

The **SHORT WAVE** Magazine

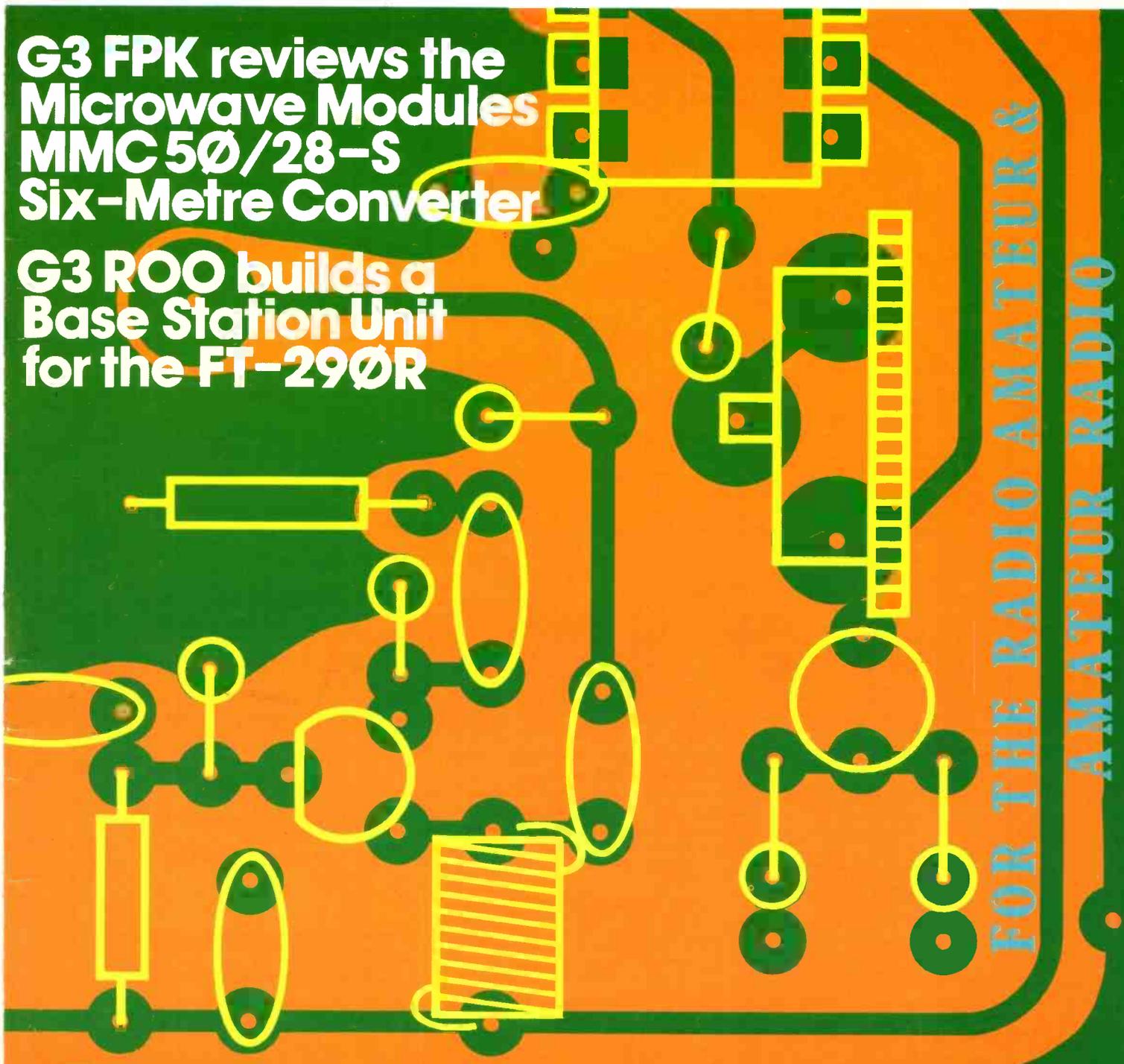
April 1985

Volume 43 Number 2

**G3 FPK reviews the
Microwave Modules
MMC 50/28-S
Six-Metre Converter**

**G3 ROO builds a
Base Station Unit
for the FT-290R**

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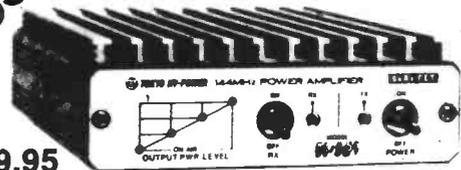
VHF 30W Linear
HL-30V



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A compact and light-weight 144MHz band power amp for FM/SSB handie.
Freq.band:144MHz amateur band, **Mode:**FM.SSB.(CW), **Supply voltage:**DC13.8V(neg. ground), 4A max, **Output:** 25W(10-30W), **RF input:**1W(0.5-3W), **In/Out connector:** SO-239(50 ohm), **Built-in circuitry:**COX, FM/SSB MODE select SW, Reverse polarity protection, **Dimension:**100(W) × 30 (H) × 158(D)mm, **Weight:**520g

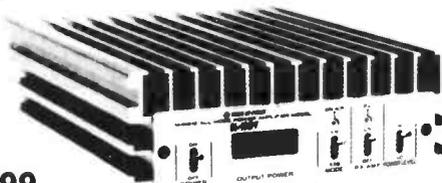
VHF 30W Power Amplifier
HL-35V



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Freq.band:144MHz amateur band, **Mode:**FM, **Output:** 30W(16-35W), **RF input:**3W(0.5-5W), **Supply voltage:** DC13.8V(neg. ground) 4.5A max, **Built-in circuitry:** GaAsFET receive preamp, OUTPUT LEVEL LED indicator, Reverse DC power polarity protection, **Dimension:**100(W) × 35(H) × 150(D)mm, **Weight:**520g(Approx.)

VHF 110W Linear
HL-110V



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Freq.band:144MHz band, **Mode:**FM.SSB.CW(AM), **Supply voltage:**DC13.8V(neg. ground) 18Amax, **Output:**110W(120W max), **RF input:**2W/10W selectable, **In/Out connector:** M type(50 ohm), **Built-in circuitry:**COX, Mode switch, Receive preamp, Power meter, Reverse polarity protection, **Dimension:**172(W) × 60(H) × 263(D)mm, **Weight:**2.5Kg(Approx.)

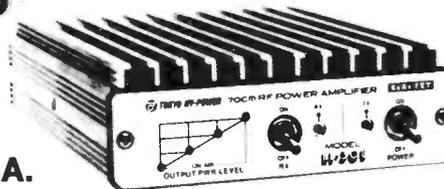
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Freq.band:430-439.995MHz band, **Mode:**FM.SSB.(CW & AM), **Supply voltage:**DC13.8V(neg. ground) 5A max, **Output:**20W(15-22W), **RF input:**2W(0.5-3W), **In/Out connector:**M type(SO-239)(50 ohm), **Built-in circuitry:**COX, Output power select, Reverse polarity protection, **Dimension:**100 (W) × 30(H) × 158(D)mm, **Weight:**540g

UHF 30W Linear
HL-30U



T.B.A.

A compact 430MHz band linear amp for handie and portable radio with GaAsFET receive preamp.
Freq.band:430MHz band, **Mode:**FM.SSB.CW, **Supply voltage:**DC13.8V(neg. ground), **RF input:**2W, **Output:**30W, **Built-in circuitry:** GaAsFET receive preamp, OUTPUT LEVEL indicator, Reverse DC power polarity protection, **Dimension:** 100(W) × 35(H) × 170(D)mm

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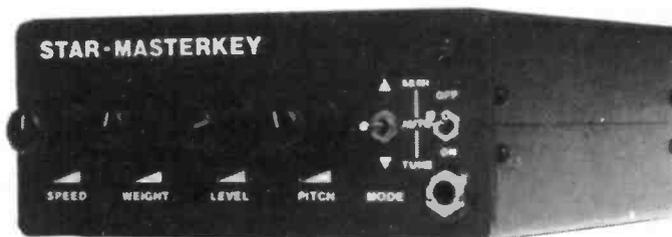
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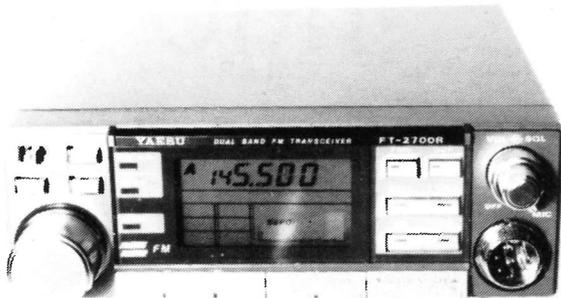


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YAESU FT77		479.00	TRIO TS780 2M and 70cm base		981.00	(-)	YAESU QTR 24D—Analogue quartz		34.50	(2.00)
ANTENNA TUNER UNITS			YAESU FT726R 2M fitted (70cm optional)		869.00	(-)	ANTENNA BITS			
ICOM IC-AT500 Auto		429.00	TRIO TS711E 2M base		831.00	(-)	HI-Q Balun 1:1 5kw p.e.p.		11.95	(0.75)
ICOM IC-AT100 Auto		299.00	ICOM IC271E 25W base		699.00	(-)	7.1 MHz Rat-Traps—Epoxy pair		8.95	(1.50)
TRIO AT250 Auto		305.00	ICOM IC290D 25W Mobile		469.00	(-)	Self-Amalgamating Tape 10m x 25mm		3.95	(0.75)
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TRIO AT230		157.00	70cm TRANSCEIVERS				Small ceramic Egg Insulators		0.50	(0.10)
TRIO AT130		108.00	TRIO TW4000A Mobile 2M/70cm		536.00	(-)	Large ceramic Egg Insulators		0.75	(0.10)
YAESU FC700		119.00	TRIO TM401A 12W Mobile		340.00	(-)	75 ohm Twin Feeder—Light duty	per metre	0.16	(0.04)
WELZ AC38		85.00	TRIO TR3500 Handheld		291.00	(-)	300 ohm Twin Feeder	per metre	0.14	(0.04)
YAESU FRT7700 Short Wave Listening		49.85	TRIO TH41ET Micro Handheld		214.00	(-)	UR67 Low Loss Coax—50 ohm	per metre	0.65	(0.20)
TAU SPC 3000		349.00	ICOM IC4E Handheld		259.00	(-)	UR76 50 ohm Coax—Dia 5mm	per metre	0.25	(0.05)
HF RECEIVERS			POWER SUPPLIES				UR70 70ohm Coax	per metre	0.30	(0.05)
ICOM R71		699.00	YAESU FP757HD		200.00	(1.50)	4mm Polyester Guy Rope, strength 400kg	per metre	0.16	(0.04)
ICOM R70		599.00	YAESU FP700		170.00	(2.50)	50 Mtrs 16 swg Hard drawn Copper Wire		6.90	(1.00)
TRIO R2000		479.00	TRIO PS430S		145.00	(2.50)	WELZ SWR-POWER METER			
TRIO VC10 VHF Converter for R2000		128.00	TRIO PS20		59.95	(2.00)	SP15M SWR-Power HF/2M 200W		49.00	(1.00)
TRIO R600		299.00	ICOM PS15		135.00	(2.50)	SP45M SWR-Power 2M/70cm 100W		69.00	(1.00)
YAESU FRG8800 New receiver		559.00	ICOM PS20		189.00	(2.50)	SP350M SWR-Power HF/2M/70cm 200W		79.00	(1.00)
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JIL SX200N		299.00	6 amp 63.00	(-)	24 amp 125.00	(-)	SA450 2 Way Diecast N plug (500MHz)		19.95	(0.75)
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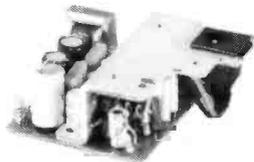


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The DcRx is available for 20, 30, 80 or 160 Metres. It requires a 12 to 14V DC supply and will produce up to a watt of audio into a speaker or 'phones. Modes: SSB and CW. A case and two tuning capacitors are the only major parts to add to finish your receiver. We have suitable capacitors for all but the 160M version at £1.50 each.

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CM2 Kit £10.25. Assembled PCB module + mic. capsule £13.75.

PA2/15 15W output with 1.5W drive 2M linear amplifier. Suitable SSB or FM.

PA2/15 Kit £18.90. Assembled PCB module £23.90.

PA2/30 8dB gain, up to 30W output 2M linear. Designed for use with IC202, FT290, etc., to give a "clean" signal with good margin against overdriving. Read about it in G3ROO's article in the April issue of Shortwave Magazine.

PA2/30 Kit £22.90. Assembled PCB module £27.90.

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ST2 Kit £7.30. Assembled PCB module £10.80.



If you would like more information on any product, simply drop us a line, enclosing an SAE. We have an information sheet on each kit.

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73 from Dave, G4KQH, Technical Manager.

FOR THE RADIO AMATEUR AND AMATEUR RADIO



Of Laws and Standards

A press release from the British Standards Institution refers to the new British Standard for sound and TV receivers: electro-magnetic compatibility. It is stated that BS905 will help radio and TV manufacturers by aligning the recommended limits of interference caused by radio and TV with international standards. It also specifies limits of interference for TV games. In Part 2 it looks into the problem of interference to radio and TV and specifies limits of immunity of sound radio, TV broadcast receivers, and associated audio and video equipment — in the frequency band 26-30 MHz! It also specifies limits of immunity of TV receivers to ghosting. We hope to have a review copy soon and will then comment at greater length.

The Merriman Report was published in July 1983. The government has at long last attempted to define its position in respect to the recommendations contained therein, and in a speech on March 5 The Minister of State for Industry and Information Technology specified what was being done about it — as usual, precious little beyond talk.

A recent press notice from the DTI details the action taken against 'Radio Jackie' in south-west London. It is interesting to notice that in 1984 the Radio Interference Service took action against illegal broadcasting stations on over 120 occasions. Between 1972 and today, 24 people have been prosecuted in connection with 'Radio Jackie' alone.

Yet again this wearisome business of a novice licence is being trawled around; this time by G4ZBD. At least this time the scope is a little wider: G4ZBD would include novice operation as an extension to the CB licence (didn't we imply that just this sort of thing could arise after the announcement of CW-without-a-test by variation of licence conditions?) and would insist on such licensees using 'type approved' amateur radio equipment — but, of course, no examination. The one saving grace is that it does attempt to introduce a graded structure, *i.e.* incentive licensing. The cheeky bit is the statement that there are people who "are prepared to risk fines or imprisonment for wanting to pursue their hobby". That attitude could be said to apply to thieves. By the same logic, one might suggest that theft laws be relaxed to accommodate *their* wishes!

Finally, the Dayton Hamvention is over April 26-27-28 so there is still *just* time to fly to Ohio and join in the fun! Details from WA8ONQ, 311 N. Marshall Road, Middleton, Ohio 45042.

W. J. K. F. E.
 23KFE.

WORLD-WIDE COMMUNICATION

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

There are, we know, devotees of *Short Wave Magazine* who also read other amateur radio magazines, and some of them encourage us no end. The sharp-eyed among them will have noted G3XSE taking the mickey out of your old conductor over a 'fault' in his VHF rig which in fact turned out to nothing more than being tuned to the wrong frequency . . . Thus he spake in *Amateur Radio*.

However, such things can happen to others, too. Imagine G3XSE stuck on the roadside after an exercise mending fuses; there is much wailing and gnashing of teeth, indeed veritable swear-words (of which, we testify, G3XSE knows most!), simply because it is getting dark, and no headlights will condescend to light up. Eventually, G3XSE is reduced to attacking the recalcitrant car with an *Avo* . . . the shame of it! However, the worst (or best, depending on your viewpoint!) is yet to come — the reason the lights were not on was shown by the meter to be — because they *weren't switched on!*

The Bands

The writer has not himself had a lot to do with them this month, between the usual chores and traipsing round the country on his lawful occasions. However, to judge from the letters, the lower bands have been quite reasonable, while the higher bands 'had their moments' if not consistently.

Let us, therefore, have our monthly amble round and see just what's cooking.

Ten Metres

G4HZW (Knutsford) has only run across a couple of openings; 5B4BS and ZS6APM fell into the bag as a result. Otherwise there was nothing, but the acquisition of a Lowe SRX-30D receiver has permitted Tony some exploration of other parts of the spectrum.

G4VFG (Ivybridge) built a new VK2ABQ beam for Ten with a balun in the feedline, put it up and waved it about to attract any itinerant signals that might be passing; all it found was a weak and watery ZS beacon, and a few signals from the RS-series satellites.

There is, of course, the local FM activity on the band, but no-one reports the activity other than in very general terms; neither do we have the comments about CB and other intruders which

used to be so common. It is not only important that the band be used, but the results need to be published, because those who cast eyes on our band would rather pick up a magazine and read that the band is dead (or buzzing with life) before putting in a take-over bid, than spend a lot of money on equipment and aerials to find out!

Fifteen

Very definitely a 'daylight' band. G8PG (Greasby) is now able to get on the band with his QRP signal during the day on several days each week, and he has found the band quite reasonable over the December/January period, although Gus notes that for the first time for years the RF Gain control has been wound right up. Three new ones (for the QRP score) were worked on the key in the shape of N3RD/VP9, N4BP/C6A, and KC7UU/5N8, not to mention EA8, EA9, and above a dozen Ws. One watt, used on 16 days in 1985 so far, has yielded 38 DXCC countries in four continents.

Turning to GW4BLE (Newport, Gwent) we find Steve sending an early report as he intended to put in an all-band single-op entry in the ARRL DX Phone contest and was sure he'd feel too shattered to write after it! So, the GW4BLE report concentrated on the good conditions on the LF bands, but does indicate 3C1 as an all-time new country on 14 and 21 MHz — Annobon had previously been worked but 3C Equatorial Guinea not. Adding to that a new one raised on Eighty, to pick up a couple of new ones in one month when the score is already above 300C seems a pretty good reason for celebration!

G2HKU (Sheppey) says he would be quite pleased to *hear* some of the stuff he reads about, let alone actually *work* it! Ted reckons conditions were pretty poor on all bands for much of the time, and to some extent at least has switched his attentions to woodwork — building cupboards for the XYL, a task which Ted reckons will be finished just about in time for the grass-mowing season to start! G5CW/EA8 was worked on SSB, while the CW was preferred to work EA8QO, N4GG, K4XU, W3LPL, K4FU, W2GW, N5TP, K4XG, K4BAI, W3NX, K8OHG, K8ONV, K5RC, and K3ZO.

G4OBK (Chorley) stayed on SSB on this band, and notes that he worked

UI9BWF, PY1BVY/PY0T (Trinidad Is.), C53EK, and W1-2-3-4.

Here and There

During the national meeting of REF (the French equivalent to RSGB) over May 25-26-27, they will be celebrating 60 years, 1925-1985, of IARU. Among other things they will be relating amateur radio to is philately, and doubtless stamp-collectors too will be interested in the show. In addition they will have available an illustrated envelope bearing a temporary postmark of Chateauroux Post Office; also a similar envelope, but bearing the postmark of a special post office set up for the meeting; and a large parchment, made by the last French parchment-maker, with illustrations, and the same special postmarking. Six IRCs for the envelopes, and 15 IRCs for the parchments. Send your orders or enquiries to: FE1335 Mr. Raymond Aupetit, 14 Residence Bois Boutin, 16340 L'Isle D'espagnac, France. We have seen copies of the parchment and the postmarks and they are well worthy of a place in a stamp-collection, quite apart from their amateur radio interest.

It is with a great deal of pleasure that we report that after a very long period of years indeed, the first legal amateur radio licence has been issued in Turkey; Dr. Unal Akbar is now signing TA1A, he used to be TA1UA on the bands, but he now has the first official licence. He is the General Secretary of the Turkish Radio Amateur Club. There is, we understand, just one class of licence, giving all bands and 400 watts p.e.p. It is also stated that the Asian part of Turkey is divided into 7 call areas, TA2-TA8.

We were very sad to hear that owing to his wife's continued ill-health, Geoff Watts has had to give up the administration of the IOTA Awards scheme (IOTA means 'Islands on the Air' and is a popular activity worldwide). We are pleased on the other hand to hear that Roger Balister, G3KMA, has taken over the task for the future. Address your correspondence, therefore to: R. Balister, G3KMA, La Quinta, Mimbridge, Chobham, Woking, Surrey GU24 8AR (09905 8224). Geoff will continue to handle requests for his invaluable Prefix-Country-Zone lists, as advertised in this magazine each month. All we can say is how sorry we are to hear that Marjorie is so poorly, to hope that she is soon fit again, and to thank

Geoff for all he has put into the hobby over the past forty or more years; and of course to thank G3KMA for taking over the reins of IOTA — he has a hard act to follow.

ARRL's DXAC have decreed that ZC4 is a separate country; the only problem is that ZC4 covers the main Base Areas and some smaller parts of the island, but ARRL at the time of writing doesn't seem to understand that since 1960 ZC4 calls have only been issued by the Sovereign Base Areas authorities for use in those areas, and that no Cypriot national has been issued with a ZC4 call or used one other than under the correct conditions and within the SBAs. Thus, it would seem, any ZC4 activity post 1960 by a properly-authorized station (*i.e.* not a pirate) must be 'good' for this country. However, a lot of people who know the form pretty well have been shouting to ARRL and no doubt this question will be resolved before long.

Still on the subject of ZC4, does anyone know how to get hold of a QSL from ZC4MT? VK5BS notes that he worked this one one morning in January 1979, and the QSL address at that time was listed as Box 413 Larnaca. Contact B. S. Clarke, VK5BS, 17 Sycamore Avenue, Novar Gardens, South Australia 5040 if you can help, please. Incidentally, it is interesting to note that Barry was a reader of *Short Wave Magazine* in the far-off days before WW2.

The station at XU1SS was over-run some weeks ago; it is understood that the YL operator Kimsan has been heard since but has again gone QRT. VS6CT will be listening at the regular sked times until further notice and will pass on any information as to how things are going.

News of the HS position; it is understood through various bulletins that they will be back on the air "soon" at the time of writing; this may well imply that they will in fact be about on the bands by the time you get to read this.

You may soon find yourself getting a mite tangled up with the new Portuguese licensing; the long-standing calls may well be retained, but the new ones will be issued on the basis of licence class and post code. The Class 'A' licence will be denoted by prefix CQ, Class 'B' by CR, Class 'C' by CS, and Class 'D' by CU. The numeral will be defined by the post code, so for instance CT1UA will turn into CQ3UA.

Finally, news of an Indian Ocean DX-pedition by LA7XB and SM0AGD; the first stop is understood to be 3B7 around Easter-time.

Just for a final-final, we have two conflicting stories on 1985 activity from Marion Is. ZS2MI. The first one says there are no amateurs in the 1985 party (this is backed up by another statement elsewhere that ZR6AOJ failed his



S.W.M. subscriber VK3DS of Ballarat, Victoria, recently sent us this picture which, he says, shows the tidy end of his shack!

medical); the second story says that ZR6AOJ is in fact in the party, and will be active, albeit as a SSS-only operation. Take what you like out of that welter of conflicting information!

Top Band

Although this band is no longer the local-natter band it was, say, twenty years ago, it has become a very fine DX band. There is, however, as usual, somewhat of a fly in the ointment. Several reports have been received of the German group operating upper sideband on 1833 kHz; and from W1WY, Frank Anzalone, with his *Contest Calendar* we had a note that although 90% of the GB stations played it fair and operated split frequency during the CQ Top Band contest, there was some misbehaviour by other Europeans. As Frank says, the DX must take the lead; if we insist on working split, the Ws will fall into line, since they are the majority and hence want to work us. It is also, of course to our benefit too, because if single-frequency simplex operation becomes the rule, we will (except maybe for the chaps with super aerials) be at a considerable disadvantage due to our regulations and the nearness of all the European QRM. *Please* don't encourage simplex single-frequency working, and if you have to work a DX station to get a new country, take a moment out to try and explain to him what will happen if single-frequency working becomes the norm.

When your scribe saw G4AKY (Newport, Essex) a couple of days prior to writing this piece he was quite cock-a-hoop as his score had gone up to 106 countries worked by way of, among others, G3ZGC/J6L. When I opened the "CDXN" mail from the office, behold there was a letter from G3ZGC which mentions that he worked G4AKY! One wonders, now, whether the fact that each end of the QSO

confirmed, in writing, to your scribe, that they had completed their end of the QSO, implies verification of the contact without the QSL? Wonder what DXCC desk and the DXAC would have to say about that! You may argue that the question is academic; but we know that G4AKY is still chasing up the cards to get his 100 in for a Top Band DXCC application!

Still with Dave, G4AKY, his CW worked EM8CIL, RL7FER, UL7TAQ, W2ZZ/CT3, DJ3ZX/CT3, 4J5JYC (believed to be a Russian), N4JJ, W1RR, K2TR, W3LPL, N4IN, W4BT, KA2RDO, W2BXA, W2KFG, W2QD, K2VV, N4PN, CT2CB, UA9YGO, UA9UCO, and six new ones in K1MM/SV5 (Rhodes), 3A2GL, G3ZGC/J6L, KJ0D/VP2E (Anguilla), and J87UEE on St. Vincent. Others to note were VO1HP, PT7BZ and IT9ZGY, while the gotaway list is impressive too: UA0QO (Yakutsk), UA0AG, PY1RO, 3B9CD (Rodrigues), 3C1BC, TG9NX, FG5AM, FM5CD, 5Z4ED, W1BIH/PJ2 (Netherlands Antilles), WB0MIV/V4 (St. Kitts), and PY1JF. All these were heard; others known to have been on but missed included P29PR (believed to be ex-VS5RP), 5V8WS in Togo worked by DJ6QT, VQ9QA, ZL3GQ and ZL1HY. Turning to SSB, there were contacts with T77V, SV8CS on Corfu, C31YA, EA9KF, PJ7A (Saint Maarten) the last-mentioned being another new country. Thus Dave broke the 100 barrier with a vengeance — seven new ones on the band in one month!

D. A. Whitaker (Harrogate) is up to 97 countries heard on the band, and notes that it is getting harder to find them; certainly David seems to have missed some of the good stuff this time although his equipment is good enough to hear ZL2BT and, more recently, ZL3GQ. David's list includes C31YA, HH7PV, EA9KF, J87J, YV3AZC,

W9SMY, 6Y5IC, WB0MIV/V4, EA8, KN6M, WD9AHJ, P42J, ZL3GQ, K5UR, W0EJ (Iowa), T12CF, 7X5AB, SV8CS, T77V, 4X4NJ, UG6GAW, and VP9IJ, not to mention the smaller fry such as this author, for one, would crow over!

G3ZGC (Newbury) wrote about his last trip to the Windward Islands, where he decided to try Top Band. There was operation from St. Vincent and St. Lucia; from St. Vincent things were O.K., whereas from Vieuxfort, St. Lucia, all of America and Europe was booming in on one day, while on the following day from Castries, St. Lucia, it was just as dead as can be — almost as if the aerial was unplugged from the rig. In terms of results: from G3ZGC/J8 on February 18, FM7WD, and the following night HC1BI plus many Ws. From G3ZGC/J6L on February 21st, all CW and between 0226z and 0402z, 9Y4VU, VE3EK, PZ1DT, G3KMA, OZ7JZ, FG5AM, G4AKY, LU2WM, J73HA, TG9NX, OH1XX, OZ7YY, YU1EXY, OZ1LO, UG6GAW, WA6EUZ, W6AJJ, W7MB. On February 22, just W4FX at RST 449, and VE1ZZ at 449, the only stations at all readable! An interesting report, and nice to hear from G3ZGC after a long break.

Now G3BDQ (Guestling) who writes to indicate that his Top Band activity is falling off with the end of the winter season. John says he has missed some good openings by not staying up too late, but feel he would miss the shut-eye rather more! During the ARRL Top Band CW affair, G3BDQ operated between 0430 and 0530z to work 19 Ws before going back to bed; later on there were ten more, plus VO1AW, VO1HP, and VE1FH. Other CW DX worked included W2ZZ/CT3, CT2CB, EA6NB, K1MM/SV5, 4X4NJ, 3A2GL, ZB2BX, 4U1ITU, RL7FER, UA9s, EU1Q, EW5T and F6REF/HYE (Porquerolles Is, off the south coast of France). An interesting propagation oddity was noted on the morning of February 3; after the local AM net at 1100, G3BDQ tuned to 1955 and heard GM3VMB for a good SSB chat, followed by contacts with G5NV (Sheffield), G4VHH (Lincoln), and G4TUK in Norwich all with good reports. Talking to others it appeared that there had been a wide-spread inter-G opening around either side of noon that day.

We turn now to one of those that missed the bus last time round, namely that from G4AAW (Maidstone). The best to date for Peter was 9M2AX, on January 9 and, with a QSP from G3PQA, VS6DO. Peter's luck was out in the CQ WW contest, but the rest of the month yielded C31OF, C31YA, IS0PLQ, OH0BA, EU2C, UZ9AWZ, UA9YGO, UM8MBA, VS6DO, W1CF,

W1WEF, KA1DLX, W2QD, K4PI, and 9M2AX, all CW save for the C31s.

G2HKU reports a Phone contact with PA0PN — nice to hear he is much better after his operations — plus CW out to OY6FRA, KH8AC/1, K1MM/SV5, OH0PA, K4PI, N4PN, UA9YGO, UA9UCO, W3LPL, W1RR, CT1AOZ, SM5JE, K1MEM, DL1BU, F9LT, DJ6RX, DL1RK, LA2UA, OK1GT, GM4SID, OZ1W, GD4BEG, SM5GLC, and OZ1LO.

G4OBK (Whittle-le-Woods, Chorley) says he has put in some time on both 7 MHz and Top Band. On the latter, there was CW with UT5UBW/UM, RT5UL/UJ (both QSL via UT5AB), W5TZC (Arkansas), UO5JM, 3V8AC, UV6AAO, CT2CB, UH8DC, W2ZZ/CT3, K5NA/KP2, K5UR, N0XA (Kansas), K1MM/SV5, 9Y4VU, J87UEE, K5RX, W0PGI (Minnesota), TF3KG, UG6GAW, XO1ASJ, EU0G (QSL via UG7GWA), FG5AM, 4Z4DX, WB0MIV/V4, RF6VAA, EA8QO, 4U1ITU, UY500, EM8CSB, UL7MAN, plus 24 assorted East Coast Ws. Gotaways included D44BC — a sked on SSB that didn't work out — 7X5AB and 5N8BAV (only interested in Ws on SSB), plus J87J and K4LTA/J7 both too weak to work.

New Bands — Activity Period

Our proposal for an Activity Period did not fall on deaf ears, if the reports are anything to go by. G2HKU worked CT1AZN, but didn't hear anything else, despite frequent listening.

G4FLK (Corfe Mullen) sent in a report both for the Activity Period and also for the following weekend. To look at the Activity Period first, 0900-1200 was spent on 10 MHz and the following were worked or heard: VK4RF, G6HL, GW3AHN, OZ1EYL, CT1CO, LA5QC, G4OBS, FD6IIE, G3BDS, SMs, GM3MXN, GW3MWS, FE6BVF; conditions were by and large pretty good. From noon to 1500 G4FLK was on 18 MHz; here the tally was EL2FJ, G6HL, GW3AHN, VU2LO, LU1DOW, EL0BY/MM, SM6EHY, N0BB, OE2TSM, LU5DJO; conditions assessed as fair but signals QSB in local mush. 1500-1800z saw attention turned to 24 MHz, where there was a QSO by ground-wave with a local plus GW3AHN, plus a few RTTY commercials heard. Over the weekend 9-10 a similar routine was observed. The morning session on 10 MHz was very good with some 18 signals heard or worked in a couple of hours, on February 9; from noon to 1400z 18 MHz was tried and five stations noted, and from 1400-1500z, 24 MHz was monitored and found to be dead. Next day saw many Europeans in a half-hour session on 10 MHz, after which a look at

18 MHz for a couple of hours showed up twelve stations, including VU2LO and ZS at a time when conditions seemed to be poorish; for an hour after noon, 24 MHz was searched, and it yielded signals from ZS6BWS believed to be a beacon, and 9J2WS despite a high noise level.

G3SFZ (Ealing) indicated in his letter an intent to be on for the Activity Period — he wrote in mid-February. Meantime, John summarised his findings: some 2000 QSOs on 10 MHz, spread over 56 countries, which is reckoned to be about average; on 18 MHz 25 countries have been worked, and on 24 MHz 13 countries — the latter band does rather seem to have become dormant over the past few months. The rig is TS-930S and the aerials dipoles.

"CDXN" deadlines for the next three months:

May issue—April 4th

June issue—May 9th

July issue—June 6th

Be sure to note these dates

Now we turn to two letters from G4HZ (Altrincham); For 18 MHz, Eric uses an indoor dipole in the loft, and the specified power of his licence. On January 30 there was a QSO with SM6LQG/MM in the Red Sea from 1121 to 1127z and on February 3 a QSO with LU5DJO on 18.073 MHz, report received 229 and given 569. LU5DJO was heard again on February 17 working into Europe, and also a number of DL stations were noted. February 22 saw contacts with OZ8IH and CT1LN. Turning to 10 MHz, CT1UP, SM5BJU, SK0TH, DL2SBM, EA5CQC, SM2GQC, and DK2CZ were worked between February 21 and 23rd, all between about 10.102 and 10.107 MHz. The aerial for 10 MHz is a Partridge Joystick, tuned "on the nose" with a Partridge ATU for 1:1 VSWR; the single wire comes down from the loft where the Joystick is erected vertically, through the ceiling and down to the operating table, about 25 feet; this is fed by a single-wire arrangement through the 'through' position of an Olympic ATU dating from 1963. The loft is quite roomy and boarded over with walk-ways so aerials can be worked on conveniently; there are dipoles for 10, 21 and 28 MHz, plus two-metre Slim-Jim, two-metre G/P, a two-metre five-element beam, and some 35 feet of a 68-foot end-fed wire which reaches the shack from outside. Also outside is a Mosley V3 vertical, ground-mounted, with nine buried radials and coaxial feeder buried under the lawn. Quite an aerial farm in fact!

Our final report on the New Bands comes in from G4UZN (Leeds); on 10 MHz, G4UZN worked CTIUP, CT1YH, W2ZZ/CT3, EA8AGF, EA8RCT, K4LTA/J7, J73D, KA2DIV/V2A, 5B4DN, Ws and VEs, plus a gotaway TI2LK. on 18 MHz few signals were worked at weak signal strength, but J37AE, LU1DOW, LU5DJO, VU2LO, ZS11M, ZS6AVM, ZS6DN, DL2GG/YV5, 3B8FA, and EL2FJ were all heard — the skip seemed too long for inter-EU contacts. Finally, 24 MHz — “still sleeping”!

So — there you have it for the New Bands. Pass the word round and let's see if we can have some more reports on these Activity Periods through the rest of the year — the first weekend of each month. Not a contest; just get on, work what you can, and report the results.

Eighty

Both space and time press in upon us heavily, so we will clip out the small fry for the rest of this column. G4UZN starts the ball rolling; his CW got out to HV2VO, K8II/VP2E, UA0BCS, UL7GCE, W5XZ, DJ6SI/5V, and 9Y4F.

No doubt about the position for G3ZPF (Kingswinford); David's second letter announces “I've Done It!” in three-inch high letters! ‘It’ in this case means the 100 countries worked on Eighty, which concludes the ‘easy’ bit of his 5-band DXCC. HK6GEA, D44BC, J73LC, SU1ER, JY5CI, PZ1BS, and TI2CCC where the stations that bumped the total of new countries up to the 100 mark during the month after a longish period of no-progress. This was done with no wire higher than 28 feet and without a linear. Another contact was with T77V, working split between 3799 kHz and 3645 kHz; the QSO was achieved by cranking the tuning knob from one frequency to the other — a somewhat unscientific method, but justified by success!

Just a couple of QSOs on the key by G2HKU; he found G6ZY/EA6 and OZ1W.

G3BDQ tried SSB successfully on HZ1AB, and CW was exchanged with RT5UL/UJ, UA9CDH, UA9AHR, UA0ABB, and a fantastic signal from UA0YAN in Tuva, Zone 23.

G3ZGC/MM looked at the band while he was in the Caribbean; the only station of interest worked was FG5DL/FS on St. Barthelemy; in the mornings there were JAs at S9+20 on SSB, but none interested in a contact with the Caribbean!

The list from D. A. Whitaker is quite enormous, and we only mention those not noted by others: 9K2DZ, P42J, HI0A, XE1L, YN1TA, PZ1BS, VK2AVA at 1900z, ZC4AB, TF3FC, HH7PV — but there were dozens of

other choice ones in David's list.

GW4BLE found 80 and 40 quite good this month. Steve uses an inverted-vee dipole (he actually wrote “an inverted dipole” in his letter!) and on SSB it netted CE3DMP, CE0DPD, FM5WS, HK5BCZ, HZ1AB, PZ1BS, KL7U, TG9AL, VP5SBX, WB0MIV/V4, TI9J, YN1TA, YV6BXN, ZLs assorted, ZL70Y, ZF2DR, 6W1CK, 9M2RT, and 9Y4LM.

Two months notes from G2NJ — Nick's list for last time just failed to arrive in time. The earlier letter mentions the station of GW8WJ of TOPS CW club, who runs just ten watts for quite a potent signal on the band, the aerial being a W3EDP. A planned three-way QSO between G4ZYD, G4RAR and G2NJ is worth noting; Barney, G4ZYD, says Nick was having his first CW contact since he passed the Morse test from scratch at the age of 76. Other eighty-metre day-time signals noted and worked included GB2SM, the Science Museum, using their reserve gear, a KW-2000. A CW signal was noted from G4PTX/M, in QSO with G8ND; the mobile was near Birmingham and on the way to Coventry. QRP stations worked included G4GIQ (Northwich) with his home-brew pocket rig, which is intended for some /P forays; the other one was G6RO, near Shipley, who had an old Top Band home-brew rig, put on to Eighty, and run into a loop aerial.

Talking of loops, that piece by G8PG (*S.W.M.*, Feb. 1985) intrigued VK5BS; Barry has horizontal loop aerials for 14, 7/21, and 28 MHz. On the subject of the lousy propagation we have been reporting from here, Barry finds Twenty all but dead in the *day* time, save for short skip to other parts of VK; and Eighty is much more active than usual DX-wise as far as they are concerned.

Forty & Twenty

VK5BS notes that JT1AI is often to be found on 14 MHz, and his QSL address is Box 639, Ulan Bator, Mongolia; T32AB goes to N7YL, T32AF to KH6UR. VK0RK, who sometimes appears on the 14.220 MHz net, QSLs *via* VK2DEJ; VK0YL goes *via* VK3AH; and finally Barry notes that JD1AMA checks into the same net and has his cards sent to him *via* Kyose 5-105, Ogasawara Island, Tokyo 100-21, Japan. Project ‘Blizzard’ is an interesting one; the hut at Commonwealth Bay used by Sir Douglas Mawson is being restored — they are signing AX0PB, and the QSL route is by way of VK6NE.

G4VFG has made himself a folded dipole for 14 MHz, using the Swedish slotted twin, with a 4:1 balun down at the shack end; the result has a wide bandwidth and seems to be working

well, with QSOs with K3RCU, PY5BI, CE8EMM, PP5MQ, PT2HE, and GB4DIS who was in the Weddell Sea — the latter is looking for Gs on 14121 kHz at 2000z.

At GW4BLE there is no word of Twenty, but on 7 MHz there were a whole raft of signals worked, using a loop for an aerial — we assume a Quad loop. Far too many to note, but sufficient to say, for example, four each VKs and ZLs, Africans, and a bevy of south and Central Americans; the North Americans seem to have been omitted as small fry — enough said!

What a pity space is now so tight, as again we have a long forty-metre list from SWL D. A. Whitaker, among which we noted 4S7NMR — a prefix no-one has mentioned for some months.

G3BDQ went on 7 MHz CW to work VK2PA, VK2KM, VK3NC, VK3VJ, VK6OH, ZS6QU, W3VN, UJ8JJK, and ZL1BN — this last at 1540z. On Twenty, CW went out to EW7BF and EO3AYB, plus SSB contacts with A92EI, an exhibition station signing A99A, and EW2C.

G4OBK offers SSB with LX1FJ, UA9CG, UH8EAA, UL8LWZ, UA9YI, HH7PV, CN8CX, CN2AQ, AJ2W/I8, EA6VQ, PY2EWU, and UA1OT in Franz Josef Land. CW bookings were made with eight UA9 stations, 4N3E, RL7GC, all W call areas apart from W6 and W7, various Asian Russians, VE1-2-3, VO1AW, PP2YY, CG3IY, TI2PZ, TI4BGA, KA2DIV/V2A, HP1XKR and lesser fry as well.

Twenty SSB was used by G2HKU for his regular contacts with ZL3FV, and ZL3KW. CW accounted for W1AW, C53BU, W2FC, W3LPL, W1HT, W4YE, W7OVE, ZS5WT, N6EA, ZP5XDW, XO1ASJ, 9J2BO, 4X4NJ, EA8QO and lots of others Ws. 7 MHz was CW all the way, and included K8CW, K8CV/VP2E, K5MA, K3ZO, N4AR, N2GC/KP4, 4X4NJ, EA8QO, W2MEL and W3LPL.

Last but not least G4UZN took a peek at 7 MHz, and made QSOs with K4LTA/J7, AD8J/VP2E, VP2MP, TI2PZ, TI4BGA, UD6CN, UJ8JA, and UJ8JW.

Finis

That's the lot! Space has run out, and we seem to have given every one their mention — we hope! Let's have your reports for next time, to arrive by first post on the day mentioned in the ‘box’, addressed as always to your scribe, “CDXN”, SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts. AL6 9EQ.

And don't forget the New Bands Activity Period — first weekend of every month.

The "S.S." Top Band AM Receiver

A Project for the Beginner or Old-Timer

JOHN D. HEYS, G3BDQ

THE receiver described in this article may seem to be a 'throw-back' to earlier and less sophisticated times but it was expressly built to allow listening with some comfort to members of my local Sunday morning net on 1950 kHz. It is all very well to own one of the latest oriental black boxes which now seem to do anything short of making cups of tea, but those fine and costly rigs rarely have an AM facility. One can of course take one of the sidebands from an AM transmission and receive it as SSB but in practice this is often far from satisfactory; the speech quality seems to lack 'body' and an almost constant attention to tuning is called for. The VFO's used in the home-brew Top Band rigs (often valved specimens) in our corner of Sussex are far from stable. They are quite adequate for AM work when there are receiver bandwidths of 6 kHz or more, but it is not easy to hold them 'on the nose' with a receiver set up for SSB. The local netting is not spot-on either and this calls for a retune after each transmission. Effortless 'natter-net' listening and operating was the goal which stimulated the 'S.S.' (Silly Simple) project.

The Ferranti AM Radio IC

This little receiver makes use of the splendid ZN414 radio chip which Ferranti designed around 1970 and which became available in late 1972. The chip is in a TO18 package with just three lead-out wires and is virtually a complete AM receiver just needing a tuned circuit and a 1.5 volt supply. It contains ten transistors which perform as RF amplifiers and detector/output stage and was designed to operate between 150 kHz and 3 MHz. Some ten years ago the writer ran an electronics club at his local primary school and some twenty or thirty youngsters built receivers around the ZN414 chips. By using tapped tuning coils it was found that they worked well right up to about 10 MHz.

The ZN414 contains its own AGC circuitry which operates when the input signal exceeds about 2mV and it has an audio output of typically 30mV r.m.s. Its RF input impedance is high, being about 1.5M and its output impedance is of the order of 500 ohms. The sensitivity is better than 100 μ V and the device power gain is in excess of 70dB. Using the recommended supply voltage of 1.5V the supply current averages 300 μ A, going up to 500 μ A with very strong input signals. A later development of this IC is

the ZN414Z which has a higher input impedance (4M), 72dB power gain and a sensitivity of 50 μ V. This newer version will also allow a 4 kHz bandwidth to be achieved when using suitable input circuits. The new ZN414Z is housed in a plastic 3-lead TO92 package and it has the same low voltage requirements as the earlier type. It may be obtained from *Maplin Electronic Supplies Ltd.* for £1.30 at the time of writing, and the earlier ZN414 is now available from *J. Birkett* for less than £1.

The Front-End Circuit

A simple coil plus variable capacitor arrangement as suggested by the makers of the radio IC is quite adequate for the reception of AM broadcasts on the MW and LW bands, but to achieve some real selectivity for amateur listening on Top Band a double tuned band-pass circuit is needed. By using two identical coils, a two-gang variable capacitor and a very small top coupling capacitor (C_x , see Fig. 1) made from a few twists of plastic covered wire (less than 2pF) together with an antenna hooked to an ATU some 'real' selectivity is possible. The gain remains surprisingly high and the prototype receiver is well able to allow good copy of the weaker signals on the local net. The nearer and stronger stations tend to actually block the AGC of the ZN414, and should this problem be encountered some attenuation can be switched into the input circuit. A suggestion could be a series resistor in the antenna link circuit or even a variable capacitor there. The attenuator could be cut out when copying the weaker brethren.

It is important that the two tuned circuits are well screened from each other and that there is no stray magnetic or capacitive coupling between them. The receiver described had its coils in screening cans which were earthed. Mounting the coils at right

Table of Values
Fig. 1

R1 = 100K carbon film	D3 = OA91 or sim. germanium diode
R2 = 470R c/f	IC1 = ZN414 or ZN414Z
R3 = 3K3 c/f	AF Amp = Z914 using TBA820 or similar amplifier module
R4 = 470K (part of AF board)	L1, L2 = 40 μ H, 50t close-wound, 36 swg enam. on 10mm. dia. former with dust iron core (type 450 former, type 8 core, <i>Maplin</i>)
R5 = 22K, see text	L1a = 4t thin plastic-covered wire over earthy end of L1
R6 = AF board volume pot.	
C_x = see text	
VC1 = 2-gang 360 + 360pF	
C2 = 0.02 μ F d/c	
C3 = 2000pF disc or metalised polyester film	
C4 = 4 μ 7 tant, 35V working	
D1, D2 = gen. purpose silicon diode	

Note: all resistors are 1/8 W or 1/4 W rating. *J. Birkett* can supply 3-gang variable capacitors suitable for this circuit.

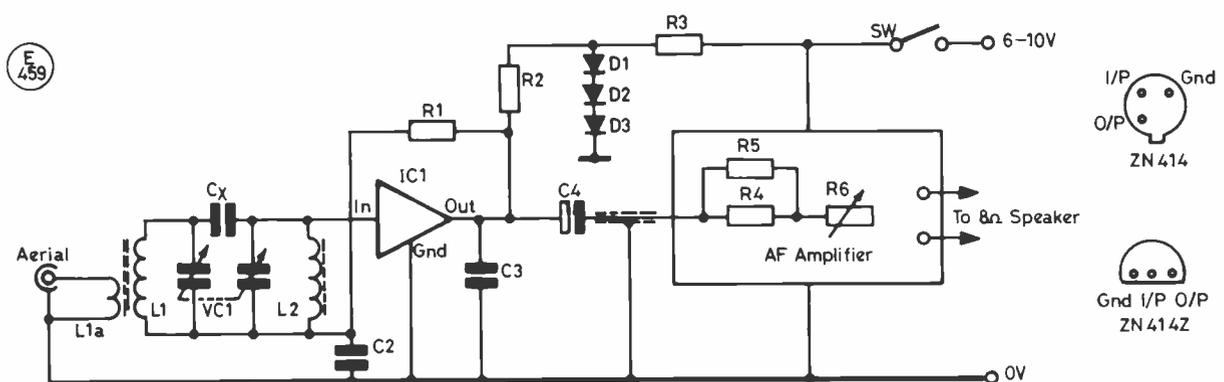


Fig.1 CIRCUIT of the "SS" TOP BANDER

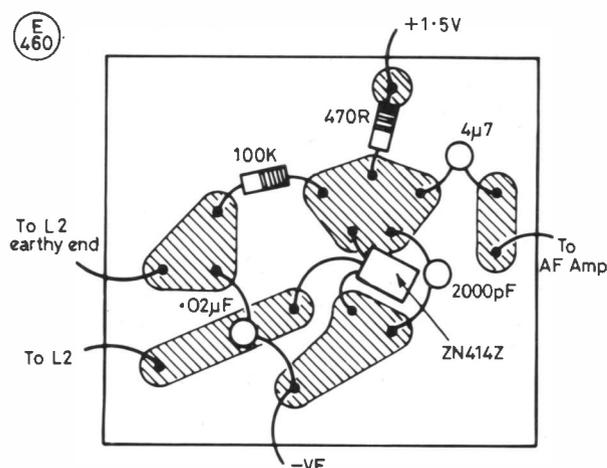


Fig.2 Plan view of the ZN414 Circuit Board

angles and also using a flat piece of metal or copper-clad board between them is another way to reduce unwanted coupling. The *only* coupling must be *via* the tiny 'gimmick' capacitor Cx. If coils of the inductance suggested (see coil data) and a twin-ganged 360pF variable are used, Top Band will tune at approximately half capacity. An added bonus is the ability to tune in your favourite (?) pop station at the LF end of the tuning range. There are also a few broadcast stations down at the HF end including the BBC World Service. The audio quality, by the way, is superior to that of many superhet 'trannies' and the distortion is less than 3%.

The 100K resistor (R1) provides feedback for the AGC and the output voltage is developed across R2. The value of R2 can lie between 1000 and 500 ohms but the lower value will allow the sharpest selectivity for the receiver. C1 is preferably a disc ceramic component and C2 may also be of this type. Instead of a separate 1.5 volt battery for the IC a simple voltage stabiliser consisting of a chain of diodes is used; two silicon and one germanium, together with R3 will provide the needed voltage. Almost any diodes from the junk box can be used for this purpose.

Should loudspeaker output not be required a pair of phones (medium impedance) may be connected between the negative side of the tantalum output capacitor (C3) and earth. This enables the construction of a very small receiver; the limiting factor being the physical size of the tuning capacitors. The writer prefers to sit back in a modicum of comfort without wearing the 'cans' when working local nets so some AF amplification was called for.

The Audio Section

These days few constructors use discrete transistors to make up AF amplifiers or output stages. There are many IC's available and they offer a wide range of input and output powers using a minimum of external components so it is just not worth the time and trouble involved in making up an amplifier. The school project mentioned earlier was made easier by using ¼-watt output IC's such as the LM389 which could drive small 8-ohm speakers. Being naturally indolent, 'BDQ' is always on the look out for devices which will save him effort and expense! Messrs. Greenweld were selling complete 1-watt amplifier panels which have a switch and volume control. These boards use the TBA820 chip for the output stage. One of the panels was obtained for £1.50 and they are ideal for the 'S.S.' receiver. The input connection point on these amplifier boards has a 470K resistor running from it to the volume control pot., and this is best shunted by a 20K resistor. Doing this really increases the gain of the unit and it becomes very sensitive but still stable.

The ZN414 output is more than enough to allow full output

from the TBA820. The usual precautions to be taken with high gain AF amplifiers must be observed and a run of screened wire or thin coax connects the front-end circuit to the amplifier. Only earth *one* end of this screening wire to avoid earth loops. A small elliptical 4-in. x 2½-in. 8-ohm speaker from a defunct 'trannie' gives more than enough audio to fill the shack. Almost any other amplifier giving from half to one watt output will serve in this receiver and the choice is left to the constructor.

Construction

The actual disposition of the tuned circuits, the ZN414 and its associated components, the speaker and the output amplifier can be left to the individual discretion of the intending constructor. In the original receiver the two coils were placed well away from the IC and were mounted behind, and onto, the front panel which was a piece of Formica. The iron-dust cores of the coils were then adjustable through holes in the front panel. Another smaller piece of Formica served as a board for the ZN414 circuitry. Instead of the writer's brass pins in groups and wired together underneath to simulate a PCB, the purist can etch his or her own circuit board. The plan of the circuit board showing the 'lands' or areas common to each part of the circuit may be helpful (see Fig. 2).

It is suggested that the ZN414 circuit is first checked by connecting it to a simple tuned circuit which covers the MW band. A scrap ferrite rod and coil from an old radio can be used and then no antenna connection will be needed. Use a pair of phones and a 1.5 volt battery for this initial test. A dip-oscillator is useful to set up the two coils and tuning capacitors when they are in position, but do this before you connect the tuned circuit to the ZN414 or it may be damaged; the output from a valved GDO is quite considerable. The aerial connection is *via* a 4-turn link winding at the 'cold' earthy end of L1. An ATU is advisable, for when carrying out tests on the original receiver a few feet of wire were stuck into the input socket: in addition to Top Band the local Fire Service transmitter on its hilltop about ½-a-mile from my QTH came in loud and clear all over the dial! Using the ATU took it completely out.

Some Further Experiments

As it stands the 'S.S.' receiver can only handle AM signals. To resolve SSB or CW some kind of beat oscillator is needed. Such a BFO must tune over Top Band and be a *very low power* device. It must be loosely coupled to the ZN414 input circuit otherwise it can block the AGC and bring all signals down to a very low level. A little 'play' with a BFO like this will allow CW and SSB reception but don't expect miracles! The sensitivity of most HF band transceivers is rather better than 1μV, whereas the ZN414 needs from 50 to 100μV input which is a signal increase of between 15 and 20dB.

The ZN414 is an ideal IC for the IF and detector stages of a simple superhet. A circuit was devised and tried out by the writer recently. A couple of 2N3819 FET's operated as mixer and local oscillator respectively, having an IF of 460 kHz. An old valve-type IF transformer coupled the mixer to the input of the ZN414 and another much smaller IF transformer rescued from a scrapped 'trannie' together with a BC107 transistor made an excellent BFO. The superhet worked well on 160 metres but its very simplicity meant that there were a number of unwanted beats and whistles over the band. Some of these were 2nd Channel QRM, others were 'odds and ends' from around the IF getting in and still others were produced from beats with the oscillator harmonics. How nice it was to go back to using the ZN414 as a straight forward AM receiver and dispose of all the unwanted 'crud'. A cleverer circuit with better front rejection would overcome the superhet problems and here lies scope for experiment.

Even if there is no local AM net on Top Band in your area build up this little Rx anyway and give yourself a stand-by source of news or 'pop' during those hours in the shack when you are 'doing things' and not actually operating.

EQUIPMENT REVIEW . . .

The Microwave Modules 50 MHz Converter, Model MMC 50/28-S

THERE are now one hundred stations in the British Isles with permits to operate in the 50 MHz band and some Norwegian amateurs have also appeared recently, so this is an opportune time to review a converter for 6m. The **Microwave Modules Limited Model MMC 50/28-S** enables the entire 50-54 MHz band to be tuned using a 28-30 MHz IF strip. It is a logical development of the **MMC 50/28** which provides coverage of 50-52 MHz.

The Specification

The specification states a 2.5dB maximum noise figure, an overall gain of typically 30dB, 65dB image rejection, a maximum frequency conversion error of 1 kHz and a current consumption of 40mA at 12v. Dynamic range and output intercept point were not specified.

The Circuit

The circuit is quite basic and straightforward consisting of an RF amplifier stage, mixer and local oscillator. According to the circuit diagram, the RF stage uses a dual gate Mosfet type 3SK60, but the review model had a 3N204. The antenna socket is coupled *via* a 470pF capacitor to a tap on the parallel tuned input coil across gate 1. A parallel tuned output circuit is loosely coupled through a 1.5pF capacitor to another such circuit across gate 1 of the 3SK60 mixer with the local oscillator signal being injected to gate 2. The single stage LO uses a BF375, the supply voltage being zener stabilised at 8.2v. There are two crystals — 22 MHz and 24 MHz nominally — selected by a miniature toggle switch. The output from the mixer is transformer coupled through a 10dB attenuator to the output socket.

Description

The components are mounted on a double-sided, fibreglass PCB inside a 110×60×30mm. diecast box, black crackle finished. Input and output sockets are 50 ohms BNC types and the power socket is a five pin DIN type with mating plug supplied. The antenna socket is labelled and is adjacent to the unmarked band change switch. The unit weighed 220 grammes.

Tests

The converter was connected to the stabilised 13.8v supply from the Icom IC-730 transceiver used as the tunable IF. The current consumption was 48mA. When the supply voltage was reduced to 12, the current dropped to 33mA. The two crystal oscillator frequencies were counted and were 22,002.37 kHz

and 24,000.29 kHz respectively. The specified maximum error of 1 kHz was therefore exceeded significantly in the case of the 22 MHz crystal. Thus, beacon GB3NHQ on 50.050 MHz came in at 28.0476 MHz on the dial of the IC-730. One had to remember to tune low if, for example, setting up for an MS test or on a beacon not copiable on tropo.

Before connecting an antenna, a 50 ohms resistor was plugged into the antenna socket. The converter noise fed to the IC-730 was very low. A foot of wire was sufficient to bring in GB3NHQ, 43 kilometres away, at S5. Great things were expected when the five-element Yagi was plugged in, however, the converter immediately "took off." As soon as the lid screw nearest the RF stage was loosened, this instability stopped; and the converter was quite stable, with and without an antenna, with the lid completely removed.

A constant level signal was fed into the antenna socket and tuned from 50-54 MHz. Maximum converter gain occurred around 51.5 MHz, however, the total maximum to minimum gain variation was only 2.3dB which is remarkably constant for such simple circuitry.

Next, a short length of the UR67 feeder was cut off in case a high VSWR was upsetting the RF stage. When the lid was firmly screwed back, the instability was just as bad. By chance, a short length of thinner 50 ohms coaxial cable was spliced onto the UR67 and this resulted in the complete disappearance of any instability. The leaflet included with the converter advises the use of a resonant antenna, such as a multi-element Yagi, and that long wire, random length antennas are unsuitable. So it seems that very accurate matching of the antenna system to the converter is essential and an antenna tuning unit might be warranted to ensure optimum performance in this respect.

The converter was then used to receive the GB3NHQ beacon in the daytime "off" hours, and amateur stations between 23.30 and 08.30. Signal reports were very similar to what other comparably equipped localish stations were giving. The brief test period proved that from the reviewer's QTH, stations 250 kms. distant could be reliably received in flat conditions although at much lower strengths than on 144 MHz. Meteor pings are much in evidence all the time on 50 MHz. With the receiver tuned to GB3SIX in Anglesey, inaudible on tropo., pings averaged one per minute from random meteors in the daytime.

Conclusions

With a properly matched antenna system this converter performed well so can be recommended to anyone wanting to listen on 50 MHz and who has a receiver capable of tuning from 28 to 30 MHz. However, most activity seems to be confined to just the lower 200 kHz, so a receiver or transceiver only tuning 28-28.2 MHz would be sufficient at present. The **MMC 50/28-S** converter is manufactured by **Microwave Modules Limited** of Brookfield Drive, Aintree, Liverpool L9 7AN. (Tel. 051-523 4011). It is available either direct or from various national stockists, the current U.K. recommended price being £34.90 including VAT at 15%.

For those not requiring coverage of 52-54 MHz, the earlier MMC 50/28 is available at £29.90.

N.A.S.F.

Since this review was completed Microwave Modules Ltd. has informed us that the MMC 50/28-S will not be generally available until early summer.

ANTENNA REVIEW . . .

The Tonna F9FT 50/5 Five-Element Six-Metre Yagi

WHILE reviewing the *Microwave Modules* six-metre converter, it seemed logical to simultaneously review a typical six metre beam and the one chosen was the **F9FT 50/5** from the well known French company **Antennes Tonna**.

Packaging and Literature

The antenna arrived safely *via* British Road Services in a box about six feet long and $5 \times 2\frac{1}{2}$ inches. All the hardware, such as clamps, brackets, etc., was packed in a sealed plastic bag. Two leaflets were included, one dealing with assembly instructions with a list of all the parts, the other being an exploded diagram of the antenna.

Electrical Design

This five-element Yagi is about 0.59 wavelengths long, the claimed gain being 9dBi or 6.85dBd. This seems a very realistic figure and could be a little conservative. The driven element is a single dipole fed directly with 50 ohms coaxial cable without any balun. Impedance matching is achieved by a "beta match" consisting of a 450mm. long, 5mm. diameter aluminium rod spaced 30mm. from the centre of the driven element and bridging the feedpoint. How it works is not explained nor is "beta matching" mentioned in any of the reviewer's antenna literature. Although the parasitic elements are mounted above the boom in plastic mouldings, they are in fact electrically connected to the boom in "plumber's delight" fashion.

Mechanical Construction

The boom is 20mm. square duralumin alloy section in three pieces. Front and rear sections are identified by red and black end plugs respectively, while the middle section is symmetrical. The supporting legs, or braces, are also 20mm. square tube and are fixed at the boom splice points. All elements are approximately 15mm. diameter aluminium seamed tube; *i.e.* not seamless like copper plumbing tubes. The elements are in two halves joined together in the middle *via* substantial black plastic mouldings which fit snugly over the boom, saddle fashion, and secured with wingnuts. The driven element mounting incorporates a hinged snap-on lid for the feeder connexion and a suitable boot for the feeder is provided.

The mast clamping hardware is all galvanised and will accept up to 54mm. diameter tubing. It took about forty minutes to unpack and completely assemble the antenna. The diagrams were easy to follow and unambiguous. Although the elements are identified by R, D1, D2, etc. on the diagram, they are not labelled. However, the physical lengths are all stated and the leaflet states that elements get progressively shorter from rear to front, so there is no excuse for making any mistakes. The completed antenna is quite rigid and looks and feels right.

Feeder Connexion

The manufacturer recommends RG8/U or RG213/U coaxial cable and the reviewer used the European equivalent of UR67. The centre conductor consists of seven 0.77mm. copper wires which is far too fat to fit under the tiny screw in the moulded housing. The leaflet recommends soldering this

connexion but care has to be taken not to melt the plastic. Coating of the connexions with a thin coat of plastic varnish is recommended, but filling the box with silicone material is not recommended.

Durability

Corrosion is the great enemy of all antennas. No mention is made in the leaflets about protection, but the distributor's booklet listing all **Tonna** products advises that all antennas be coated with polyurethane varnish.

Testing

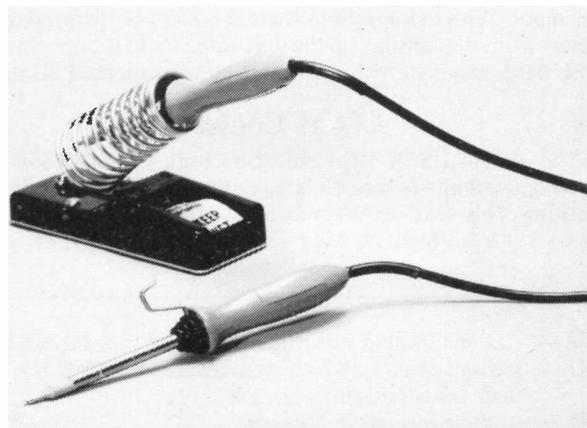
The antenna could only be erected at about half a wavelength over wet grass, the feeder length being about 25 metres. Attempts to determine the resonant frequency and impedance with the station antenna noise bridge were inconclusive and it transpired the bridge had developed a fault. However, the driven element length, taking into account the ratio of length to diameter, suggests that the resonant frequency must be in the 50 to 51 MHz range specified.

Converter instability was found when connecting the system as reported in the MMC 50/28-S converter review. Monsieur Tonna does not believe in baluns so it could be that the VSWR was enough to cause this mismatch resulting in instability; perhaps an unfortunate length of feeder was used. Purists might consider a balun at the feedpoint, the reviewer favouring the "bazooka" type as featured in most handbooks. This antenna provides very useful gain and possesses good directivity. The claimed front-to-back ratio of 25dB seems somewhat optimistic for a five-element Yagi with one reflector, though. However, due to proximity to the house, it was not fair to make any front-to-back measurements.

Conclusions

The **Tonna 50/5 Six Metre beam** is a sturdy, straightforward Yagi. When properly installed, in the clear, suitably protected, it should give years of satisfactory service. A number of six-metre operators are using this model with satisfaction. The U.K. importer is **Randam Electronics** who kindly supplied the antenna. They are at 12 Conduit Road, Abingdon, Oxon OX14 1DB. The price is £34.30, including VAT at 15%, and carriage is £4.00.

N.A.S.F.



The 'Oryx' range of soldering irons by **Greenwood Electronics** has been extended by the addition of a low cost, thermally balanced, general purpose 17-watt model, the 'Super 30'. The iron, which weighs only 115gm., has a range of ten tip widths from 1.6mm. to 4.8mm. and can be supplied to operate on power supplies of 12, 24, 50, 115, 220 or 240 volts; operating temperature is 365°C. Full information is available from **Greenwood Electronics Ltd.**, Portman Road, Reading, Berks. RG3 1NE. (Tel: 0734-595844).

★ ★ ★ ★ Oblast Corner ★ ★ ★ ★

NIGEL CAWTHORNE, G3TXF

1985 started off with a bang! Soon after midnight on 1st January, the bands were hopping with USSR stations using a whole new series of special callsigns.

The special prefixes EM, EO, ER, EU, EV and EW as well as the USSR stations signing with /R after the callsign are all part of the celebrations for the 40th anniversary of the ending of WWII. There are 100 stations using these special prefixes and a further 500 war veterans using their own calls /R. All will be QRV until 9th May, 1985.

A special award is available from Central Radio Club, Box 88, Moscow for working 40 stations with either special prefixes or /R callsigns. In order to claim the "Victory 40" award, send a list of stations worked, including the QSO details such as date, time, band and report. The list should be certified as being a true extract of your log by two other amateurs or a club official.

Table 1 shows the significance of each of the different 'E' prefixes. The special prefixes appear to have thrown into temporary disarray the oblast identification rules. Table 2 lists a number of special calls with their oblast number and the QSL information. The most important feature of the special prefixes is that the letter after the 'E' does not tie in with the letter that normally comes after a 'U'. Thus EM8CIL is not an UM8, as one might expect at first glance. As can be seen from Table 2, EM8CIL is a 'UC' station in Oblast 008.

Identifying Oblasts

An excellent and highly recommended aid to identifying oblasts is the Geoff Watts *USSR Oblasts List* which is regularly advertised in *S.W.M.* Geoff's lists details the oblasts that have more than one key identifying combination. Oblast 101, for example is both UA6A and UA6B. Similarly UP-B and UP-P are both Lithuania and oblast 038. These were not included in the February *S.W.M.* Oblast Table.

Several letters received queried 'two letter' callsigns such as UH8DC, UA9NS, UA1DZ, UA1MU. Many 'two letter' calls issued prior to 1971 did not follow the oblast identifier sequence. With these stations there is no way of identifying the oblast from the callsign, so the only thing to do is hope that the QSL card comes in with the oblast number marked on it.

CQ-M Contest

The annual USSR HF Contest on both CW and SSB is a good opportunity to make a large number of QSOs with USSR stations. This year's event runs from 2100z on Saturday, May 11 to 2100z on Sunday, May 12th, 1985. The significance of

EM — stations located in former capital of guerilla activity
 EO — stations in cities which were awarded medals for their contribution towards Victory
 ER — stations located in Moscow
 EU — stations in the capitals of the 15 Soviet Republics
 EV — stations in capitals of Soviet Autonomous Republics
 EW — stations located in 'hero' cities

Table 1. Significance of the special 'E' prefixes being used by USSR stations from 1.1.85 to 9.5.85. For European stations working 40 special prefix stations (including the individual stations signing /R) there is available from Box 88 a special "Victory 40" certificate.

the 2100z start and finish times is that 2100z is equivalent to 0000 MSK (Moscow time).

Although the rules do allow QSO's on an 'everyone works everyone' basis, the vast majority of stations active are USSR stations, and hence the 'CQ-MIR' (peace) contest can be a useful source of new oblasts.

During the contest, USSR stations will send a signal report and their oblast number as the contest exchange. Non-USSR stations send a signal report followed by a serial number, e.g. the first QSO on CW 599001, or on SSB 59001. Count one point for QSOs within your own continent and three for QSOs with stations outside your own continent. Contacts with your own country count for the multiplier only.

Multipliers are countries worked on each band (irrespective of mode) and satellite QSOs count as a separate band. The countries list is the same as the ARRL list with the following difference: UA2 does not count as an additional country multiplier, it is considered as being part of European USSR.

In addition to the standard USSR countries there are also a number of individual oblasts that count as multipliers. Table 3 shows the forty multipliers within the USSR that are used during the CQ-M in addition to the normal DXCC list for the rest of the world.

Final score is QSO points multiplied by the sum of countries worked per band. Entries should be posted by July 1st to "CQ-M Contest", Box 88, Moscow, USSR.

Every entrant who submits a log receives in due course a complete copy of the results, including a metal pin commemorating the contest. Entry categories are all band single operator, single band single operator, and multi-operator/single transmitter. Medals are awarded for first, second and third placed scores in each category, along with certificates to top scorers.

QSOs made during the CQM can be used to apply for any USSR award, without needing to wait for QSLs. Send your application with the log. All awards, pins, medals are sent to the RSGB from where they are mailed out to individual recipients.

Activity during CQ-M is usually very good, especially from USSR and Eastern European stations. CW is the most lively and there is plenty of activity on SSB, too. With a relatively

Station	Oblast	QSL Info
EM2C	188	UC1AWB
EM6AAK	101	UZ6AWA
EM8CIL	008	UC1IWB
EM0CWN	006	UC1WWR
E05BCK	080	UB4CWK
ER3A	170	UZ3AZO
EU10	037	UQ1GWW
EU1R	083	UR1RWN
EV4AP	094	UZ4PWR
EV6AX	097	UZ6XWA
EV9AW	084	UW9WR
EW2C	188	UC1AWC
EW0CL	005	UC1LWA

Table 2. The new "special calls" have temporarily thrown into disarray the oblast identification system!

USSR DX Countries

European RSSR	UA1, UA2, UA3, UA4, UA6
Asiatic RSSR	UA9, UA0
Ukraine	UB, UT
Byelorussia	UC
Azerbaijanistan	UD
Georgia	UF
Armenia	UG
Turkmanistan	UH
Uzbekistan	UI
Tadzikistan	UJ
Kazakhstan	UL
Kirghizistan	UM
Moldavia	UO
Lithuania	UP
Latvia	UQ
Estonia	UR
Franz-Josef Land	UA1P

Individual USSR that also count as 'country' multipliers in the CQ-M Contest

002 UD-N	088 UA1N	096 UA6P
013 UF-V	089 UA61	097 UA4Y
014 UF-Q	090 UA9X	098 UA0Q
056 UI-Z	091 UA4S	114 UA1P
084 UA9W	092 UA4U	128 UA0Z
085 UA0O	093 UA6J	159 UA0Y
086 UA6W	094 UA4P	
087 UA6X	095 UA4W	

Table 3. As well as the standard DXCC countries, the country 'multiplier' for the USSR CQ-M Contest to be held from 2100z on May 11th to 2100z on May 12th, 1985 also includes a number of special oblasts each of which counts as a separate 'multiplier' for the purposes of calculating the contest score.

simple HF band installation, a good number of contacts can be made from the U.K. during this contest. Give it a try this year! It will certainly help the oblast score for 1985!

Station	1985	All Time
G4OBK	49	97
G3BDQ	42	—
G2DAN	40	65
BRS32601	24	148
G4MQC	23	109
G3ICG	18	95
G4TWX	18	102
G4UNH	14	89
RS 44984	14	78
G4WSX	14	61
RS86766	12	15
G4VDX	8	35
G4XTM	6	60
G4ARI	2	61
G4EZA	1	111
G4YWG	1	17
SWL GIHGD	—	34

Table 4. S.W.M. Oblast Table. See last paragraph for details of how to add your callsign to this listing. Refer to page 559 in the February issue for the Oblast Table. For fuller information on how to identify oblasts, please refer to Geoff Watt's USSR Oblasts listing.

Oblast Table

Table 4 shows the first entries received for the new S.W.M. bi-monthly Oblast Table. Many entrants found it convenient to use a photocopy of the oblast table that appeared on page 559 of the February issue of S.W.M. for their entry. This is probably the best way of doing it, but please make sure that you add a total figure for both 'All Time' and '1985 In-Year'. It is not necessary to submit lists of individual callsigns except where perhaps there are queries on the oblast number. In future columns, I will attempt to answer some of the oblast queries received.'

Send your up-dated entries for the 'All-Time' and '1985 In-Year' oblasts heard/worked tables to G3TXX at Holt Cottage, Kingston Hill, Kingston-upon-Thames, Surrey by April 15th, to appear in the June issue.

• • • "Practically Yours" • • •

with GLEN ROSS, G8MWR

This month we continue the subject of attenuators by looking at the various ways in which they may be built up. It is, I hope, obvious that any coupling between the input and output ports will reduce the effectiveness of the unit and that this effect becomes more serious as the frequency goes higher, and also as the amount of attenuation is increased. Following from these points the design should use a layout which reduces the through coupling, and attenuation of greater than 20dB should always be done in more than one step.

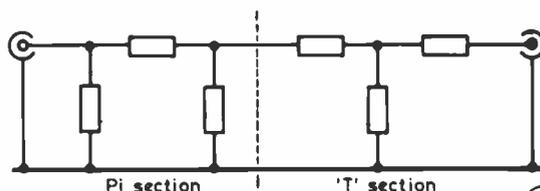


Fig.1 CASCADED 'Pi' AND 'T' SECTIONS

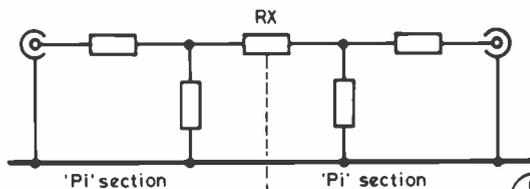


Fig.2 RX IS THE COMBINED VALUE OF TWO RESISTORS

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Preferences

There is normally no advantage in using either the Pi or T configuration except that the resistor values may be more convenient in one layout than the other. It is also possible to mix the two types at will when building cascaded units to achieve higher attenuation, *see* Fig. 1. You may also be surprised to find that you need fewer resistors than you thought: this is because in a cascaded design all resistors that appear as series or parallel connections can be calculated as one resistor of the required value. For example if when using the Pi layout the output resistor of one section was 1000 ohms and the input resistor of the next section was 200 ohms, then a single resistor of 1.2K ohm would be used. The same idea can be used on the T attenuator, this time looking at the parallel connections, *see* Fig. 2.

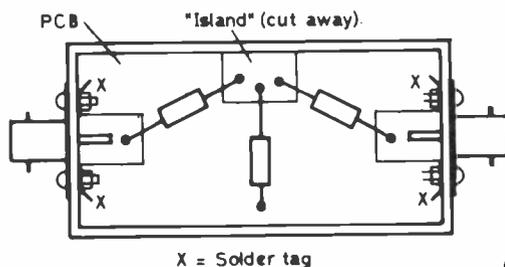


Fig.3 SINGLE STAGE ON "ISLAND" TYPE PCB

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Layout

If the unit is being built into a PCB as part of a larger piece of equipment it is advisable to lay the attenuator on the board in the same layout as the circuit is drawn, rather than laying the resistors alongside one another. This is especially true if the unit will be used at 70cm. The capacitive coupling that would exist between the parallel mounted resistors would seriously degrade the performance and the expected attenuation may not be achieved.

If units are to be assembled as test gear then the best method of construction is to build them into small die-cast or tinplate boxes. The sockets should be mounted on the end faces of the box and the components can be mounted "in air". The earthed end of the resistors may be soldered direct to the tinplate box or taken to solder tags mounted on the die-cast box with small nuts and bolts. This type of construction is suitable for the HF bands but at frequencies above about 50 MHz it is better to use a PCB cut to fit between the sockets.

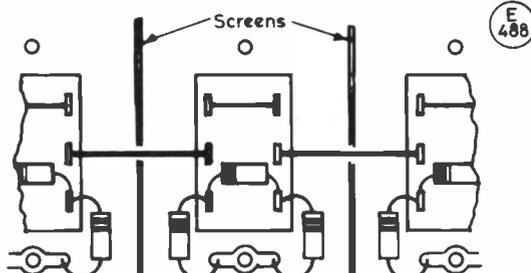


Fig.4 LAYOUT OF COMPONENTS FOR SWITCHED ATTENUATOR

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The earth plane provided by this board should be soldered to tags fixed under the mounting bolts of the sockets. There is no need to etch the board, all that is needed is the appropriate number of small 'islands' to which to connect the signal ends of the resistors. These can easily be made by cutting the copper away with a sharp pointed tool, a small screwdriver with the blade filed down to a scribe point is ideal for this operation (Fig. 3).

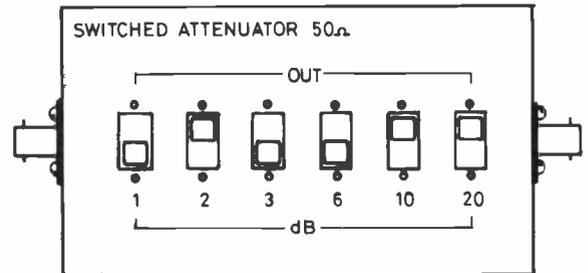


Fig.5 GENERAL LAYOUT

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Switched Attenuators

These are probably the most useful form for test purposes as they can be arranged to switch in any required loss. By suitable choice of values it is possible to provide, say, 1dB steps up to any maximum required value; this may be done by providing individual steps of 1, 2, 3, 6, 10 and then two steps of 20dB. Using combinations of these it is then possible to obtain any required value up to a maximum of 62dB. Higher losses are possible by adding extra stages of 20dB. This type of unit is best built in a die-cast box to provide rigidity and the switches may be toggle or slide types. The slide is advised because it is far less likely that they will be accidentally knocked in use. Many strange results have been obtained by people who have not noticed the accidental removal of some attenuation! This is the one type of attenuator where there is a definite advantage in using the Pi configuration, simply because it fits the mechanical layout of the switches so well. The general form of construction can be seen from the drawing, Figs. 4 and 5. The switches should be mounted "in line", with two solder tags mounted under one of the fixing nuts and the resistors should then be fitted using the minimum lead length that is reasonably possible. For the best results at high frequencies a screen should be placed between each switch to reduce the coupling between them; this can be made from lightweight sheet metal, or use normal PCB material. Make sure that the screen is well earthed to the box.

Warning

Whilst the switched unit will have the nominal impedance it was designed for at low frequencies, this will not be well maintained at higher frequencies due to the inductance of the components and interconnecting wires and also the capacitive effects between the components and the case. In most uses this effect will not be serious, but it should be kept in mind. A well constructed single attenuator will always be better in this respect. One way round this difficulty, if a switched attenuator is required for a specific purpose, is to use external fixed attenuators of 2 or 3dB on the input and output connectors of the switched unit. By this method a close approximation of the required impedance is 'fixed' and the switched unit is then used. You must remember to add the fixed attenuation to that shown on the switched unit. This dodge can be used in any condition where it is required to establish the 'correct' working impedance and so isolate the device being used from variations in the other impedances due to the connection of test gear or various adjustments. The higher the attenuation that can be used the better will be the isolation effect, but there are obviously limits as to how far this can be taken.

A Base Station Unit for the Yaesu FT-290R

IAN KEYSER, G3ROO

Having owned an FT-290R for some time and used it mobile and portable it was decided that it was necessary to build a unit so that the set could be used in the shack. The unit was also to overcome some of the drawbacks of the little rig as well as removing some of the clutter from the desk (one of the most important things in any shack!)

To this end not only was the power supply to be included in the unit, but charger, amplifier, and a system to change from Tx to Rx automatically on CW instead of having to hold the PTT while keying. Another worthwhile modification decided upon was an outboard IRT to enable the SSB stations to be tuned in perfectly by being able to tune between the annoying 100Hz jumps. This would need some internal modifications to the set, but nothing at all difficult.

To enable all these facilities to be realised it was necessary to pick up all external sockets on the FT-290R, a fiddly job. It was obviously necessary to make it a slide mount fitting and just have to pick up the two external points on the side if these were required.

As far as designing a 2m. amplifier was concerned I doubted that it was worth the effort as there were so many kits on the market at very reasonable prices. The magazines were scanned to see what was available and the firm that caught my eye was *C. M. Howes*. The reason for this was that they went to the effort of pointing out that their PA2/30 30-watt amplifier (see Fig. 1) was ideally suited to the FT-290R as it was impossible for it to be overdriven and so produce a dirty signal. *Howes* also do an aerial change over unit, so both these units were ordered.

The power supply was the next problem to tackle, a total of about five amps at 12 volts regulated being needed. The size of the case was to be kept as small as possible and so this demanded the use of a toroidal transformer (Fig. 2). These are

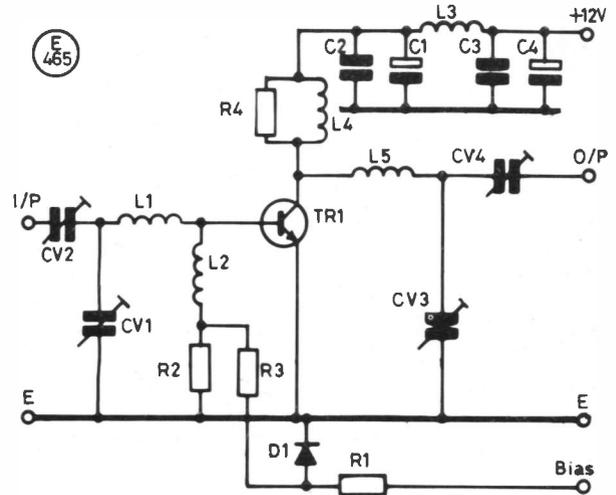


Fig.1 HOWES PA 2/30 VHF LINEAR AMPLIFIER

very useful little devices as it is easy to add overwinds if required. Also they have the advantage of a very low external magnetic field, reducing the induction of noise into external wiring. However, they do have a very annoying feature if you happen to live in an area where the mains supply can be unevenly loaded, such as in the country, when the mechanical noise can be excessive. The mains supply for my FT-707 uses a 300W unit and when the washing machine is in use the noise from the transformer picked up by the microphone is audible over the air by local stations!

It was decided to use two regulators, one for the FT-290R and a second for the power amplifier (Fig. 2). A 7812 is suitable for the FT-290R, but a higher current is needed for the amplifier and a 7812, with diodes in its earth return to lift the output voltage to 13.5 volts, is used to drive a TIP3055 power transistor. Care is required when working with this supply not to short it as this is almost certain to destroy the TIP3055 as there is no current limiting built into the circuit; in use, however, this should cause no problem.

Auto CW PCB

The circuit of this is given in Fig. 3. When the key is depressed Q2 turns on very rapidly charging up C8. On key up, C8 discharges through the bases of Q3 and Q4 energising RL1

G3ROO's FT-290R with the base unit in use.



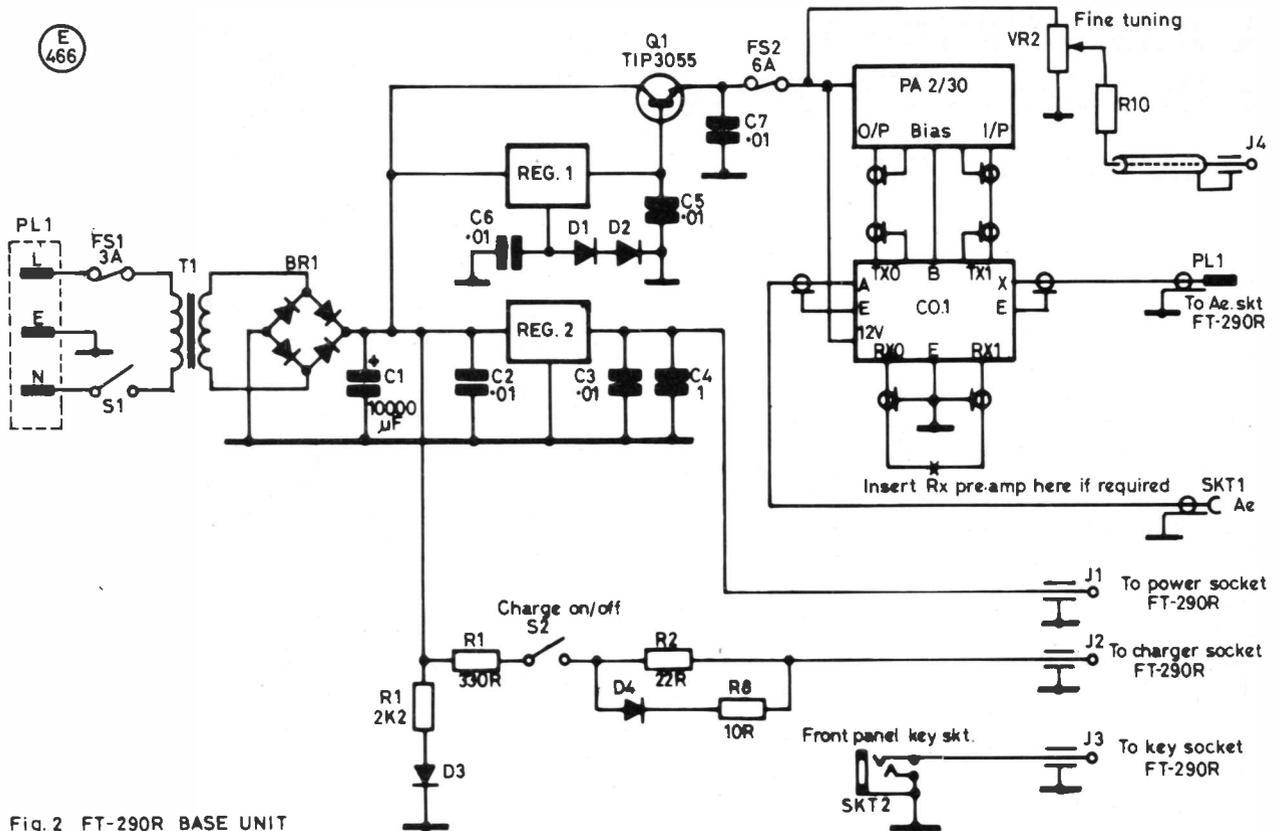


Fig. 2 FT-290R BASE UNIT

and placing the FT-290R in the transmit mode. The transceiver will remain on transmit until there is sufficient charge in C8 to keep the transistors turned on and so RL1 drops out. If however, the key is depressed before this happens C8 is recharged and the relay holds in. In early development Q4 was used to pull the PTT line down and hold the transmitter on,

Table of Values Figs. 2, 3, & 4(a)

R1 = 330R, 1W	T1 = I.L.P. 32014
R2 = 22R, ¼W	Fs1 = 3A
R3 = 4K7, ¼W	Fs2 = 6A
R4, R9 = 10K, ¼W	RL1 = 6V DIL relay
R5 = 1K, ¼W	S1, S2 = 1-pole, 1-way, 250VAC rated
R6, R7 = 2K2, ¼W	J1 = power jack for FT-290R
R8 = 10R, ¼W	J2 = 2.5mm. jack
R10 = 22M, ¼W	J3, J4 = 3.5mm. jack
VR1 = 100K min. preset	PL1 = chassis power plug (1440)
VR2 = 22K lin. pot.	PL2 = PL-259 push fit
C1 = 10000 µF, 40V elec.	Skt 1 = SO-259
C2, C3, C5, C6, C7 = 0.01 µF d/c	Skt 2 = 3.5mm. jack socket
C4 = 1 µF tant.	"CO1" = see text. From C. M. Howes Communications, 139 Highview, Vigo, Meopham, Kent DA13 0UT
C8 = 47 µF, 10V elec.	"PA2/30" = see text. From C. M. Howes Communications
Q1 = TIP3055 (10181)	
Q2 = BCY72 or similar <i>pnp</i> (10507)	
Q3, Q4 = BC107 or sim. <i>npn</i> (10135)	
Reg 1, Reg 2 = 7812 (10343)	
D1, D2 = 1N4001	
D3, D4 = LEDs	
BR1 = 6A bridge rectifier (10609)	

Note: also required, for CO1 modification, are 2×1K ¼W resistors, 1×4K7 ¼W resistor, 1×0.001 µF, disc ceramic capacitor. Numbers in brackets above are MS Components part numbers; their address is Zephyr House, Waring Street, West Norwood, London SE27 9LH.

but there was a problem due to the transceiver latching in the Tx inhibit mode. It appeared that this was happening if the key was depressed at the instant Q4 changed from an 'on' to an 'off' state. This occurred relatively slowly as it was dependent upon the discharge rate of C8 and the gain of the Darlington pair, Q3 and Q4. By including the relay this 'danger period' was minimised and in fact has only occurred once in over a month of operation. If it does happen it does not seem to disturb the rig at all, and all that is necessary is to stop keying for the time it takes for the Auto CW PCB to go into the receive mode; this is set by the variable resistor VR1. It can be set between about 50mS and 1 second, and the longer the hang time the less the chance of the key being depressed at the wrong millisecond!

This board is wired into the relevant parts of the circuit in the FT-290R, as indicated in Fig. 3, with sufficiently long wires for the unit to be either fixed in the place where the tone squelch should be or, as I have done, wrapped in Sellotape and tucked into this position!

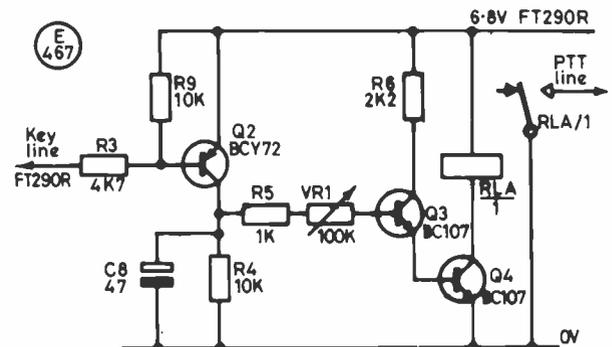


Fig. 3 CW AUTO CHANGEOVER UNIT

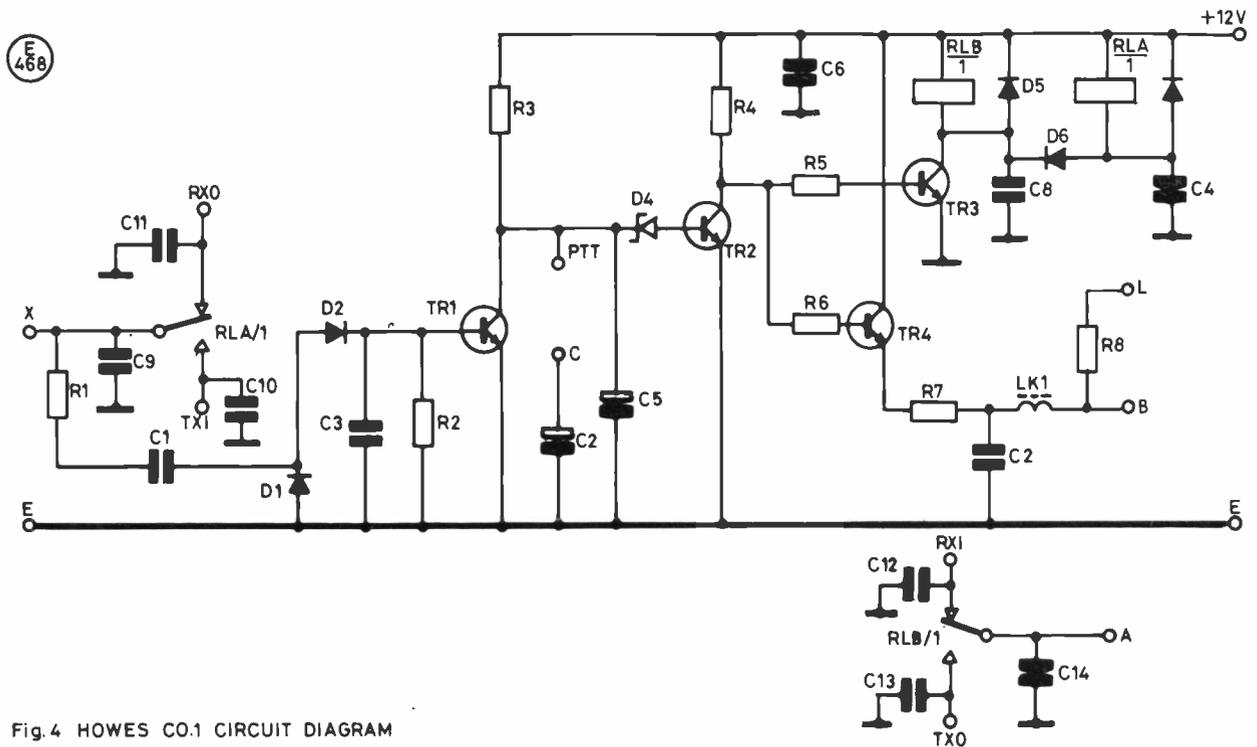


Fig. 4 HOWES CO.1 CIRCUIT DIAGRAM

The base unit nearing completion.

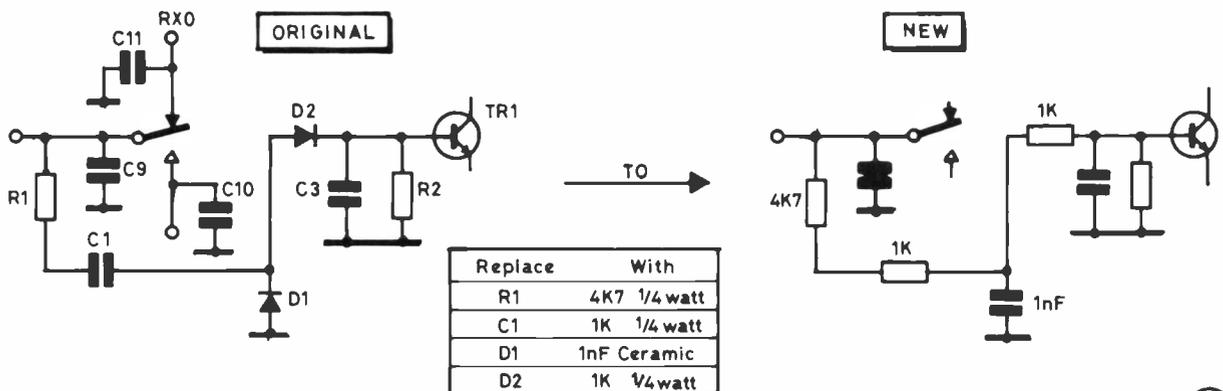


Fig. 4(a) MODIFICATION OF HOWES CO.1 SWITCH KIT

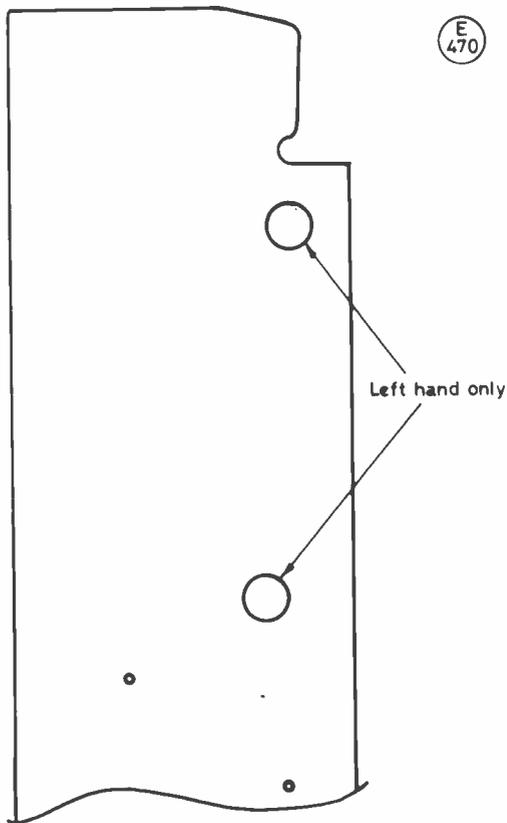


Fig. 5 TEMPLATE FOR FRONT END OF SIDES OF 'U' SECTION (Half full size).

Rx Preamplifier

I have not included a preamplifier in my design as I do not think they improve the sensitivity of my FT-290R at all. They do increase the apparent signal strength and also improve the action of the AGC, but the increase in blocking by local stations is not worth the effort. This was proved when the local contest group, operating from my QTH, were running a linear and four *MET* 19-element beams. My FT-290R could copy GB3VHF with my 7-element *MET* beam looking through the contest array, whereas an FT-290R fitted with a preamplifier received nothing but noise and pops! A switch has been included on the front panel in case I put one in later as it is easier to mount a switch during construction than to try and drill holes later.

The PA

This is constructed as described in the ample literature supplied with the PA2/30 kit. There should be no problems at all as this is a well proven unit.

The Switch Unit

I have slightly modified the *Howes* CO1 kit to take advantage of the fact that there is a switching bias on the aerial socket of the FT-290R. This DC potential is used to operate the relays rather than detecting the RF; the bias is present at all times the FT-290R is in the transmit mode. This is sampled by R1 which has been increased to 4K7. C1 has been changed to a 1K resistor, a link could have been included here but I had a 1K resistor in my hand at the time! D1 and D2 have been changed to a 1,000F capacitor and 1K resistor respectively,

these act as an RF filter to stop any RF from disrupting the operation of the switching transistors. The circuit of the kit is shown in Fig. 4 and the changes are given in Fig. 4(a).

Construction

The metalwork can be obtained from *H. L. Smith*, 287-289 Edgware Road, London W2. and comes in three sections, the U-shaped base, the front tray, and the PA box at the rear. Using the template in Fig 5 (note this is half-size!) cut the front edge for the U-shaped base to take the strap mounting nuts on the FT-290R and drill the four holes in the sides as in Fig. 5. The two small holes are for the mounting of the front tray hinge, and the two large holes on the left hand side are for access to the 'standby' and 'Ext Sp' sockets. These must be marked and drilled as accurately as possible for the FT-290R to sit in the frame properly. Next comes the front tray, this is only fixed to the U-frame by a hinge consisting of a piece of 1/4-inch square perspex rod fixed to the tray by two 6BA

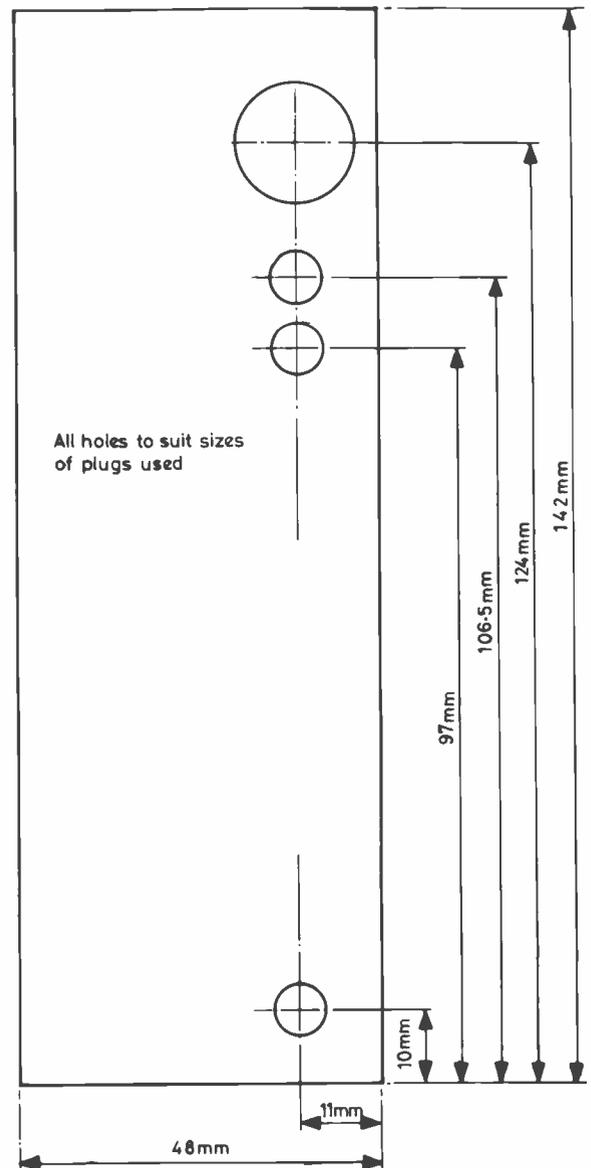
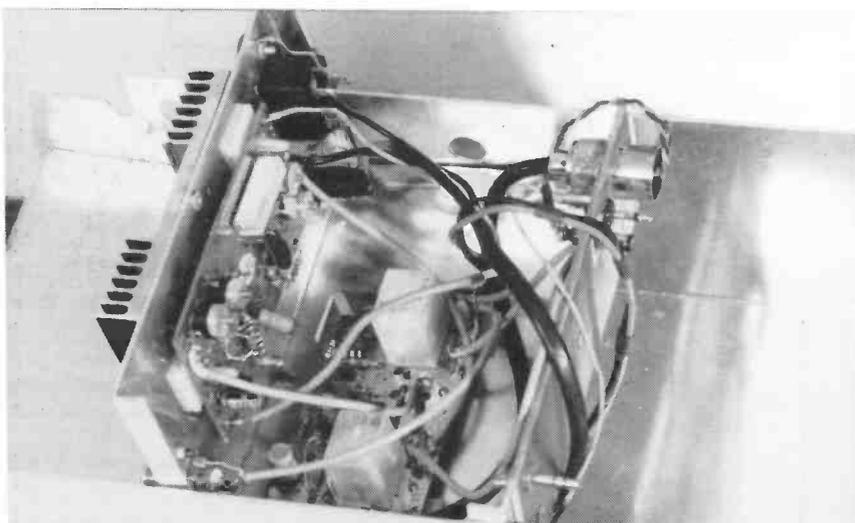
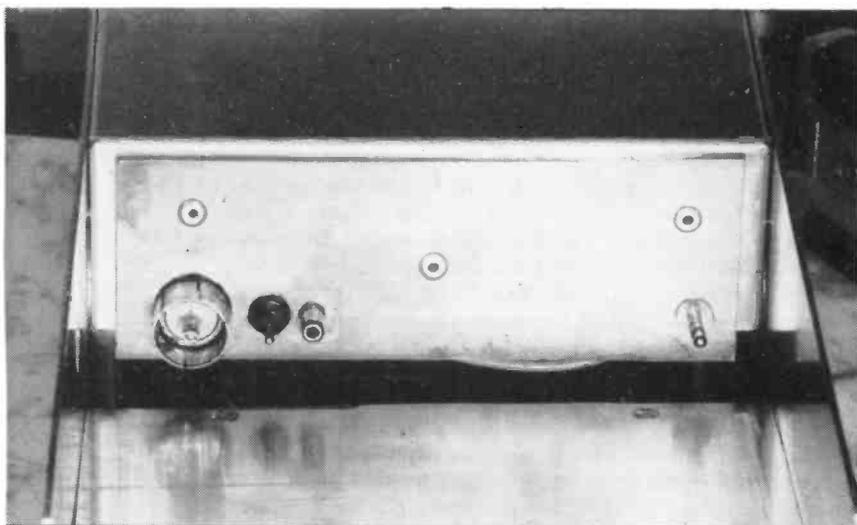


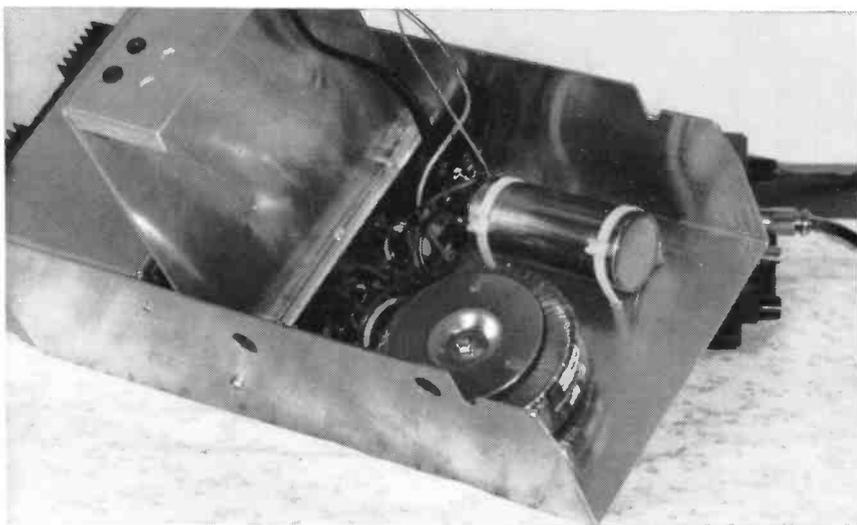
Fig. 6 TEMPLATE FOR PLUG ASSEMBLY (Full size)

The slide-mount connections.



The PA box 'folded back' to show the *Howes* PA and Switch in position.

Showing the power supply components; the capacitor is fixed with cable ties.



screws. Then two screws into the ends of the rod, through the two small holes on the sides of the U-section, act as the hinges. Two self-tapping screws could be put through the sides of the front panel to hold it down, but I have not done that in my unit as it is not really necessary as the weight of the FT-290R holds it in position.

Now for the accurate marking and drilling of the plate to take the various plugs which fit into the rear sockets of the FT-290R. The template in Fig. 6 should be accurately traced and using gum stuck to a piece of thick (preferably about 1/8-inch) glass-fibre PCB. Using small drills first, then slowly increasing the drill size, drill the holes until the various plugs will fit with just clearance. Place the plugs into the rear of the FT-290R, and offer the piece of PCB to them to ensure that it will slide over the threads; if it does not carefully open the side of the offending hole until it does. Now comes the time that real care is needed as we have to stick the plugs to the PCB in the correct positions, using the FT-290R to hold them into position. To reduce the possibility of having a mishap and sticking the whole assembly to the FT-290R I carefully smeared the rear drop of the set with lanolin (wool fat, makes your hands as soft as a baby's bottom!). Not too much that it gets all over the place but enough to ensure that the *Araldite Rapide* cannot get a hold to the set. Mix up a small amount of *Araldite Rapide* and apply a smear on to the plugs where they pass through the PCB; next, carefully insert them into the PCB and then plug the assembly into the back of the FT-290R. Leave the arrangement for an hour in a warm place for the adhesive to set.

Remove the assembly from the set with care — you have only used a little *Araldite* to temporarily fix the plugs. Now

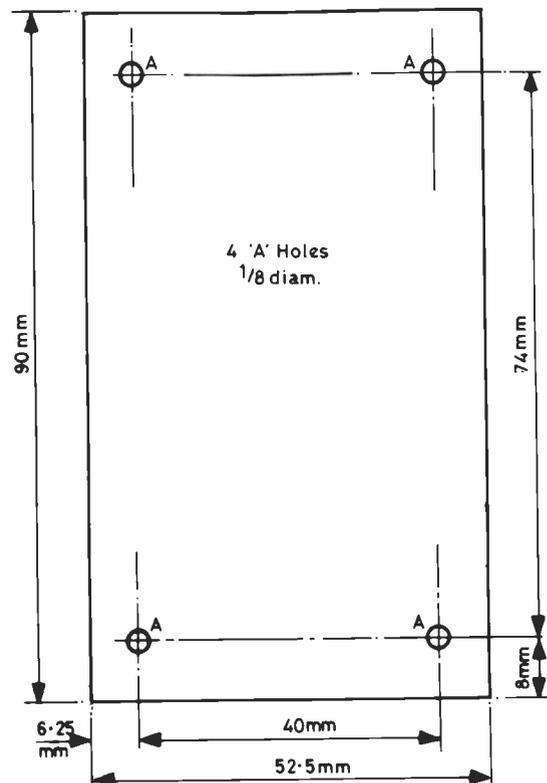


Fig. 6 DRILLING TEMPLATE FOR HOWES C.O.1 (Full size)

E
473

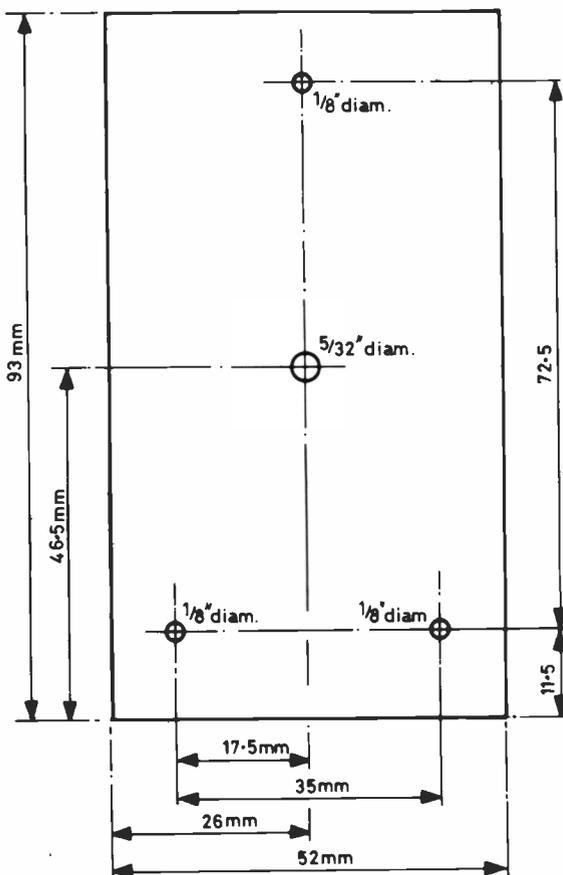


Fig. 7 DRILLING TEMPLATE FOR HOWES PA (Full size)

E
472

mix up more *Araldite Rapide* and apply to the rear of the PCB around the plugs to reinforce the fixing and put aside to set. Clean up the FT-290R using a piece of rag. By the way, I find lanolin very useful outside on aerials. Nuts that have been covered with it are still covered a year later and undo with ease!

Fine Tuning

This part of the modification is far from necessary, but it does make it very easy to tune in SSB stations correctly. It is a simple modification and consists of one variable resistor and one fixed resistor. It is necessary to remove the existing wire from the 'Standby' socket on the left hand side of the set and replace it with a new wire from this socket to Pin 10 of J5002. This pin is the output of the digital-to-analog converter of the processor to the crystal oscillator on the main PCB, and by slightly altering this voltage it is possible to tune between the 100 Hz steps.

Conclusion

The set has seen a considerable increase in use since this base unit was constructed and the amplifier has enabled me to work mobile stations in the deep valleys in the Dover area, but the most unexpected advantage has been the charger! The reason for this is that I have got into the habit of discharging the batteries properly and recharging them overnight: this has produced a considerable increase in their capacity and no doubt extended their lifespan.

My poor beat-up FT-290R delivers just under 2W according to my Daiwa CN620A power meter, this into the *Howes* amplifier gives an output of just over 16 watts, a very worthwhile advantage indeed. Audio quality reports on SSB with amplifier on and off are little or no change, proving the amplifier to be very clean indeed.

VHF BANDS

NORMAN FITCH, G3FPK

ALTHOUGH there was a good north-south tropo. lift on February 4/5, the period was unremarkable. Nevertheless, the postbag was fat with a number of new contributors too, so down to business.

Awards News

Two more readers have joined the 144 MHz QTH Squares Century Club so first, congratulations to Byron Fletcher, G6HCV, from Codshall, Staffs., who is member number 45. His award was issued on Feb. 13 for exactly 100 squares confirmed, all on SSB mode. The breakdown was 83 on tropo., 10 via *Es*, 6 via *Ar* and one on MS. His station is the same as described in the March 1984 issue.

Member no. 47 is Walter Steinwender, OE6IWG, from Kapfenberg (HH47j) in Austria. Two of his 100 squares were worked on CW, the rest on SSB. The modes breakdown is most interesting: 41 on tropo., 7 via *Ar*, 15 on MS, no less than 36 via *Es* and one with EA6IF (CA) via FAI — Field Aligned Irregularity for the uninitiated. Walter's QTH is 510m. *a.s.l.* and he has been licensed since Dec. 1978. On 2m he runs 400w with two 16-ele. *Yagis* at 30m. and S3030 masthead preamplifier. He also operates on 70cm. with an 8874 PA for future *E-M-E* work, the antennas being four 35-ele. home made *Yagis* and MGF1402 masthead preamp.

John Hunter, G3IMV, holder of QTHCC award no. 3, has won his "350" sticker which was dated Feb. 6, a quite outstanding achievement considering his QTH is not exceptional, he only uses a single *Yagi* and does not run illegal kilowatts. Obviously all the "easy" squares within normal tropo. range have been worked, if not all confirmed, so it is no surprise that 14 of the new 25 confirmations were for MS QSOs. The rest were 5 on tropo., 4 via *Es* and one via *Ar*.

Erik Cechota, OE3CEW, (II52f) is now up to 202 confirmed, his "200" sticker being dated Feb. 19. Of the 26 new confirmations, 17 were CW and 9 SSB. Only three were on tropo., four via

Es, 18 on MS and one with SM2GGF was *E-M-E*. Erik's membership no. is 22. He queried whether squares outside Europe via *E-M-E* can be counted, the answer to which is "Yes". Just identify them by their Maidenhead codes.

Kevin Piper, G8TGM, (ZK17f), member no. 28, now has 150 confirmed, the sticker being dated March 1. His 21 new confirmations comprised 7 tropo., 11 via *Es* and three on MS. A nice *Es* one was from Africa, IOSNY/EA9 (XV) who Kevin worked on 7-7-83.

The *G QRP Club* has extended its CW Novice Award to Class B licensees who hold a letter of variation to their licence. To qualify, applicants must contact 50 other amateurs on CW in the first twelve months. No QSLs required, just a list from the log checked by another licensed amateur. The Class A version is for output power not exceeding 3w, while the Class B award has no power limitation. Applications require 50p in stamps and should go to G8PG, 37 Pickerill Rd., Greasby, Merseyside L49 3ND.

Interference

The saga of the *British Telecoms' Ambassador* telephone QRM in the 2m. band has reached an important stage. The generation of this QRM has been pin-pointed as due to switching transistors which turn on status LEDs becoming potent oscillators when *not* switching. A few tens of milliwatts have been measured. The cure is quite simple and *BT* has already incorporated the "mod" in current production runs of the problem model.

It seems that tens of thousands of these systems are in use, all of which could misbehave. Ideally they all ought to be recalled and modified as happens with motor cars when certain models are found to be suspect. This would be a lengthy task. It is understood that *BT* will deal with errant *Ambassadors* that interfere with radio amateurs where the locations of the instrument is known. At the time of editing, the exact method of initiating this has not been finalised so readers should listen to *GB2RS* news broadcasts for guidance.

The successful outcome of this problem is largely due to the efforts of the *RSGB* which prepared a report, based on several cases from members, which was sent to *BT* and the *D.T.I.* It may well have set an important precedent concerning interference from digital communications and domestic devices behaving as illegal radio transmitters. The moral is that we should not just accept this kind of interference as something we have to put up with. It unusual noises are heard of local origin, they should be tracked down and all relevant information sent to the *RSGB*.

If tracking poses a problem there are probably DF and Fox Hunt enthusiasts in local clubs who might be glad to help trace illegal transmissions.

On a positive note, the severe QRM Jim Rabbits, G8LFB, was reported as suffering in the February issue ceased on Feb. 18 and had not reappeared up to Mar. 10, so presumably the defective instrument has either been replaced or repaired.

Repeater Note

The new Isle of Man relay GB3GD has been causing severe co-channel QRM to the Stoke-on-Trent repeater GB3VT 140 miles away. A press release from the *RSGB Repeater Management Group* states that: "The interference was the direct result of the *I.O.M. Repeater Group* erecting an aerial — a 3dB 'white stick' colinear — totally unsuited to the job of covering a small island from a site 2,000ft. *a.s.l.*" As a temporary measure, until a more suitable antenna is installed, the GB3GD Tx has been reduced in power.

The *RMG* letter lists four areas where the *I.O.M.R.G.* departed from antenna matters previously agreed and specified on the Site Clearance Form. The *RMG* is continuing to advise the Group on more suitable antennas to give better island coverage, rather than "DX potential" for working EI, GI, GM and GW stations as well as Gs.

"VHF Bands" deadlines for the next three months:

May issue—April 3rd
June issue—May 8th
July issue—June 5th

Please be sure to note these dates

DX-Peditions

Dubus Informationen readers may have noted a proposed Andorran VHF DX-Pedition in March/April by G6JNS. However, Peter Crosland has confirmed this is now off but that it might take place in September instead. David Jones, G4RVJ, writes that the *Exmoor Radio Club* is going to Lundy Island (I071PE) from June 8 to 15.

Activity promised for 2m., 4m., 70cms. and 23cms. hopefully with GB2LI or GB4LI. The WAB square is SS14 and they will be on 40m. and 80m. for this purpose. An *s.a.e.* to G4RVJ at 6 Priory Close, Pilton, Barnstaple, Devon EX31 1QX will bring further details.

Clive O'Hennessey, GW4VVX, writes

he has acquired two 13-ele. *Tonna Yagis* for his proposed holiday/radio trip to XS square from July 14 to 28. He would like to "beg or borrow" a big amplifier to make the most of the good site, which should be much better than the 1984 one. His QTH is 3 Bryn Lane, Bryn Estate, Pontllanfraith, Blackwood, Gwent NP2 2PG, should anyone feel magnanimous.

Roger Banks, G4WND, (Warks.) having seen his call mentioned in the 4m. section, has written to advise that he is planning an expedition to northern England in May. Operation will only be on 4m. and he hopes to activate Northumberland, Tyne and Wear, Durham and Cleveland counties over a long weekend period. More precise details later.

Richard Hope, GW8TVX, writes on behalf of *The Square Bashers Expedition Group* to advise of a *Perseids* assault on XJ square in August. Operation on 2m., 70cm., 23cm., 13cm. and 4m. and perhaps some other microwave bands. The group has mounted very successful forays to XM, XN and XQ squares, the operators being GW3NYY, GW4LXO, G8TFI and GW8TVX. More information later in the summer.

Contests

From *GB2RS*, news that the 1984 432 MHz *Cumulative* Contest was won by GW8TFI/P with 3,848 pts. from sessions 1, 3 and 5. GW6SNO/P with 3,529 pts. from sessions 2, 3 and 5 was a close runner up. G4NVA/P was third with 1,584 pts. from sessions 2, 4 and 5. The 70 MHz CW event last December was won by GW4MGR/P with 250 pts. from 38 contacts. G4MHC was second (236/46) and G3UKV third (233/41).

A reminder about the *Barking Club's* 144 MHz Contest from 1300-1700 GMT and the 432 MHz CW event in the identical period on March 31; see p. 11 in the previous issue. The *B.A.R.T.G's* Spring VHF/UHF RTTY Contest is on from 1800 on Apr. 13 to 1200 on the 14th, GMT times. A declared four hour rest period must be taken. Bands are 144, 432 and 1,296 MHz but no satellite or repeater QSOs. Normal radial ring scoring on 144 and 432 MHz, but one point *per* kilometre on 1,296 MHz. For full details, send an *s.a.e.* to G6LZB at 464 Whippendell Rd., Watford WD1 7PT.

The 70 MHz Fixed and SWL Contest is on Apr. 21, 0900-1500 GMT being a Fixed and All-other affair. Usual exchanges using Maidenhead locators, plus the old 15 kilometres east of Llanfihangel Glyn-Myfyr bit. The first leg of this year's *Microwave Cumulatives* is on Apr. 24, from 0900 to 2000 GMT on 10 GHz and 24 GHz. The

other dates are May 12, June 16, July 14, Aug. 11 and Sept. 15.

QTH LOCATOR SQUARES TABLE

Station	23cm.	70cm.	2m.	Total
G3JXN	72	110	172	354
G4NQC	61	90	211	362
G3XDY	59	109	159	327
G8TFI	51	109	126	286
G8PNN	50	83	126	259
G4MAW	43	105	52	200
G3COJ	42	97	170	309
G4FRE	42	112	68	222
GJ4ICD	41	116	238	395
G3PBV	41	106	189	336
G8FUO	39	105	88	232
G8FMK	36	70	80	186
G3UVR	35	92	202	329
G8ULU	35	90	125	250
G4ZTR	35	57	82	174
GW4LXO	29	69	213	311
G4STO	29	48	113	190
G6DER	27	72	142	241
GJ8SBT	26	47	182	255
GW4TTU	25	73	215	313
G4ROA	25	61	65	151
G8ATK	23	82	129	234
G8KBQ	22	96	188	306
G4MCU	22	82	200	304
G8HHI	22	77	135	234
G6MGL	19	54	127	200
GJ8KNV	18	79	201	298
G4RGK	16	62	158	236
G6CSY	15	25	34	74
GD2HDZ	13	50	91	154
G6YLO	13	22	59	94
GM8BDX	13	29	41	83
GW3CBY	10	35	105	150
G3BW	9	38	250	297
G8WPL	9	70	105	184
G1EFZ	9	49	133	181
G4NRG	5	40	119	164
EA3LL	3	32	300	335
GM8MJV	3	26	101	130
G6DDK	3	15	131	149
G8VR	2	24	246	272
G4HMF	2	35	152	189
G4RSN	2	23	88	113
GW8UCQ	1	70	120	191
G6JNS	1	48	117	166
G8ROU	1	43	86	130
G6XVV	1	30	46	77
G3IMV	—	100	371	471
G3POI	—	—	429	429
G4IJE	—	—	326	326
G4DCV	—	64	219	283
G8GXP	—	—	280	280
G4ERG	—	16	261	277
GW3NYY	—	48	219	267
G4KUX	—	36	232	268
G4TIF	—	90	167	257
G4DHF	—	—	245	245
G8XVJ	—	73	169	242
G4DEZ	—	—	242	242
G4OAE	—	46	190	236
G4BWG	—	68	160	228
GW4EAI	—	—	218	218
G3FFK	—	—	207	207
GM4CXP	—	27	175	202
GM4PK	—	—	201	201
G6HKM	—	68	127	195
G4HFO	—	69	118	187
G4MUT	—	74	112	186
G6ECM	—	—	185	185
G3BDQ	—	—	177	177
G8LFB	—	—	177	177
G6HKS	—	6	169	175
G8TGM	—	—	175	175
G6DZH	—	61	111	172
G4MEJ	—	—	160	160
G4FRX	—	66	92	158
G4TJX	—	59	97	156
G4MJC	—	12	140	152
GM8YPI	—	41	109	152
G4SFY	—	—	149	149
G4IGO	—	—	148	148
G8ZDS	—	31	104	135
G4DOL	—	—	131	131
G4UYZ	—	—	125	125
GW8VHI	—	41	82	123
G6XLL	—	32	91	123
G4GLH	—	6	112	118
G4CQM	—	49	67	116
G6HCY	—	—	109	109
G8VFX	—	—	108	108
G4XEK	—	—	105	105
G8RWG	—	—	103	103
G6AJE	—	20	82	102
G6NWF	—	—	86	86
G8XTJ	—	—	83	83
G6YIN	—	11	71	82
G4UYL	—	—	81	81
G4LZD	—	—	71	71
G6XSU	—	50	19	69
G4WHZ	—	8	49	57
GW6OFI	—	—	48	48
G6SIS	—	—	30	30
G2DHW	—	3	25	28

Starting date January 1, 1975. No satellite or repeater QSOs.
Band of the Month. 23cm.

Satellites

Very little news of the satellite scene this month from readers, in fact, none at all. However, the *UoSAT Bulletins* continue to arrive from the *University of Surrey* from which we learn that, following the re-loading of the On Board Computer software, U-O-11 activities have concentrated on further evaluation of the Particle/Wave, CCD Camera and Data Store and Readout experiments. This satellite has a number of high speed data formats available on 145.825, 435.025 and 2,401.5 MHz up to 9,600 *b.p.s.* on the two higher downlinks. *Bulletin no. 114*, dated Feb. 22, gave details of the data format for the DSR tests.

From details in these *Bulletins*, it is obvious that *U-O-9* and *U-O-11* are sophisticated research satellites. What has never been clear to your scribe is do any VHF Band readers actually use them for anything, or if not, do they know anyone who does? Your comments please.

Six Metres

Dave Sellars, G3PBV, (Devon) has finished off his hurriedly made beam and GB3NHQ is now heard more regularly. The transceiver is a *Trio TS-660* at 10w and 25 stations of the other 99 have been worked. Dave remarks on the very low activity in the late evenings. The more distant stations contacted include G4FXW, G3FDW, G3UUT, G4GLT, G3NOX, G3LTF, G4CUT, while G3OSS has now been worked on all bands from 6m. to 23cm.

Dave Lewis, GW4HBK, (Gwent) now runs crossband skeds at 0715 each morning, except Sunday, with G4CG on 4m. Signal strengths over the obstructed path vary from S9 to nil. Dave is going to try a 3-ele. *Quad* using wire, soon. At G3FFK, the band was tuned for a few periods and 18 different stations were heard, most all in the morning period. Your scribe's conclusion is that as a tropo. band it is poor but that for MS, provided there are others to work at the right distances, it is very good. If any midnight *Auroras* occur, propagation should be good.

Four Metres

All band reports were from G4s this time starting with Tim Raven, G4ARI, (Leics.) who lists the 16 counties he worked on Feb. 24 in the third leg of the *Cumulatives*. Kev Archer, G4CMZ, (Derby) is still soldiering on with his 600 milliwatts and HB9CV antenna with 33 confirmed of 40 counties worked. This has earned him the *RSGB's Standard*

Award, the first to be achieved with less than one watt.

Jerry Russell, G4SEU, (Warks.) found conditions good to the south on Feb. 24. He has already notched up 31 counties up to the end of February. G3ZNU in Suffolk and G4WND/P in Northamptonshire were recent all-time new ones. Martyn Jones, G4TIF, (Warks.) also worked G4WND/P when Roger was in Northants. on Jan. 31. Roger Banks, G4WND, lives five miles from G4SEU and uses an *Icom IC-202S* driving, "... the inevitable *Microwave Modules* transverter ..." the antenna being a 7-ele. *ZL-Special* at 25ft., the same as 'SEU uses. He is only QRV on 4m.

GW4HBK reports mainly local QSOs apart from G4DQA (Kent) at 2018 on Feb. 25. Dave reports deep QSB in the Feb. 10 *Cumulatives* with lots of noise and only six QSOs completed. Lift conditions on the 24th resulted in 14 QSOs and a new all-time county, Warks., thanks to G4LRT in Rugby.

Two Metres

Starting with new contributors, a warm welcome to Ela Martyr, G6HKM, (Essex) whose first callsign was ZL0TAC in April, 1982. When she returned from holiday in New Zealand, her present call was awaiting her. The station comprises a *Trio TR-9130* and 17-ele. *Tonna Yagi*, shared with husband Roy, C3PMX. Ela enters our tables with respectable scores. Next is Bob Nixon, G1KDF, (Lancs.) who contributed to our S.W.L. feature in the early 1960s but then gave up the hobby to pursue family life and career. He was first licenced in Sept. 1984 and enters the Annual Table with a good score. His gear is also a *Trio TR-9130* with a 160w *BNOS* amplifier and 9-ele. *Tonna Yagi* at 30ft. In the contest on Mar. 2/3, Bob made 50 contacts including F, GJ and ON.

After a gap of many years, Colin Smith, G3GHY, (Hants.) has subscribed to the *Magazine* again. Apart from local FM nets, his 2m. operation is exclusively on CW, hence the entry in the Annual Ladder. Jack Charnock, G4WXX, from

ANNUAL VHF/UHF TABLE

January to December 1985

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		23 CENTIMETRES		TOTAL Points
	Counties	Countries	Counties	Countries	Counties	Countries	Counties	Countries	
G4TIF	6	1	48	6	32	5	—	—	98
G6ZPN	—	—	38	5	36	4	—	—	83
G4SEU	31	2	33	5	9	1	—	—	81
G6XLL	—	—	53	8	17	3	—	—	81
G4YCD	—	—	65	11	—	—	—	—	76
G4WXX	—	—	64	11	—	—	—	—	75
G3FPK	—	—	61	11	—	—	—	—	72
G4ARI	16	1	47	7	—	—	—	—	71
G6MGL	—	—	33	8	18	2	7	3	71
G1KDF	—	—	58	10	—	—	—	—	68
G4MUT	11	1	28	5	16	3	—	—	64
G1EZF	—	—	37	13	9	2	—	—	61
GM4CXP	5	2	34	10	6	2	—	—	59
G6HKM	—	—	23	8	24	3	—	—	58
G4VXE	—	—	29	3	22	2	—	—	56
G6XSU	—	—	23	8	14	3	—	—	48
G8XTJ	—	—	41	6	—	—	—	—	47
G8VFX	—	—	36	5	—	—	—	—	41
G4EZA	—	—	35	5	—	—	—	—	40
GW6OFI	—	—	33	6	—	—	—	—	39
GW6VZW	—	—	34	5	—	—	—	—	39
G4WHZ	—	—	26	3	3	1	—	—	33
GW4VXX	—	—	21	2	—	—	—	—	23
G4WND	20	2	—	—	—	—	—	—	22
GW4HBK	19	2	—	—	—	—	—	—	21
G4YIR	—	—	17	3	—	—	—	—	20
G4CMZ	13	2	—	—	—	—	—	—	15
G6CSY	—	—	5	1	5	1	—	—	12
G6SIS	—	—	4	2	—	—	—	—	6
GW4TTU	—	—	—	—	—	—	2	3	5

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

near Wigan uses a *Yaesu FT-290R* and *Alinco* 30w amplifier. His antenna is now a 14-ele. *MET Yagi* at 50ft. *a.g.l.*, the QTH being 90ft *a.s.l.* He enters the Annual Table, "... as there does not seem to be many from the North in it."

Bob Ainge, G4XEK, (Staffs.) has been a radio amateur for 39 years with a variety of callsigns; W5MJQ, VE7ACN, K2GMO, G5CIQ, G5BEX, F0BLB and DL4OZ. He used to contribute to our HF bands feature way back when the late G6QB edited it. He is enjoying VHF operation in Britain and has 105 squares in our table. Norma Willicombe, G6SIS, is another new lady contributor from Essex who enters the tables, but she did not divulge any station details.

Ian Morgan, GW6OFI, (Gwent) uses a *Yaesu FT-290R* with a *muTek* preamplifier. His antennas are two, bayed 10-ele. *Yagis* at 20ft., the QTH being 900ft. *a.s.l.* He has borrowed a 30w amplifier from GW6OK1 and, in the *Ar* on Jan. 28, which was his first, he worked G18YDZ (WP), two GMs in XP and one in YP. On Feb. 4 he managed F6KCM (BG). Another first report from Paul Baker, GW6VZW, (Gwent) who has been a reader since the mid-1960s in his *s.w.l.* days. His 7½ years old son Stephen regularly reports to our Justin Cooper's column. Paul commenced operation in mid-November last year and got off to a good start in the December lift. Another *TR-9130* user, his antenna is a 4-ele. *Quad* in the attic, hand rotated. Local mountainous terrain makes some directions impossible but QSOs are possible by bouncing signals off the mountains.

Paul stresses he would appreciate listener reports. He asks if anyone has DJ0XR's address.

And now to the regular correspondents starting with John Hunter, G3IMV, (Bucks.) now with 371 squares worked. He has an MS sked with the group going to Foula Is. in YU square in April. They plan operation from ZT and ZU in The Shetland Islands too. (N.B. Shetlands are counted as another country for our tables). The calls will be GM4AFF and GM4RQI and they will be there between Apr. 10 and 19, principally for MS operation. In the Feb. 24 tropo. opening, G3PBV reports only very strong "local" signals with no real DX. Conditions from Devon faded rapidly in the afternoon.

Tim Charles, G4EZA, (Essex) took part in the CW contest on Feb. 3 and concluded that conditions were incredibly flat as his analysis showed an average of 5.3 points per contact. G4SEU was busy with decorating so AR activity took a back seat. A QSO with GM6WIX/P on Jan. 28 gave Jerry his first ever *Auroral* report. Ray Baker, G4SFY, (Norfolk) found conditions "... pretty dismal again ..." for the most part, and describes the contest as "chronic." His best DX was G3TIR in Devon and his 73 QSOs were worth 663 pts. On Feb. 24 tropo. was good to the "D" row of squares. F6ITU (BI) with 3w and DK1KO (FN) were worked. The next day, the FM end was full of DX-ey stuff and repeater DB0UO on R3 was S9-plus 20dB at 1500. But neither beacons DL0PR nor Y41B were audible. Ray is now on *RTTY* using a

Station	ANNUAL CW LADDER			
	4m.	2m.	70cm.	µWave
G4SFY	—	168	—	—
G4WHZ	—	141	3	—
G4ARI	7	118	—	—
G4VXE	—	108	4	—
G4WGY	—	73	—	—
G4EZA	—	69	—	—
G3GHY	—	56	—	—
GW4VXX	—	48	—	—
G4YIR	—	46	—	—
GM4CXP	3	38	1	—
GW4TTU	—	—	27	3
G4ZTR	—	29	—	—
GW4HBK	12	—	—	—
G4CMZ	6	—	—	—

No. of different stations worked since Jan., 1.

Commodore 64 computer and GW3RRI's software. He will be on CW MS by now, too.

G4TIF added 36 counties and two more countries in the month. Martyn's best DX included G14BXB (Down), G8KPL (Cumbria) and GW20P (Dyfed). Tim Kirby, G4VXE, (Gloucs.) mentions GMs 3ZBE (YR), 4OGI (YP) and 4VYQ (XQ) on Feb. 4 and GM1IHD (YQ) on the 24th. On the Mar. 2/3 weekend he was out portable with G8TFI, G4BVY, G4GFX, G8FUO and G6CQO and, as GW4VY/P made 780 QSOs. Sue Frost, G4WGY, had made 73 CW QSOs with different stations up to Mar. 5 and writes, "... I am afraid I'm a typical lady op. and like a good chat." Well, there is nothing wrong in that; it is refreshing to have an interesting contact discussing several topics, rather than the impersonal contest-type exchanges.

Dave Cater, G4WHZ, (Essex) writes that he has not been able to work any DX due to very bad QRM for home computers. By the way OM, you can count your own country and county in your table scores. Martin Lowe, G4YCD, (Bristol) did well in the Jan. 28 *Ar* working 12 GMs, GI and OZ1IVW (J056). Unfortunately a broken rotator cable meant the beam was stuck at 20° so perhaps other DX was missed. Throughout Feb., he found GB3ANG well above normal in strength.

Graeme Caselton, G6CSY, (Kent) often goes out portable with low power. On Feb. 24 he caught the tropo. lift and worked GJ1KCB, GD8ODB, GW4UKU and G3IZD in Cumbria for best DX from AL51j. He reports that most stations knew their WAB squares, and the morning's tally was 20 counties, 4 countries and 11 squares using a *Yaesu* FT-225RD and 9-ele. *Tonna Yagi* at 3m. *a.g.l.* Philip Ruder, G6MGL, (London) lists his best DX in the Mar. 2/3 contest as GM4HAA/P (I085), G5ECD/P (I084) and G1ELC/P (I084).

Roy Gibbons, G6XSU, (Herts.) bought a secondhand *Icom* IC-202 as a prime mover for 23cm. but has been using it on 2m. Using a 25w amplifier and 4-ele. *Yagi*, he managed GM4HAA/P and G14VIP/P in the contest for new countries. He also got sundry PA and ON stations and DF00K in JO30. G8TGM now has *RTTY* receive capability and expects to be transmitting it by Easter. Kevin has received his Morse variation which does not allow CW MS, by the way. Neil Clarke, G8VFV, (W. Yorks.) mentions openings to PA/ON on Feb. 5 and 24 as far east as the JO3 squares. In the Mar. 2/3 contest he found the conditions fair on Saturday, but poor on Sunday.

John Fitzgerald, G8XTJ, (Bucks.) was one of several who worked Graham Knight, GM8FFX in Aberdeen during

the Feb. 4 lift and who is his furthest north U.K. station so far. His local *Ambassador* telephone QRM has been reduced from S9-plus 40dB to S2 following BT attention. Clive O'Hennessy, GW4VVX, (Gwent) had made 48 QSOs on CW with different stations up to Mar. 1, only six less than he managed in the whole of 1984 from his, "... hole in the hills." He only put in 2½ hours in the CW contest on Feb. 3 and remarks on the poor sending by some operators who seemed either incapable of, or unwilling to, reduce speed when asked.

John Eden, GM6LXN, (Caithness) sent a most interesting account of the Jan. 28 *Ar*. At first, beacons GB3VHF and Y41B were *Auroral* all the way from 270° through north to 80° and mostly at S8 throughout. Other beacons copied were OH8VHF (MZ79h), DLOUB (GM47b), LA1VHF (ET13c), LA3VHF (DS77j), DL0PR (EO54c) the most consistent throughout the event, SK7VHF (GP38c) and GB3LER (ZU65f) which was a 50/50 mix of tropo. and *Ar*. Due to the large number of different reflecting regions, SSB signals were very garbled impairing readability. By 1700, the band was so full that John had to go to 144. 155 MHz to find a clear frequency.

GM6LXN reports an *Ar* on Feb. 27 between 2300 and 2350 with five stations worked — 3 GMs and 2 Gs. For the first half hour, GB3VHF was *Ar* only at 290° azimuth, but no other beacons were audible in the westerly side of the north. Another event occurred on Mar. 2 between 1630 and 1715 with many stations heard calling "CQ Contest," but obviously unaware of the *Ar*.

Nick Peckett, G4KUX, (Durham) mentioned an *Ar* on Feb. 17 from 1500–1900 at QTE 0° so obviously too far north for stations further south to hear. Ray James, GM4CXM, (Strathclyde) reported another *Ar* on Mar. 5 ending at 1900 and in a second phase around 0100 the following morning, Jim Rabbitts, G8LFB, (London) had a QSO with GM6LXN.

From G3FPK, conditions in the Mar. 2/3 contest seemed very uninspiring with little real DX. At times, the SSB part seemed thinly populated with persistent "CQ Contest" pleas going unanswered. A number of participants complained to G1KMI/P about their wide signal which was pretty foul in Purley; "Never mind the quality, feel the width!"

Seventy Centimetres

David Whitaker, (N. Yorks.) found it "... quite lively..." on Feb. 4 around the U.K. with GM4MOX (YQ) a new square heard. G8DDY (I.O.W.) was heard for the first time; G3TA and G1EQP (Gloucs.), GM8MBP (YR), GM8BZX (Angus), G6BNE (London)

and G4CQR (E. Sussex) were also logged. G3PBV has put his 23-ele. DL6WU *Yagi* up again but did not think conditions in the Mar. 2/3 contest very good. Dave had just 12 QSOs at 230 kms. average DX. John Neal, G4NQC, (London) now has sixteen 21-ele. *Yagis* aloft and G3IMV heard him working GM4MOX on Feb. 4.

G4TIF lists GJ4ICD worked on Feb. 3, the following day bringing G4CQR, G1HGJ (Tyne & Wear), G8DDY, and GU8FBO as the pick of the DX. Feb. 24 brought G6NMK (Norfolk), while in the Mar. 2/3 contest, Martyn managed GM4HAA/P (D & G) and G4CLA/P (Lincs.). G4VXE worked G1HDJ (ZP) on Feb. 4 and Tim took part in the Fixed contest on the 17th working 45 stations in a couple of hours from Cheltenham, including G8PNN and G1HDJ. In the Mar. 2/3 contest weekend, operating GW8TFI/P, 315 QSOs were completed.

G6HKM uses an *Icom* IC-490E, *BNOS* 50w amplifier and 21-ele. *Tonna Yagi* for this band. Ela has 68 squares worked. G6MGL's best DX in the Mar. 2/3 contest was G4RNL/P (IO93AD) from East London with just 3w. G6XSU's plans to complete his 50w amplifier have been frustrated, Roy's workshop being full of motorcycle parts down to his son. Colin Morris, G6ZPN, (W. Midlands) has an extra 5-ele. *Yagi* at 45ft. fixed south with which he gets coverage from XK square to the Isle of Wight, with GU and GJ worked. He found good conditions around the U.K. on Feb. 3/4, but contest conditions on Mar. 2/3 poor.

Twenty-three Centimetres

Very little microwave news this month. G6MGL worked PA0RDY (JO22) and PE1KNA (JO22) on Feb. 5. On the 23rd. there were more continentals and Philip contacted PE1FRC and PE1FOT in JO21, PE1JBK (JO22) and DD8DA (JO31). Don Hughes, G8WPL, (Gr. Mchstr.) has four 23-ele. *Yagis* for the band but did not mention any activity. He hopes to move QTH this year.

Thirteen Centimetres

Only Gordon Emmerson, G8PNN, (Northumberland) mentions this band on which he has 16 squares, 10 counties and 6 countries. Would other 13cm. operators like to send in their all-time squares, counties and countries so we can introduce the new table?

Sign Off

Thanks for all your interesting letters. The copy deadlines are in the box, so please make a careful note of them. All your news, views, etc. to:—"VHF Bands," SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts., AL6 9EQ. 73 de G3FPK.

Parcel Radio

Amateur Radio once again at the forefront of technology. Described here, from an exclusive translation, by

GLEN ROSS, G8MWR

Introduction

PARCEL radio is taken from the initial letters of "Perfect Amateur Radio Communication (by) Electronic Logic". There has been tremendous interest in "Packet Radio" during the last few months, developments have been very rapid and we are pleased to be able to describe the latest of these. The article has been translated from a relatively unknown South American journal, "Revista de la Sociedad de los Aficionados de Radio Emisoras (Numero 58) Y De Burrologia Del Pueblo de Santa Euforia del Gran Puerco". The original author was Jose B Marvella. Some of the terms used do not translate readily into English but in all cases the sense of the original has been maintained. Some of the concepts introduced are breaking new ground and provide a fresh and fundamental reappraisal of transmission technology.

Review

All radio transmission systems are subject to corruption due to interference of various types. Many ways have been found to reduce this problem, ranging from the simple noise limiter of AM radio to the more sophisticated noise blankers used with SSB. Since the introduction of computers it became obvious that they could be used to receive and control, by interrogation techniques, the information received from a distant transmitter. This has been implemented in systems of

the Amtor and Packet radio types. This only goes part way to overcoming the problem and also involves a time penalty as much of the information has to be transmitted several times before it is correctly received. A complete reappraisal of current techniques was undertaken and it became apparent that the transmission of information was based on some very suspect thinking. This seems to be due to a continuation of the methods of the early pioneers with updates based on modern technology. What has become increasingly apparent is that these ideas, while workable, are not the best available.

The Problem

As was previously stated the problem is that of corruption due to interference, but this is only due to our use of "carrier on" type transmission to carry the information. Take the case of Morse code, varying lengths of carrier (dots and dashes) are used to convey the information but these are easily corrupted by excessive noise. If we reconsider this case it must be obvious that we could also use the spaces, rather than the marks, to carry the information, *i.e.* a long gap equalling a dash and so on. We now arrive at the basis of the new system: if the information is passed when there is *no* carrier present then it cannot be corrupted! This concept is very simple and yet it opens the door to tremendous strides in communication techniques.

Advantages

Apart from the obvious one of no corruption the system offers several other great advantages. The system can be looked upon as a "negative power" arrangement, therefore there is no heat generated in the transmitter and low power transistors may be used to generate full legal power. The aerial systems required are very modest and can easily be installed in lofts or small gardens, and there will be no SWR problems to worry about. Other advantages are that receiver noise figure and overload performance are no longer of any consequence and a simple AGC system will give a completely constant output regardless of the input signal voltage. The usual filters to limit bandwidth are still required, but recent research into equilateral linearity techniques may soon make these redundant.

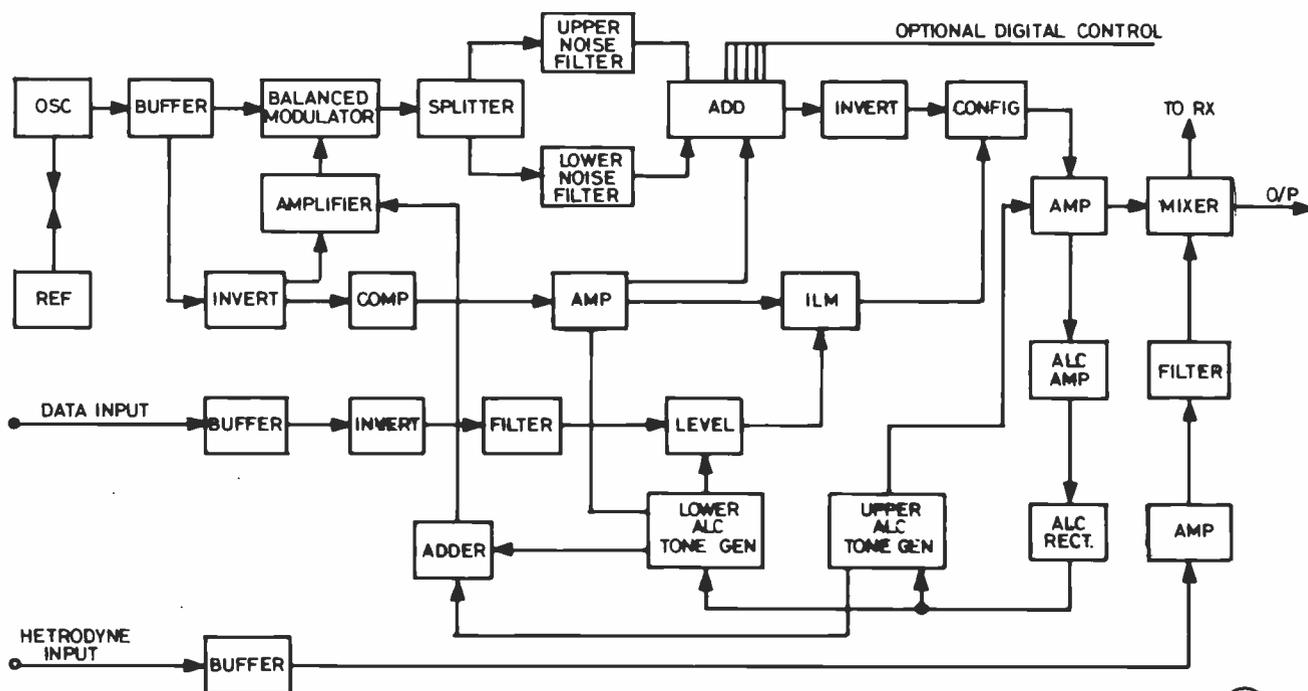


Fig.1 BLOCK DIAGRAM OF TRANSMITTER

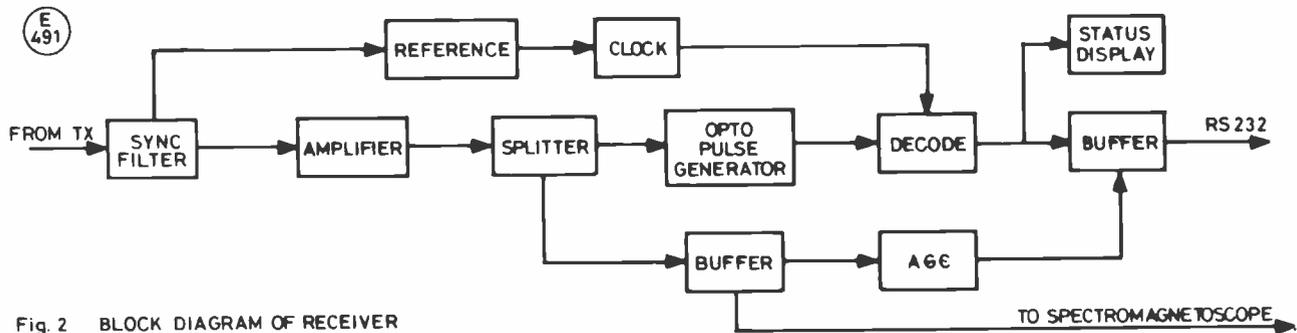


Fig. 2 BLOCK DIAGRAM OF RECEIVER

System Design

The system will be described, and some of the more radical features identified, by reference to the block diagram in Fig. 1. One of the major problems to be overcome in the new system is the reduction of noise sidebands. This is absolutely crucial to the success of the system. Many oscillators were investigated and it was found that push-pull FETs operating in the Dorian mode gave a major improvement; further minor enhancements were obtained by flattening the third order node by filtering. The oscillator is then buffered and the output is split to feed a balanced modulator, using the circuit developed by Scales, and an inverter stage. After phase reversal this signal is amplified and fed to the other input of the balanced mixer. By the use of inverse vectoring techniques this produces a near-perfect carrier at the required level of -100dB.

Filtering

There is still some unwanted noise on the carrier and this is removed by a most unusual filtering technique. The complete block is manufactured using LSI techniques so as to maintain the very accurate phase magnitude and linearity that is required. The signal is split and the upper and lower noise sidebands are separately filtered using seventh order Biddulph filters with elliptically enhanced ultimate bandwidth control. The two outputs are combined in a Teskolator unit with optional digital control. This is followed by a simple inverter to reinstate correct phase angle for the following summation unit, which is based on a design by Gross with additional facilities developed by Atkins. A separate output is taken from the adder and after amplification is used to control the Barnes and Hill compressor in the inverted carrier chain. This is required so that the level of the path is maintained within very close limits.

Information Encoding

This is an appropriate time to look at what, in a normal system, would be called the modulation circuits. The main difference between this and other systems is that all types of modulation are first converted to a digital format before transmission. Obviously data and RTTY can be sent in the normal environment. SSTV is fairly readily converted to digital form, as is done by various photographic satellites, and speech can be treated in the same form as digital discs. It is simply a matter of sampling at a high enough rate to maintain natural sounding speech. Whatever system is used must provide a data output at normal TTL levels which is then tied to a clamping system to ensure a minimum of data corruption. It is no good using a transmission system which is corruption free if the data is "bad" to start with.

Modulation Enhancement

The data is bit-length encoded and then applied to the data buffer which is a simple 741 in a zero gain, virtual earth configuration. The signal then passes to a Hackenkauff phase shifter where it is converted to the inverted zero power

condition which is required. The unavoidable harmonics which are produced (mainly those due to the spin rotation of the inverse vectorials) are then filtered in a fully bidirectionally-balanced Margeworth six-section filter, with full interdigital control of the retrogressive degeneration characteristics; this uses a variation of a method described by Heintze, and is one of several that were tested. The modulation, now at the correct inversion, phase and level, is then checked against the parameters of the conditioned pilot carrier and only when the modulation index matches that of the carrier are they passed to the Index Linked Modulator, all others being rejected.

The negated power carrier now contains both the pilot carrier information and also the encoded modulation. By use of the spiral scales of a modified Jones chart it is possible to show that this is the ideal condition for error-free information handling and interchange. It is *not* possible to demonstrate this on the more usual Smith chart as there is no allowance on this for the combined effect of the modular phase spin acceleration when coupled to the velocity gradient of the Heintze retro-generator and the enhancement capability of the Barnes and Hill compression system.

Carrier Configuration

It is not possible to apply modulation by any of the normal methods and a completely new concept is now introduced, namely "Carrier Configuration". This is essentially a method whereby the pilot carrier/information combination is used to modify the basic characteristics of the primary carrier. It is obvious that if the spin index of the information is added to the vectorial rotation of the pilot carrier (after allowance for the reverse gradient which is implied) then the resultant can be used to modify the Barkhndt characteristic of the primary carrier, after the removal of the inverse harmonic content. This simple conception then allows the addition of the well known integration of first order Hertzian power curves with the index corrected content of the information. This is a major advance in technology and yet is such a simple concept in its basic engineering requirements.

Power Control

The composite signal is now in a useable form but must be amplified to a suitable level. This is done in the following stage which has a gain of exactly -102.35dB so reducing the previous level to a point where all external noise additions will have little noticeable effect. The theoretical level to obtain 100% noise immunity is, in fact, -117.367245dB but the problems in achieving this level are enormous and it is felt that the more readily obtained 99.925674% immunity is acceptable. An output is taken from this amplifier to the Automatic Level Control system. This is required to ensure that there is no change in the level of the pilot carrier chain which would affect the performance of the configuration circuit. There is nothing unusual in this circuit except for the provision of a Rampaltube to provide the very tightly controlled tuning of the ALC tone generators. A normal ALC voltage would not be

accepted by the ILM circuitry so a system of variable tone frequencies is used. The combined tone and level characteristics providing the control of power by use of negative Furrier analogue control, this being one of the few parts of the circuit which does not depend on digitally derived or enhanced techniques.

Frequency Agility

We now have a signal of the correct characteristics but on a single frequency. This may be shifted to any point in the spectrum by the use of mixing techniques as in normal SSB operation. The only critical factors are to maintain the phase, noise and power levels. Several circuits are available to achieve this and the writer uses a system due to Dobplenganga. This relies heavily on the tight control of the parameters by the use of the reverse hyperbolic transfer action originally defined by Krautz but with the addition of full asymmetric coincident phase transfer. Additional amplification is not normally required as all the facilities are now complete, but if it is thought desirable then the amplifier used should be a bidirectional type so as to maintain the present advantage of needing no Tx/Rx switching.

The Receiver

This is a very simple unit due to the fact that most of the advantage is gained during transmission. Refer to Fig. 2 for a block diagram.

Original frequency manipulation is performed in the final transmit mixer and the signal is then taken to a sync-filter. This uses two Borg cylindrical units in the tandem circuit developed by Pettengell, and is protected from transient shock by Poore buffers at both terminals. The signal output is taken to the low gain amplifier stage. Here the emphasis is on very low noise operation and advantage is taken of the noise cancelling feedback circuit recently developed by the Muew-Tech Corporation. The following splitter circuit is optional and is only required if it is intended to monitor solar activity. This is achieved using a spectromagnetoscope based on a design by Coatfield, but is outside the scope of the present article.

Decoding

Complete noise immunity is now produced by regenerating the original signal from a clean DC voltage. This is achieved by using an optocoupler, the very fast rise times involved being taken care of by the use of a light-emitting GaAsFet instead of the more usual LED. The pulses are then passed to the decoder. This is driven from a clock which obtains its reference from the Worthington Standard, with phase adjustment provided by an input from the Dynapole sync-filter unit. After buffering the RS232 signal is available for external use. Another optional feature is the status display, this is based on a readily available plug-in card (type number UB40) which is available from Arthur Electronics Ltd.

Aerials

The aerials to be used with this system should be chosen with care. As the performance of the HF bands decreases it would be worth considering the underground aerial recently described by Heys. This makes use of a previously unknown inverse function centred on 7 MHz and would make an excellent complement to the new transmission system.

Translator's Note: Once again amateur radio is leading the technology race, but it will be some time before this system is heard on the bands to any great extent, but that also happened with SSB. It is hoped that a full constructional article can be prepared for future publication, but it has only been possible in the space available to cover the basic design criteria of the new method. However, enough information has been presented to allow the average amateur to at least consider building his own unit or modifying existing equipment.

The Ionosphere in Danger

A Disturbing Report

Prof. F. N. T. ROMANICH, M.A.

AMATEUR radio operators on the HF bands will be only too familiar with the infamous "Woodpecker" transmissions from the Soviet Union which have been severely disrupting all types of radio traffic over a large part of the radio spectrum. A disturbing report has been received by the author's department from the Propagation Studies Department of the Nanchang University in the Peoples Republic of China which concludes that the ionosphere is being steadily destroyed by these transmissions.

Translation from Mandarin Chinese of scientific matter is not easy, but the mechanism appears to be that the extremely powerful Woodpecker signals which, contrary to what many believe are in fact highly directional, react with proton particles from the solar wind to produce positive electrons. These positrons then collide with the electrons forming the ionosphere, thus annihilating one another. As Einstein's equations predict, this annihilation is accompanied by a release of energy and this is suggested to be the cause of much of the observed increase of general noise in the 12-18 MHz region, in particular.

If these transmissions continue at their present level throughout the present sunspot minimum — which is expected to be unusually long — the report suggests it will be "touch and go" if there will be much F-layer left by 1988/9. If these predictions are correct, then there will be far-reaching repercussions: worldwide short wave broadcasting would be impossible and local radio broadcasting would be confined to VHF and ground wave coverage on medium waves. World wide communication would have to be *via* satellite which would provide great opportunities for companies engaged in satellite design, building and launching. If radio amateurs wish to enjoy communication with fellow enthusiasts across the world, they will need to build more satellites to transpond their signals. These would have to be in geostationary orbits but competition for such orbits is bound to be intense.

If HF radio communication ceases, then all the considerable investment in transmitting equipment and antennas will be wasted, having little value. This will affect radio amateurs with multiband transceivers and beam antennas. It is possible that after the destruction of the present type of electron ionosphere, if the Woodpecker transmissions are continued, perhaps under the auspices of the United Nations, a new ionosphere based on positrons might be created. Some researchers have suggested this would cause auroral propagation to appear over equatorial regions while those in the more northerly and southerly latitudes would be able to communicate over long distances by T.P.P. or trans-polar propagation mode.

Newcomer's Guide to CW Operating

N.A.S. FITCH, G3FPK

THE agreement to allow Class B licensees to use CW mode on the VHF/UHF bands if they apply for a letter of variation to their licence has come in for some criticism, mostly from Class A licensees who fear that the bands might become cluttered up with struggling brass pounders with little idea of acceptable operating procedures.

A legitimate criticism of the current *R.A.E.* is that candidates are not questioned on operating procedures. In the past, most aspiring radio amateurs spent time as short wave listeners so could absorb basic operating methods. Nowadays however, many new licensees have come straight from the CB band where operating practices and jargon are quite different from those on the amateur bands. The purpose of this article is to acquaint first-time CW operators, who have learned the code, with the basic operating procedures so that they will have a reasonable idea of "how to do it."

The General or CQ Call

Before starting any transmission, make sure the frequency is not already in use. It may sound unoccupied but someone may be working a station you cannot hear. A quick way of inquiring is to send "QRL?" a couple of times before starting to call CQ. QRL? means, "Are you busy?" but in this context means, "Is anyone already using this frequency?" If there is no response, then go ahead and call CQ.

When calling CQ, a few CQs followed by your call, two or three times, is sufficient. Sending CQ thirty times and your call once at the end is poor practice since the receiving station may have copied your interminable CQs but missed your call due to a burst of local interference. It helps if you indicate where you are so that the listening station can beam towards you; e.g. "CQ CQ CQ de G1XYZ in Bath" or you can use your European or Maidenhead locator code. When you have finished calling, you should send the letter "K" which will tell others you are now listening for replies. With any luck, someone will answer; e.g. G1XYZ G1XYZ de G0SWM G0SWM KN." The letters "KN" sent without a space, which is the meaning of the bar over the top, indicate that G0SWM is listening only for G1XYZ.

Alternatively, you may have been monitoring a calling frequency or a QSO that has just ended and decide to call a station. In this case you would send: "G0SWM G0SWM de G1XYZ G1XYZ KN."

The Calling Frequencies

If you have put out a call on a calling frequency, such as 144.050 MHz, and have received a reply, or have answered another's CQ call, the next thing to do is to move off. This is best done by one partner sending, say: "QSY 12 Up," or "QSY 14 Dn," meaning go 12 kHz up or 14 kHz down respectively. This is more reliable than stating a specific frequency, such as "062" since frequency read-outs from rig to rig often differ. If you are using a narrow IF filter, an error of one kilohertz would result in nothing being heard.

The Message

If you have never contacted the station before, the first thing to do is to send his RST report and your QTH; most people also send their name on this preliminary exchange.

Readability

- R1 Unreadable.
- R2 Barely readable, occasional words distinguishable.
- R3 Readable with considerable difficulty.
- R4 Readable with practically no difficulty.
- R5 Perfectly readable.

Signal Strength

- S1 Faint, barely perceptible signals.
- S2 Very weak signals.
- S3 Weak signals.
- S4 Fair signals.
- S5 Fairly good signals.
- S6 Good signals.
- S7 Moderately strong signals.
- S8 Strong signals.
- S9 Extremely strong signals.

Tone

- T1 Extremely rough hissing note.
- T2 Very rough AC note, no trace of musicality.
- T3 Rough, low-pitched AC note, slightly musical.
- T4 Rather rough AC note, moderately musical.
- T6 Modulated note, slight trace of whistle.
- T7 Near DC note, smooth ripple.
- T8 Good DC note, just a trace of ripple.
- T9 Purest DC note.

Table 1. The RST Code. Note: When reporting Auroral signals, it is usual to send "A" instead of a T report; e.g. RST 53A.

Rather than launch into a long transmission, it is best to let the other person send their basic information by which time both will have assessed how reliable the path is, whether copy will be easy or a struggle, etc. Short initial overs will give either operator the opportunity to request a change in sending speed. "QRS?" means, "Shall I send more slowly?" while "QRQ?" means, "Shall I send faster?" Sometimes a station will request, "PSE QRS," accepted as meaning the other operator is sending too fast for proper copy.

The RST code is set out in Table 1 and you should always send an honest report. It is misleading to send, "Ur Sigs RST

<i>ABT</i>	About	<i>SA</i>	Say
<i>BT</i>	Separation between sentences	<i>SN</i>	Soon
<i>CL</i>	I am closing down	<i>SRI</i>	Sorry
<i>CPI</i>	Copy	<i>SUM</i>	Some
<i>CUD</i>	Could	<i>TDY</i>	Today
<i>ES</i>	And	<i>TKS</i>	Thanks
<i>FB</i>	Fine business	<i>TMW</i>	Tomorrow
<i>FER</i>	For	<i>TNX</i>	Thanks
<i>GA</i>	Good afternoon	<i>TT</i>	That
<i>GB</i>	Goodbye	<i>TU</i>	Thank you
<i>GD</i>	Good day	<i>U</i>	You
<i>GE</i>	Good evening	<i>UR</i>	Your
<i>GM</i>	Good morning	<i>VY</i>	Very
<i>GN</i>	Good night	<i>VA</i>	End of work/message
<i>GUD</i>	Good	<i>WAT</i>	What
<i>HPE</i>	Hope	<i>WL</i>	Will
<i>HR</i>	Here	<i>WUD</i>	Would
<i>HRD</i>	Heard	<i>WX</i>	Weather
<i>HW</i>	How	<i>XYL</i>	Wife
<i>NW</i>	Now	<i>YDA</i>	Yesterday
<i>PSE</i>	Please	<i>YL</i>	Young lady
<i>R</i>	Received	<i>55</i>	Best success
<i>RPRT</i>	Report	<i>73</i>	Best regards
<i>RPT</i>	Repeat	<i>88</i>	Love and kisses

Table 2. Some Common Abbreviations for CW Operation

569," if you are only copying 75% and the signal fades into the noise from time to time. It makes sense to ignore S-meter readings and instead judge what the signal sounds like from the descriptions in Table 1. If the signal has nasty clicks associated with it, as is often the case when so-called linear amplifiers are activated by RF sensing, then politely tell the other person. Send: "Sri but can hr ur key clicks plus/minus 10 kHz."

In marginal conditions, or when there is some QRM, it is wise to spend important parts of the message more than once, in particular the report and location. The correct way to indicate you are about to repeat a word or phrase is to send "II", *i.e. dit-dit, dit-dit; e.g. "QTH is Bristol II Bristol."* Often, under such difficult reception conditions, an operator will add a question mark, *dit-dit-dah-dah-dit-dit*, to ask if you copied it alright.

Abbreviations

The newcomer to CW operation is often confused by the many abbreviations in common use; *e.g. "Mni tks fer call es pced to meet u condx vy bd tdy wid QSB es QRM."* That means, in plain English, "Many thanks for (the) call and pleased to meet you. Conditions (are) very bad today with fading and interference." The more usual abbreviations are shown in Table 2 and a comprehensive list is given in the RSGB's *Amateur Radio Operating Manual* and in other handbooks. You do not have to use abbreviations but they do speed up a QSO; it is much quicker to send "B4" instead of "Before," or "TMW" rather than "Tomorrow," for example.

Identification

It can be very time-consuming giving call signs at the beginning and end of each transmission period especially if the others are very short. To overcome this, many more experienced operators use "break-in" procedure. True break-in is when the sender can actually listen between words and it is a very efficient way to operate. Newcomers can speed up a QSO by adopting this technique by sending "BK," *e.g. "Ur*

QTH? BK." The other operator might reply, "QTH Bristol BK." However, to comply with licence requirements, you must identify at not more than fifteen minutes intervals.

Ending a Contact

When you have run out of things to say and wish to end the QSO, the accepted way is to send, "QRU?" which means, "Have you anything more for me?" Another way is to send, "QRU NW QRU?" which can be interpreted as, "I've nothing more to send, have you anything more for me?" When you have both decided to finish, there is no need to make repetitive, long-winded goodbyes. A courteous "Tnx fer QSO es hpe cuagn sn 73" is quite adequate, meaning, "Thanks for the QSO and (I) hope to see you again soon. Best regards." To indicate your very last transmission and to signify you are ready to receive any other call, you would sign off, for example: ". . . 73 G0SWM de G1XYZ VA," and VA meaning end of work. If you intend to switch off after signing, it is usual to indicate this by sending "CL" meaning "I am closing my station."

Conclusions

One often hears opinions that CW is an outmoded and unnecessary form of communication. The arguments include that machine code systems, like RTTY, AMTOR, Packet Radio, etc., have rendered CW obsolete. No doubt they can be very efficient and pretty reliable, but what if some small component in such systems should fail? You are left with hundreds of pounds-worth of gear that is useless. But as long as you have a simple Morse key with which to turn your transmitter on and off, you can always communicate.

Like many other activities, efficient CW operation is an art. The more you practice it, the better you will become and the more enjoyment you will get from this very first type of telegraph and radio communication. It is hoped that these few notes will help the newcomer to start the right way. You should find that, if you follow these basic practices, the more experienced CW operators will be glad to contact you and help you gain more confidence and speed. Happy brass-pounding!

CLUBS ROUNDUP

By "Club Secretary"

The Mail

AND our very first letter — from **Abergavenny and Nevill Hall** — brings us a problem. *Please*, new Hon. Secs., include your name and address and *not* just a number to ring. Anyway, the gang get together on Thursdays at Pen-y-Fal Hospital, Abergavenny, in the room over Male Ward 2.

At **Acton, Brentford and Chiswick** the Hq. is at the Chiswick Town Hall, High Road, Chiswick. On April 16, G4HMC will explain how he manages to work 3.5 MHz QRP with a restricted aerial QTH. Start time, as ever, 7.30 p.m.

Bangor have a talk by one of the coastguards for April. There is both a change of date and place to be noted — April 12 at the Royal Hotel, Bangor, *not* the Sands Hotel as usual.

The **Barry College of Further Education** crew is based at the Annexe at Weycock Cross, Barry, every Thursday evening; on April 11 they have a talk on WW2 clandestine radio, and on April 25 they have a trip to Bridgend Police Hq. Radio Room.

St. Marks Church Hall, Biggin Hill, is the Hq. of the **Biggin Hill** club, where they may be found next on Tuesday, April 16, with an invitation to bring along pictures, slides and so on, which you feel may be of interest to the others.

As **Blackwood** have their Silver Jubilee in 1985, they are putting out an Award to celebrate; work as many members as you can between April 1 and March 30, 1986. There is an SWL section, too. Get the full details, and all about the club as well, from the address shown in the Secretaries Panel.

Every Wednesday evening the **Bolton** club foregathers in Horwich Leisure Centre, Horwich. Again, more details from the Hon. Sec. — *see* Panel.

April 19 is "Test Equipment and Measurements" for the members of the **Borders** group, at their Hq. in the Tweed View Hotel, Berwick-on-Tweed. The routine is to have meetings on the first and third Fridays each month.

Now we turn to **Bridgend** where again it is first and third Fridays, at the YMCA in Bridgend. More details from the Hon. Sec. — *see* Panel.

Every other Wednesday the **Brighton** crowd heads for the Seven Furlong Bar at Brighton Racecourse, where they have a

programme put together for some way ahead.

The Bristol area seems well catered for in the way of clubs. **Bristol ARC** gets together at the YMCA in Park Road, Kingswood, Bristol 15; April 2 is "Specialist Video", with the club management meeting on 9th. April 16 is a night-on-the-air, and on 23rd they have a computer night. That leaves just April 30 for an 'Open'.

Another one in Bristol is the **Shirehampton** lot, based on Twyford House, High Street, Shirehampton, Bristol, where they are to be found every Friday evening. The general routine is to alternate planned activities with informals throughout the year; and they have a club station and gear for HF and VHF.

BARTG is the one for the RTTY buffs, not to mention such peripherals as AMTOR and Packet Radio. Details from the Hon. Sec. — see Panel for his details.

There is to be a meeting of the members of **British Rail** at Torquay on April 26-27, and for details we must point you at the Hon. Sec. — see Panel; he can also, we suspect, put you more into the picture about their part in the G.W.R. 150th Anniversary celebrations.

For more details of the **Bromsgrove A.R.S.** we are asked to refer you to the Hon. Sec. — see Panel. There is also another club in the area with almost the same name, which tends to a little confusion.

Nice to see that the **Bury** club's new scribe doesn't have a computer — most of them have dot-matrix printers that are short of ink(!). Anyway, G6SPM tells us that they have meetings every Tuesday at Mosses Community Centre, Cecil Street, Bury, with the second Tuesday each month being the main, formal meeting; the rest are informals.

The **Cambridgeshire Repeater Group** has a newsletter which alone is worth a subscription; they look after the various repeaters at Barkway, plus the Cambridge one. Details from the Hon. Sec.

The **Cheltenham** gang has a booking on the first and third Friday of each month; it is in the Stanton Room, Charlton Kings Library, Cheltenham, and they have club members interested in just about every aspect of amateur radio activity.

April in **Cheshunt** means natters on April 10 and 24; on 17th G3OJI will talk about the BBC's OB communications. Venue is Church Room, Church Lane, Wormley.

These days the **Chester** club is based at the Chester Rugby Club, Hare Lane, Vicars Cross, Chester. On April 9, G3EWZ will talk about HF aerials and propagation; on April 16 they have GW1ATZ on the installation of PMR equipment; and on 23rd GW8ICT talks about entertainment electronics. That leaves April 30 for an outside activity evening at The Yeld, Kelsall, Chester.

At **Chichester** they have Chris Page, G4BUE, talking about QRP on April 2 in the Long Room; on April 18 they are in the Green Room for a talk on xerography by G4TSQ. The Hq. is Fernleigh Centre, 40 North Street, Chichester.

April 18 is the date for a talk on packet radio at **Colchester**; that is a late bit of news, filling in the rest needs a phone call to the Hon. Sec. — see Panel. The Hq., by the way, is Colchester Institute, Sheepen Road.

The new **Cornish** cover replaces a design that has been in use for at least a couple of decades; inside the revamped newsletter we see that April 4 is the AGM, at Treleigh Church Hall, on the old Redruth by-pass.

There is no meeting at **Coventry** on April 5; they will have nights-on-the-air on April 12 and 26, and on April 19 they will be having a PCB talk and demonstration. Find it all happening at Baden-Powell House, 121 St. Nicholas Street, Coventry.

Strangely enough there seems to be no meetings for **Crawley** in April. It is suggested that a check be made as to what's on with the Hon. Sec. — see Panel for the details.

Now **Crystal Palace** where the venue is the All Saints Parish Rooms, Upper Norwood, at the junction of Beulah Hill and Church Road, opposite the IBA mast. The meetings are on the third Saturday; on April 20, G8OTG will be asking "What am I doing with my computer?" with the help of some other members.

If you are interested in the **Dartford Heath D/F** group then we

have to refer you to the Hon. Sec. — see Panel — for all the details both of the hunts and the meetings at their local, the "Horse and Groom".

The **Derby** gang have been thumped by a massive 20% increase in the rent of their place at 119 Green Lane, Derby, where they gather each Wednesday. On the other hand, this is a club which seems to have lots of members and do lots of things, so they will doubtless get by.

For the details of the **Droitwich** doings we must refer you to the Hon. Sec. — see Panel. However, we can say that they have a booking at the Scout Hq. in Union Lane on the second and fourth Monday of each month.

It looks as though the meetings of the **Dudley** group at Allied Centre, Greenman Alley, off Tower Street, are every week on Mondays. However, for the latest data, get in touch with the Hon. Sec. — see Panel.

April 11 at **Edgware** is informal, and on 25th G3SJE, John Bluff, will be talking about operating techniques. Both are at 145 Orange Hill Road, Edgware.

On we head for **Exeter** where the April 15 talk will be on fault-finding and circuit testing. This is at the Community Centre, St. Davids Hill, Exeter. Everyone please note this month's date is a week later than usual to allow for Easter.

April 10 at **Farnborough** is noted as being a bring-and-buy sale, and on April 24 they have G4CJO and G4EMR to talk about AMTOR. Both are at 7.30 p.m. at the Railway Enthusiasts Club, Access Road, off Hawley Lane, Farnborough, Hants.

Deadlines for "Clubs" for the next three months—

May issue—March 29th

June issue—April 26th

July issue—May 31st

August issue—June 28th

Please be sure to note these dates!

The **Fylde** wishes to be sure there is no confusion with the old 'Blackpool and Fylde' club which, though moribund, has never been wound up and historically was one of the first five involved with the Postmaster-General back in 1921. They get together at the Kite Club, Blackpool Airport — there is a combined subscription to the Kite Club and the radio club, so they can have access at all the normal club opening hours. Meetings are on first and third Tuesdays, the latter being the informal-plus-Morse evening.

For all the details of the **Glenrothes** club, we must refer you to the Hon. Sec. — see Panel.

On the last Thursday of each month the **Glossop** members aim for the "Nags Head" in Charlestown Road, Glossop; April's meeting will be hearing a talk by the RSGB Regional Representative.

Next we have the **G-QRP Club** — this is the one for the low power operators and the chaps who believe amateur radio is about home construction. Details from the Hon. Sec. — see Panel.

It is many years since the writer had anything to do with **Grafton** club; nowadays they are to be found at the "Five Bells" in East End Road, Each Finchley on the second and fourth Friday of each month. G3MCD talks about coils and capacitors on 12th, and on 26th they have a junk sale.

April 25 will be a dose of Nostalgia for **Greater Peterborough**, when G5UM gives his talk on "VHF, Then and Now". Venue is the Southfields Junior School, Stanground.

Now we must go to **Grimsby** where the Hon. Sec. not only promised to send us a programme but actually did so. . . . April 4 is down for Communications with Aliens", and on April 18 they learn all about CW contest operating; the venue is the Cromwell Social Club, Grimsby.

Names and Addresses of Club Secretaries reporting in this issue:

- ABERGAVENTNY: J. B. Davies, GW4XQH. *Address wanted. (0873 4655)*
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- G-QRP CLUB: Rev. G. C. Dobbs, G3RJV, St. Aidans Vicarage, 498 Manchester Road, Rochdale, Lancs. *(0706) 31812)*
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- REIGATE: T. Trew, G8JXV, Hoath Meadow, Church Hill, Mersham, Redhill, Surrey.
- ST. HELENS: A. Riley, G6MXT, 32 Old Lane, Eccleston, Prescot, Merseyside L34 2RG.
- SARUG: P. Newman, G4INP, 3 Red House Lane, Leiston, Suffolk IP16 4JZ.
- SCARBOROUGH: N. Lill, G4YWR, 7 Harwood Avenue, Newby, Scarborough. YO12 6DH. *(0723 360587)*
- SEFTON: M. Webb, G6ICR, 33 Belle Vue Road, Gateacre, Liverpool L25 2QD. *(051 487 0756)*
- SOUTH BRISTOL: L. Baker, G4RZY, 62 Court Farm Road, Whitchurch, Bristol, Avon BS14 0EG.
- SOUTHDOWN: T. Rawlance, G4MVN, 18 Royal Sussex Crescent, Eastbourne.
- SOUTHGATE: R. Snary, G4OBE, 12 Borden Avenue, Enfield, Middx. EN1 2BZ.
- STAFFORD: A. C. Bairstow, G4RSW, 63 Barnes Road, Stafford. *(Stafford 46306)*
- STANLEY: R. Piper, G6XCO, 13 The Crescent, Tanfield Lea, Stanley, Co. Durham DH9 9NQ. *(0207 235930)*
- STOURBRIDGE: M. Davies, G8JTL, 25 Walker Avenue, Quarry Bank, Brierley Hill. *(Lye 4019)*
- SURREY: R. Howells, G4FFY, 7 Betchworth Close, Sutton, Surrey SM1 4NR. *(01-642 9871)*
- SUTTON & CHEAM: A. Keech, G4BOX, 26 St. Albans Road, Cheam, Surrey.
- SWINDON: D. Ireson, G4ZAZ, 20 The Broadway, Swindon SN2 3BT.
- THORNTON CLEVELEYS: Mrs. J. Ward, G8YOK, 143 Arundel Drive, Poulton-le-Fylde, Blackpool, Lancs.
- TODMORDEN: Ms. J. Gamble, G6MDB, 283 Halifax Road, Todmorden, Lancs. OL14 5SQ.
- TORBAY: B. Wall, G1EUA, 48 Pennyacre Road, Teignmouth, TQ14 8LB. *(Teignmouth 78554)*
- VERULAM: H. Clayton-Smith, G4JKS, 115 Marshalswick Lane, St. Albans, Herts. *(St. Albans 59318)*
- WACRAL: L. Colley, G3AGX, Micasa, 13 Ferry Road, Wawne, Hull, Yorks. HU7 5XU.
- WAKEFIELD: W. Parkin, G8PBE, 14 Cleveland Grove, Lupset Park, Wakefield WF2 8LD. *(Wakefield 378727)*
- WELLAND VALLEY: A. Faint, G4TZY, 33 Fairway, Market Harborough, Leics. LE16 9QL. *(0858 62827)*
- WEST KENT: Mrs. J. Green, G4UPI, 13 Culverden Down, Tunbridge Wells, Kent TN4 9SB *(Tunbridge Wells 28275)*
- WESTMORLAND: G. Chapman, G1HIE, 61 Rusland Park, Kendal, Cumbria LA9 6AJ. *(0539 28491)*
- WIRRAL: C. Cawthorne, G4KPY, 40 Westbourne Road, West Kirby, Wirral L48 4DH.
- WOLVERHAMPTON: K. Jenkinson, 10 Avondale Road, Wolverhampton WV6 0A1. *(0902 24870)*
- WORCESTER: D. W. Batchelor, G4RBD, 14 Oakleigh Heath, Hallow, Worcester. *(Worcester 641733)*
- WORTHING: R. Jones, G4SWH, PO Box 599 Worthing, W. Sussex, BN14 7TT. *(Worthing 208752)*
- YEOVIL: E. H. Godfrey, G3GC, Dorset Reach, 60 Chilton Grove, Yeovil, Somerset BA21 4AW. *(0935 75533)*
- YORK: K. R. Cass, G3WVO, 4 Heworth Village, York.
- 308: D. Davis, G6YQD, 13 Maple Road, Surbiton, Surrey KT6 4AA.

The Harlow group is still to be found at Mark Hall Barn, First Avenue, where they meet on Tuesdays at 8.30 p.m.

On to Harrow and here the venue is Harrow Arts Centre, High Road, Harrow Weald, opposite "The Alma" pub. They skip April 5, and have a junk sale on 12th. April 19 is activity night on Top Band, and on 26th G3WCB talks about 'Listening in'. You will also meet Grubby Gremlin, Uncle Oscar and Katy Kathode —

so watch your step!

Friday is chat night for Hastings at Ashdown Farm Community Centre, Downey Close; the 'main' meetings are on the third Wednesday of each month at West Hill Community Centre, Croft Road. April 17 is a junk auction.

The Havering crowd has a quarterly business meeting on April 3, and informals on 10th and 24th. That leaves April 17, when



The occasion of the Maltby A.R.S Christmas Junk Sale. Bev, G1DWY, holds the scarf which she knitted as a 'sponsored knit', which raised £50 for club funds.

Photo: G3ZHL

they will have two videos; one is the Space Shuttle/W5LFL operation, and the other one is G3EUR on the SOE.

Over to **Hereford** now, and here the locals have the first and third Friday of each month at County Control, Civil Defence Hq., Gaol Street, Hereford. April 5 is a talk on "Radio Activity: Fact and Fiction" by G8OHH, and on 19th they have an informal.

Over to **Eire** now, to **I.R.T.S.**, which is your one-stop source for all you need to know about amateur radio in EI-land, whether you are talking about a local club, or licensing or whatever. Details from the Hon. Sec. — see Panel for the needful.

Most Tuesday evenings the **Kidderminster** crowd has a meeting at Aggborough Community Centre, Hoo Road, Kidderminster; April 2 is a talk on contest working, and on 9th they have a committee meeting. April 16 is a talk by G3PGQ, and April 30 was still unsettled at the time of their letter, but doubtless filled in now.

Leicester Repeater Group looks after all the repeaters and beacons in their area, ranging from a 28 MHz proposal right on up to the beacon on 10 GHz. All the details from the address in the Panel.

The **Loughborough** has an Hq. at the Top Floor of the *Brush Sports and Social Club*, 18 Fennel Street, Loughborough, which lies by the bus station and opposite the car park. April 5 they may be closed, but if so have a listen on 145.425 MHz because they may head for a local pub. On April 12 they have a junk sale, and on 19th there is a Top Band D/F Hunt; April 26 is 'open'. All these are Fridays; each Tuesday the Constructors group meets at the same venue from 7.30 p.m.

All the details on the **Maxwelltown** club, in the Dumfries area, can be obtained by contacting the Hon. Sec. at the address in the Panel.

At **Medway** a new Hon. Sec. takes over; refer to him for the latest details and venue, which was being sorted-out at the time of their letter. The details are in the Secretaries Panel.

What do **Midland** do during each week at 294A Broad Street, Birmingham? Monday is construction night, and Tuesdays are occupied with various activities through the month. Wednesday is Morse and natter night, Thursday is HF night-on-the-air, and on Friday there is the RAE class. At weekends they can play in the contests. April 23 is the surplus equipment sale.

Mid-Ulster will have their Mobile Rally at Parkanaur on May 19, at the Thomas Down Training College, Parkanaur with lots of attractions. Details of this and of the club activities from the Hon. Sec. — see Panel.

April 9 is scrubbed by **Mid-Warwickshire** and the details for April 23 had not been finalised at the time they wrote. The venue is 61 Emscote Road, Warwick.

The **North Wakefield** weekly meetings are held on Thursdays at Carr Gate Working Men's Club. April 4 they are on the air with

G4NOK, and on 11th they have either a lecture or a visit. April 18 is down for a doubles pool competition, and the 'monthly' meeting is on April 25.

Another Mobile Rally comes up for mention now: this is the **Plymouth** one on May 26, at the Devonport Secondary School, Park Avenue, Devonport. Nowadays the club members head for the Plymouth Albion Rugby Club around 7 p.m. on alternate Mondays, for lectures or films, etc. They also have soft drinks available and a bar.

Old Timers' Meeting

After the recent flurry of activity, the **RAOTA** will be having a General Meeting on the Saturday, April 13th at 2.30 p.m. at the NEC Convention. All members of RAOTA are asked to attend as the object of the exercise is to revive the group, and to consider ways and means in which it can become more active in the future — which may mean some slight amendment to the constitution.

The **Reading** club has its home at the "White Horse" pub in Emmer Green, where they are to be found on alternate Tuesdays. More details from the Hon. Sec. — G4CCC's vital statistics are in the Panel.

April 16 is the AGM for **Reigate**, at the Constitutional and Conservative Club, Warwick Road, Redhill.

Every Thursday evening the **St. Helens** club members head for the Conservative Rooms, Boundary Road; for the programme details we must refer you to the Hon. Sec. — see Panel.

SARUG is the club for radio amateurs interested in using their Sinclair computers as part of the station. All the details from the Hon. Sec. — see Panel.

If you live in the catchment area you should know a little about **Scarborough** club; they foregather in the Pavilion, Scarborough Cricket Club, North Marine Road, Scarborough, and they are in session every week on Mondays.

Sefton comes next, and they have their base in the Liverpool Prison Officer's Club, Hornby Place, Walton, Liverpool. The dates for next month are April 3 and 17. No details of the programme available, but we understand it is being put together.

Now **South Bristol** which means Whitchurch Folk House, East Dundry Road, Whitchurch. April 3 is a lecture on 10 GHz gear, and on 10th a VHF activity night. April 17 sees the start of the club's VHF DX contest, and on 17th they have a computer night. That leaves April 24 for a microwave workshop.

The **Southdown** club has a rather vivid blue cover to its newsletter which is quite unmistakable. It tells us that they have main meetings at the Chaseley Home for Disabled Ex-Servicemen, Southcliff, Eastbourne, on the first Monday of the month, or second should the first be a Bank Holiday. In addition they gather at the club room at Wealden District Council Offices on Tuesday and Friday evenings — this venue is in Vicarage Fields, Hailsham.

April 11 is the date for **Southgate**, at St. Thomas' Church Hall, Prince George's Avenue, Oakwood, London N14. The activity is a surplus equipment sale. Just before the end of the month we see they are having a sponsored station at Forty Hall, Forty Hill, Enfield; the aim is to work as many countries as possible. The Mayor and Mayoress of Southgate are both licensed amateurs and both club members.

At **Stafford** we find the club uses the Coach and Horses Motel at Weston on the A51 every Tuesday evening for their meetings. They try to have a talk or demonstration at every meeting.

The **Stanley** club lives at the "Kings Head" in Stanley, Co. Durham, and has various activities lined up for 1985. More details on what happens every Tuesday evening from the Hon. Sec. — see Panel.

Stourbridge has its base at the Robin Woods Centre (ex-Beauty Bank School), which is in School Street, off Enville Street — this is the Bridgnorth turning from the Ring Road. They are to be found here on the first and third Monday of each month.

It is now the turn of **Surrey**; this club meet at *TS Terra Nova*, 34 The Waldrons, South Croydon, on the first floor mess deck, on

the first and third Monday each month. The first meeting is the main one, the second being an informal. For this month, we note April 1 is the AGM.

Every Thursday the **Swindon** club members get together at Oakfield School, Marlowe Avenue, Swindon. Details of the programme from the Hon. Sec. — see Panel.

On to **Thornton Cleveleys** who have a talk on April 1 entitled "How to Blow up your Rig"; the Bank Holiday results in no meeting on April 8. April 15 is a talk by the local crime prevention officer, and on 22nd they have an auction. April 29 is the date for the advanced Morse class. Venue is the 1st Norbreck Scout Hq., Carr Road, Bispham, Blackpool.

Next we come to **Todmorden**; and here we must refer you to the Hon. Sec. — see Panel for the details.

New Home

It is nice to know that **Torbay** have found a new home at last; they are now at the E.C.C. Social Club, Ringslade Road, Highweek, Newton Abbot, where they have a main meeting as usual on the last Saturday in each month — AGM in April — plus the weekly natters on Friday evenings. The club also puts out an Award, for working 30 members of the gang since January 1, 1985. Details from the Hon. Sec. — see Panel.

April 23 is the date when **Verulam** will be having G3NRW to give a talk on AMTOR, at the R.A.F. Association, New Kent Road, St. Albans, where they gather on the second and fourth Tuesday each month.

WACRAL is the club for committed Christians worldwide. All the details from the Hon. Sec. — see Panel.

Now we must head back up to **Wakefield**, and the club at the Community Centre, Prospect Road, Ossett. April 2 is the AGM, and on 16th they have an on-the-air/natter night. April 30 sees a talk on amateur radio in SE Asia.

For the details of the **Welland Valley** group we must refer you to the Hon. Sec. — see Panel for the needful.

Although the meeting due on April 5 is cancelled due to the holiday, they still have April 19, for the AGM. The Hq. is at the club premises at Adult Annexe, Quarry Road, Tunbridge Wells. All this means, of course, **West Kent**.

April 9 at **Westmorland** will be a visit from **Oldham Batteries** who will give a film and talk about how their sealed-for-life batteries should be used for amateur radio. Venue is the "Strickland Arms", Sizergh, near Kendal, as ever.

Wirral now has its place at Heswall Parish Church Hall, on the first and third Wednesdays. No idea about the programme — no one told us!

Wolverhampton has a talk on third-method SSB by G6UDX on April 2, and no meeting on 9th. April 16 is informal, and on 23rd it is the turn of Wolverhampton Repeater Group to do their thing. Finally, on April 30, the home-built equipment competition.

At **Worcester** they have a club night on April 29 at the Oddfellows Club, New Street; the informal is at the "Old Pheasant" in the same street, on April 15.

Every Wednesday evening is the routine for **Worthing** at their Hq. at the Parish Hall, South Street, Lancing, West Sussex. They also go in for activity on the air in a big way by nets on several bands. All the details from the Hon. Sec. — see Panel.

On to **Yeovil** and the Recreation Centre, Chilton Grove, Yeovil. April 11 is AGM night, and on 18th G3MYM talks about mutual coupling between aerials. April 25 is a natter session and on May 2 G3MYM leads his previous talk on to Yagi aerials.

Every Friday the **York** lads head for the United Services Club, 61 Micklegate, where they usually have something interesting going on. More details from the Hon. Sec. — see Panel. One thing we notice is the 'home-brew night' on April 19 — whether wine, beer or rigs is not mentioned!

Finally **308**, where it looks to be the fourth Tuesday in each month at the Coach House, Church Hill Road, Surbiton. More details from the Hon. Sec. — see Panel.

QRT

That's the end of another pile of mail. Send your information to arrive by the dates shown in the box, addressed as always to "Club Secretary", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. Meanwhile, get the gardening tools sharpened up — you'll need 'em!

Mobile Rallies, 1985 — a first listing

April 8, North Wakefield R.C. Amateur Radio and Computer Fair, Bretton Hall College, Bretton, Wakefield (4 miles from J39 on M1), doors open 11 a.m., radio, computer and electronics stands, bring-and-buy, RSGB bookstall, refreshments, family attractions, good parking, free admission, talk-in on S22 and GB3WU (RB15). Further details from Steve Thompson, G4RCH, on 0532-536633. **April 28, Southend D.A.R.S.** Rally, "Rocheway", Rochford, Essex, 10 a.m. to 5 p.m., trade stands, refreshments, free parking, venue will be signposted locally with talk-in on 2m. Further details from Bryn Llewellyn G4DEZ (0702-617749), or Brian Wood G4RDS (03745-50494). **May 5, Anglo-Scottish Rally**, Tait Hall, Kelso, Roxburghshire, 11 a.m. to 5 p.m., admission £1 (children, YLs, XYLs free), usual stands, CW testing station, raffles, bar, snacks, talk-in on S22. More information, including accommodation, from Andre Saunders GM3VLB, Physics Dept., Kelso High School, and Bruce Cavers GM4UIB QTHR (tel: 0573-24664 and 24654 *evenings only*). **May 12, Swindon D.A.R.S.** Radio and Electronics Rally, Oakfield School, Marlowe Avenue, Swindon, doors open 10 a.m., admission 50p with free parking, refreshments, family attractions, talk-in on 2m. (S22) and 70cm. (*via* GB3TD). Further information from Ken Saunders, G8SFM, on 066689-307. **May 26, Maidstone A.R.S.** Rally, Melrose Close, Cripple Street, Maidstone, doors open 11 a.m. More details from Alan Judge, G6FZD, on 0622-50709 or QTHR. **June 30, Buxton Mobile Rally**, Pavilion Gardens, St. John's Road, Buxton, 10.30 a.m. to 5 p.m., admission 50p, children free, trade stands, bookstalls, refreshments, on-site and local family attractions. More details from Dave, G6MIF, 0298-6174. **July 21, Anglian Mobile Rally**, Stanway School, Colchester, Essex, 10 a.m. to 5 p.m., talk-in on 2m. Further details from G6HQI, 0206-860403. **July 28, Abergavenny, Brecon and Pontypool Rally**, Market Hall, Abergavenny. Full details from C. Lonsdale, GW8ROW, 27 Jerusalem Lane, New Inn, Pontypool, Gwent NP4 0NP. **August 11, Hamfest '85**, sponsored jointly by RAIBC and Flight Refuelling A.R.S., at Flight Refuelling Sports & Social Club, Merley Park Road, Merley, Wimborne, Dorset, large trade exhibition, extensive family attractions. **August 18, Red Rose Rally**, Haydock Park Racecourse, Wigan, organised by West Manchester Radio Club. **September 22, Harlow D.A.R.S.** Rally, Harlow Sportscentre, Harlow, doors open 10.30 a.m.

More rally dates will appear in future issues. If you have not yet notified us of *your* rally, now is the time to do it! Send the information in an envelope clearly marked "Mobile Rally". And don't forget we are always glad to receive photographs of rally events for possible publication.

Morse Tests in Swindon

Ken Saunders, G8SFM, tells us that he has again been able to arrange for Morse tests to be held at this year's Swindon Rally on 12th May (pass rate last year, 85%). The tests can be booked by sending the normal application form and fee of £15.00 (payable to "British Telecom International") to G8SFM, "Tamarisk", Tetbury Lane, Leighterton, Glos. GL8 8UP; he can also supply application forms if necessary. Venue for the Rally is Oakfield School, Marlowe Avenue, Swindon.



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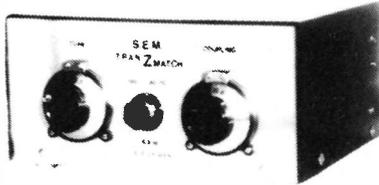
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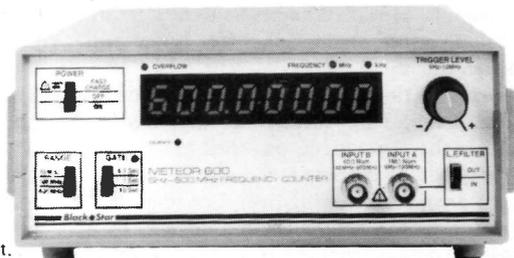
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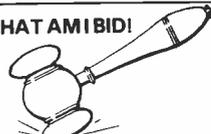


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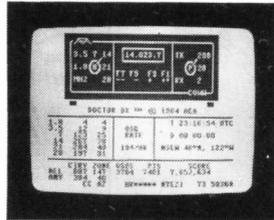
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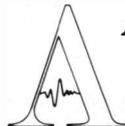
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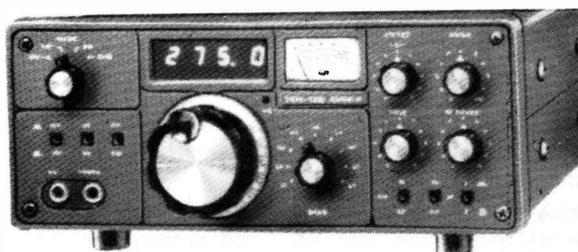
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