification", incorporating Q-Multiplier and BFO, in perfect condition, £18. RF-24 Unit, modified for 10-15-20m. xtal control, 50s.—Baldwin, 2 Evenden Cottage, Hook Green, Main Road, Meopham, Kent.

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FOR SALE: Marine radiotelephone, Coastal Radio "Curiew", in excellent working order and condition, complete with all fittings, handbook, spare valves, etc., price £100, or near offer; s.a.e. for descriptive leaflet. Quantity of marine-band crystals, send s.a.e. for complete list of types, frequencies and prices. Also "ARRL Handbooks" 1960-'65, in as-new condition, 20s. each. Quantity of 2 1/2-in. square and 3 1/4-in. round meters, 7s. 6d. to 15s., state requirements for quote. VHF mobile units by Marconi and BCC, from £5 to £8 10s. complete. —McVicar, 31 Lochend Road North, Musselburgh, Midlothian, Scotland.

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WANTED: A good Eddystone S.740 or S.750 receiver. State age, condition and any modifications incorporated. —Hodds, 16 Derby Road, Rawdon, Leeds, Yorkshire.

WANTED: Manual or circuit diagram for the Hallicrafters Super-Skyrider Rx. Will buy, or pay for loan.—Gaule, Braddy House, Brockhall Hospital, Old Langho, Nr. Blackburn, Lancs.

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FOR SALE: Mint, unused and unmodified Heathkit SB-10U SSB Adaptor, with manual, £25 or nearest offer.—Scotney, 9 Spencer Street, Rothwell, Kettering, Northants.

FOR SALE: Lafayette HA-350, in very good condition, £40 or near offer. — Lowden, Newland House, Workington, Cumberland.

SALE: Eagle RX-60N receiver, in excellent condition, price £12. Also Codar PR-30X preselector, £5. Buyer to collect, or pay postage. Call or phone, evenings only. — Startin, 105 Rock Street, Sheffield (24562), S39JB, Yorkshire.

FOR SALE: KW-201 Rx, with calibrator, including extra crystal for full cover 21 mc, purchased end May 1968, little used, as new and unmarked, property elderly SWL and unused last four months. (Lincolnshire.)—Box No. 4808, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

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FOR SALE: Withers TW2 with matching mains PSU, £22. Also following Heathkit items: RA-1 Rx, with xtal calibrator and matching speaker, £28; OS-1 3-in. 'scope, £15; RF-1U signal generator, £10; no mods. All items, buyer to collect. — Hogan, G8AZX, QTHR, or ring 01-969 1882 (London).

FOR SALE: R.C.A. AR88D, in good working order, with speaker; American Heath DX-100, needs some repair, includes microphone and headphones; also Labgear Top Bander; manuals and spares. Price £40, buyer to collect.—Rink, 11 Weymouth Avenue, London, W.5 (Tel. 01-567 8999.)

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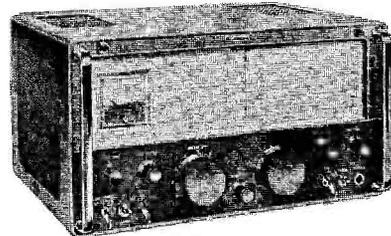
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FOR SALE: K.W. Vanguard Tx, coverage 10-80m., AM/CW, FB modulation, price £25 or near offer.—Treasurer, Radio Society, University of Nottingham, Nottingham, NG7-2RD.

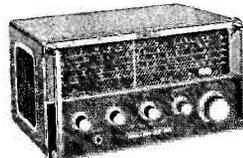
SELLING: Heathkit DX-100U/SB-10U, with manuals, inspect and collect, £65. Trio 9R-59DE, with Q-multiplier and xtal band marker, £30. Top Band "Natterbox," with linear 5763's, £10. Two-metre Converter, 4 nuvistors, S/Pwr, IF 14-16 mc, £6. ARR88 speaker in cabinet, 35s Labgear LG.300 RF Unit, valved, £10.—Hales, G2DIO, 4 Westbrook Road, Thornton Heath, Surrey.

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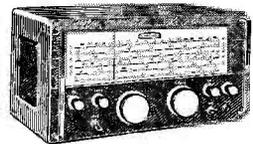
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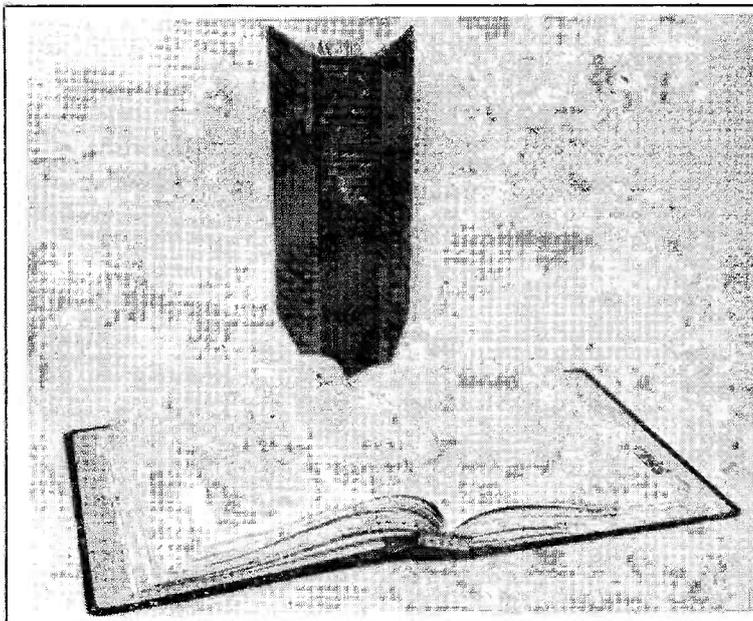
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