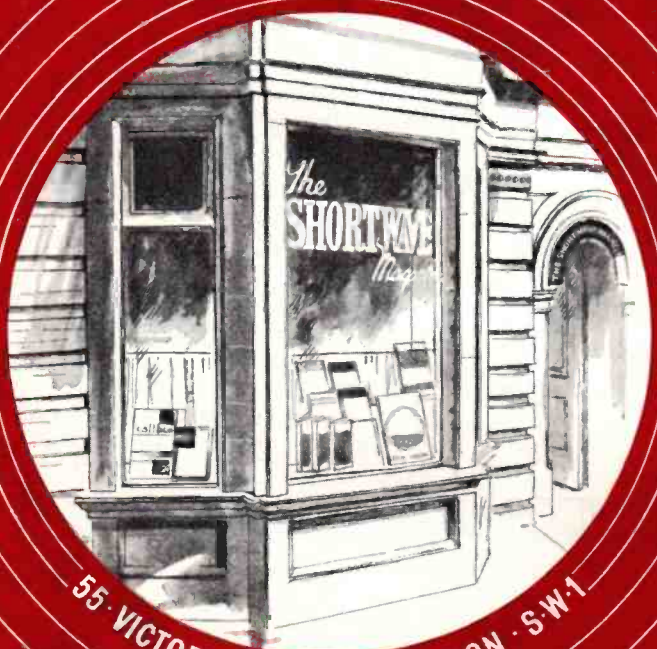
The SHORT WAVE Magazine

22½p

VOL. XXIX AUGUST, 1971 NUMBER 6



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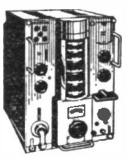
ADMIRALTY 62B RECEIVERS



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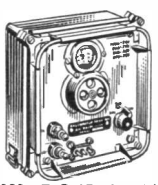

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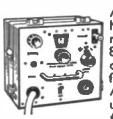

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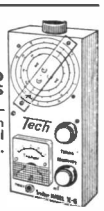

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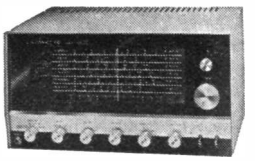

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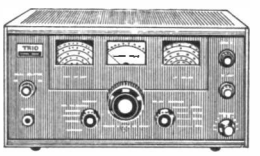

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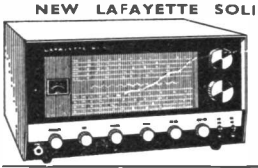

5 Band AM/CW/SSB amateur and short wave 50 Kc/s.–400 Kc/s. and 550 Kc/s.–30 Mc/s. F.E.T. front end. 2 Mechanical filters. Huge Dial. Product detector. Variable BFO. Noise limiter, S Meter. 24½" Bandspread. 230v. A.C./12v. D.C. Neg. earth operation. RF gain control. Size : 15" x 9½" x 8½". Wt. 18 lbs. Exceptional value, **£45.** Carr. 50p.

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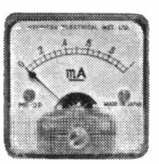

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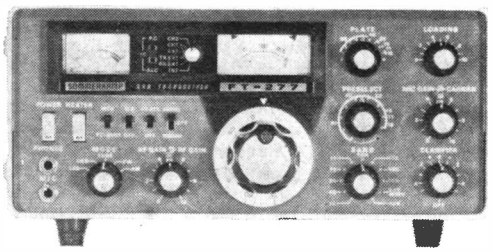

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All this for our low PRICE of **£230** (carr. £2).

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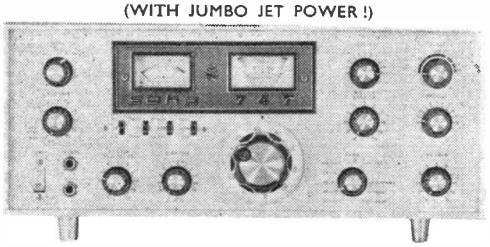
(WITH JUMBO JET POWER !)



★ 560w. p.e.p. input 3·5–30 MHz.
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★ SSB with 1·6 : 1 filter shape factor.
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SHORT WAVE MAGAZINE

(GB3SWM)

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CONTENTS

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FOR THE RADIO AMATEUR AND AMATEUR RADIO

The SHORT WAVE Magazine

EDITORIAL

Competition

Taking an objective look at Amateur Radio, one cannot fail to see the extent to which the competitive angle has been developed.

There are those — and their opinions are worthy of respect — who regard the competitive aspect of the game as tending to bring it into disrepute and so likely to be harmful to Amateur Radio as a hobby. On these grounds we are sometimes assailed by well-meaning readers who feel it their duty to point this danger out to us.

Now, while there is obviously much to be said for both sides on an issue of this kind, the essential truth of the matter is that a high standard of achievement can best be obtained by encouraging keen competition — this is true of all walks of life. The striving for high achievement encourages efficiency, both personal and technical. The result is progress, even if certain undesirable characteristics (latent in the human race) are inflamed thereby.

As Amateur Radio must progress if it is to live, it has always been our policy to maintain the competitive interest in those various aspects of operating activity to which the factor of competition can usefully and properly be applied.

But this certainly does not mean that everyone, everywhere, should be trying feverishly to outsmart his neighbour. These competitive activities can be followed vigorously, in moderation, or not at all—just as the individual feels inclined. There are, indeed, many (and probably the majority) who have never entered into any competitive activity at all in the Amateur Radio context. They are those who make their own way along the paths of fascination offered by a great scientific hobby such as ours without feeling the slightest urge or need to join in on the competitive side.

Austin Forsyth, G6FO.

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

SUMMER conditions about sums it up, both in weather terms and on the bands. Periods of high humidity and great heat, then rain, go hand in hand with natural noise and natural quiet on the bands. The decline in the sunspot number has of course brought its own fallaway in conditions on Ten—but one suspects that band is as dead now as is ever likely to be—the three or four years of utter silence at the base of the eleven-year rotation is just not true, except to folk—like most radio-amateurs!—who never look at the band when the books say it is dead.

But the eternal surprise is one of the pleasures of the game; after sitting on Top Band SSB for an hour, to QSY, ask if anyone is using the new channel, and be rewarded with an answer that blossomed into a QSO with a new county, helps to make it all worth while.

The HF Bands

One of the odder things about human nature is the way priorities change. DL7FT and his buddies dished out 2513 QSO's to the chums from ZA2RPS, but in terms of "news" the operation this time barely ruffled the surface.

However, the OH DX-pedition has been on from Fernando Po, 3C1EG, and Annobon Is. signing 3CØAN; and this one really hit the 15-metre band for six. When they opened up for business, propagation was good to U.S., Europe, Africa and South America, and most of the world's DX'ers must have been lying in wait. The band was so crowded that they had to work split-frequency, which caused 21300 to 21350 kHz to go out of use for anyone not chasing the expedition. Add to this a little savour of Klotted Nonsense calling on frequency, plus a good larding of II's acting the self-appointed role of policeman to move the Klots on, and the whole mad recipe, is revealed. But, it gave a lot of people pleasure, it certainly proved the OH DX-pedition to be superb operators, and it put an all-time new country on the air. What more can one ask?

However, there is more to *Fifteen* than this, as many reporters testify; G3ZCC (Chingford) took a quick look to raise IØCMG and CE3AOX.

Opinions, as ever, can vary—for instance, G3OJV (Hockley, Essex) offers just one QSO on Fifteen with the comment "The results speak for themselves." His one QSO was with VQ9R.

G3ZAY (Petts Wood) took the trouble to write his letter on the eve of his departure to New York, and offers contacts with 3B9DK, 3C1EG, DU1TOM, VK6HD, VQ9R, C31BZ, IA5WWW/5 (Elba), FH8CG, ZS, 9J2, TG9DX, FG7AF, KZ5FF, plus as gotaways KX6KS, KG6S and ZD8TS. The gear for this lot has changed somewhat, with the FT-560 now doing most of the work, backed up by the old Trio receiver as stand-by.

Some people are clearly cut out as men of ideas from a very early age; one such is G4AAQ (Sharlston Common) who managed to get a station set up in the school, and then to operate it for six hours of lesson-time. In terms of results, the operation netted Phil SSB QSO's with 5B4ES, 4X4HT, CR7FS, 5Z4MO, 5H3LV, 5X5NA and VS9MT. CW was not entirely neglected, with 5B4ES, again, ZD8CW, and run-of-the-mill Europeans booked in.

There are so many possible distractions for the week-end only type of DX'er, infers G3DCS. Reasons are largely aerial construction—the hula-hoop was a failure and has been replaced with a G6LX rectangle, which is found to load up on the band higher than the one for which it is cut; and as if that were not enough there is a boat in the background, and thoughts of chugging up and down the Orwell . . . Still, Enver did work the odd W on CW, and has lashed out on 400 watts with a of linear, which should ensure instant compliance!

Without a shadow of a doubt one has had to have a hand on the beam-rotator control all the time, as well as being on at the right time, if one is to take best advantage of erratic conditions, says G2DC (Ringwood). Jack goes up in all-time countries with 3CØAN, and also raised CE2RF, EA6BP, LU4AA, PY's, UG6AF, UI8AB, UI8AAF, VS9MT, ZS3KC, 3CIEG, ZD8CW, 5N2AAN, 5Z4DV, 9V1QG, W1-O and VE1-8. Listening on *Fifteen* has been evenings, Saturday and Sunday mornings and the early lunch period during the week. The latter has yielded virtually nothing saving weak East Coast W's, but the North and South Americans have been going well in the evenings, sometimes holding up to 0100. Of a morning, the main thing of interest is the changing skip from ZS1 to ZS6-9J-9Q-5Z4-5N and finally Europe. SSB contacts came up with MP4MBC, VQ9R, VS9MT, 3C1EG, 3CØAN (raised at 1142 off a first call), 5X5NA, 5Z4MO, 9G1DY, 9J2DY and 9Q5ITU.

Twenty Metres

And here we *must* start with a long and interesting letter from 9K2AL (Kuwait); not just for its news but for the way it gently prods your conductor for not mentioning certain items . . . alas, no-one saw fit to tell us about them! Anyway, to put the record straight, the "Arabian K Nights DX Net" comes on from 1900z on 14295 kHz plus-or-minus-the-QRM for a couple of hours of group DX'ing—*not* on Sundays, but Saturdays. There are some thirty members who appear on the net from time to time, not to mention JH1YDR and FG7XL as associates. Of course, one must remember that among the "full" members one has to include, for instance CN8, MP4, and OD5, who are also often present.

On an entirely different tack, 9K2AL has possibly the best reason of all as the explanation for JY1's seeming ability to be on the air at all sorts of odd times—plain honest-to-goodness organisation when it is a matter of a couple of hours, or five minutes away from duty to raise a new one and come back with a quiet feeling of satisfaction.

G3DO (Four Oaks) has been fairly quiet in the Amateur Radio sense of late months, between holidays and work-pressures, but writes to bring his Table scores up-to-date. Naturally, for an operator with a score like Doug's, new countries are like hens teeth as to rarity, but 3CØAN and ET3ZU/A (Jabal at Tair Is.) both come into that category as far as we are concerned, as does VU5KV for the Laccadives, as far back as last March. In a way, it's almost a pity Doug had already worked Fernando Po, otherwise he would have had the Four Aces.

It is a long time since your conductor can recall getting a letter to this column from a licensed amateur who, of all things, omits any mention of his callsign—name and address, maybe, but callsign *never*. But we had one this time, and it took your poor fuddled old conductor quite a while to recognise the fact that it came in fact from G3YRR. Charles has started to suffer the things most of us have to put up with—his card to 3V8AL "bounced", as the QSO was after the real operator left Tunisia. On a different theme altogether, G3YRR mentions the recent death of Bill Felton, G2ATS, so well-known and liked in the Grimsby area, and yet no-one in the area had the initiative to send a paragraph in. On a different line again, the "Grimsby Wheatsheaf Club"—a gang of keen types of whom we have heard before, we must add—have been entertaining W3CTR, Don Rayner, who is a top-brass lad in the electronics industry over in the U.S. as well as a leading-light in the Ex-G Club.

It's always an interesting thought, that a lot of the chaps who sit tight and say nothing, or write in with a small report and snippets of semi-local stuff, are in fact at or near the top of the line. For instance, when a new one comes up, it usually

Bill Stevens, ZD7SD, Box 16, Jamestown, in the remote island of St. Helena in the South Atlantic, runs 20m. Sideband only and is on most evenings. He is always glad to QSO the U.K. —but cards can take months to reach him.

appears in the list from G2HKU (Sheppey) even though Ted would not even call himself a DX'er. However, there it is, as large as life, in between W2MDQ/MM on SSB and VO1AW on CW.

For G3NOF (Yeovil) the oddity of the month has been *Twenty* open to DX and true short-skip at one and the same time, resulting in G's at umpty-over-nine on top of the DX. Gotaways included EA9AI, FO8CS, JY1, JY9YL, KG6SW at 1801z, SU1MA, TN8BK, VP2LG and 9M2WM; but SSB did the trick with C31DZ, CR6GA, EP2DA, ET3DS, FØWV/FC, FO8BS, EA9EJ, HBØXTO, HK3ASJ, JY9XL, 3C1EG, 3CØAN, OB4LM, VP2MF, W6, W7, ZD7SD, ZE6JP, 4U1ITU, 5Z4KL, 5Z4KZ, 7Z3AB and 9M2LP.

That aberration of G2DC's last month—SSB phone—was not just a flash in the pan, then; Jack worked Fernando Po, at least on 20m. Sideband but used CW for CR5SP, CR6IY, EP2DH, HK2VFS, HK4CAV, KG4EW, KL7MF, OA1BU, OB4LM, TI2J, TI2AS, TI8PE, TG9GI, SU1IM, PZ2AB, UAØYT on Tannu Tuva, lots of VP9's, XE1YV, XE1CA, ZL4OL/A, 3C1EG, 3CØAN, 5W1AU, and all W, VK and VE call areas.

Twenty for G3DCS (Ipswich) was a quite interesting band, both on CW and SSB; CW first, and it includes such as PJ2PS, YV5BPJ, KP4DGE, PY6ABD, UW6FS, VE3BTS, TA2FV, UW9EY, UA9MAA, VE1AL, VP9GD, VP9EP, VO1AQ, KP4ID/4 and a host of EU stuff. SSB came up with a QSO of more than usual interest to a boating man in W4SYL/MM 200 miles off Portugal—a U.S. Coastguard Cutter, called *Chincoteague*.

Sitting there on his packed cases one can almost see the glow on the face of Martin, G3ZAY, as he writes against 20 metres: VR6TC, at last! But there were others, among whom could be counted FP8CZ, HBØXUO, VE8RCS, HKØBKX, FO8DE, MP4MBC, 3C1EG and JY1. On the gotaway list appear KS6CY, 5W1AM, 3B9DK, VS5CB and KH6HIH.

Quite a list comes in this time from G3OJV with his SSB and vertical aerial, including such as HC2KF, HC6JB, HK3BGB, HR2JMC, HV3SJ, JW5NM, OA4OS, OA4HJ, OB4LM, PZ2AB, VP2VV, XE3DE, YN3FP, YS1SC, YS2CEN, YV5ACL, YV5CVE and 6Y5GA.

For G3ZCC the biggest frustration of the month was getting up in time to hear VK3JA at S9 plus,

working G's quite happily, but not answering G3ZCC's plaintive calls. However, Martin did manage to raise W3BVL, W3VX, K3RLY, KZ5NV, W4FGH, a couple of Europeans and a call which we just *cannot* decipher!

Ten Metres

At times there has been some hefty short-skip, probably propagated by means more familar to the VHF fraternity, but as for real DX—*niet*! At best, says G3NOF, the odd very weak 9J, and around 1700z, a few weakly-sounding LU signals. All, be it noted, on the North-South path, implying that we have been listening to a band going into its death-rattle; there might be a last rally this autumn, but then nothing—which is just the time to open up the band for local traffic.

This is a topic covered well in a letter from G3XEG (Hatfield) who says that over there, there are five base and three mobiles in the group, all crystal-controlled to 28·889 MHz using BCC gear, and all running permanently "on squelch." Thus, a quick whistle into the mike is enough to bring an instant QSO, while if Ten is open in the VHF sense there is "Uncle Albert" QRM to be contended with. On the other hand, against this there is the occasional whiff of real DX which these boys can work with just a few watts and a GP aerial. The Welwyn group is joined by a few others from around Harlow, some of the mobiles in the area have latched on to the scheme, and so also has K2UTC, who joins them all whenever the band is open! Eddy makes no mention of TVI in his letter; one would think that the use of such a link-up would result in minimal interference to the Lantern, if only because the squelch removes the need for long overs and low power keeps the level below TVI threshold. A good idea, this, and one which other groups in the more populated areas could well emulate.

G2DC can be relied upon to find anything findable, no matter what the band may be, but even he could not rake up much of value on Ten; a few UA9 and African stations in the forenoon, but nothing out of the ordinary—and plain nothing at any time the band was checked after noon zulu.

Here and There

All sorts of things to talk about under this head. For a kickoff an interesting letter from G4AGC, who is R/O on m.v. *Eastern Cape*, c/o Jardine Matheson, P.O. Box 70, Hong Kong. G4AGC was at the time of his writing on the way to Fremantle *via* Capetown and then on up to the Far East, and offers to listen for, and report on, signals as requested. Anyone interested should airmail him giving times of working, band, type of emissions, and so on, and he will do his best to oblige subject to the over-riding requirements of watchkeeping.

The advance details, as far as the G stations are concerned, of the *CQ WW Phone* and *CW Contests* are now available.' Taking the Phone first, the Top G's were: *All Band*, G3LNS; *28 MHz*, G3YBM; *14 MHz*, G3FXB; *All Band*, GM3BCL and GW3NWV; *28 MHz*, GC3YIZ and GI3RXV; *14 MHz*, GM3VEY; *7 MHz*, GM3WOJ; *3.8 MHz*, GM3VTB; *1·8 MHz*, GM3YCB for the world-high score. Multi-operator single-transmitter, G3WYX. A total of only 20 logs from the whole of Great Britain.

Now to the CW side of things, and here there was a total of 27 logs. *All Band*, G3FXB; *21 MHz*, G3HCT, who was fourth world high scorer; *14 MHz*, G3JKY; *7 MHz*, G3KDB; *3·5 MHz*, G5ATD; and *1·8 MHz*, G3NT. Others doing well were GD3AIM, GM3CFS, GW3NJW, GM3JDR and GM3YCB. While our congratulations are due to all these operators it is a pretty poor show that, as compared with the

SIX-BAND DX TABLE

(All-Time Post War)

Station	Countries	28 MHz	21 MHz	14 MHz	7 MHz	3.5 MHz	1.8 MHz
G3IGW	212	129	153	169	136	107	50
G2DC	339	181	312	330	170	116	20
G3VLX	67	7	14	34	20	33	19
G3YDX	148	85	83	72	81	76	17
G3ZCC	39	10	8	21	18	23	16
G3PQF	175	119	53	107	85	56	13
G3XAP	122	44	75	53	77	31	13
G3ZEM	110	—	—	108	28	32	13
G3IDG	131	77	97	55	27	18	12
G3KMA	262	210	209	193	146	64	11
G3DCS	130	26	83	80	29	24	10
G3DO	340	216	253	333	90	83	9
G3LZQ	265	140	156	215	72	38	8
9H1BL	202	117	129	143	74	57	8
G3RJB	177	80	58	164	60	37	8
W6AM	349	149	161	349	145	119	8
ZL3GQ	285	146	164	245	178	127	5
G3NOF	321	207	232	312	38	67	4
GC2YIZ	80	47	13	37	15	4	1

Note: Placings this month are based on the "1·8 MHz" column. Claims must be made at least every three months to retain a place.

pitifully few U.K. logs submitted there were better than 3100 logs put in for both legs of the Contest. Compare our 27 logs in the CW section with, for example, 56 from OH alone! Thanks to W1WY for this advance information—this time he nearly drowned in the sea of paper which hit him, so the formula is right for the rest of the world.

On a different tack, we have to hand a letter from DL2AH which says he is taking-over the QSL Bureau duties for all Nato forces other than U.S., comprising DL2, DL5, DA1, DCØ and DC4 call-signs. The mailing address is: BE/NL/CDN/UK Forces in Germany QSL Bureau, J. T. Worrall, DL2AH/G3XBA, 3090 Verden Aller, Am Alten Pulvershuppen 80, Germany, and is effective forthwith.

G3UAN has now finished his studies and emerges from the University of Sussex with an honours degree in Electronics. To consolidate it all, Robert is going to Israel, to a small, very modern town called Arad for five months, learning to speak Hebrew before spending the remainder of a year in the electronics industry of Israel. At the end of that time there is the option for him either to stay or come home. Robert has been told by the authorities that a call is "on" and will probably be G3UAN/4X4 or /4Z4. Although Top Band is not in the Israeli radio spectrum, Robert is optimist enough to say he will try and get permission to come on as a special case—one thought G3UAN would not miss a chance to be DX on what has always been his favourite band!

A rare letter from Allan, G3IDG (Basingstoke) who has a *cri de coeur* over the vexed question of QSL cards. After eighteen years of trying to keep faith, he stopped completely on January 1, 1971. However, to say he does not QSL can turn a QSO into a quite incredible business. A few understand, a few more understand but don't like, others *still* come back "OK FB ur QSL dr om" and of course the charitable souls who come back "OK no QSL, but mine *via* Bureau." But how does one *broadcast* the fact that one does not want QSL cards any more? Personally, your scribe suspects Allan is writing with tongue partly at least in cheek. Poor returns, fair comment; also the complications of QSL'ing in the affluent society, when QSL managers come back hollering for IRC's rather than return *via* bureaux. This last point is very valid, and it does seem about time the bureaux and the amateurs of the world got together to squash those among the QSL managers who refuse to come across with a card in the absence of s.a.e. or IRC's. After all, this hits the youngsters more than anyone else, and paying for cards, leave alone IRC's is a heavy drain on the pocket-money of a school-boy. The better QSL managers operate ethically enough, as do the Bureaux—why not, then, a code of practice for the whole breed of managers which they have to accept before the Bureaux accept *them?* This would just involve shunting off to the nearest convenient bureau all outgoing cards for which no s.a.e. or IRC's were supplied, a guarantee that the manager would honour *all* incoming cards, by whatever route, and a little indication on the QSL cards sent out that they were accompanied by either s.a.e. or IRC—this latter as protection to both sides in the event of mails being tampered with, which *does* occur in some parts of the world. To your conductor, a QSL manager who does not honour these principles is not worth the name or his ticket anyway—but there are sure to be one or two offenders who do so out of thoughtlessness rather than for less creditable motives.

DA2XW (G4AGM) reports that he has received special permission to operate on Top Band over frequency areas 1825-1835 kHz and 1985-1992 kHz (for CW), also on 1832-1835 kHz with SSB, maximum permitted input 10 watts. His location is Cologne and he will be on most evenings from 11.0 p.m.

W2QFR, who transmits the ARRL official RTTY bulletin, normally beams these westwards from New Rochelle, N.Y. to serve the U.S.A. Commencing shortly he has agreed to beam one run of his bulletin tape to Europe following the U.S. transmission. The approximate time, depending on bulletin length, will be weekly on Sundays at 1630 G.M.T. Frequency 14·095 MHz, speed 45·45 bauds, shift 170 Hz.

G3UKM, of 97 Meadway, Bramhall, Cheshire, is Capt. Douglas Leighton, of Northern Executive Aviation, who flies twin-engined air taxis from Manchester A/P to all parts of the Continent. Interested in Amateur Radio since school-days, he has more than 100 countries worked and is aiming for DXCC. G3UKM believes in keeping to matters etheric—his wife is an ex-air hostess.

These bulletins, while containing material mainly concerning the U.S.A., also have useful predictions on propagation conditions and other news. Reports may be sent to Robin Addie, G8LT, Spring Hill, Wappenham, Towcester, Northants., who will deal with them for W2QFR.

The LF Bands

Were it not for 9K2AL, your scribe would have been tempted this time to shut up shop for once as far as *Forty* and *Eighty* go—but Zaman stresses that he, and some of the MP4's and EP2's, have been attacking both those bands since the New Year with some considerable zest. Of course, we tend to forget that June is the time of the Southern winter, and those who have been logged by 9K2AL as working DU1FH, CT2AK, CR7FM, are the gainers by our forgetting. However, it does seem rather as though 9K2AL will be the only one in Bahrein to be able to work the LF bands in the foreseeable future.

A new correspondent is G3YYD, who runs a KW-2000B and 400w. output p.e.p. Linear of his own brew, used on *Eighty* for DX and on other bands for local and semi-local contacts in conjunction with an inverted-Vee dipole having its apex at fifty-five feet—Dave has recently lifted it from forty-five feet and is surprised, as your scribe always is, at the improvement a bit of extra height gives. In terms of QSO's, this tackle has so far managed C31BZ, C31DZ, CR7FM, EA8HA, EA9AQ, EP2BQ, JY1, KP4AN, OY7JD, PJ2CW, PJ2CU, PY7BOP, PY4BLS, PY3CIP, seven VE1's, VE2XF, nine VO1's, VP9AT, YA1OS, ZD9BE, ZP3AQ, ZS1MH, ZS5LB, 3C1EG, 4X4NJ, 9K2AL and 9Q5IA—a rich haul indeed.

TOP BAND COUNTIES LADDER

Station	Confirmed	Worked
	Phone and CW	
G2DF	98	98
G3ADH	98	98
G3VLX	98	98
G2NJ	98	98
G2HKU	98	98
GI3WSS	97	98
G3YMH	69	93
G3KFE	66	88
G3LXD	64	83
G3XIV	?	63
	Phone only	
G2NJ	98	98
G3PQF	98	98
G3XDY	72	89
GI3WSS	67	83
G2HKU	51	52

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

Another one-band merchant is GM3JDR (Wick) who has now put up a full-wave delta loop aerial for *Forty*, aimed to fire at South America —or, rather, midway between there and South Africa—on which heading it nets S9 from 9Q5 and S8 from PY, the while putting paid to about four-fifths of the European QRM. As an idea of what can be found on *Forty* between 2030 and 2200z, take this collection into account: On SSB—ZB2A, 9Q5EP, 9Q5KJ, 9Q5RD, CT2AK, LU7AAC, LU8AJG, LU4DSG, VK6CT, EP2BQ, UL7JA, JW7UH, EA6BN, IT9ZGY, ZS6YQ, ZS1JU, ZS5LB, 5H3LV, CR7IK, CR7FM, CR7IC, CR7AC, CR6TP, EA8EX, VS9MB, VS9MT, IP1ZUN, ZS1MH, 9K2AL, 9H1BX, CN8HD, 4X4NJ, PY7BIH, PY8RH, PY6JM, PY5OF, PY2EYD, PY6PW, PY7BIU, PY8KP, PY2DPS, PY7VON, PY7AJU, PY7BBD, PY7BFN, PYØAD and PY7AYE. Turning to the shorter CW list, GM3JDR made it with EA8FF, JA6BJT, UD6DGX, UA9KDB, UK9SAA, UK7EAA, 4X4UA, 8P6DR, EA8FO, PY2GGO, UW9XS, ZS6BT, TU2BK, VK3MR and ZE1CR. All these, let it be stressed once again, both CW and SSB, worked on *Forty* between 2030 and 2200z, the sort of hours when most of us have given up in favour of the all-conquering Lantern.

Another believer in the DX possibilities of 40m. is G2HKU but, sad to say, Ted has difficulty in persuading them to go along with him to the extent of answering his calls. Often he can hear HK, PY, YV and similar groups talking among themselves and just not seeming to notice G2HKU trying to call in. Nonetheless, he made SSB contacts with C31DZ, VK2EO, and YV1KZ, plus CW to KV4FZ, VE1XI, YN1CW, ZL3KB and 9H1BL. As for *Eighty*, there were QSO's to record with DJØSUF, PY7BFN and WA6GDS/P/LX(!)

G3OJV gave both Forty and Eighty a cursory look-over; SSB came up with 9G1DY, CT1BB/CT3 and C31BZ on *Eighty*, and PY2FEJ, PY2YC and JW7UH on *Forty*. Not so far away G3ZCC lists his lot as simply "no activity on Forty," and nothing more noteworthy than three GB3 stations on the trot for Eighty.

The FT-560 at G3ZAY was used by its owner on Eighty to work ZL3LE, 9Q5IA and PY7BOP.

Now for a different viewpoint, from G2DC, who avers that "It all depends on what you mean by DX." He worked on all-time band new one in 3C1EG on Fernando Po. Having raised him on Twenty Sideband—this SSB is getting to be a habit!—Jack established that he would be on for a trial of *Forty* at 0200z, 7002 kHz. Jack set the alarm-clock, pretuned the rig, and hopped up to the shack just in time for the first CQ, called him, worked him, and was back in his warm bed within fifteen minutes. Others on Forty included VP9BK, all W call areas, VE1-4, VE7-8; Eighty did not get the usual G2DC thorough treatment this month, mainly due to a father mysterious spot of bother with the transmitter, but W, VE, VP9, UA9 and UF6 were raised, just to keep the hand in practice.

Now on to a different tack. G3ACR/P is going to Ramsey, I.o.M., over August 20-30, and will have four watts of CW, crystal on 3543 kHz with a transistorised transceiver; he will generally be on during the periods 1000-1200 and 1400-1700 clock for his operations unless otherwise dictated by XYL and family. Keep an ear open for him, and keep a clear channel for his QRP, please chaps (quite apart from working him if you want GD!).

Another expeditioner reporting is GM4AFF, who says he, with GM8EVV and A. N. Other, will be activating rare WAB areas in the N.E. corner of Scotland between August 15 and 20th, as follows: On

August 15, NJ93 all day on the HF's, then CW, *Eighty* AM and *Top Band* AM/CW in the evening, following this form basically on August 16 and 17. On August 18 the pattern changes, with participation in the WAB Net from 1730-1830 from NKO2, 1900-2000 NKO3, and 2030-2130 NK13. August 19 sees the same one-hour periods to activate respectively NKO4, NK14 and NK15, while August 20 sees them use only the first two periods, for NKO5 and NKO6 respectively. All of which doesn't mean much to those who don't play WAB—if you are in that category, rush your request to G3ABG, *QTHR*, for all the details. And don't forget the profits go to help RAIBC!

And Now, Top Band

Who said that is what we're all waiting for? Well, this time there's not a lot of news, when one gets to the meat of it.

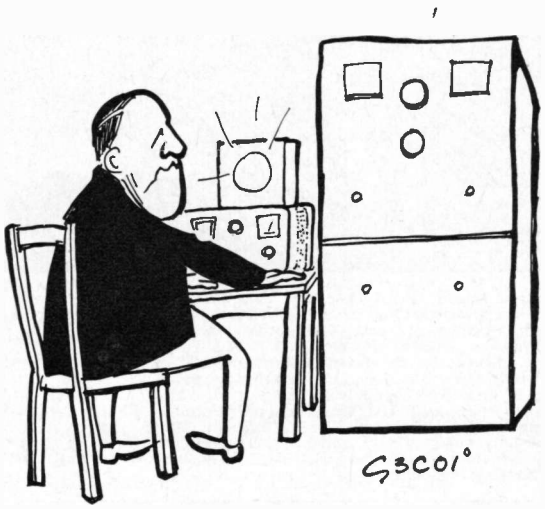
For the county-chasers, we hear from G3ZRA of a trip he is mounting with some others unspecified, to cover *Wigtown* on August 17-18; *Ross and Cromarty* August 20-22; and *Peebles* on the 24th and 25th. For a sked, send a quick s.a.e. to R. Elliott, G3ZRA, 19 Lyndhurst Road, Ramsgate.

Those Transequatorial Tests with the South Americans have proved, this time at least, to be a wee bit of a wash-out. During June, G3YMH heard PY1DVG, PY2BJH, ZP9AY and KV4FZ, all audible between 0001 and 0100z, with ZD8AY also occasionally coming through. However, looking at the world-wide picture, PY1DVG (ex-SWL Rolf Rasp) who was licensed on June 2, already is known to have worked CX3DN and G3IGW, as well being heard in VK by at least five different stations. Skeds have been arranged to VK now the original shock is over, but nonetheless this laddie looks set fair to make a Top Band WAC in his first active season, having downed the difficult birds in the first month. Congratulations, Rolf!

Coming back to G3YMH, Ron has worked W1HGT a couple of times this last month, thus bearing out W4WFL/1's contention that every time he switched the receiver down to Top Band, there was W1HGT on the trail of another one. However, Morgan is beginning to have to pay for his re-entry into orbit—his Drake 2-B is giving signs of its age, these showing, naturally enough by Murphy's Law, always *just* when about to VFO on to desirable DX on a clear channel!

That comment of your conductor's last time about the "escape of 4U1ITU" caused remarks in return from G2HKU, G4ADP and G3ZZB, all commenting on the apparent inability of 4U1ITU to hear G's on

R. H. Godfrey, G3WCK, 87 Clifden Road, Clapton, London, E.5, got his ticket in February 1967—having been interested in radio since he was ten years old. Operating coverage is all band 10 to 160m., and much DX has been worked on CW and Phone—up to the present time more than 4,000 log entries have been made. The gear used is mainly Heathkit, with a home-built Tx for the 20-40-80m. bands. All EU countries have been worked on 80m. CW. The aerial normally used is a 132ft. end-fed wire.



" . . . Yes, OM, your big linear did make a bit of difference — about half an S-point . . . "

Top Band of late. The interesting point about all this is that it seems pretty clear that the operator—or at least one of them—at the material time, was Bob, WØDX, a man who is by any standards a top-flight Top Band man, with a 160m. WAC to his credit and ears to match. It all seems to suggest that either the 4U1ITU aerials are by some accident disposed again the U.K. at first-hop range or that the transmitter is much more potent than the receiving set-up. Curious, indeed.

QSL Aid

Here we have first W4WFL/1, who has quite a pile of interesting ones put by for us. On September 1-7, in memory of Walt Disney, WD6WD will be on during the ARRL Southwestern Division Convention at Disneyland Hotel, Anaheim, California. QSL's *via* K6VDP, with s.a.e. or IRC's. October 23-25 is down for KY6PMR at Point Mugu, California, in connection with a Space Fair—for QSL try WA6WWC or keep an eye open here for some later news.

Anyone still missing a card for KX6FN for between July 1967 and July 1969 can still apply to W2MS —*but* for KX6FN/KC6 go to DOTM. 3V8AL has now arrived in Kinshasha and awaits a 9Q5 call. HB9XUS is another *alias* of Bob, WØDX, mentioned elsewhere in this column, and his QSL's are being handled by WØDRE/1. WOJYM, is possibly better known in his earlier styles as ZD8HAL, ZD8H and 9Y4KK—however, although he is now permanently back in the States, outstanding QSL's are still being looked after by KØETY. Finally, 3AØFF cards can be obtained by going either to his home DL4WJ call, or *via* DARC. Tnx, Morgan!

G4AAQ gives *ZD8CW*, to W3MUM; *5X5NA*, to G3LQP; *VS9MT*, to G3LQP; and *5H3LV* to VE3ODX.

Finally, in this section we have G3NOF, offering *KP4BJD*, to ISWL; *HBØXTO* to DK3ST; *MP4MBC* to G3XEC; *VQ9R* to P.O. Box 193, Mahe.; *VP2LG* to P.O. Box 455, Castries; *JY1* to WA3HUP; *FØWV/FC* to ON4TJ; *JY9XL* to FG7XL; *3C1EG* to OH2NB; *TN8BK* to P.O.B. 123 Brazzaville; *C31DZ* to G5YC, *EP2DA* to W2MXB; *JY9YL* to W3EMH; *VP2MF* to VE3GCO; *9M2WM* to WA6AHF; *KG6SW* to W7YBX; and *3CØAN* to OH2NB.

Finale

That's the lot, gentle people; we hope no-one who has written has missed a mention, and that none of the information has been garbled—but if it has please blame the bugs afflicting him and *not* your G3KFE. Deadline for next time is to arrive first post **August 9**, as ever addressed to CDXN, SHORT WAVE MAGAZINE, BUCKINGHAM. *Till then, 73.*

A receiver unusual for Eddystone Radio, Ltd.—their new Type 31A Rx, designed to trace VHF interference sources. Produced in collaboration with the Post Office, the Type 31A may be regarded as a calibrated RF amplifier or as a selective voltmeter. The tunable coverage is 31 MHz to 250 MHz, any mode acceptable. and the Rx can be used to measure field strength or to trace signals (or noise) to source anywhere within the tuning range, either by D/F or signal-intensity comparison techniques. The circuitry is double conversion (25 MHz and 3 MHz) with a separate oscillator for each of the three bands 31-68, 66-136 and 135-250 MHz. The Eddystone 31A is portable, fully transistorised, and operates from an internal battery, rechargeable from a built-in charger. (Shades of E. K. Cole and his original "mains eliminator" of 45 years ago!)

DIPOLE FACTS

BASIC PRACTICAL DETAILS

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

AT G3OGR numerous wire aerials have been used. This series is intended to be more in the nature of a quick reference for newly licensed stations, rather than a lengthy examination of each type of aerial.

The aim is to include essential constructional information, and brief notes on working or other points.

Virtually all commercially made and most home-constructed transmitters have a *pi*-tank and coaxial output socket. The idea of plugging a coaxial fed dipole straight into this, and at once getting on the air is attractive, and sound. In fact, an aerial of this kind is sure to be useful and successful, and encourage proper operation of the transmitter.

The dipole has a top, radiating portion which is cut to be about a half-wave long at the working frequency. This means that the dipole is particularly for one band, and is fashioned to suit. Fig. 1 shows this "top length" and each of the wires forming it are of the same length.

The length does not have to be *exactly* correct, so the same dipole will work over a range of frequencies in the band for which it is cut. As example, one length will readily work satisfactorily from 7·0-7·1 MHz. On the other hand, loading troubles may well arise when using the same length over a rather wide range of frequencies. So it is then necessary to cut the aerial with the favoured section of the band in mind, such as for CW or phone operation.

The 75 ohm coaxial cable can be of any length, and its length need not be known. So the piece employed simply runs as convenient from the centre of the aerial to the transmitter. It can, and should, be regarded simply as an RF pipe, feeding power to the radiating portion.

If a standing-wave ratio (SWR) indicator is in use, plug the aerial feeder into this. A short piece of coax cable with plugs then connects the transmitter to the SWR indicator.

Length and SWR

The SWR would be 1 : 1 for a perfect match, and can sometimes show about this for a dipole, at around one frequency. Generally, anything under 1·25 : 1 is good, and anything under 1·5 : 1 is satisfactory. In fact, the manufacturing tolerances of coaxial cable might result in worse than 1 : 1 with a perfectly terminated feeder.

Fig. 2 shows typical situations which might be found if the SWR is checked at various frequencies over a band. Curve "A" is worst at the HF end of the band, falling nearer 1 : 1 at the low frequency end. The aerial is thus too long. Cutting off equal lengths from each side with respect to the centre insulator could produce curve "B". The SWR is nearest to 1 : 1 around the middle of the band, rising somewhat HF and LF of this. This well illustrates how "frequency-sensitive" a dipole can be.

The table shows dipole lengths for about the centre of each band, 80 to 10m. Since it is easier to cut off than

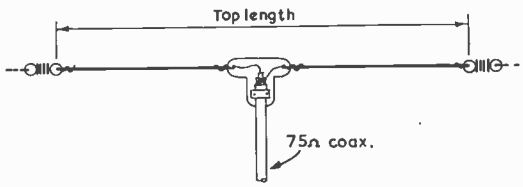


Fig. 1 Important dimension of a dipole

to add length, extra length may well be provided if operation is to be at the LF—normally the CW—end of a band, or if elements will not be in a straight line.

The table also indicates approximate lengths to remove (or add) to shift the frequency by about 100 kHz (or 500 kHz, for 10m.). As an example, if the SWR were best at about 3·5 MHz, but operation would tend to be in the 3·5-3·7 MHz range, centred around 3·6 MHz, then the aerial is to be moved 100 kHz HF—so 42in. can be cut off. That is, 21in. off each arm.

With the higher frequency bands, changes may well be a matter of a very few inches only. If length has to be added, twist the wires together for an inch or two, and solder—or use the screwed sleeves from strip connectors.

If no SWR indicator is available, a situation such as "A" in Fig. 2 would generally be revealed by the transmitter loading satisfactorily near the LF end of the band, but PA loading becoming progressively more difficult as frequency is increased. The solution is to cut off a length equal to about 100 kHz, and try again.

Should loading appear to be correct at the HF end of a band, but gets worse as the working frequency is reduced, then of course it is necessary to add equal additional lengths to each arm of the dipole.

Height Effect

Details of erection will influence the SWR. A 22ft. 1in. dipole, cut for 15m., was found to give an SWR of very near to 1 : 1 from 21·1 MHz to 21·4 MHz, but a 40m. dipole with sections at an angle to each other was found to require a length of 67ft. 1in. for the lowest SWR.

Two-Band Operation

The only case where a dipole of this type can be used on two bands is with that length which is one half-wave

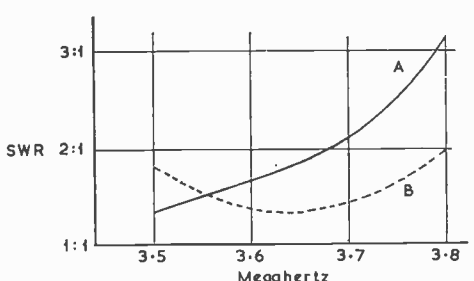


Fig. 2 Effect of length on SWR

A 514

Dipole Dimensions

MHz Band	Length	Per 100 kHz
3·65	128ft. 3in.	42 inches
7·05	66ft. 5in.	11 inches
14·17	33ft.	3 inches
21·2	22ft. 1in.	1¼ inches
28·5	16ft. 5in.	4in. per 500 kHz

on 7 MHz, which is about three ½-waves on 21 MHz, so may be centre-red with 75-ohm coax for operation on both these bands. The 67ft. 1in. mentioned for 40m. was found to have an SWR of under 1·5 : 1 from 21·1 MHz to 21·4 MH, and radiated well on this band.

Making It Up

Hard-drawn 14g. enamelled wire is probably best, but 7/26g. stranded wire is equally satisfactory. Some rather thinner stranded and p.v.c. covered wire has been used, but broke on one occasion when an aerial was tightened. There is a limit at which thin wire can support its own weight, and will stand tightening.

The middle requires an ordinary insulator or dipole centre-piece. Loop the wires through the holes, and solder—or use sleeve connectors. Remove the coax outer insulation for about 2in., unravel the braid and twist it into a pigtail. Solder this to one portion of the aerial, and the inner lead to the other portion, Fig. 1. *Seal the coax against the entry of moisture.* Tape or bind the cable to the centre-piece to take strain off the connections. The best sort of binding is waxed cord.

Measure the top length as accurately as possible and be sure each half is the same length. Leave a suitable extra bit (say 3in. to 4in.) each end, to pass through the insulators and twist, so that the actual top length is as in Fig. 1.

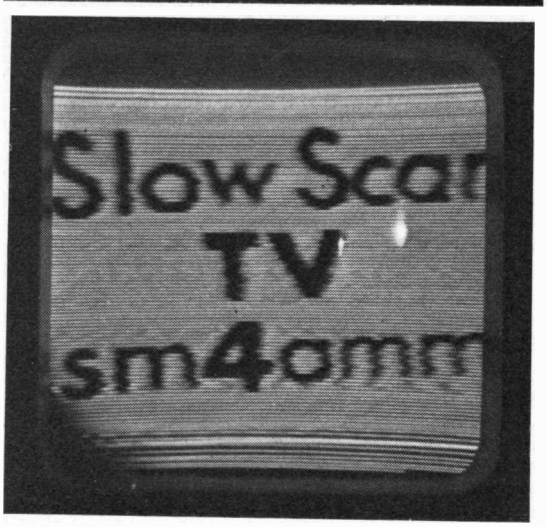
The position, height and orientation of an aerial often depends more on convenient supports than on planning. The shorter dipoles can be supported satisfactorily with one cord each end. With an 80m. dipole, an additional support at the centre, or at least something that can take some of the weight of the coax feeder, becomes increasingly helpful. Without this, considerable tension is needed to avoid bad sagging in the middle—which is why heavy-gauge wire is usually necessary.

Where there is one good support, such as a pole on a chimney, it may be better to raise the centre of the aerial, with the feeder, to this. The free ends are then stretched out as other supports allow. Where the ends come down rather low, the system becomes an inverted-V, which can give a good performance.

In general, extra height helps radiation. Dipoles of the kind described have been used horizontally, vertically, sloping at angles dictated by supports, and with sections at sundry angles. All have given much the same kind of general result, depending in the usual way on band, orientation and conditions. Dipoles are much used on 80 and 40 metres and give good general signal reports. On the HF bands the longest distances worked have of course been to VK and ZL, but a good many reports have been in the 5/3 range. In the 1,000-3,000 mile range, the majority of reports seem to fall in the 5/4 to 5/6 region. So a dipole for a particular band can be a very useful aerial to have.

For anyone contemplating serious work with aerials, a 33ft. or 66ft. surveyor's tape is an extremely useful adjunct for accurate measurement—they can usually be obtained from good-class general ironmongers.

—Editor.



Some remarkable slow-scan TV pictures obtained recently by G5ZT, Plymouth, on his Robot SS/TV equipment—about which we hope to be giving more details in a later issue.

VARACTOR TRIPLERS FOR VHF

DESIGNS FOR 70 Cm. AND 23 Cm.

G. DIDELOT, F8TD ("Radio REF")

This article, translated from the French by A. H. Dormer, G3DAH, points up the practical value and importance of the varactor in VHF/UHF working. In these applications, the mechanical construction plays a very important part in obtaining satisfactory results—hence, detailed construction drawings are given, as a general guide to the building of this sort of equipment.—Editor.

THESE triplers have been designed specifically to eliminate, as far as possible, undesirable harmonics at the output, always a vexatious problem with these devices, and to be driven from a 144 MHz Tx having an output power of some 50 watts, typically that from the widely used QQV06-40A. It can be readily appreciated that the latter requirement has led to the adoption of a solid type of construction because, reckoning on an efficiency of 60%, it will be necessary to dissipate 20 watts of calorific heat in the most efficient manner possible in order to avoid overheating of the varactor junction. This problem has been solved in a simple manner by using 2mm. copper sheet for the chassis and bending it in the form of an inverted-U to give a large cooling surface without any joins. The same method of construction is used for both the triplers described here.

It is possible to use various types of varactor in these designs. Tripling from 144 MHz to 432 MHz, the BAY96 can accept an input of 40 watts which, at an efficiency of 65%, gives approximately 25 watts output at 432 MHz. For tripling from 432 MHz to 1296 MHz the BAY96 is suitable from the frequency point of view, but the input is limited to 12-15 watts which, with an efficiency of approximately 50%, gives 6-8 watts output, and with a good parabola this is sufficient for medium-range contacts. However, if a transmitter is constructed using this varactor, it will be necessary to reduce the output power of the 144 MHz driver for operation on 1296 MHz. It should be noted that the powers quoted above are the *maximum* powers, and can only be used with CW or NBFM. With AM it will be necessary to reduce the carrier power by approximately one quarter, and this makes the design much less attractive. It would be simpler, and cheaper, from all points of view, to use NBFM for telephony operation.

If it is desired to make use of the full 50 watts output from the 144 mHz driver, higher power varactors must be used, specifically in the 1296 MHz stage.

The *Motorola* varactors Type MV1805C are rated at 50 watts input and, with a tripling efficiency of 70%, should give an output of 35 watts on 432 MHz which, when applied to a second varactor of the same type operating as a tripler at an efficiency of 55%, should produce an output power of some 18-20 watts on 1296 MHz. Although the figures quoted here have been taken from the manufacturer's specifications, and have not been actually measured in practice, the results obtained indicate that they are of right sort of order.

Most amateurs are a little scared of the high prices demanded for high-power varactors, and it must be admitted that the *Motorola* types are very much more expensive than the BAY'S. However, it should be borne in mind that, to obtain the same power output with valve triplers and amplifiers, it is necessary to use special types which are not in themselves very cheap, and with the associated components, blowers, heater and HT supplies, the cost may be more than that of the varactors. In any case, the difference in price will be small.

Construction and Mounting

As can be seen from the accompanying diagrams, the construction of the triplers need present no great mechanical problem as long as one takes reasonable care. The drawings show varactors with single hole fixing, such as the BAY96 and BAY66. When the *Motorola* types are used, having terminations rather like the 1N21, a method must be devised for supporting them without mechanical strain, but in such a way as to give good thermal conductivity to the chassis. Special holders may be obtained, but these are very expensive. However, with access to a lathe, it is possible to make suitable holders. These might consist of a copper tube, 10mm. in diameter, externally threaded at one end and fastened to the chassis with a small collar, and with an internal, conical, toothed sleeve fitting into a helical groove

Table of Values

Fig. 1. Circuit of the 2m.-70 cm. Tripler

C1 = 5-45 $\mu\mu$F, air spaced
C2 = 3-25 $\mu\mu$F, air spaced, spindle insulated
C3 = 2-7 $\mu\mu$F, air spaced, min.
C4 = 0·8-10 $\mu\mu$F, min.
C5 = ·0047 μF, feed thru
C6 = Tuning discs, 24 mm. dia. x 2 mm. thick
R = 47,000 ohms, ½-watt
V = Varactor, *see text*

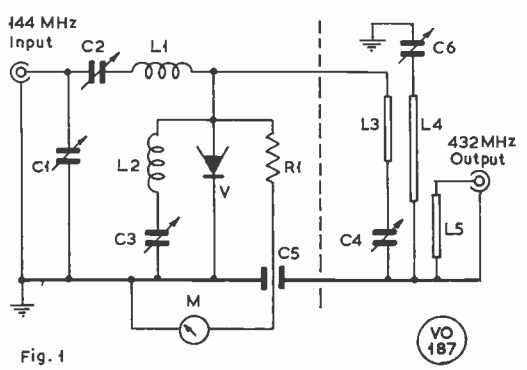


Fig. 1 Circuit of the 144-432 MHz varactor tripler, discussed in the text.

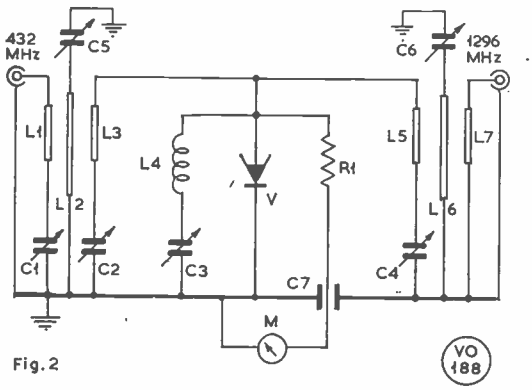


Fig. 2. The tripler circuit for 432-1296 MHz, where line dimensions and mechanical layout become critical.

TABLE OF COIL DATA (Fig. 1, p.345).

L1 = Five turns 16g. silvered wire, int. dia. 12 mm, length 18 mm.
L2 = Two turns 16g. silvered wire, int. dia. 8 mm, length 6 mm.
L3 = 16g. silvered wire, coupling length 34 mm. plus 27 mm. for connections, spacing 0·5 mm.
L4 = Tubing 10 mm. dia., total length including disc C6, 79 mm. Screwed and soldered to screen and disc.
L5 = 16g. silvered wire, coupling length 28 mm. plus 8 mm. for connections, spacing 1 mm., with earthy end soldered into hole cut in screen.

Notes: L3 connection through screen must be insulated; a piece of coax internal insulant will do. While the chassis should be in copper, there is some advantage in silver-plating it, also the 432 MHz line and capacitor C6.

Table of Values

Fig. 2. Tripler for 432-1296 MHz

C1, C2 = 0·8-10 $\mu\mu$F, tubular ceramic
C3, C4, C5, C6 = 0·35-3·5 $\mu\mu$F, tubular ceramic
C7 = ·0047 μF, feed thru
R = 47,000 ohms, ½w.
V = Varactor MV1805C, *Motorola*

Notes: Coil dimensions will have to be a matter for experiment, based on values given for Fig. 1 and depending on actual constructional form achieved. Basic line dimensions can be, for 70 centimetres, length 95 mm., thickness 17 mm. and width 20 mm.; and for 1296 MHz (23 cm.), 48 mm. long by 11 mm. thick and 15 mm. wide.

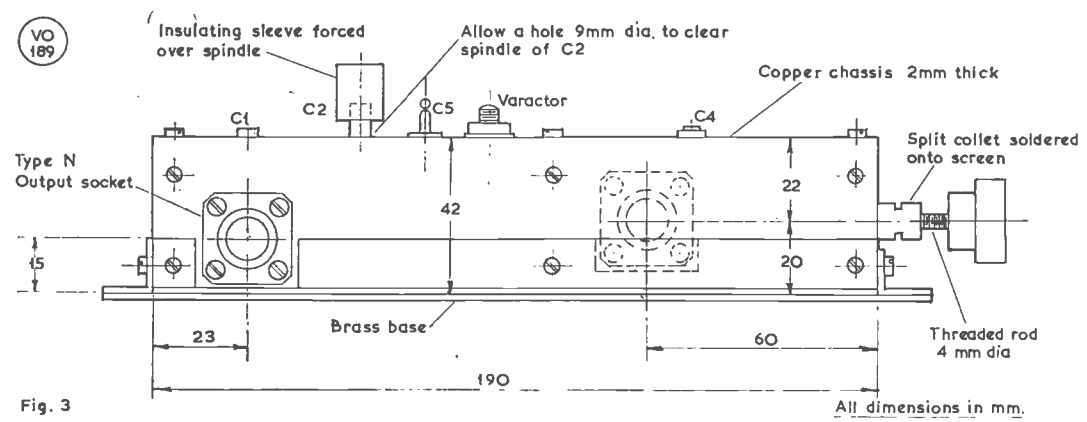
which, when screwed into position, will grip firmly the metal end of the varactor.

In the case of the BAY66 and BAY96, no mounting difficulties arise, but it should be remembered that varactors are generally mechanically fragile, and they should be treated with the respect which their price demands! Lateral stresses should be avoided, and there is no need to bolt them as firmly to the chassis as if one were changing a wheel on a ten-ton lorry! Also, if the top connection of the varactor consists of a metal tag to which the appropriate components must be soldered, this operation should be completed as rapidly as possible, preferably with the help of a copper heat shunt.

There is some advantage in silver-plating the circuit elements as well as the interior of the tripler cavities. If you can afford it, it is even better to have them gold plated, to avoid tarnishing!

144 MHz to 432 MHz Tripler—Fig. 1

Capacitors C1 and C2 are the readily available types with ceramic end plates. Note that C2 must have both terminals insulated from earth and that a large enough hole must be drilled in the chassis to avoid any metallic contact with the centre spindle. Mount the two coils



Constructional layout for Fig. 1.

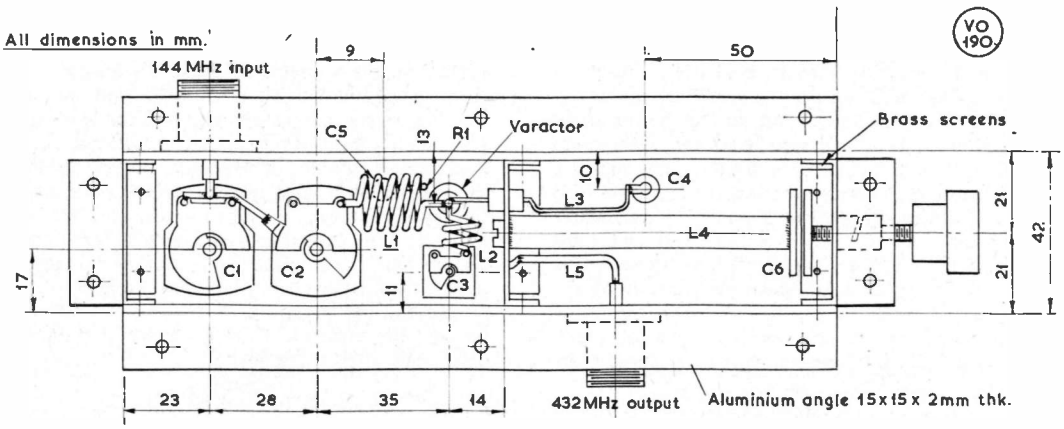


Fig. 4

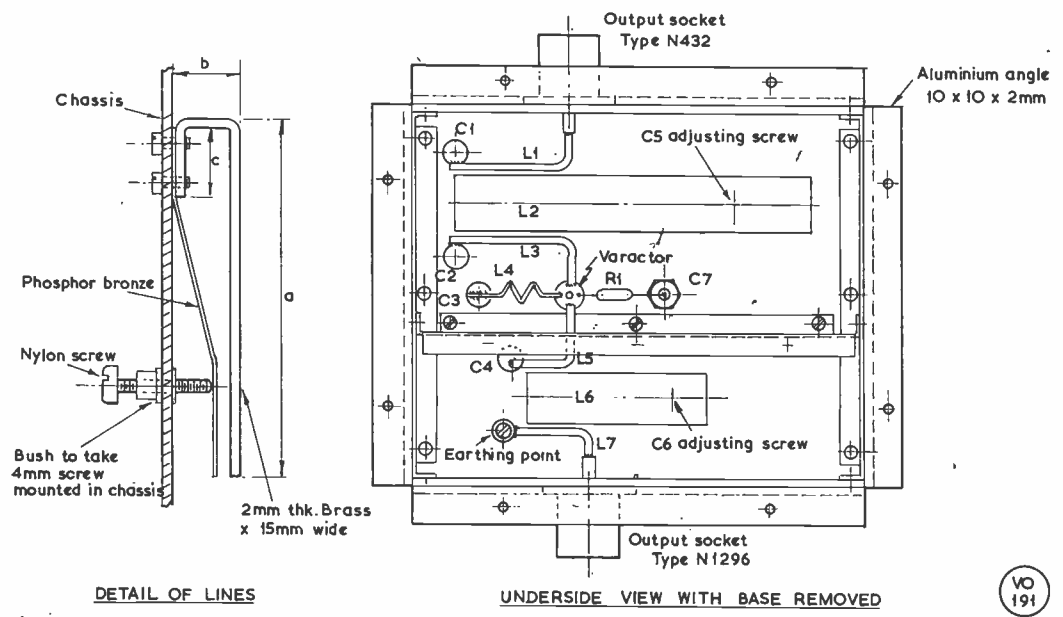


Fig. 5

Fig. 3, Fig. 4 and Fig. 5 show general constructional procedures, all dimensions shown being in millimetres.

L1 and L2 perpendicularly as shown in the drawings, with L2 near the bottom of the chassis, and L1 nearer the cover plate. The position of the moving plates, as shown on the drawings, approximates to that found correct in practice. Provided always that capacitors of the same type as specified are used, this may give a guide to final adjustment.

432 MHz to 1296 MHz Tripler—Fig. 2

The most important point here is to shorten the line L5 as much as possible so that it tunes with C4 to 1296 MHz. For this reason, the varactor must be mounted as closely as possible to the screen—the distance shown on the drawings represents the maximum. The remainder of the construction does not call for any particular comment, as the drawings are sufficiently explicit. The variable capacitors specified here are excellent, but they are difficult to obtain and rather expensive. If left with no other alternative, it may be possible to substitute them by piston types, which are much less costly, but this may lead to difficulties during the setting-up process. It is obvious that with a price ratio of the order of 10 : 1 between the two types, one cannot ask the same performance of the two models.

[over

Adjustment

Although many methods of adjustment have been described in the various journals, here are a couple of supplementary ideas. So as not to run the risk of damaging the varactor, start adjustment with a power input to the varactor equal to its rated maximum dissipation as quoted by the manufacturers, and do not increase this power until the tuning-up is nearly accurate. To complete adjustment as rapidly as possible, it is an advantage to use wavemeters covering the second and third harmonics of the input frequency. Couple these to the output of the tripler and adjust the circuits to obtain *maximum* output of the third, and *minimum* output of the second harmonics. As the tuning adjustments reach optimum, the F3 wavementer coupling should be reduced and the F2 wavemeter coupling increased, to facilitate the location of the minimum. Commence with the adjustment of the input circuits to obtain maximum current in the varactor as indicated on the meter, and then adjust the output circuits to give the maximum reading on the F3 wavemeter, and the idler circuits to give minimum output of second harmonic. These adjustments should be repeated several times, in the same order, as it must be remembered that in circuits of this type, tuning adjustments will interact with one another. The best results will only be obtained after a certain amount of "fiddling". During all these adjustments, the chassis cover plate must be in position, firstly to prevent the radiation of a parasitics, and secondly because the presence of the plate has a slight effect on the tuning of the circuits.

COURSES FOR THE R.A.E.

Following are the courses, as so far notified to us, on Subject No. 55, the Radio Amateur's Examination, in which a pass is essential for the obtaining of an AT-station licence. The examination itself is set by the City & Guilds of London Institute and is held at centres all over the country, the next being in May 1972. The Morse Test is taken separately and a pass in both qualifies for the full amateur-station licence, with a callsign in the G4/3 series.

Other authorities offering courses are asked to let us have details by *August* 6 for appearance in the September issue.

Readers not finding a course offered in their particular locality should apply at the local office of their Education Authority, asking for details as to the nearest centre at which instruction is available—in all such enquiries, always quote "The Radio Amateur's Examination, Subject No. 55 in the City & Guilds of London Examination syllabus".

Brighton: At the Technical College, on two evenings each week, details from the Faculty Office, Richmond Terrace.

Colchester: At the North-East Essex Technical College, Sheepen Road, on Tuesday evenings, first session Sept. 28 at 6.30 p.m., enrolment at the College Sept. 13-15. For details contact F. R. Howe, G3FIJ, *QTHR.*

East Herts.: At the College of Further Education, Turnford, on one evening a week, 7.0-9.30 p.m., enrolment Sept. 13-15. The College has its own AT-station, signing G3ZSY.

Glasgow: At the Further Education Dept., College of Nautical Studies, 21 Thistle Street, C.5, on Tuesday and Thursday evenings, 7.0-9.30 p.m., commencing Sept. 14. Enrolment at the first session (fee for the course £3, but free for under-18's). The coverage is all-embracing—R.A.E. theory, licence conditions and Morse instruction. No prior knowledge of radio is assumed or required.

Leicester: At the School of Electronic & Electrical Engineering, The Polytechnic, on Wednesday evenings, starting on Sept. 22, in two sessions, 1800-1915 Morse, and 1915-2115 R.A.E. Theory. Enrolment Sept. 14, fee £4 for the course (juniors free subject to certain conditions). Instructor-in-charge R. G. Titterington, G3ORY.

Lincoln: Course offered at the College of Technology, Cathedral Street; apply to the Principal's office for details.

London (Brentford): At the Centre for Adult Education, Brentford School for Girls, Clifden Road, on Monday evenings, 7.15-9.15 p.m., starting on Sept. 13. Enquiries to Adult Education Office, Old Town, School Road, Hounslow (*01-572 0698*).

London (Chingford): At the Community Centre, Friday Hill House, Simmons Lane, Chingford, enrolment week commencing Sept. 13 from 8.0 p.m., classes on Monday evenings 7.30-9.30 p.m., starting Sept. 20. Inclusive fee for two terms £2·65 (juniors under 18, £1·25). Course instructor E. Johnson, G2HR, *QTHR.*

London (Highgate): At Whittington School, sponsored by the Grafton Radio Society, enrolment from 8.0 p.m. on Sept. 20, course starts Sept. 27 at 7.0 p.m. Instructor will be B. Bond, G3ZKE, and Morse instruction will be available on Friday evenings. Further details from T. W. Coleman, G8EEI, hon. secretary, Grafton Radio Society, 14 Norman Court, Stapleton Hall Road, London, N.4. (*Tel. 01-340 9542*).

London (Merton): At the Technical College, Morden Park, London Road, Morden, on Thursdays 7.0-9.30 p.m., commencing on Sept. 23, enrolment Sept. 13-15. Course will cover R.A.E. theory, licence conditions and Morse, and the College has its own AT-station, G3ZSO. Enquiries to Head of Electrical Engineering Dept., or ring *01-542 2442.*

Plymouth: At the College of Further Education, on Monday and Wednesday evenings, 6.30-9.0 p.m., instructor D. M. Webber, G3ENX. For details ring *68000 day*, or *73238, evenings.*

HIGH-IMPEDANCE VOLTMETER

FOR ACCURATE READINGS IN LOW-VOLTAGE RANGES— RELIABLE MEASUREMENTS IN TRANSISTOR APPLICATIONS

R. A. PENFOLD

DURING the servicing of electronic equipment, voltage checks are continually having to be made. Usually a multimeter will be used, and the normal sensitivity for such a meter is 20,000 ohms per volt. This means that a current of 50 μA is required for full-scale deflection of the meter. While under most conditions a small current such as this will not effect the circuit under test, and thus also the voltage reading, it is sometimes necessary to use a voltmeter of much greater sensitivity.

An example of such an instance is given in Fig. 1. This shows a potential divider circuit, typical of those found in transistor circuitry. By each resistor the approximate voltage one would expect to find across the component is given. If a 20,000 ohm/volt multimeter were set to read 0-2·5v., and connected across the lower resistor, a totally misleading reading would be obtained. As the meter has about the same resistance as the resistor, R2, the voltage reading would be about halved.

A high voltage range on the meter could be selected, but as the accuracy of a meter is usually expressed as a percentage of its full-scale deflection, readings obtained on the lower end of the scale may have an accuracy not appreciably better than that of the reading obtained on the lower range.

A better alternative is to use an electronic voltmeter, which will enable an ordinary 50 μA meter to measure voltages with a sensitivity of 500K/volt or more. Such meters can be rather complex, but the one shown in the circuit diagram, Fig. 2, is fairly simple, but nevertheless has an excellent performance. As it was specifically designed for use with transistor equipment, it has been given a highest-voltage range of 50 volts. By changing the input resistors it would, of course, be possible to obtain almost any desired voltage range. For higher voltage ranges it would be necessary to change the simple series resistor for an attenuator arrangement, due to the lack of availability of the very high value resistors which would otherwise be required. On high voltage ranges an

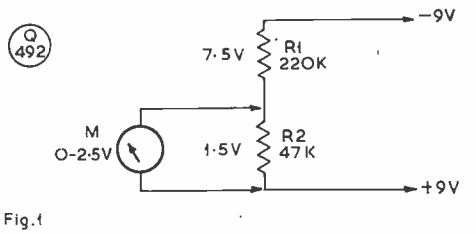


Fig. 1. With the wrong sort of voltmeter in this instance, instead of the correct reading of 1.5v. or so, the meter will scale about 0.75v.

Table of Values

Fig. 2. Circuit of the Voltmeter

R1, R3	= 27,000 ohms	R9	= 2·5 megohm standard pre-set
R2, R4	= 220 ohms	R10	= 5 megohm standard pre-set
R5, R6, R11, R12	= 10 megohm	ZD1	= 7·5v. 400 mW, 5%
R7	= 330 ohms	Tr1, Tr2	= BC169C
R8	= 500,000 ohm standard pre-set		

Notes: All resistors rated ¼-watt, 10%. Switch is 6-way 2-pole. Meter 0-50 microamp, 2in. square or as available. Printed circuit board can be 3⅜in. by 1½in. VR1 is a 47K standard pre-set. Resistors R11, R12 should be standard horizontal pre-set types.

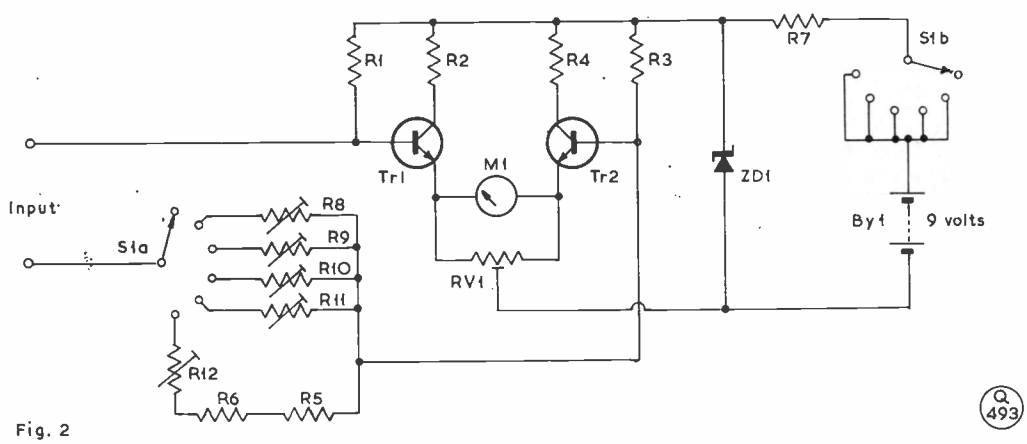


Fig. 2. Circuit of the high-impedance voltmeter complete as discussed in the text.

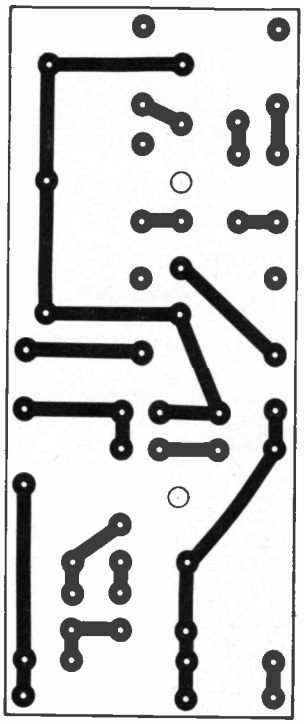


Fig. 3. While any tidy method of construction can be used, a professional-looking job will result with a printed circuit board. Etching and drilling details for a suitable layout are shown here.

ordinary multimeter will have a very high input resistance anyway.

The sensitivity of the prototype is a little better than 500K/volt, which should prove perfectly adequate for any voltage checks likely to be encountered in amateur practice.

The Circuit

As shown in the diagram, a bridge circuit is used. R2-Tr1-half VR1 form one side of the bridge, while R4-Tr2-opposite half of VR1 form the other side. Resistors R1 and R3 bias the transistors, which are both silicon high-gain types, into a linear operating condition. The preset potentiometer, VR1, is adjusted so that the same voltage appears at the emitter of each transistor. As the meter is connected between these two points, it will measure any difference in voltage across them. With no input this will be zero.

When a voltage is applied at the input, it is passed through the series input resistors. Usually 1% high-stability resistors are used for the input resistors in this type of instrument, but as this would not allow for any minor variations in sensitivity obtained with individual circuits, and the required values are not preferred ones anyway, this is not easily possible. It was therefore decided to use presets which may be set to the correct value with the aid of a multimeter, as described later. The presets do lack the stability of a high-stab. resistor but if there is any long-term variation in their resistance, they can always be reset.

From the input resistor the current flows to the base of Tr1. The other side of the input is connected to the base of Tr2. With no input the bases are at about the same potential, but with an input one base will go more positive, and the other more negative. This unbalancing of the bases will cause a much larger unbalancing of the emitter voltages. This will be registered on the meter.

As there is a linear relationship between the base voltages and the emitter voltages, the circuit is ideal for use as an electronic voltmeter. In practise the circuit has been found to give extremely accurate results.

There is a certain amount of built-in temperature

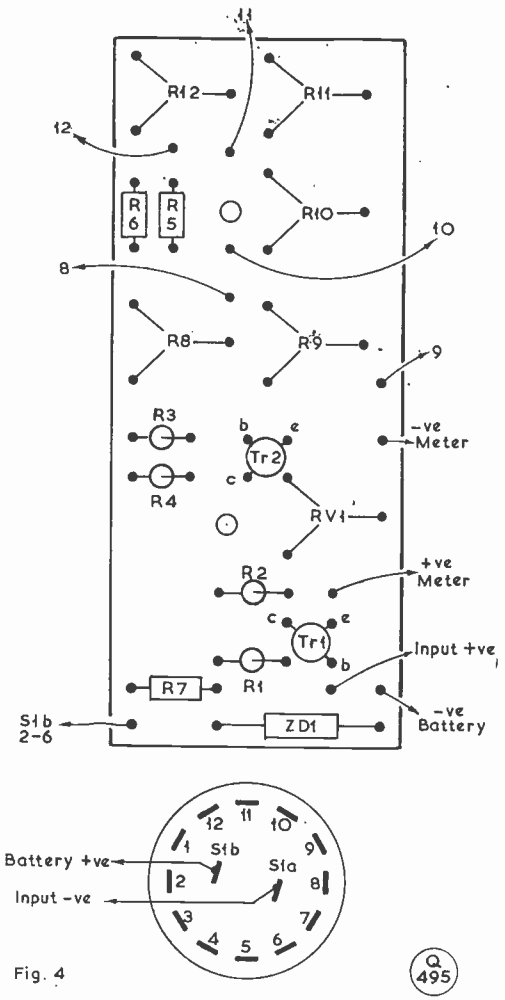


Fig. 4. This diagram represents the wiring layout if the board shown in Fig. 3 is used. Dimensions are such as to fit into a box or cabinet 4in. wide by 3in. deep.

compensation, as if there is a change in temperature, both transistors will be effected, and so will both sides of the bridge. There will thus be no effect on the meter.

Changes in supply voltage alter the sensitivity of the circuit, and to counteract this the supply is stabilised by a zener diode, ZD1, and resistor, R7. A voltage of 7·5 volts was chosen as it gives a reasonable battery life consistent with good sensitivity. The current consumption should be no more than about 5 mA with a new battery, and should be very much less than this as the battery voltage drops.

The switch, S1, is the function switch, and it selects one of five voltage ranges, and in Posn. 1 the unit is turned off.

Construction

The prototype was built on a printed circuit board, and housed in a wooden case. However, as everything is at DC the layout is not at all critical, and any tidy method of construction can be used. For anyone wishing to use a printed circuit, a diagram of the board used in the prototype is given in Fig. 3, and an accompanying wiring diagram in Fig. 4. Dimensions of the case should be approximately 4 in. wide by 3 in. deep by 2¼ in., assuming that a panel meter of no more than 2in. square is to be used.

Setting Up

When the unit is completed, a certain amount of adjustment has to be made to the preset potentiometers. First, VR1 must be set for zero-reading on the meter. The meter itself should be temporarily disconnected by removing one of the screws holding the solder tags to the meter connections. A 0-5 voltmeter should now be connected in its place. With VR1 turned fully anti-clockwise the unit should be turned on, and VR1 adjusted for zero reading on the 0-5 volt meter. The meter, M1, should then be reconnected, and any final adjustments made to VR1.

Next the input resistors have to be adjusted. These should all be set for maximum resistance at the outset. These presets should be given the correct adjustment by connecting a multimeter in parallel with the voltmeter, and then connecting them to a series of suitable voltages. The presets can then be adjusted until the reading on the voltmeter is the same as that on the multimeter. For the greatest accuracy the voltages should give nearly f.s.d. on both the meters.

SPECIALLY ON THE AIR

Most of the happenings given publicity in our last having by now taken place, the list this time is a good deal shorter. Organisers of public-occasion events to happen during the next month or so should let us know as soon as possible, and in any case not later than by *August 6* for appearance in the September issue.

Notices should be set out on a separate sheet in the form shown here—and in every case must include the QTH of the contact-man for QSL's.

In connection with the burning topic of QSL cards for these occasions, we would suggest that all who are interested should have another look at the notes on p.303 of the July issue of SHORT WAVE MAGAZINE.

GB3ESP, July 31-August 7: For the 56th Universal Esperanto Congress, London, operating CW/SSB on 10-80m., 0800-2100z daily. Skeds welcomed, particularly with Esperantists, by arrangement stating date, time, frequency and mode preferred.—W. Farrar, G3ESP, Wentwood View, Ackworth, Pontefract, Yorkshire.

GB3TSE, August 3-7: At the Tyneside Summer Exhibition, Newcastle-on-Tyne, to be laid on by the Tyneside Amateur Radio Society.—G. Lowdon, 21 Winifred Gardens, Wallsend, Northumberland.

GB2MO, August 5-7: Operating from the Recreation Park, Maldon, as part of the town's octocentenary celebrations, working SSB on all HF bands, also two metres on Saturday, 7th. There is to be a special commemorative QSL card for all contacts and reports.—R. Wager, G3VOJ, Manse Chase, Maldon, Essex.

G3SFG/P, August 13-14: At the Friern Barnet Summer Show, an annual event at Friary Park, Friern Barnet Lane, London, N.11. Operation will be mainly on Top Band and two metres. (GB3 prefix applied for).—A. G. Edwards, G3MBL, 244 Ballards Lane, North Finchley, London, N12-OEP.

G3DOE/A, August 28-30: Put on by Thanet Radio Society for "Quexpo 71" at Birchington, Kent, for a weekend of family entertainment. They will be operating SSB on all HF bands, and will also be on two metres.—R. Trull, G3RAD, 1 Approach Road, Broadstairs, Kent.

GB3ATC, September 11: For the open day to be held by 2247 (County of Flint) Sqdn., Air Training Corps, at their Hq., working AM phone on 10-160m., also operating on the A.T.C. network, callsign VQ5X449 on 4925 kHz. A special QSL card has been produced for the occasion and the four operators involved hope to be working many stations in both connections.—H. D. Fennah, A.T.C., 14 Highfield, Hawarden, Deeside, Flintshire, CH5-3LR.

PHOTOGRAPHS AND ARTICLES

If you have anything of Amateur Radio interest to offer for paid publication in SHORT WAVE MAGAZINE, please note that what we prefer are post-card size black-and-white pictures of good photographic quality and articles prepared strictly in accordance with the "Authors' MSS" note on the Contents page of any issue. All such material should be addressed: Editor, SHORT WAVE MAGAZINE, BUCKINGHAM.

TRANSISTOR MODULATOR

WITH CLIPPING AND FILTERING —SUITABLE FOR A 30-WATT CARRIER

A. J. GOFF (G8DKL)

THE modulator described here has been used in conjunction with the author's two-metre transmitter for over a year and has proved to oe most successful, some very good quality reports having been received. A lower power version is in use on seventy centimetres with similar results.

This unit is capable of fully modulating a transmitter running 30w. input. It must be pointed out that this only applies with speech input, as the supply voltage fluctuates with output power. Therefore, under a continuous *sine* wave drive, the full power output will not be achieved, as the supply voltage will drop to too low a level. However with normal speech drive the voltage is maintained by the power supply smoothing capacitor.

Preamplifier

A filter is used at the input to reduce the chance of RF getting into the amplifier and causing instability. Two ferrite beads are also fitted on the screened lead between the input socket and the circuit board.

The input stage consists of a DC-coupled pair with DC negative feedback to stabilise the currents in the transistors. The input of Tr1 is arranged to produce an input impedance of 50k to match correctly into a 50K dynamic microphone. Output from Tr2 is taken through a potentiometer to feed Tr3, which further amplifies the signal to produce sufficient level for the limiter, D1 and D2. These diodes are silicon type and any other silicon diodes should function correctly here.

After clipping, the signal is fed through a low-pass filter which has a cut-off frequency of 3 kHz. Low-frequency roll-off is produced by a low value coupling capacitor, C6. The final stage of the preamplifier consists of an emitter follower to isolate the filter so that it is provided with a constant load.

Power Amplifier

The signal is taken from the audio level control and fed to Tr5, this stage preventing the gain control affecting the feedback in the power amplifier. Tr6 provides the signal for the drivers, and D3 produces a small bias voltage to give a low standing current in the output transistors, to avoid crossover distortion. The resistor connected across this diode, R29, is adjusted for a quiescent (standing) current of 30 mA in Tr9 and Tr10. Two diodes are used in the base circuit of Tr8 to equalise the

Table of Values

Fig. 1. Preamplifier

R1	= 68,000 ohms	C2, C7, C8	= 6·8 μF elect
R2	= 10,000 ohms	C3, C4, C5, C12	= 16 μF elect
R3	= 12,000 ohms	C6	= 0·01 μF
R4	= 270 ohms	C9	= 15 μF elect.
R5	= 1,800 ohms	C10, C11	= 0·097 μF
R6	= 39,000 ohms	C13	= 50 μF elect.
R7, R12, R17	= 2,200 ohms	Tr1, Tr2	= OC45
R8	= 1,000 ohms	Tr3, Tr4	= OC76
R9	= 25,000 ohms log. pot.	D1, D2	= SJ103-F
R10, R11	= 56,000 ohms	RFC	= 15 turns 22g. enam.
R13	= 5,600 ohms	L1	= 88 mH ferrite pot core
R14	= 680 ohms		
R15	= 27,000 ohms		
R16	= 33,000 ohms		
C1	= 100 pF silver mica		

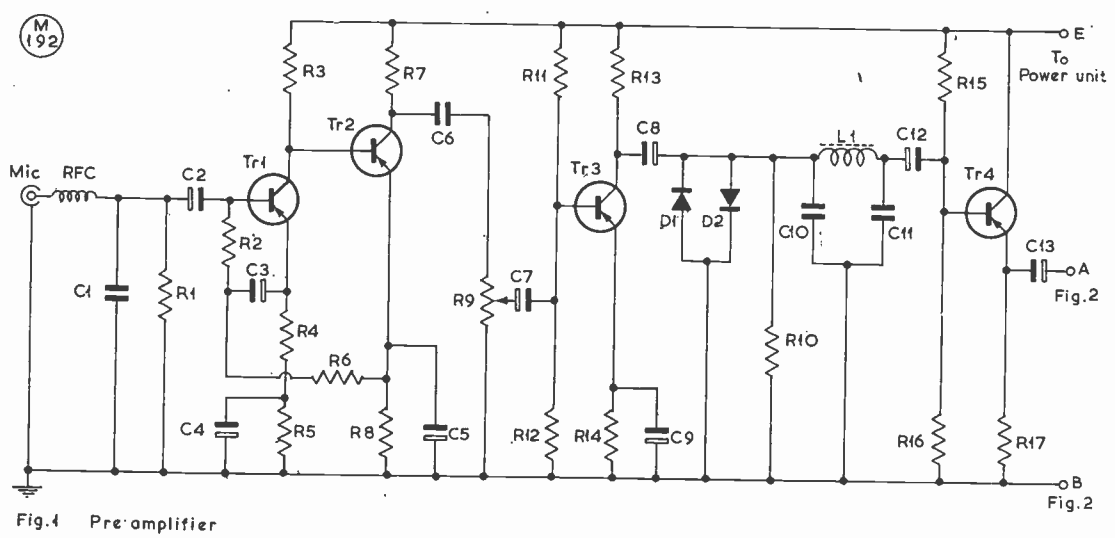


Fig. 1. Circuit of the Preamplifier.

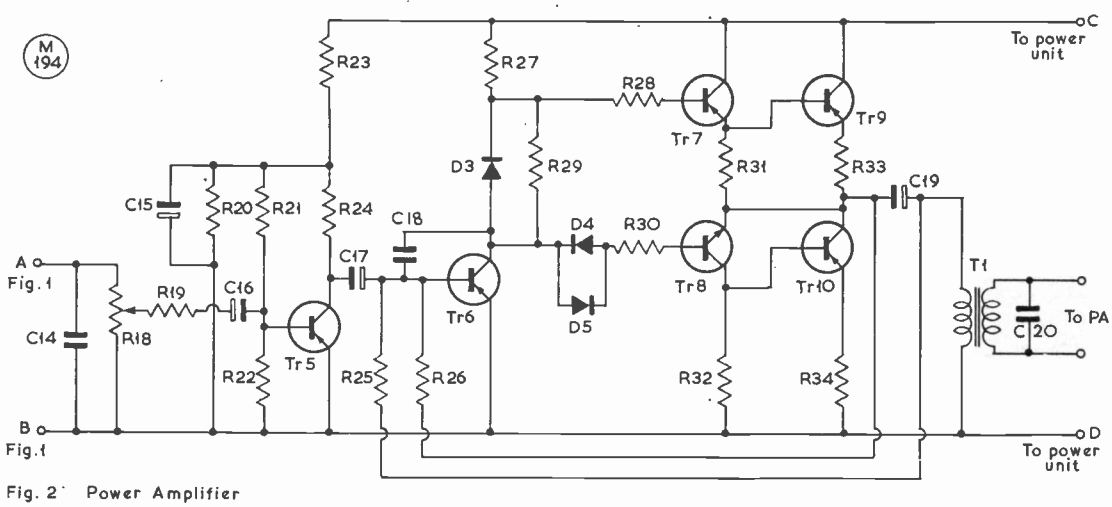


Fig. 2 Power Amplifier

Fig. 2. The Power Amplifier section.

Table of Values

Fig. 2. Power Amplifier

R18	= 50,000 ohms log. pot.	C15	= 160 μF elect.
R19	= 100,000 ohms	C16, C17	= 16 μF elect.
R20, R22	= 4,700 ohms	C19	= 500 μF elect.
R23	= 3,600 ohms	C20	= 0·01 μF disc ceramic
R24	= 1,300 ohms	Tr5, Tr6	= OC45
R25	= 68,000 ohms	Tr7	= OC81
R26	= 150,000 ohms	Tr8	= OC140
R27	= 3,300 ohms	Tr9, Tr10	= OC35
R28, R30	= 560 ohms	D3, D4, D5	= OA81
R29, R31, R32	= 100 ohms	T1	= *see text*
R33, R34	= 0·5 ohm		
C14, C18	= 680 pF polyester		

drive to the driver transistors, Tr7 and Tr8. The use of a p.n.p. and n.p.n. combination here removes the need for a driver transformer, so making construction easier. Output from the power amplifier is taken from the junction of Tr9 and Tr10 *via* a capacitor. AC and DC negative feedback is from the output and fed to Tr6 through R26, which is adjusted to give half the supply voltage at the collector of Tr10. Additional AC negative feedback is provided by R25. The capacitor between Tr6 base and collector, C18, is to ensure stability of the amplifier at high frequencies—it must not be omitted.

The modulation transformer is a 240v. to 6·3v. mains transformer, this matching into a QQV03-20A running 30 watts input. This produced a load on the modulator of approximately 3 ohms.

The power supply is a conventional bridge rectifier

Table of Values

Fig. 3. Power Supply Unit

R35	= 160 ohms	FS1	= 0·5A
R36	= 5,600 ohms	FS2, FS3	= 1A
C21	= 2,500 μF elect.	LP1, LP2	= 24v. LES lamps
C22	= 2,000 μF elect.	T2	= 240v. primary, 32v. 1 amp. secondary.
D6, D7, D8, D9	= SD91		
RLA	= 2-pole changeover, 5,800 ohm coil		

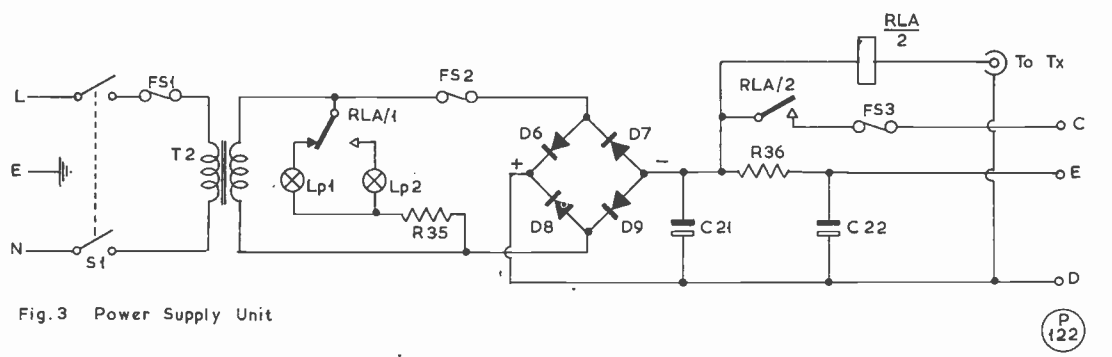


Fig. 3 Power Supply Unit

Fig. 3. Suitable Power Supply Unit.

arrangement, with two lamps incorporated to indicate when power is on and applied to the power amplifier. The relay, RLA, is operated from the associated transmitter to connect power to the amplifier when transmitting. This allows the output transistors to cool during standby periods (should they become warm) though under normal conditions they run quite cool. Power is permanently connected to the preamplifier to avoid the few seconds wait while the decoupling capacitor charges due to the long time constant.

Construction

The only critical point about construction is to ensure that adequate screening is used in the low-level circuits to prevent RF pickup, and the subsequent results of instability and spurious outputs on the transmission. All the circuits in the original unit are wired on *Veroboard*, with the output transistors, Tr9 and Tr10, mounted on a *Radiospares* heatsink, thus ensuring that they operate at a low temperature. Care must be taken that no earth loops are produced where signal currents can circulate, otherwise instability will very likely occur.

The adjustments to the power amplifier are mentioned in the circuit description and should cause no trouble. The remaining adjustment is to set the clipping level, which is achieved by the potentiometer, R9. This is best done whilst listening to the modulator output on headphones with it terminated in a dummy load. The control is turned up whilst speaking into the microphone until distortion of the speech occurs and it is turned back to the point where the distortion becomes negligible.

When first connecting the modulator to the transmitter it is advisable to check for any RF pickup or instability with the transmitter itself on dummy load, thus ensuring that the equipment is working satisfactorily.

RF TRIGGERED CW MONITOR

RESPONSIVE ON ANY BAND

S. LINDSAY (G3ZCE)

IN this article a CW monitor is described, operation of which does not depend on transmitter frequency and requiring no connection to any part of the station. Ample (adjustable) volume is available from a loudspeaker.

Most CW men would list the following points as essential to any useful monitor:

(1) It is independent of the receiver settings,
(2) Will work on any band without adjustment,
(3) Requires no connection to any part of the station,
(4) Gives audio output without any significant load being imposed on the transmitter, and
(5) that, for sake of convenience, it is loudspeaker operated.

The author has been unable to find a unit described which met these criteria. However, using modern devices, the simple circuit shown in Fig. 1 was evolved and meets the need admirably.

RF, on any frequency, is picked up by the small antenna (a few inches of 18g. or 16g. wire will do), the unit being placed in the vicinity of the transmitter. C1, C2, D1, D2, act as a voltage-doubling detector, turning on the Tr 1, Tr 2 pair on "transmit". This arrangement gives high impedance at the detector output, hence good sensitivity. The action causes current through VR1, hence allowing an amount of current, determined by the setting of VR1 to flow through the power oscillator forming the collector load of Tr3. VR1 thus acts as a volume control.

The oscillator consists of a power IC (available from J. Birkett, Lincoln). Ample drive to the speaker is

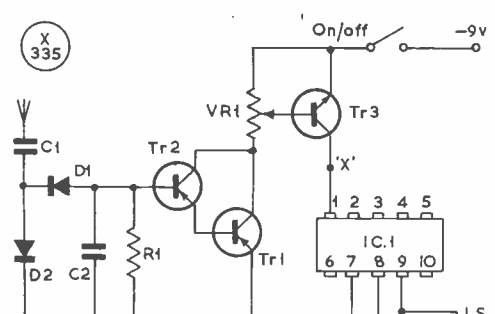


Fig. 1

Fig. 1. The main unit, for which values can be : C1, C2, .001 μF, mica ; C3, 0.33 μF, paper ; R1, one megohm ; VR1, 50K, carbon ; D1, D2, D3, BAX13 or similar ; Tr1, Tr2, 2N4288 ; Tr3, BYF51 ; IC1 (integrated circuit) used, see text ; LS, any small transistor radio speaker.

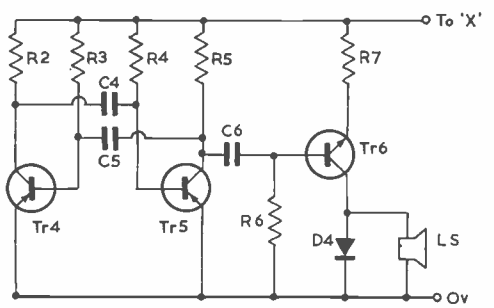


Fig. 2

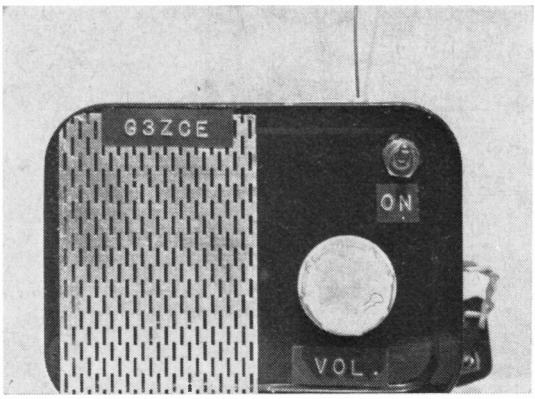
Fig. 2. An alternative power oscillator arrangement. In this, C4, C5, are .0022 μF ; C6 is 0.1 μF ; R2, R5, 4,700 ohms ; R3, R4, 680K ; R6, 1000 ohms ; R7, 22K ; D4, BAX13 or the same ; Tr4, Tr5, 2N4288 ; Tr6, BYF51.

provided. Substitution of the 2N4288 is not advised, due to its low leakage current. Other types would require a change in the value of R1. Should the power IC not be available, the circuit of Fig. 2 is suggested to be connected between "X" and the *Ov.* rail on Fig. 1. It consists of a simple multivibrator and amplifier.

Construction

The whole unit, including speaker and battery, can be housed in a tobacco tin. The main circuit was built on a piece of *Veroboard.* It is worth noting that the mounting lugs on the power IC are internally connected, and should be isolated.

Many units have been made to this design, and the original has been in service at G3ZCE on all bands, 160-2m. (It is particularly useful on VHF, where receiver monitoring is out). Thanks to the semiconductor, this unit amounts to a cheap and simple answer to one of the CW man's main problems.



The CW Monitor Unit described by G3ZCE in his article.

INTERNATIONAL LONDON ELECTRONIC COMPONENTS SHOW

Olympia, London, May 18-21

THIS year the Show was even bigger and better, with more floor space and a rise of some 15% in the number of firms represented. A notable feature was the large American contingent of 51 companies—although there were some unexpected gaps in this cover, notably the absence of such world-known concerns as Texas Instruments and RCA. Of the 611 firms represented, 253 were from overseas and included, for the first time, the participation of the Russians, Hungarians, Spanish and Iraelis. It was gratifying to note that the organisers, and indeed some of the exhibitors, had this year made a determined effort with interpretation services and at last seem to be getting away from their long-held belief that all the world speaks technical English.

Of particular interest in the amateur context was *The Plessey Company*, showing a wide range of IC's in their SL600 series; worthy of special note was the SL640, which is suitable as a mixer up to 150 MHz, and which should therefore simplify the home-conceived SSB rig. The SL403D audio amplifier, on view for the first time in this country, is completely protected against short circuits and looked a good bet for amateur use. *Erie Electronics* have introduced a new range of tantalum chip capacitors and have increased their range of ceramic feed-through types—of which the discoidal is in common amateur use—by the addition of *pi*-filter types containing two by-pass capacitors and an integral ferrite bead. Insertion losses of 25 dB at 10 MHz and 65 dB at GHz are claimed for these devices, a great improvement on the 10p-each types normally available.

Although one has not heard much of them in the amateur field, *ATES Electronics* have gone into the transistor business and were showing both high-power and high-frequency devices, including a MESA germanium type for operation up to 800 MHz. *Cathodeon* have introduced voltage-controlled packaged xtal oscillators, and what is believed to be the first monolithic SSB filter, which has distinct possibilities in the amateur context.

Heathkit had some interesting instruments on display, including their new 15 MHz frequency counter. This is an all-solid-state device with eight digit display capacity, and is available in kit form at £106, comparing very favourably with other available counters of similar performance. A similar instrument counting up to 80 MHz was also on show but the price of £196 does not make it very attractive for the amateur pocket. The new *Heathkit* receiver, the SB-303, is another solid-state design which should have a distinct appeal at its price of £175 in kit form. Construction is simplified by the use of plug-in circuit boards with, as usual, the very clear assembly instructions. One criticism might be that although facilities for RTTY reception are included, there is no provision for NBFM.

While this Show is obviously directed exclusively at the commercial market, a visit is always very well worth while in order to keep one up-to-date with the latest developments. Although prices for the newer components are in some cases staggeringly high, one might recall that the same could have been said of transistors when they first appeared—so a little early knowledge might prove to be advantageous eventually.

Nobody could put a trading value on this Exhibition —it could be anything from £30 to £70 million, and might take some years to become evident. More importantly, there is now every indication that the U.K. electronics industry is on its way back to the prosperity it enjoyed in the 1950-'60's—that, at any rate, is the contention of the sponsors of this latest in the long series of what used to be known as the RECMF Show.

A.H.D.

CRUISE OF THE "CHAMARU"

INTERESTING TRIMARAN DESIGN —WORLD-WIDE CONTACT MAINTAINED BY AMATEUR RADIO

J. R. H. SWANTON (EI9W)

It will be remembered that in CDXN in our May-June issues we gave some information about the trimaran (three-hulled yacht) "Chamaru" and her expected arrival in Southern Ireland on her world cruise. This article will be of interest not only to all who heard or worked "Chamaru" but also to those having opinions about the merits of multi-hull craft in comparison with keel boats.—Editor.

THE voyage of the *Chamaru*, which is a ketch-rigged diesel auxiliary trimaran 50ft. long and 24ft. wide, drawing only 3½ft. of water (designed by Erick Manners of Yarmouth, Norfolk, and built in Sasebo, Japan) started in September 1969 when Cdr. Charles M. Sturkey (U.S.N., ret'd.) and his wife Mary, of Seattle, together with their crew-man Abraham Magpatoc, left Japan on a world cruise.

After visiting ports in New Zealand, Australia, South Africa, South America and the Azores, they arrived in Baltimore, Co. Cork, Eire on June 17 last, having by then covered some 29,000 miles.

There are two noteworthy points arising out of the cruise so far: The first is that though this yacht is a trimaran, nothing untoward has happened to the boat herself! This is news-worthy because of the disasters that have befallen other multi-hull craft on long vogages. Secondly, both Commander Sturkey and his wife are licensed amateurs, their callsigns being W7TNA and K7BGS respectively—thus, while at sea they could operate on the amateur bands using the /MM suffix.

Throughout this long voyage, over half-way round the world, they have been in constant daily contact on the amateur bands, neutralising the inevitable boredom and loneliness of long ocean passages—and also proving that relatively small and compact SSB equipment can give reliable communication across the world.

The radio equipment provided for *Chamaru* consists of two Yaesu (Jap) FT-DX100 transceivers and an FL-1000 linear. One of the transceivers has been converted to operate on the marine bands—since the ship must be capable of communicating with coast stations on the appropriate frequencies and the authorities at ports of call—the other being used on the amateur bands, with the FL-1000 linear as required. Power for either FT-DX100 run barefoot is drawn from the boat's normal battery supply but when the linear is in use the diesel is started up and power taken from the 3 kW generator coupled to it.

Amateur Contacts

Amateurs in the British Isles began to come into the *Chamaru* picture early in April and after the appearance of notes on the cruise in CDXN in recent issues of SHORT WAVE MAGAZINE. First contacts were made through EI6CB (Skibbereen), followed by QSO's with EI6AX (Castletownbere) and EI9W in Cork.

From then on a regular net was set up, control for the South Atlantic being maintained by PY2ZAC (Sao Paulo), the intermediate stage coming under CT2BB in the Azores. The U.K. end was handled by G3JTY, Poole.

This organised net operated nightly on 14235 kHz at 22.30 local. As the days went by, various other EI's joined in and regular communication was maintained by EI2CA, EI2BZ and EI5AJ. Of course, it was not possible for everyone to be on each evening but there was always somebody on the air to keep the EI end of the net going. Callers-in from the U.K. were welcomed. Reports on this 20m. phone channel varied from RS-53 to RS-59, depending on distance and conditions. Easy communication was maintained with *Chamaru* up to the time she berthed at the Azores when, because of the international regulations governing these matters, she was not able to use her amateur /MM callsign while within Portuguese territorial waters.

On June 8, the Sturkeys left the Azores and within an hour radio contact was resumed with the EI's and CT2BB. Transmission was kept to 20m. until *Chamaru* was about 200 miles off the Irish coast, when 40m. was brought into use for EI/G contacts. On the Wednesday night prior to arrival W7TNA/MM changed to 80 metres.

By 4.0 p.m. on June 17, they gave a position showing that *Chamaru* had about 14 miles to go to reach Baltimore, Co. Cork—so EI9W, with EI6CB, went out in his own boat to the Fastnet Light to meet them, and escort them into Baltimore. On arrival, Mary Sturkey, K7BGS, was presented with an Irish visitor's licence, callsign EI2VEM.

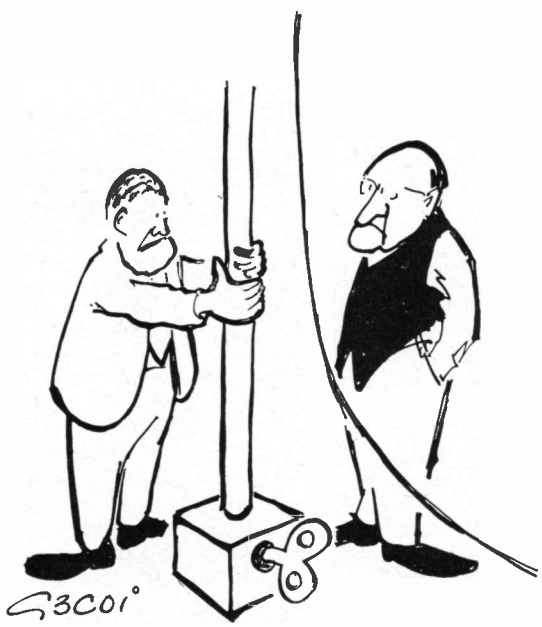
To enable Mary Sturkey to visit her Irish father and relations, and her birth-place, *Chamaru* is to remain at Baltimore until about mid-August, when the cruise will be resumed, the itinerary being Spain, the Canary Islands and New York. For each stage of the cruise, the radio net will be resumed and extended, using either 15, 20 or 40 metres.

So, when U.K. operators hear or work either W7TNA /MM or K7BGS/MM, they will know what it is all about—and they should remember that from the sailing man's point of view, *Chamaru* is a remarkable boat, embodying new principles in yacht design and construction.

The trimaran "Chamaru" at moorings in the little harbour of Baltimore, Co. Cork, Eire, after her long 'cross-world voyage of some 29,000 miles. Owned and sailed by Cdr. Charles Sturkey, W7TNA, "Chamaru" is of particular interest because she is hydrofoil-stabilised—meaning that at sailing speeds she can become almost impervious to surface-wave effects because the under-water fins are shaped to lift the hulls. Being three-hulled, a boat like "Chamaru" offers the additional advantage of spacious accommodation—cabins and room for everybody to get away from one another on a long cruise! On the right is shown W7TNA/MM with the radio gear, consisting of Yaesu FT-DX100's and an FL-1000 linear, capable of giving world-wide communication—see text.

THOSE CONCERNED, PLEASE NOTE!

When sending in requests for publication under the "Mobile Rally" or "Specially on The Air" sections, *please* keep the information on separate sheets under the appropriate headings—*not* mixed in with other correspondence. Likewise, when notifying a DX-pedition or similar activity for mention in CDXN and/or VHFB, *please* be sure to give the details on separate sheets, headed for the features concerned. The reason for this is that those who are responsible for preparing these various items for press sit about 100 miles apart—hence, it is most inconvenient, to say the least, if extracts for internal distribution have to be made from one letter dealing with several different projects. (We don't mind if one envelope is used—the point is to keep the details to separate sheets under the appropriate headings.) All such correspondence should be addressed simply: Editor, SHORT WAVE MAGAZINE, BUCKINGHAM. The distribution of all editorial matter is effected through the Editorial Dept. Letters sent direct to contributors individually will not normally be accepted for feature treatment. The reason for this is also a simple one—unless all editorial matter (which means everything appearing in the body of the *Magazine*) is handled through the Editorial Dept., confusion occurs and misunderstandings can arise. This is why the correct QTH for all such material has for long been established as: The Editor, SHORT WAVE MAGAZINE, BUCKINGHAM.



" . . . fully wound up it can last through a contest . . . "

THE MOBILE SCENE

Rally Reports and Pictures

IT is very evident that the Mobile Rallies already held have been most successful in terms both of attendance on the ground and business done by the Trade stands.

For the *Maidstone* event, some 700 people paid to come in and their talk-in station statistics are particularly instructive: The total of mobiles worked was 102, fifty of them on Top Band, 25 on two metres and, interestingly enough, 22 on four metres (the other five /M's were on 80m.). This gives a fair idea of the distribution of mobiles on a band-by-band basis. What it comes to is that /M activity on Top Band is still as high as on all other bands put together. It is certainly encouraging to see the figure for four metres. At Maidstone this year, they had 24 Trade stands, all under cover in the main hall.

* * *

Down at *Longleat*, the attendance was put at "2000 in spite of inclement weather"—but of course at these stately-home Rally sites it is not really possible to separate those there for the Rally from the visitors to the place who would have been there anyway—indeed, we would think that the Marquis of Bath would regard two thousand as rather a low count for a June Sunday. Anyway, the Rally organisers were able to put on 14 Trade stands and a successful bring-and-buy stall. A variety of displays and demonstrations had been arranged, including one by the GPO TV/detector van showing how they do it (!!). Talk-in was provided on 160-80-2m., but no "worked mobiles" figures are quoted in the report. This is a pity, because it is only a matter of totalling up from the logs the /M's worked—these data being of great value from the statistical point of view. At Longleat, they had also planned a 4m. talk-in station but apparently the Tx went *phut* after the first QSO.

* * *

The *Anglian* Mobile Rally at Ipswich, though in a sense competitive with two other Rallies held on the same day (June 27), showed an increase in attendance over last year. Visitors were there from Kent, Yorkshire and North Wales. From some of the Trade stands, equipment could actually be tried on the air. The organisers, led by G3ZLN, feel that they were much helped by willing assistants and well-rewarded by the attendance. But an odd note in the report is "There was less support from the locals this year"—oh, well, it is the old problem of trying to please everybody!

THE RALLY CALENDAR

August 8: RSGB Mobile Rally at Woburn Abbey, near Luton, Beds., with talk-in to be given on 2-4-160m. As this is a stately-home site, there is a *per capita* charge for admission, which has nothing to do with the Rally—except that if you don't want to pay it you can't get in! Separate car parking is to be provided for the Rally site (on steeply sloping ground) and all the usual attractions are promised.

August 15: Torbay Amateur Radio Society Rally at the Newton Abbot Rugby Club ground, on the Exeter-

At the highly successful second Elvaston Castle Mobile Rally on June 13, one of the Trade stands having plenty of attention was that of Taurus Electrical Services, Loughborough, Leics., owned and managed by G3TED.

In the foreground, G3XKX, chairman of the Leicester Radio Society, demonstrating his home-built mobile SSB rig for Top Band to G3NEO and G3JMV. They were at the Elvaston Castle Mobile Rally when this picture was taken. On the facing page is a less modern approach to mobile operating'

This very interesting picture has all the appearance of being authentic—the rider has his cap put on "against the wind," the machine is a "Campion" (of the same era as the famous "Douglas"), the tyres are marked "Dunlop Pneumatic", the bulb-type horn looks to be in the character of the time and the registration mark is right for the district. All this makes the period about 1910. It is the wireless gear that is of particular interest—because it is claimed to be the first mobile-radio ever conceived. The rig evidently used—as it would be in the context of the time—was a spark Tx, the gap for which can be seen just below the rider's right shoulder, with the necessary inductance coil in the box below and the battery in the leather holder. It is said that the operator was George Campion, manufacturer of the motor-bicycle, and that he was demonstrating the whole outfit to the Nottingham City Police. In those days, it was quite usual for engineers to be taking a practical interest in developments outside their immediate sphere, so that it is entirely probable that George Campion saw the possibilities for wireless in Police work.
(Picture sent us by G3CDC/M)

Newton Abbot road, opposite the race-course. Talk-in by G3NJA/A, 1865 kHz, and on two metres by GB3TMR, also operating on the HF bands. Indoor facilities, refreshments on the ground and competitions for everyone.—L. H. Webber, G3GDW, 43 Lime Tree Walk, Newton Abbot, Devon.

August 15: The 14th Derby Mobile Rally, at Rykneld Schools, as in previous years. Talk-in by G3ERD/A on Top Band and G8DBY for two metres. Free admission and parking, and all the usual attractions associated with this well-known event. Further information from: T. Darn, G3FGY, 1 Sandham Lane, Ripley, Derbs., DE5-3HE.

August 22: Annual mobile picnic organised by Bromsgrove & District Amateur Radio Club, in the grounds of Avoncroft Building Museum, near Bromsgrove, at the intersection of the B.4091-A.38, Droitwich to Bromsgrove. The Museum itself is of great interest and there is an admittance charge. Talk-in will be given by G3VGG on Top Band and on two metres by G2CLN.—J. Dufrane, 44 Hazelton Road, Marlbrook, Bromsgrove, Warks.

August 22: Swindon & District Amateur Radio Club Mobile Rally at R.A.F. Wroughton, near Swindon, with local sign-posting and ample parking. Top Band talk-in will be by G3YNK and on two metres by G8DPV. There will be Trade stands and among attractions offered are to be raffles and a D/F hunt (which is a little surprising, as it is hardly the sort of event that can be organised off-the-cuff!). They also offer the interest of a bring-and-buy stall, becoming more and more a feature of Rally occasions. Refreshments will be available on site and the contact-man for further details is E. J. Andrews, G3JAP,

56 Windsor Road, Swindon, Wilts.

August 29: Preston Amateur Radio Society annual Mobile Rally at Timberley Barracks, Preston, with talk-in on 2m. and 160m. There will be trade stands, a bring-and-buy stall and a junk sale, with a licensed bar and refreshments on site.—G. Windsor, 26 St., Gregory's Road, Preston (*55913*), Lancs., PR1-6YB.

August 30: The Loddon Valley Amateur Radio Club will be supporting the Hurst (Reading) annual flower show and mobile visitors will be very welcome—talk-in on Top Band and details from E. Davies, G3PGM, 11 Tape Lane, Hurst, Reading, Berks.

September 5: Stratford-on-Avon Mobile Picnic, on the recreation ground directly opposite the Shakespeare Theatre, across the river. Turn off alongside the Swan's Nest Hotel, south of Clopton Bridge. Entrance free on production of QSL card, Tx or SWL. Talk-in on Top Band and two metres. Information and details: M. Wells, G3OOQ, *QTHR.*

September 26: Peterborough Mobile Rally, at Walton School, Mountsteven Avenue, 3 miles north of the City. Talk-in on 2m./160m. Details: A. H. Jackson, 57 Peterborough Road, Castor, Peterborough, PE5-7AX.

September 26: Once again, Harlow & District Amateur Radio Society come up with their annual Mobile Rally, usually the last of the season, and as always at Magdelane Laver Hall, near Harlow. The site will be sign-posted off the A.11 Epping-Harlow road, and talk-in will be given by a station signing G6UT/A on Top Band. For information and QSL's, the contact man is A. B. Ward, 27 Sharpecroft, Harlow, Essex.

We shall not be publishing any further Mobile Rally notices until next Season, May to September 1972. Organisers who have dates booked or in mind should let us know what their plans are before the end of this year.

If ever you hear or work W5TVW-suffixed, this is the little rig he carries about with him—a Ten-Tec 20/40m. QRP outfit in a home-made plywood cabinet, with accommodation for the ancillaries, including cut-wires for dipole antennae, logs, etc. Operation with this 5-watt solid-state Tx/Rx is on CW, the aerial being strung up to any convenient support. That's the way to work /P with a mobile rig. The QSL address for W5TVW is Elliot Blaize, 600 Deckbar Avenue, New Orleans, 70121, Louisiana, U.S.A.

The crowd along the Trade stands at the Northern Mobile Rally, for which they had not only a very good attendance but excellent business done in the hall.

For the Northern Mobile Rally, the Top Band talk-in station signed G3WVD/A, with a home-built transceiver operated by G3MFJ. He had an EC-10 as stand-by Rx.

VHF BANDS

A. H. DORMER, G3DAH

THERE can't be many operators who will complain about propagation on the VHF bands during the last month. Sporadic-E on Two and Four, PAØ at 5 & 9+ on 70 cm., good tropospheric contacts, including HB9, LA, SM and GM, a very good *Artob*, a couple of helpful DX-peditions for the county chasers and reasonable conditions for the two-metre contest. Let's look at it all in a bit more detail.

First of all, several letters have been received about the two-metre *Es* opening to Italy and YU on May 24 and reported last month, and of these, two contain points which are worthy of special mention here, the others being of most value in plotting out the coverage in the U.K. G3COJ comments on the short skip on ten metres which preceeded the opening, and this can be indeed a pointer to the possibility of *Es* on the higher frequency bands. It does not always follow, of course, but as pointed out last month, there are no completely positive *criteria* which enable one to predict with certainty that Sporadic-E will occur on any band. There are certain months of the year, and certain times of the day, when *Es* is more likely to occur than at other times, but that is just about as far as one can go. The important thing is to be on the bands at the right times, and that is a matter of economics and luck usually. G3COJ adds further that no SSB or CW DX was heard, which is remarkable, as under the severe QSB which usually accompanies *Es* working, one might have thought that resort to CW would have brought more reliable contacts. There appears to have been a short return of these conditions on May 28, since PAØCSL reported to G3COJ that PAØVV worked an EA on Spor-E at 2104 CET. Most. unusual as late in the evening as this Could this have been extended tropo.? Did anyone else log the opening? A very brief opening also occurred on June 14 when F1BG in Toulon was heard calling CQ. Five-metre operators may recall working the French station on *Es* around 1948, but he has still to work G on two metres.

G8DVZ (Towcester, Northants.) got in on the opening quite early and attributes his success to the fact that he did *not* have a VFO, and so avoided the pile-up on the frequency. He is rockbound on 145·21 MHz and was therefore reasonably in the clear. So here we go again on the controversy about VFO's, but it is still the writer's personal opinion that the VFO is a very useful tool *if used intelligently*! It is with regret that one must report that this was *not* the case during this opening, neither was it the case during the recent two-metre contest, of which more anon. 'DVZ also reports one other interesting piece of information: Although the sky was overcast and the sun not directly visible at this time, there was a considerable amount of UV about, so much so that he got quite badly burned while outside the shack during the afternoon. The two phenomena could well be related.

Four Metre *Es*

The major event here was the opening to Malta in mid-June. It appears to have started on June 11, when 9H1BL was copying G3VPS and GB3SX between 1730z and 1930z, but the great day was June 13, when 11 crossband QSO's were completed, and 25 different stations logged in Malta, from Yorkshire to the South Coast. The following day, more stations were logged, but only one crossband QSO was completed. For those who want to keep an eye on this, A1 is now using 14150 kHz as the primary crossband frequency, with 28·5 MHz monitored only after the opening has got going —this since he has heard several operators on Four saying that they are monitoring the ten-metre frequency and he has called them without result, conditions on the higher frequency being less reliable than on 20m. Whichever way it is played, time is running out, as A1 returns to the U.K. on August 16. More detailed information on this opening, together with tape recordings of the U.K. signals in Malta, is held by G3VPS and G3JHM, *QTHR*, to whom thanks for this summary.

Although Auroral-E rather than Sporadic-E, mention may be made here of the openings to Iceland on June 20 and July 4 when the beacon station TF3VHF was copied by many British operators at good signal strengths. Regretfully, TF3EA was laid low with an attack of lumbago at these times so was not on.

Two Metres

The better weather has brought with it a significant improvement in propagation on this band. The last week in June gave many operators a taste of solid contacts with Continental Europe, in some cases right up to the DM border, and although the nearer French stations were workable at good strength, the best DX axis seemed to be due East rather than to the South. This state of affairs continued over the two-metre contest on July 4/5, and by July 9/10 the Scandinavians were coming in well, SK6AB being a particularly good signal, and LA6OI/Z being a welcome visitor. Incidentally, the suffix indicates an alternative site, in this case some 80 miles south of the home QTH in Oslo.

One of the most productive *Artob* ballons was launched from the Hannover area on Sunday, July 11. The "up" frequency was in the 70 cm. band, with the "down" frequency around the SSB channel of 145·41 MHz. Conditions were just right for this particular form of activity, and G3LTF in particular was doing remarkably well with his 70 cm. SSB giving him contacts into HB9 and DM. Endeavours have been made in the past to get timely notice of these launches, but frequently last-minute changes have to

be made in the schedules to take account of local conditions, and no foolproof method has yet been devised to get accurate information into this Column in time for use to be made of it. However, recent discussions with DL1CU have suggested that a short-term warning system may be possible, and we are working on this.

The beacon stations have been extremely useful at these times in the evaluation of the best DX directions, and a daily check is always productive, even if no signal is heard, as even this negative information is in itself an indication. As one example only, reception of the Angus beacon in Herne Bay on July 7 suggested that there might be a chance of working GM, and a search of the top end of the band rapidly produced a QSO with GM3EOJ in Kincardine. "Check-point Charlie" on 143·968 MHz is readily identifiable by the continuous 1000 Hz modulation, and is proving to be a better indicator of conditions than either DLØER (which has been poor of late) or DLØPR, and F3THF and GB3CTC have given timely information on conditions to the South-West.

Seventycems

Conditions on 70 cm. have frequently been at least as good as, and at times better than, those on two metres. The new beacon station operated by PAØVD has been at 5 & 9 for hours on end in many parts of the country, and sad to relate, the good propagation has not always been matched by high activity. Similarly, both GB3GEC and GB3SC have been well above usual reception levels on numerous occasions, but repeated calls on the band have yielded little result in most cases. One gets the impression that there is a tendency for operators on Seventycems to listen rather than call, and if we all do that, nobody is going to get a QSO. These comments must expressly exclude operators in East Anglia, notably, G8BCA, G8BYV, G8CXE, G3ZEZ and a welcome newcomer to the band in the form of G5YK, who although feeling that they are rather out on a limb and away from the centres of 70 cm. activity, are nevertheless usually QRV in the evenings and very ready for a contact.

The July two-metre contest in this country coincided with a 70 cm. contest in PA, and it was worth taking time off from the main event to work the continentals who were coming through remarkably well, and, naturally, were avid for G contacts. Conditions to EU were particularly favourable on the night of July 9. The Dutch beacon was well over the 599 mark, and so a call was put out by G3DAH in that direction, and QSO's with DL, ON and PAØ resulted. Once again, the PAØVD beacon signal revealed its worth. Several contacts have been made with Denmark during the period under review—G3ZYC had QSO's with OZ5AH and OZ9SW, and G8ARM has twice worked OZ9SW within three weeks.

Contests

Reports on the two-metre July contest are unanimous in the conclusion that propagation was good for most of the time, although the static from the intermittent thunderstorms didn't help. Indeed they must have been good as GW3NUE/P was heard passing a score of over 420 towards the end of the event. Some idea of the rate at which he was working may be gained from the fact that at 1150 he passed a score of 307 and at 1850 it was up to 427. In other words, they made 120 contacts in seven hours, or roughly one every 3½ minutes, and that takes a bit of beating! It is perhaps nugatory to list all the high scores heard, since the final result is dependent upon distance. Suffice it to say that once again the GW portables seemed to be having a ball—several had scores of over 300—and that some of the nearer French stations were also doing very well with G contacts, one of the most consistent being F6BEG/P, near Calais, and who nearly made the 300.

Heard on the Band: G3COJ made it with F5RZ/P in DF11j near the Italian border, and with HB9RO/P in DG32a. G3CGQ, Luton, had a nice CW note and must have found two metres a change from 23 cm., on which band he worked years ago when he was with British Rail. G6RH and G3JXN were also knocking them off on CW, the latter alternating between CW and Phone with a xtal change as the situation demanded. F1AGY/P was having a lean time of it, but then his MCW buzz-saw was probably the cause of that. A fixed station doing well was GW8BHH in Radnor with 295w. at 1755 in spite of the competition from the portables. G3ZXR/P in Ventnor, I.o.W. and 266w. at 1750 and GW4ABR/P had the 300 up. Report has it that there were four HB9's active and at least two GM's were working into the South. An interesting point in connection with the HB9 is how much time one should spend on trying to work them, with or without a VFO. Although they were worth a good few points, if it is going to take 30 minutes to get the contact, one could have knocked off a few ten-pointers in that time, showing an overall profit. G8APZ and G8AZU, operating portable in Merioneth, had a rough old time with the storms, on top of the fact that, due to the favourable conditions, many antennae were orientated more towards the Continent than towards the 2½ watts from them.

General Comments: Activity appeared to have been up compared with the corresponding event last year, and checks with several participants showed that not only were more contacts made than previously, but that the points per contact were also up. Propagation tailed off towards the end of the contest, and it would have been better had the contest started 12 hours earlier—but who was to know that? Operating procedures and techniques left a great deal to be desired in many cases. Apart from the usual gabbled, garbled callsigns and overmodulation —when *will* they learn?—a great deal of unnecessary chaos was caused at the LF end of the band by out-of-zone operation and swishing VFO's, and the poor chaps in Zone A were having a really rough time of it, as were those who were trying to make contact with them. For example, G3KDG of Okehampton, Devon, found the going really hard. Although he got 5 & 9 + 40 from HB9RI, and 5 & 9+ from F2QZ/P near the German border, he could only raise 13 contacts in some 20 hours of operation. It was notable that many of the big signals, for example those from some of the GW portables, were being transmitted on a fixed frequency in the

correct Zone, *and getting the results*. There was also a great deal of back-chatting while calling CQ or while in contact with another station, some of it ribald, most of it unnecessary and all of it a waste of time. A great deal more discipline, both self-discipline and supervision, is required at some of these multi-operator stations before contests return to the happy state we used to enjoy.

The four-metre portable contest on July 27 went off reasonably well with conditions fair to good, although activity was not very high. This did not prevent G5NU (Reading) and G3COJ (High Wycombe) from making it with GM3LTW/P in Ayr, and G3ZYC (Ripley) worked EI7AS.

Although the Region 1 VHF contest clashed with the four-metre event, there was a fair participation in the North-West. Stations noted as active on two metres were:—G3UHF/P, G8BWW/P who finished with 67 QSO's, G3SMM/A, G8EVQ/P, G8BRS/P, GW3AHD/P, the Liverpool Club (with whom G3DAH would have liked to swap callsigns) and the likely winner G3WIN/P from Millom in Cumberland who, although finishing with 89 contacts "found conditions poor with QSB on all signals". Activity on 70 cm. was low, with the Ainsdale Club G2CUZ/P being the only signal audible for long periods. On four metres, the best score heard was that of G3RLE/P with 86w at 1735z. Also active from the North-West was GW3UCB/P in Caernavon.

Congratulations to Peter Blair, G3LTF, the winner of the 1296 MHz fixed station contest; to GW3NUE/P, an easy winner in the long section of the May two-metre portable contest; and to G3OBD/P the winner of the short section of the same event. G8BBB carried off the first place in the January SSB contest for the second time, and so congratulations to him also.

Forthcoming events are the two-metre SSB contests on August 9 and the 70 MHz CW event on August 15.

The BARTG VHF RTTY contest this year is slated for 1700-2300z on Saturday, September 11, and 0600-1200z on September 19. Both two-metre and 70 cm. sections have been allowed for, with a separate 70 MHz leg for the U.K. only. Details from, and logs to, Ted Double, G8CDW, *QTHR*.

News Items

G3UVR (Parkgate, Wirral) will shortly be active again on four metres after an absence from the band of some three years. He will be running a 50-watt mobile rig both from his fixed QTH and from various sites in North Wales. That he was very active on the band, may be judged from the fact that when Denis went QRT he had over 70 counties worked on Four. G3SEK (Wimbledon) has been putting out a good four-metre signal to the North of late. Not heard so frequently these days since qualifying as an airline pilot, is David Evans, G3OUF, but he showed that he still has an interest in four metres when, at his own wedding reception recently, he talked in, on 70·26 MHz with his walkie-talkie, some of his guests who had become separated from the main party.

G3ZYC (Ripley, Derbyshire) is running a 70 cm. sked with G5QA in Exeter. QRG is 433·08 MHz, and Herbert down there is on 432·3 MHz; time is 1800z on Mondays and Wednesdays, and 2045z on Fridays. Signals have been peaking S8/9 over this 280 km path, and both would welcome reports—and we are delighted to hear of G5QA again. G3ZYC is looking for 70 cm. skeds with GM, as this is his best direction. Increased activity in the Leeds area on 70 cm.—now on are G3LKK 433·15 MHz, G8EOP

THREE BAND ANNUAL VHF TABLE

January to December, 1971

Station	FOUR METRES Counties	FOUR METRES Countries	TWO METRES Counties	TWO METRES Countries	70 CENTIMETRES Counties	70 CENTIMETRES Countries	TOTAL pts.
G3COJ	33	3	60	16	28	7	147
G3OHH	44	5	54	5	20	3	131
G3ZYC	41	4	26	5	33	7	116
G3DAH	18	2	57	11	21	4	113
GD2HDZ	23	4	48	8	15	3	101
G3JXN	27	2	57	9	—	—	95
G5DF	—	—	51	11	19	1	82
G2AXI	24	3	39	4	8	2	80
G3ZPZ	—	—	66	12	—	—	78
G8BCA	—	—	45	6	23	3	77
G3EKP	22	5	17	5	6	4	59
G3IAR	31	3	21	4	—	—	59
EI6AS	15	5	30	6	1	1	58
G8ECK	—	—	46	9	—	—	55
G3FIJ	—	—	42	8	1	1	52
G8BKR	—	—	35	5	8	2	50
G8BWW	—	—	32	5	6	4	47
G8CBU	—	—	35	3	—	—	38
G8AUN	—	—	30	3	3	2	38
G8CVD	—	—	32	5	—	—	37
GM3EOJ	—	—	18	10	3	1	32
G2JF	—	—	26	4	—	—	30
G8CYN	—	—	13	2	—	—	15

Just a reminder that the Tables go through to December 31 1971. The three band Annual Tables show claims to date for the year commencing January 1, 1971. Claims should be sent to:—"VHF Bands," SHORT WAVE MAGAZINE, BUCKINGHAM.

433·12 MHz and G8CUW 432·75 MHz, with indications that a further two stations will come on shortly.

G3EMU (Canterbury), whose regular contacts with PAØNAP are a feature of the early evening air on two metres, has become the first G station to gain the Kenner Merland award for working 100 different QRA locators in the Haarlem area on two metres. He was followed by G3PQF, so G's have got the first two places out of the four certificates issued so far. G3EMU has also got the Amsterdam certificate, the PACC Veron award for having worked all Dutch Provinces, and an unusual one for working all the transmitting members of one family in the Hague, PAØ's, PRX, PRY and PRZ!

G8ESY is now QRV on two metres from a West Bromwich QTH at 500ft. a.s.l. with a good take-off in all directions; Tx is a BCC-699 with ten watts input and the Rx a dual gate mosfet converter with a Mohican receiver. The antenna is at present a six-ele Yagi indoors, but plans are in hand to raise it to 40ft. or so outside; he expects to have about 50 watts of NBFM available shortly.

GD2HDZ has now moved QTH, although still in Laxey. He worked 107 stations during the recent two-metre contest in 20 hours of operating, but found conditions not too good, with only three PAØ and one F heard from the continent.

The Skelton Radio Club in Cumberland, based on the BBC transmitting station there, expect to be very active shortly with their own Club callsign. Although this is difficult territory for VHF, they have found a good site for portable operation and should be on for the September contest. There are some 12 active transmitting amateurs on the Unit, including G8BMY, G3EBR, G8BBA, G3ZIY, G3SPL and G8CCR (and thanks again to them all for a very enjoyable evening spent there when on the way back from GM recently.)

Some new callsign changes on two metres: G8BBY/G4AHH, G8BTN /G4AFX, G8AVC/G4AGE, G8BQE /G3YVR, G8CIV/G3YVI, G8CYV /G3ZXX, G8BCN/G3ZEZ, G8AUE /G3ZYC. Since January 15, when he first became G3ZYC, Ian has made over 250 contacts on 70 cm. He now has gear for four metres, 23 cm. and 13 cm. G3ZEZ also has been no slouch; he is now equipped for all bands from 160 to 13 cm., and has a 3 cm. Tx and antenna under construction. He claims the first 13 cm. contact within the county of Essex, having been heard by G3PQR over a distance of four miles. He uses a 3ft. dish and a DET-22 PA running 10 watts input.

G3ZPZ makes a point in favour of the VFO when he says that many contacts have been made at the RS 3/3 level because the return call has been made on the transmitting channel, and could easily have been missed had it been a question of tuning over the whole of the band for a reply to a CQ call. He also points to the advantages of co-channel working as far as the SWL is concerned, but suggests that such operation should always be within Zone, and that the two operators concerned return to their own Zones after the contact has been completed. He calls the SSB operators to task for conducting lengthy QSO's on the calling channel. There does seem to be very little SSB activity far off the calling channel, although your scribe has noticed a growing, and welcome, volume of it, which is helping to reduce the artificial dichotomy so apparent a few years ago.

G2AXI has an ambitious receiver project on the stocks in the shape of a completely solid-state job using IC's in the LM series, and covering Two, Four and 70 cm. GM8AGU/P had 200 QSO's on CW and 970 on SSB/AM during his recent trip to the rarer Scottish counties. All cards, other than those for which s.a.e's had been sent, will be sent via the Bureau. G5DF of Reading, will shortly be QRV on Four with a Pye base-station Tx.

Converters

The opportunity presented itself recently to try out the *Microwave Modules* 4m. and 70 cm. converters, and the performance was certainly impressive. The four-metre job had a gain of 44 dB with a 1·5 MHz bandwidth at the 3 dB points, the image response was so far down that it could not be measured on the Polyskop, and the noise figure was about 2 dB. The 70 cm. converter has a gain of 34 dB at 435 MHz and a noise figure of 6 dB. The image response was 17 dB down. On both models, the minimum input signal which could be copied was 0·1 microvolt into a bandwidth of about 5 kHz. This performance can be attributed to the liberal use of mosfets in the RF and mixer stages, and the excellence of the engineering. It must be confessed that the 70 cm. job out-performed the G3DAH converter, which until then had been thought to be pretty hot. So, well done, the lads of MM!

VHFCC Awards

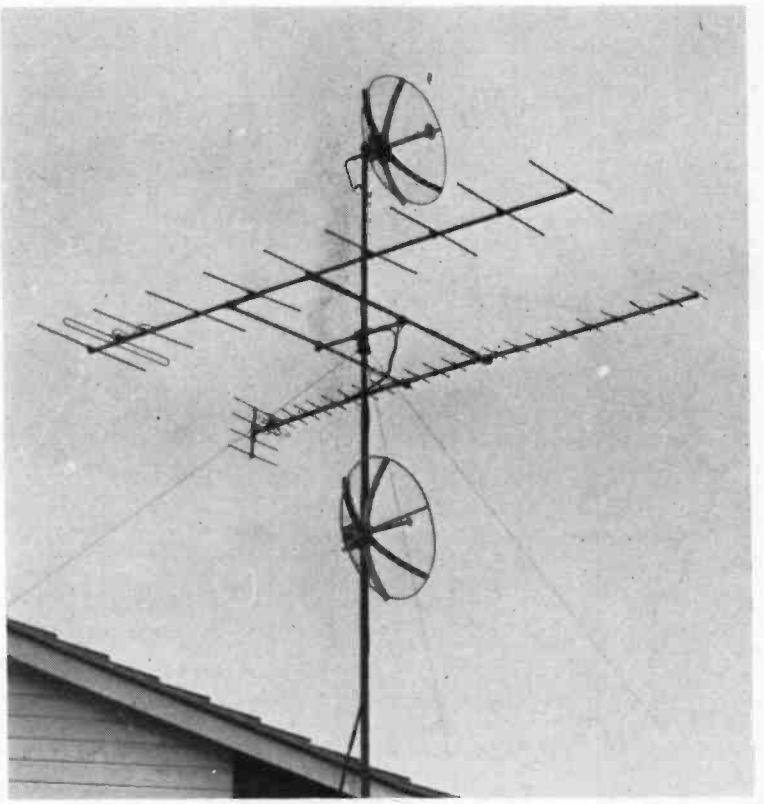
Due to pressure on space, it was not possible to publish last month details of the latest of the winners of the VHFCC Award, and consequent membership of the VHF Century Club, and so there is quite a pile-up for this time.

Certificate No. 96 goes to Peter Lea, G8DLZ, of New Duston in Northamptonshire. His Tx is VFO controlled at 6 MHz using the DL6HA design and this is fed into a phase-modulation driver and a PA using a 2N4040 running at three watts. The receive side is looked after by a Trio JR-310 with the DL6SW FET converter. Antenna is a 10-ele. J-beam at 33ft., and the QTH is some 350ft. a.s.l., which offers a clear take-off in all directions with the exception of the South-West, where the ground rises somewhat. Peter also operates two-metre mobile with a modified Pye "Cambridge," the original front end having been replaced with the one designed by G3VMU (featured in SHORT WAVE MAGAZINE, November 1969) and a VFO on 135 MHz, a combination which he thoroughly recommends. Projects on hand are for a QQV06-40A linear and the DJ9ZR SSB board, also the erection of a tower to clear the obstruction to the South-West, for which planning permission is awaited. Having now worked some 300 different stations, Peter had a quick check on his QSL's and finds, to his astonishment, (and ours) that the return rate *via* the Bureau is 70% and that from QSL's sent direct with s.a.e. only 50%. Seems odd!

Dave Rumens, G8EBV (Cranbrook, Kent) gains Certificate No. 97 for work on two metres. The majority of his contacts were made with 40 watts into a QQV03-20A

modulated by a pair of 6V6's. The receiver is an FET converter into an Eddystone EC-10 which he has modified for FM as well as AM reception. The antenna is now an 8/8 at 35ft., but it is interesting to note that all the German contacts which were included in his claim were made with a home-built 6-ele. beam in the loft. The 40-watt Tx has now been replaced with a 150-watt rig using the QQV07-50 modulated by a pair of 807's in Class-B zero bias, and the whole rig is xtal controlled. He also operates two-metre mobile.

We are pleased to be able to award Certificate No. 98 to another French subscriber, F1BF, now perhaps better known as F6BEG of Paris, whose regular appearances on 144·030 MHz on CW every evening from 2130z onwards have given pleasure to many G operators. Gerard's claim is for contacts made when he was operating near Valence in Dept 07, QRA Locator CE04b, and many will remember the very good signal he was putting into the U.K. during the various two-metre contests last year from his site at some 2000ft. a.s.l. He was then running 80 watts to an 829B modulated by a pair of 807's in Class-AB2, and receiving on a triple conversion superhet with two 417A's in the front end and a 14-ele. beam, from that well-known establishment



(Above) the VHF/UHF aerial system in use at G3ZEZ, 16 Kestrel Way, Clacton-on-Sea, Essex. At top is a 3 ft. dish for 23 centimetres—then a 10-ele Yagi for two metres—below it a 24-ele array for Seventycems—and lastly a 3ft. dish for 3 centimetres. Mounted on a rotatable mast, the whole of this assembly is home-built. At lower left is the station of G3ZEZ, all the VHF gear having been constructed by him. Altogether, a very workmanlike job, on which he is to be congratulated.

of Marc Tonna, F9FT, and all the contacts were made on AM. Having moved to Paris, he has virtually rebuilt the station, and now has a fully transistorised Rx and Tx, from which he gets about 20 watts of RF with a 2N5643 or BLY93 in the final. He has a 4CX250R with 250 watts input for CW, and this stage will be used as a linear for SSB within the next month or so. He is interested in regular skeds on SSB or CW with stations in the British Isles, and the address is: Gerard Francon, 14 rue Boyer-Barret, 75 Paris XIVe.

Award No. 99 goes to Francis Blake, G8AAF (High Wycombe, Bucks). When first licensed, he was QRV on 70 cm., but went QRT on that band at the end of 1966, and opened up on Two in June 1970 with an HW-17 and a halo in the bedroom, on which his best DX was HB9RO. He now has

an 8-ele. beam in the loft. From his 350ft. a.s.l. site, he has logged over 300 stations to get his 100 QSL's. He hopes to be back on 70 cm. shortly.

It is now some 18 months since we published the list of VHFCC Awards, and so the Tables herewith show the membership to date from January 1970.

News from GM

The VHF "get-together," held this year in Cupar, Fife, seems to have been a great success. Some 30 souls attended, including a few HF men who had come along to see what it was all about, and whom we are assured by GM8BZX, went away suitably impressed. Raffle tickets for the prizes were drawn by GM6RI and GM8EWQ, as holders of the oldest and the newest licence among those present. Attendance included three U.S. Navy Servicemen from the base at R.A.F. Edzell. All hold licences, *viz.*, GM5ATK, GM5AUM and GM5ATC, and two already have VHF gear and will be on two metres as soon as they can get the antennae up. Welcome aboard, boys. Returning from the affray, *sorry*—event, GM8BZX had a mobile QSO with GM3ZOO, at the start of which he received a 5 & 7 report and a long description of the exact route which 'ZOO was following. It turned out that they were just 50 yards apart! Congratulations to GM3DXJ and his colleagues for an enjoyable and well-organised occasion.

GM8BRM, Iain Petrie, well-known among the Sassenachs for his two-metre portable work from Cairn o' Mounth, found June 3 to be good for DX from another site, this time Cairnorrie near Methlick. He worked 15 PAØ and nine South Coast G stations using a Pye "Cambridge" and a halo on the car, and was interested to see the DX axis moving around from East to West. At 1900z the Dutch were 5 & 9 and by 2145z they had virtually dropped out. At 2200z the G's were coming through at 5 & 9+, and by 2300z they had faded and the GW's had taken their place. The GM8BCG/P boys started off their Scottish tour with some nice DX contacts on 70 cm. They were 5 & 9 in the Midlands on 433·8 MHz on July 6. Talking of Cairn o' Mounth, it was a pleasure for your scribe to meet GM3GDX (how could you go wrong on VHF with a callsign like that?) up there, and to hear from him that the bug has bitten once more after an absence from the bands of some years, and that he hopes to be operational again soon. Bill was at one time the secretary of the Lanarkshire Radio Club, who still meet monthly in Motherwell, and whose members include VHF callsigns such as GM3MXN, GM3EHI, GM8BSE, GM3ULP (who is also GM6ADR/T), GM3VXR and GM3UDJ.

Alex Dunn, GM8DMZ, Patna, Ayrshire, has found a wonderful new QTH for /P work from which he and GM3LTW expect to operate during contests. For fairly obvious reasons, he does not at this stage wish to reveal the exact location, but it is over 1440ft. up, and with two 14-ele Parabeams and 150 watts of AM/CW on two metres, they should do pretty well. They are also likely to have 70 cm. gear with them for the September contest. Talking of climbing mountains, GM8AMG must have set some sort of a record on his recent trip to Scotland when he carted two-metre and 70 cm. gear on his back some 3000ft. up on Ben More in Perthshire one dark night. Propagation was OK, and many enjoyable contacts were made, but it got so cold that Mike was obliged to dig peat and make himself a fire, which is pretty ingenious for a Sassenach! The trip down in the dark was fairly hairy, and it wasn't until he reached the bottom, that he realised that he had lost the antenna somewhere *en route*. It looks as if Charlie Sherrit, GM3EOJ, did not, after all, put up a new "First" with his GM/SP two metre contact. (See "VHF Bands" for June 1971). GM3FYB reports that he has in his possession a miniature bottle of gin sent to him by the late Fraser Shepherd, GM3EGW, and inscribed "Thanks for the SP—a new country". This gift was a memento of the occasion when 'FYB got 'EGW out of his bed at 1 a.m. some ten years ago to work HB and SP during an auroral opening.

Finally, the latest information on the Scottish VHF Convention at the Carlton Hotel, Edinburgh, on October 3. Speakers will be Tom Douglas, G3BA, and Geoff Stone, G3FZL. There is to be an exhibition of equipment built by local amateurs, but visitors are invited to bring along additional items if they wish to do so. The two-metre talk-in station should have the callsign GM3HAM /A. Refreshments will be served during the afternoon, and the dinner will commence at 6.45 p.m. Tickets, which will be available from GM3OWU, Vic Stewart, *QTHR*, in

VHFCC AWARDS

January 1970 — July 1971

TWO METRES

Callsign	Cert. No.	Date
GI5ALP	42	January 1970
G3TDR	43	January 1970
G8BTF	44	January 1970
G8CAI	45	February 1970
G3WEV	46	February 1970
G8ATK	47	February 1970
G3YLR	48	March 1970
G3RHU	49	March 1970
G8CKV	50	April 1970
G8BXX	51	April 1970
G8CZQ	52	April 1970
G3PTM	53	May 1970
G3WSN	54	May 1970
G3YUA	55	May 1970
G8CDW	56	May 1970
G8AEL	57	May 1970
G3HCW	58	May 1970
G8CEZ	59	May 1970
G8DLP	60	June 1970
G8COK	61	June 1970
G8BXC	62	June 1970
G8BHI	63	June 1970
G3DNR	64	June 1970
G8BZN	65	June 1970
G8CBU	66	July 1970
F1APQ	67	August 1970
G8BYV	68	August 1970
G8BEW	69	August 1970
G8CJO	70	September 1970
G8CCV	71	September 1970
G3XSK	72	September 1970
G8BWW	73	October 1970
G8DKV	74	October 1970
G8CVD	75	October 1970
G8CVS	76	October 1970
G3YDY	77	October 1970
G8BDJ	78	November 1970
G3USF	79	December 1970
G8CFI/P	80	December 1970
F1AOY	81	December 1970
GM8BRM	82	December 1970
G3YZS	83	December 1970
G8CUW	84	January 1971
G3XKT	85	February 1971
G3ZIG	86	February 1971
GC3YIZ	87	February 1971
G8BJS	88	February 1971
GM8BZX	89	February 1971
G8DJQ	90	February 1971
G8BHD	91	February 1971
G8DII	92	February 1971
SP9AXY	93	May 1971
G8BRT	94	June 1971
G8CKX	95	June 1971
G8DLX	96	July 1971
G8EBV	97	July 1971
F1BF	98	July 1971
G8AAF	99	July 1971
G8EBV	100	August 1971
G3PQF	101	August 1971
G8DAW	102	August 1971
GC3OBM	103	August 1971
G8ECK	104	August 1971

VHFCC AWARDS

to

July 1970

FOUR METRES

Callsign	Cert. No.	Date
G3IMV	1	April 1968
G3EKP	2	November 1968
G3UUT	3	February 1969
G3FDW	4	February 1970
G3VSA	5	December 1970

70 CENTIMETRES

Callsign	Cert. No.	Date
G3DAH	1	April 1968
G8AAZ	2	October 1968
G8AEJ	3	November 1968
G8AWO	4	January 1969
G8AUE	5	January 1969
G8ARM	6	April 1969
G8AYN	7	November 1969
G3MCS	8	November 1969
G8ART	9	May 1970
G8BYV	10	December 1970
G8APZ	11	August 1971

September, cost £1·75 for the convention and dinner or 40p for the convention alone. The event is being organised by the Lothians Radio Society.

Activities-Various

G8AYB (G6AFK/T) and G8DYB (G6AGX/T) intend to operate portable TV from Dunstable Downs every other Thursday commencing July 15. Times are 1830-2030z, on 437 MHz for vision and sound in the phone section of the band using the Club call G8DDC. Positive modulation and 405 lines will be radiated, and they will welcome any phone or video contacts.

Another Radelec Scout gathering is planned for this year at Gillwell Park. It will feature A/TV, RTTY, a constructor's contest and lectures on antennae and short wave listening. Full details are available from the organising secretary, G8CKT, Mike Tooley, *QTHR*.

GM3APX will be mobile down the West coast from Scotland to Devon and back *via* London and the East coast between August 16 and September 2. He has 145·0 MHz in the car. G3PMH/P will be operating in Rutland during August 20-22. Two-metre AM and SSB will be available, with four-metre AM on the Sunday morning only, and the possibility of 70 cm. also. Skeds from G8BBB, *QTHR*. The South Bucks. VHF Club meet again on August 3 to finalise details of their participation in VHF NFD, and on September 7 for a talk on radar. Place is Bassetbury Manor, High Wycombe, and the time 8 p.m. Hon. secretary G3XBP, *QTHR*.

Coming up: G3BA and G3BHT will be portable in Luxembourg for the September contest and will stay over until the Monday with the specific purpose of giving G stations a chance to work that country. Callsign G3BA/P/LX and a four-hour session starting at 1800z as follows: First 15 minutes SSB on 145·40 MHz listening for calls 10 kHz either side, next 15 minutes CW on 144·1 MHz preferably net operation, then 30 minutes AM on 144·2 MHz, thereafter repeating this schedule. Every QSO will be QSL'd and an s.a.e. should be sent to G3BA, *QTHR*, for skeds as soon as possible.

Rallies and Conventions

The Anglian Rally on Sunday, June 27, went off well and the weather was reasonably kind to them. The talk-in stations were doing a lot of business; the two-metre crew had already given assistance to some 60 mobiles by 1140 a.m., running 20 watts to a QQV03-20A with a 14-ele Parabeam and a turnstile, so it looks as if the attendance was up to last year's total.

The Midlands VHF Convention was held this year at the premises of Messrs. Albright and Wilson of G3OXD fame. Some 90 enthusiasts attended the lecture by Geoff Stone, G3FZL, and 72 stayed on for the dinner. The "radio clinics" idea, with experts available to answer questions on particular aspects of Amateur Radio, was a great success. The event was combined, and indeed formed part of, the 50th anniversary celebrations of the firm. It was announced by Geoff Stone during the course of his talk, that the Durham two-metre beacon site had now been cleared by the ITA authorities for operation of a 70 cm. beacon, which should provide yet another good indicator of propagation conditions on that band.

Continental News

The PAØVD beacon on 432·125 MHz continues to be well received in this country. The input is 35 watts to a QQV03-20A into a pair of crossed dipoles, and the QTH is on the North Sea coast at Scheveningen. Plans are well advanced to increase the input to 50 watts, to transistorise the Tx and to add further elements to the antenna. The final transmitting frequency will be 433 MHz. Reception reports from the West and North West of the country would be welcome to PAØVD, J. van de Wetering, Zeesluisweg 160, Scheveningen. PAØDSW is operating low power beacons on 433·75 MHz, 145·98 MHz and 1296 MHz.

DFØAFZ has been heard on two metres in this country. This is the special station of the German Radio Society, DARC, and if you want a QSL card you have to send DM5 with your request. This sum is devoted to the funds for their new building. DLØBGA on 145·81 MHz is located near Bremen in QRA locator FM51a, and is one of the FM repeater stations similar to DJ9CRA, both of which have been heard in the U.K. of late. DK2YN has been sending automatic V's and callsigns for long periods on 144·027 MHz, but no information is to hand at present to indicate whether this is a new low power beacon or not. New German prefixes to be heard are DC1 and a continuation of the DK3 series up to DK7. These are similar to our Class-B licencees.

Deadline

Deadline for the next issue is **August 7** and the address for news, views, claims and comments is:— "VHF Bands", SHORT WAVE MAGAZINE, BUCKINGHAM. Cheers for now and 73 *de G3DAH*.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for September issue: August 6)

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

WRITING up "Clubs" each month would seem pretty routine—but once in a way, your old scribe gets a bit of news which warms his soul. This time it comes from the Star Club in Leeds. They are setting-up a special venue at the New Inn Hotel in Bramley Town Street for a Junk Sale. So what, you may ask, is so different about this one?—just this, that *all* the proceeds of the Junk Sale are being sent to RAIBC funds; and all within striking distance are welcome. G8BUU—*see* Panel—is looking for more stuff to make the Sale go with a swing, so if you have anything useful but no longer required, get in touch *pronto*, so he can organise the collection of it. There's room for 70 plus in the "saleroom" booked, and a hint that pea-and-pie type eats may be available. This one deserves a lot of support, to make the best possible use of a chance to help RAIBC gain funds to carry on the very good work it does—so often mentioned in this column before—to help those unable to do for themselves all the things that most of us can.

The West Country

For the purposes of our piece this month, GW comes under this heading; and it is in GW we make our start, by way of a letter from G. A. Edwards, of 8 Tennyson Drive, Cefn Glas, **Bridgend,** Glamorgan, who is interested in forming a Club in the district. Anyone interested, and particularly the licensed types who would form the backbone of the group, please get in touch direct.

St. Lawrence's have their shack in the grounds of the hospital of that name in **Bodmin,** where they have a KW-204 transmitter and Eddystone EA-12 receiver. If anyone is in the area on holiday, a hearty welcome is assured—not to mention any prospective members!

Barnstaple in North Devon is the *locale* for the **North Devon** group, where we note that one date is missed, leaving August 25 for a ragchew evening. On September 8, they have a talk. Incidentally, this crowd get together at the home of the Secretary—so if you purpose looking them up, or maybe actually joining, it would be courteous to get in touch before putting in an appearance.

Nice to hear that **Hereford** are still very much alive and kicking, as their *Newsletter* amply shows; they have their corporate being in the County Control, Civil Defence Hq., Gaol Street, Hereford, but for the latest information on what is cooking, we have to refer you to the hon. secretary, as Panel, p.371.

At **Plymouth** they seem to have gone to alternate weeks, the first and third Tuesday of each month, at Virginia House, Bretonside, Plymouth. In addition, on August 22, there is the annual picnic, with talk-in on Two and Top Band, at the Scenic Car Park, Yelverton.

An unexpected but very welcome visitor to the **Yeovil** meeting on June 24 last was G3HVB/VP8KD, who showed a film dealing with the Falkland Islands. On August 5, a tape lecture on "World-Wide Communication" will be the subject. Other meetings come up each Thursday, at the Youth Centre, 31 Park Lodge, where we understand light refreshments are now available.

Over at **Torbay,** the form is a regular monthly get-together with a lecture or film-show, plus a weekly one to welcome any visitors to the area; the latter facility recently netted them visits from an SM and a DJ, not to mention chaps from the Midlands and the North as well. For details, we have to refer you to G3NQD, as Panel but we can tell you that the meeting place is at Bath Lane, rear of 94 Belgrave Road, Torquay.

Now to **Shirehampton,** where the secretary tells us the lads are "in recess" with the activities making a start for the new season around the second week in September. Details of the new season's doings, and all the other gen about this Bristol Club, can be obtained by getting in touch with G3SXY, *see* Panel, p.371.

Now the North

Into which category we have to lump the GM's, who must be a shy lot, as we seldom hear much of the many small Clubs outside the main centres of population.

It is always a source of wonder to your scribe that whenever a Club has a lady member, she nearly always seems to be lumbered with a job as an official, usually that of hon. secretary. **Inverness** is no exception, as a quick scan of the address Panel will show. They get together on Thursday evenings, and will be having natter sessions till summer is done, when such things as a construction project, films, visits, and whatever, will be organised. It is understood that an expedition to the Black Isle is also under consideration. To find out more, either go to 4 Falcon Square, the Hq., to a meeting, or contact the secretary at the address in the Panel.

No club-nights at Hq. will be possible for the **Billingham** lads in August as the Community Centre will be closed; but to make up for it, they can be found with their special-activity station set up at the Billingham Show, Whitehead Park, on Saturday August 28—and

this should be about as easy to find as it could possibly be!

Often these special-activity affairs are spoilt from the operators' point of view by the electrical noise slung out by a funfair which always seems to be part of the attractions, as **York** found to their cost at their recent York Gala effort—but it is always worthwhile in the context of publicity for the group. Incidentally, the York gang have a billet in the British Legion, 61 Micklegate, every Thursday evening.

Ovingham are the sponsors of a Fox Hunt which is being played off on August 1, with checkpoints at Newcastle, Morpeth, and Hexham, with several clubs taking part in the hunt, on 145·1 MHz. Anyone in the area who is interested in finding out more about the Club life up there could well make a start by getting in touch with G8BGU.

August 4/11/18 are all booked by the **Northern Heights** crew for outings to the BBC transmitting station at Moorside Edge, Huddersfield, but there is also a Hq. opening on August 11 so that the chaps not on the visit may have a good old ragchew. In addition, the lads have August 25 down for a visit to Bradford University to hear Dr. O. J. Downing talking about Microwaves.

The usual weekly sessions at **Hull** have been enlivened recently by visits from YS1AG. Dr. Goens is an avid DX-chaser who is working in Hull for a period of about six months. Hull again are among the organisations fixing up outdoor events in August; after G8DZG on "Basic Radio Maths." on August 6 at Hq., August 13 is given over to a visit to Hull Docks. Back "at home" for August 20, when lights will be dimmed for a film show, and August 27 the Short Wave Listeners night.

Without a Territory

Here come the ones who have no territories as such, like the special-interest organisations; and we also add to the clip the overseas societies or others who cannot conveniently be taken in under one or other of the area headings.

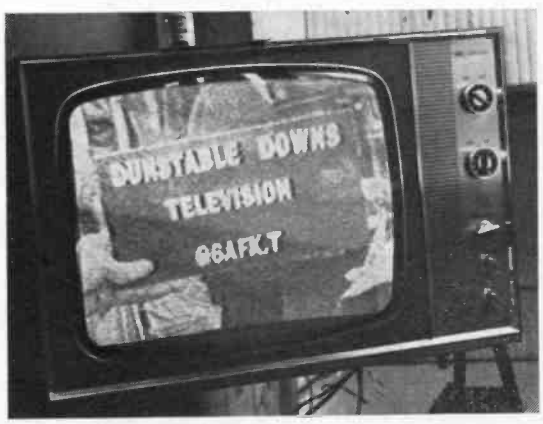
We can make a good start by a reference to **RAIBC**, and their *Radial*. The copy at hand contains a quite hilarious description of NFD 1953 at Bolton, by G3AQW, and also an excerpt from the "Possum" newsletter, in which an appeal is made for news of anyone who could benefit from Possum equipment, which has been available through the National Health Service for five years now —but to date only 150 of the Selector Units Type 1 are in service. As many will already know, Possum is a mechanical device which enables the severely handicapped to do all sorts of useful things for themselves.

How nice it is to see the **WAMRAC** Circular letter dead on time again; this group comprises Methodist Church members all over the world, not to mention a crowd of supporters from other denominations, kept in touch with each other both through the regular nets and by way of the Circular Letters.

Your conductor always finds the **Nigerian** newsletter of great interest, and the current one is no exception, with a most interesting leader on propagation predictions as referred to conditions actually met in 5N2-land.

RSEA has now opened its own shack in Nairobi, where the lads can get together every Friday evening.

The Dunstable group have a keen A/TV interest, with G6AFK/T as their leading member in that field. Here he is with his camera (cover removed), it all being a home-built job—and when you think of the intricacies of amateur TV transmission, that is quite something. The quality of the picture he can radiate is shown by the photograph below, this being photographed from an on-the-air transmission.



MAGAZINE CLUB CONTEST

The Twenty-Sixth MCC, the annual Magazine Club Contest, will take place over the weekend November 6-7. Full details in due course.

SHORT CLUB NOTICES

CLUB NAME	HEADQUARTERS LOCATION	MEETING DAY MONTHLY
Cheltenham	"Royal Crescent"	1st Thursday
Cornish	SWEB Clubroom, Pool, Camborne	1st Thursday
Crawley	Trinity Church Hall, Ifield	4th Wednesday
Exeter	Community Centre, St. Davids Hill	2nd Tuesday
Harrow	County School, Sheepcote Road	Fridays, 8 p.m.
Maidstone YMCA	"Y" Sports Centre, Melrose Close	Closed August then Fridays
North Leeds	*Not quoted*	Tuesdays
Purley	Railwaymen's Hall, Whytecliffe Road	August 6/21
Saltash	Burraton Toc-H, Saltash	August 8, Outing; August 20, Fox Hunt
Star	Star & Garter, Bramley Town Street, Leeds, 13	*Not quoted*
Stratford-on-Avon	Halls Croft, Old Town	Alternate Fridays
Tyneside	Community Centre, Vine Street, Wallsend	Mondays
Verulam	St. Albans Town Hall	August 18
Wolverhampton	Neachells Cottage, Stockwell End, Tettenhall	Mondays

N.B.—In each case, secretary's name and address appears in Panel, opposite.

In addition, one notes that a monthly lecture is organised on the first meeting of each month; August 6 sees Peter Ngugi of "Voice of Kenya," who incidentally is an executive vice-president of Radio Society of East Africa, talking about Broadcasting in Kenya.

Many mobile operators are members of **A.R.M.S.**, which caters specially for their interests. One is pleased to note, in the copy to hand, a discussion on the rules for their M.C.A.—the /M version of DXCC, in simple terms—coming down most emphatically on the side of retaining the existing rules, rather than run any risk of "cheapening" the award by allowing QSO's made while abroad countable towards the countries-total.

Another activity in Amateur Radio is RTTY, which is catered for by **BARTG.** The current *Newsletter* is mainly devoted to results of past and notification of future contests, plus of course a For Sale and Wanted column covering items of particular interest to RTTY operators, such as teleprinters, TU's, TDMS's and so on. One would think anyone interested in this field of activity would consider membership a "must."

MCC—1971

These initials stand, of course, for one of the best-known events in the "domestic" Amateur Radio calendar. Perhaps one of the reasons it is so popular is that it comes each year to enliven the Club programme and introduce that element of competition which is so good for us all.

For the moment, let us just say it will fall on the weekend of **November 6-7,** and in general the form will be much as it was last year. So now you know, you have plenty of time to get organised and to fix up the gear, the location and the antennae—and, of course, arrange for the operators, loggers and helpers so that everyone in the Club becomes involved one way or another!

East Anglia and Midlands

East Anglia is better represented this time than for many a long day. At **Wymondham** there used to be a club at the local school, run by G2UX. However, this is now defunct, but some licensed amateurs are still resident in the town—they co-operated to put on GB3WYM at the local EXPO-71 show recently, and now feel that the numbers and amount of interest justify serious consideration being given to forming a local group. If anyone within striking distance is interested, will they get in touch with G8CVJ (address under Wymondham in the Panel).

Not so far away is **Norwich,** where the Norfolk group have a hide-out in the Brickmakers Arms, Sprowston Road, where they normally assemble each Monday. For August, things are slightly different in that they have a visit to Norfolk Joint Police Hq. for a limited number. For the rest, August 9, 16, and 23 are all "informals" with nothing arranged, although the clubroom will be open and visitors welcomed.

Bishops Stortford have a booking at the British Legion Club, Windhill, on the third Monday in each month, and August is no exception. However, in past years attendances in August have been a bit thin, with a majority of members away on holidays, so the lads will be able to while away the odd hour by having a good old natter.

At **Rugby,** 10 Drury Lane is the venue, and the chaps can be found there on any Tuesday. Although the meetings generally are informals, it is understood that one of their popular junk sales is coming up shortly.

Looking at the **Worcester** club *Newsletter*, there is much stress at this time of year on outside activities, such as NFD, their Mobile Rally, and so on; but a brief reference tucked away leads us to believe that the third Saturday in the month at the Crown Hotel in Worcester is normally the form; but August 21, we also notice, is booked for the club treasure hunt—so perhaps it would be best to get in touch with the hon. Secretary for the latest information.

For **Midland** one never has much doubt—they have been meeting in the Midland Institute for longer than your scribe has been in Amateur Radio, first in Digbeth and now in Margaret Street. The date is August 17, a Tuesday evening, and for once the chaps have opted for an informal.

Nothing in the way of slacking is allowed at **Coventry** in August; on the 13th and 27th they have their Club station G2ASF on the air in accordance with established custom; on the 6th they have a Club D/F Event; and on the 27th, another of those ever-popular Quiz evenings. The venue remains as it has been for some time past, at the City of Coventry Scout Hq., 121 St. Nicholas Street, Radford Road.

The **Wirral** *Newsletter* indicates they did well in

NFD, and that the committee are very much alive to the feelings and interests of members and prospective members. For the moment they are still foregathering at their Hq., Harding House, Park Road West, Birkenhead, but as charges have recently been raised to "an uneconomic level". the search is on for a new place. The August venue, however, is still Harding House, on the 18th, for a talk on "70 Cm and Down." The other date, August 4, is given over to a visit to Liverpool Traffic Control Centre.

Oh, dear! We have a problem! **Solihull** are among our reliables but this time they have set their informal get-together for August 36! However, we are on firmer ground with the August 17 meeting, which is to feature the recent Isle of Skye expedition members and their exploits—be at the Manor House, High Street.

Nothing is shown on the **Shefford** calendar for August; the first meeting after the recess will be on September 2, when they get together to make the final preparations for VHF/NFD.

Southern England

A title that covers a wide area but is virtually London & District. . . . . .

Yet another society to indicate a break for August is **Greenford,** who would normally have been at Greenford Community Centre, Oldfield Road, on Friday evenings, a routine that will be resumed in September.

The Dolphin, Broadway, is where the **Bedford** lads meet—they can be found there on any Thursday evening unless a visit elsewhere has been arranged. This gives us August 5, for a tape lecture on Aerials; a session on the band on August 12; a D/F Hunt on August 19; and a Brains Trust on August 26. Incidentally, the group, like so many others, have Hq. in a pub, so to avoid any risk of objections by parents of younger members the rules

Names and Addresses of Club Secretaries reporting in this issue:

ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, London, W3-8LB.
A.R.M.S.: N. A. S. Fitch, G3FPK, 40 Eskdale Gardens, Purley, Surrey, CR2-1EZ.
BASINGSTOKE: P. Sterry, G3CBU, Ashley, Orchard Road, Salisbury Gardens, Basingstoke.
BEDFORD: J. Bennett, G3FWA, 47 Ibbett Close, Kempston (*2427*), Bedford.
BILLINGHAM: L. Crooks, 4 Victoria Grove, Fairfield, Stockton-on-Tees, Teesside.
BISHOPS STORTFORD: A. Stanley, G3WUR, 43 Havers Lane, Bishops Stortford (*57251*).
BODMIN (St. Lawrence's): W. F. Swain, 32 Northey Road, Bodmin, Cornwall.
BRIDGEND: G. A. Edwards, The Chalet, 8 Tennyson Drive, Cefn Glas, Bridgend, Glamorgan.
BRISTOL (Shirehampton): E. J. Davis, G3SXY, 72 North View, Westbury Park, Bristol (*33284*), BS6-7PZ.
B.A.R.T.G.: D. J. Goacher, G3LLZ, 51 Norman Road, Gorse Hill, Swindon (*21740*).
CHELTENHAM: E. Janes, G2FWA, Hillside, Bushcombe Lane, Woodmancote, Cheltenham (*Bishops Cleeve 2229*).
CORNISH: J. Farrar, G3UCQ, Elm Cottage, Ventonleague, Hayle.
COVENTRY: C. Jaynes, 20 Belgrave Road, Wyken, Coventry.
CRAWLEY: G. Bowden, G3YVR, 51 Leighlands, Pound Hill (*3253*), Crawley, Sussex.
CRAY VALLEY: P. F. Vella, G3WVP, 78 Hurst Road, Sidcup.
CRYSTAL PALACE: G. M. C. Stone, G3FZL, 11 Liphook Crescent, London, S.E.23 (*01-699 6940*).
DARTFORD HEATH D/F: Mrs. M. F. Worbey, G3XVC, 13 Havelock Road, Dartford (*22889*), Kent.
DUNSTABLE DOWNS: A. Don, G8BWZ, 51 Manor Park, Houghton Regis, Dunstable (*67349*), Beds.
ECHELFORD: R. Hewes, G3TDR, 24 Brightside Avenue, Laleham-on-Thames (*Staines 56513*).
EXETER: A. Bawden, 232 Exwick Road, Exeter, EX4-2BA.
GEORGE KENT, LTD.: J. Allen, G3DOT, 77 Rosslyn Crescent, Luton, Beds., LU3-2AT.
GRAFTON: T. Coleman, G8EEI, 14 Norman Court, London, N.4 (*01-340 9542*).
GREENFORD: I. Jackson, G3OHX, 154 Ryefield Avenue, Hillingdon (*Uxbridge 33861*).
HARROW: R. H. Medcraft, G3JVM, 134 Dulverton Road, Ruislip Manor, Ruislip (*38726*), Middlesex, HA4-9AG.
HEREFORD: S. Jesson, 181 Kings Acre Road, Hereford (*3237*).
HULL: Mrs. M. Longson, 4 Chester Road, Wold Road, Hull, HU5-5QE.
INVERNESS: Miss A. G. Veitch, Kilmichael, Drumnadrochit, Inverness-shire.
KINGSTON: R. S. Babbs, G3GVU, 28 Grove Lane, Kingston-on-Thames (*2801*).
MAIDSTONE YMCA: A. S. Walter, G3WXL, 31 Lansdowne Avenue, Maidstone.
MIDLAND: N. Gutteridge, G8BHE, 68 Max Road, Quinton, Birmingham, 32.
NIGERIA: E. A. Lomax, 5N2ABG, P.O. Box 68, Kaduna, Nigeria.
RUGBY: J. L. Wood, G3YQC, 73 Hillmorton Road, Rugby, Warwickshire.
SALTASH: J. A. Ennis, G3XWA, 19 Coombe Road, Saltash (*3551*), PL12-4ER.
SHEFFORD: A. Sullivan, G2DGF, 12 Glebe Road, Letchworth, Herts.
SOLIHULL: J. Burnie, G8BYM/G3ZXO, 12 Buryfield Road, Solihull (*021-705 4565*).
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SOUTHGATE: A. F. Hydes, G3XSV, 6 Glanbrook North, Cotswold Way, Enfield (*01-363 8747*).
SOUTH MANCHESTER: D. Holland, G3WFT, 7 Alcester Road, Sale, Cheshire, M33-3GW.
STAR: D. Leeman, G8BUU, 115 Asket Drive, Seacroft, Leeds, LS14-1HX.
STRATFORD-ON-AVON: J. W. Webb, G3OOQ, 14 Townsend Road, Tiddington, Stratford-on-Avon (*5973*).
TORBAY: Mrs. G. Western, G3NQD, 110 Truro Avenue, Hele, Torquay.
NORFOLK: J. L. Lockwood, G3KLL, 29 Coppice Avenue, Hellesdon, Norwich (*48685*), NOR-82R.
NORTH DEVON: H. Hughes, G4CG, Crinnis, High Wall, Sticklepath, Barnstaple.
NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax (*44329*).
NORTH LEEDS: T. Brown, G8CJS, 12 Hollin Hill Drive, Leeds, LS8-2PW.
OVINGHAM: M. Stott, G8BGU, 27 Dene Garth, Ovingham, Prudhoe, Northumberland.
PLYMOUTH: S. E. Martin, 32 East Park Avenue, Mutley, Plymouth, PL4-6PF.
PURLEY: A. Frost, G3FTQ, 62 Gonville Road, Thornton Heath, Surrey, CR4-6DB.
RSEA (Radio Society of East Africa): C. Marshall, P.O. Box 5681, Nairobi, Kenya.
R.A.I.B.C.: Mrs. F. Woolley, G3LWY, 331 Wigan Lane, Wigan, Lancs.
REDDITCH: R. J. Mutton, G3EVT, Summerhayes, Mill Lane, Oversley Green, Alcester (*2041*), Warwickshire.
TYNESIDE: G. Lowdon, 21 Winifred Gardens, Wallsend, Northumberland.
VERULAM: H. Young, G3YHY, 93 Leaford Crescent, Watford, WD2-5JQ.
WAMRAC: 178 Manchester New Road, Middleton, Manchester, M24-4DA (*061-643 2368*).
WIRRAL: A. Fisher, G3WSD, 34 Glenmore Road, Oxton, Birkenhead (*051-652 5078*).
WOLVERHAMPTON: J. P. H. Burden, G3UBX, 28 Coalway Road, Wolverhampton, WV3-7LX.
WORCESTER: G. Spink, G3WUI, 1 Belvoir Bank, North Malvern, Worcestershire (*Malvern 3088*).
WYMONDHAM: P. Exeter, G8CVJ, 4 Ash Close, Wymondham (*2474*), Norfolk.
YEOVIL: D. L. McLean. 9 Cedar Grove, Yeovil, Somerset.
YORK: J, A. Rainbow, G8BOK, 14 Temple Road, Bishopthorpe, York, YO2-1QN.

Jack Tweedy, G3ZY (holding cover) well known in the Amateur Radio trade, has recently opened a new demonstration show-room—actually a converted out-house at his home at Wadshelf, near Chesterfield, high in the Derbyshire hills and only a few miles from the famous Chatsworth House. The shack has been fitted with two long operating benches for the gear on show. Behind each unit is a power point, with aerial sockets and multi-way connectors for the antenna rotator, all conveniently positioned for instant operating. The site, ideal for HF and VHF band working, gives perfect conditions for testing—and G3ZY has also installed a 60ft. "Versatower," topped by a three-band beam and a two-metre aerial array. We regard this as an enterprising and intelligent approach to merchandising in the radio amateur context.

are that the meeting is informal in the clubroom till 8.0 p.m., then a couple of hours of the formal meeting, finishing at 10.0 p.m. when there is still time for a pint. This gets round one big problem—prising the blighters out of the bar to start the meeting!—and enables the youngsters to get off early without losing any of the main meeting time.

Southdown next, and here the Hq. is at the Victoria Hotel, Latimer Road, Eastbourne; however, we have no details on the actual dates for August, which can be obtained very simply by getting in touch with G3ZQB —*see* Panel, p.371.

On August 21 the **Crystal Palace** group meeting will hear G3IIR going to town on the VHF/FM receiver and its techniques. This one is at Emmanuael Church Hall, Barry Road, London, S.E.22.

The **George Kent** club lost many members through redundancies in the Company. Seven survived the axe, but this reduced number means a temporary end at least to evening lecture meetings, and consequently concentration on contest and similar activities, not to mention JOTA.

Grafton nowadays get together at Whittington School, Highgate Hill, London, N.19, on Friday evenings. However, we do not, at the time of writing, have firm information about the date on which the first meeting of the autumn season takes place after the summer recess.

Instead of its usual lecture evening, on August 17 **Acton, Brentford and Chiswick** will set up their station G3IIU at Hq. and try to work member G3CCD who will be operating at FØUT, during his holiday. Hq., by the way, is at Chiswick Trades and Social Club, 66 High Road, Chiswick, London, W.4.

At **Cray Valley** the multitudes assemble at the Congregational Church Hall, Court Road, Eltham, London, S.E.9, on August 5 to hear G3VFD talking about VHF in EI-land. In addition there is a Natter Nite, as they call them, slated for August 19.

With YL's taking the duties of both secretary and Treasurer, it is not surprising that **Dartford Heath D/F** can claim possibly the greatest active YL membership of any Amateur Radio club in the country. They seem to do their hidden-transmitter hunting as families, and those YL members with licenses take their share of the transmitter work in hiding—and what lengths they go to to make it hard for the hunters to find them! For details about this enterprising group get in touch with G3XVC, as Panel.

One of the best of the Club newsletters to come this way is from **Echelford,** now being produced by G5AGX. It doesn't give us programme details far enough ahead of its publication date to enable us to tell you what they have

fixed up for August. For that, and other details of what is surely one of the most active groups in the country, get in touch with G3TDR.

At **Basingstoke**, they have the first and third Saturday evenings booked—one of the few Clubs meeting at weekends—at Chineham House, Shakespeare Road, Popley. For August, then, this arrangement gives us August 7, for Morse, construction, and some on-the-air time. August 21 features a lecture on the setting-up of a station.

At **Kingston** on August 11 G3GVU will be talking about such fascinating devices as digital counters, and the techniques used in such measurements. For other details, contact G3GVU—he is the hon. secretary.

It is quite some time since we last heard from the **Dunstable Downs** gang, from their Hq. at Chews House, High Street, as to their doings on Friday evenings. However, our latest news is that they are still taking up every Friday and using alternate ones for formal programmed activities. This gives us August 13 for G8CPX to talk about TV Servicing, and August 27 when G3VZV will be leading their discussion of VHF/NFD.

Southgate committee are obviously hedging their bets, at least so far as the August meeting goes, as the latest *Newsletter* says that they are undecided whether to put on something formal, or whether to have the Club station on the air with ragchewing in parallel, bearing in mind the fact that August 12 falls right into the Holiday season. Incidentally, the Club Hq. is at the Civil Defence Hut, opposite Arnos Grove (Piccadilly Line) station.

Deadline

And that, good people, is once again the lot for this time. For next month, letters containing your *September* dates, venue, programme and so on should be posted to arrive by **August 6**, with the envelope addressed, as usual, to "Club Secretary," SHORT WAVE MAGAZINE, BUCKINGHAM. 73, and keep the wheels turning!

"CLUBS" FORWARD DEADLINE DATES

For reports to be covered in this feature, we must have them by **August 6** (for September); **September 3** (October); **October 8** (November); and **November 5** for December issue. Any "Clubs" material arriving too late for the issue in preparation is held over for the next if the contents of the report warrant it.

THE OTHER MAN's STATION — G3ZOJ

BRIAN Cooper, G3ZOJ, 54 Nightingale Lane, Woolwich, London, S.E.18 is a serving soldier in the Royal Artillery. He first became interested in radio as an SWL some fifteen years ago, starting with an Eddystone S.640 receiver.

G3ZOJ was licensed in September 1970 and has been active mainly on 80 metres, although all bands 10m. to 160m. can be worked using CW or AM phone.

The transmitter at present in use is a DX-60 with a VFO, and the receiver a Heathkit RA-1 having a pre-selector. Ancillary equipment includes an SWR indicator, signal generator, a Class-D Wavemeter and an oscilloscope.

His aerial is a trap dipole, running north-south and coax fed through an ATU. Main operating interest at the moment is GDX phone on 80m. and future plans are for a second station receiver and the gear for SSB operation. G3ZOJ QSL's 100% and also remarks that one of his other interests is classical music — so he has two absorbing hobbies.

NEW QTH's

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

DA4BA, T. J. Hodgetts (*G8EUW*), Hq. Tels. Group, Hq. B.A.O.R., B.F.P.O. 40.

EI7BM, P. J. Masterson, 119 Mellows Road, Finglas West, Dublin, 11.

G3ZJQ, R. S. Walker, 14 Varley Road, Erdington, Birmingham, B24 OLB.

G4ABD, D. J. Rigley, 66 Wyndale Drive, Dale Abbey, Ilkeston, Derbyshire, DET 4JG

G4ACQ, L. Randall, 118 Brook Street, Erith, Kent. (*Tel. Erith 40800.*)

G4ACV, S. C. Ford, 3 Barnhill Close, Marlow, Bucks.

G4ADT, A. Tibbett, 169 Kingsway, Darlington, Co. Durham. (*Tel. Darlington 4002.*)

G4AEQ, S. W. Redfern, 5 Pinfold Road, Worsley, Manchester, M28 5DZ. (*Tel. 061-790 2662.*)

GM4AFG, G. S. Wilson, 29 Bellevue Road, Banff, Banffshire.

G4AFI, A. H. Cheetham, 54 Brabyn's Road, Gee Cross, Hyde, Cheshire.

G4AFJ, G. W. Dover, 21 Greenwood Avenue, Bakersfields, Nottingham, NG3 7FX.

G4AFL, J. Broxton, 29 Broadfield Avenue, Poulton-le-Fylde, Blackpool, Lancs.

G4AFM, R. W. Appleby, 96 Seal Road, Bramhall, Cheshire. (*Tel. 061-439 7620.*)

G4AFW, R. C. Armour, 53 Linden Road, Aldeburgh, Suffolk. (*Tel. Aldeburgh 2464.*)

G4AGK, George Kent Group Radio and Electronic Society, c/o J. Allen, 22 Rosslyn Crescent, Luton, Beds., LU3 2AT.

G4AGM, R. H. Williams (*DA2XW/VP8JR*), 103 East Pafford Avenue, Watcombe, Torquay, Devon.

G4AGW, J. Harrison, 22 Gresham Road, Custom House, London, E.16. (*Tel. 01-476 7092.*)

G4AGY, G. H. Rippengill, 5 Bridge Farm Drive, Maghull, Liverpool. (*Tel. 051-526 2782.*)

GW4AHA, C. E. Pearmain, Borrowdale, Pentre Lane, Llantarnam, Cwmbran, Mon., NP4 3AP.

G4AHC, T. E. O'Neill (*ex-G8EHA*), 41 Willoughby Road, Wallasey, Cheshire, L44 3DZ. (*Tel. 051-638 7400.*)

G4AHF, R. Ashall, 110 Waverley Crescent, Droylsden, Manchester.

G4AHJ, M. E. Downey, 49 Wheathouse Road, Birkby, Huddersfield, Yorkshire, HD2 2UX.

G4AHU, Greenford Amateur Radio Society, c/o M. C. Holtby, 32 Woodcroft Crescent, Hillingdon, Middlesex. (*Tel. Uxbridge 30137.*)

G4AHX, J. G. Clark, 6 Gawsworth Avenue, Manchester, M20 OWG. *Tel. 061-445 6678.*)

G4AIB, P. Holt (*ex-G8DPK*), 262 Cotmanhay Road, Ilkeston, Derbyshire.

G6VF, S. M. Illman, 134 Baslow Road, Totley, Sheffield, S17 4DR (*new issue*).

G8EMQ, W. Hamnett, 34 Garland Close, Queensway, Hemel Hempstead, Herts. (*Tel. Hemel Hempstead 59091.*)

G8ESY, B. W. Nock, 4 Park Crescent, West Bromwich, Staffs.

G8ETC, C. J. Dadson, 22 Oakhurst Road, West Ewell, Epsom, Surrey.

GM8EVV, A. B. Milne, 11 Hammerfield Avenue, Aberdeen, AB1 6LL.

G8EXE, J. Stirrat, 6 Mackenzie Trench House, Lillie Road, London, SW6 7PD.

G8EXK, M. S. Hatch, 27 Alpine Grove, Blackburn, Lancs., BB2 4QW.

CHANGE OF ADDRESS

G2AQN, C. Renshaw, 51 Osgodby Crescent, Scarborough, Yorkshire. (*Tel. Cayton Bay 493.*)

G2CXO, G. Miles, British Government Office, Three McCauley Plaza, 10025 Jasper Avenue, Edmonton, Alberta, Canada.

G2FRX, G. Wakeham, Fairview, Newton Road, Bishopsteignton, Teignmouth, Devon, TQ14 9PN.

G3BRL, R. Caws, Jasmine House, Bellingdon, Chesham, Bucks. (*Tel. Cholesbury 549.*)

G3DKS, C. K. Street, 1399 Freeport Drive, Deltona, Florida, 32763, U.S.A.

GI3FIU, W. B. Gray, 13 Dalboyne Park, Lisburn, Co. Antrim.

G3HGX, F. L. Rogers, Milbury House, Florida Road, Ferring, Worthing, Sussex.

G3HMO, J. M. Osborne, M.A., F.Inst.P., Science Dept., Westminster School, 20 Great College Street, London, S.W.1. (*Tel. 01-930 0281.*)

G3IGQ, University of Surrey Electronics and Amateur Radio Society, Tillingbourne House, Surrey Court, University of Surrey, Guildford, Surrey.

G3IZN, N. W. Fox, 22 Firs Walk, Tewin Wood, Welwyn, Herts.

G3JFM, E. F. Moore, 74 Wannock Avenue, Lower Willingdon, Eastbourne, Sussex.

G3KPT, G. V. Farrance, 51 Amberey Green, Birmingham, 22-A.

GM3OEA, J. D. A. Cleaver, 5 Havers Place, Hopeman, Elgin, Morayshire.

G3RDV, S. P. Brindle, 571 Manchester Road, Baxenden, Accrington, Lancs., BB5 2RG.

G3SZY, G. J. Douglas, 11 Green Park, Brinkley, Newmarket, Suffolk.

GM3VIU, D. Horsfield, The Cottage, 61 Old Gartloch Road, Gartcosh, Lanarks.

G3VLX, D. Buckley, 17 The Weald, Chislehurst, Kent.

G3WZS, H. L. Williams, 29 Heathfield Avenue, Fareham, Hants.

G3YRU, P. R. Wilby, 9 Northmoor Road, Longsight, Manchester, Lancs.

G5IC, L. F. Ivin, Elstow, Vicarage Lane, Kinnerley, Oswestry, Salop, SY10 8DE.

G5WW, P. M. Carment, M.B.E., Swilland Hall, Swilland, Ipswich, Suffolk.

G6UW, Cambridge University Wireless Society, c/o R. Wainwright, Selwyn College, Cambridge.

G8AAU, N. D. Stanners, 22 Brands Hill Avenue, High Wycombe, Bucks. (*Tel. High Wycombe 22400.*)

AMENDMENT

EI9P, M. P. Cantwell, Maudlins, Trim, Co. Meath, Eire. (*callsign incorrectly given as "EI6CE" in April issue*).

SMALL ADVERTISEMENTS

("SITUATIONS" AND "TRADE")

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READERS ADVERTISEMENTS

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FOR SALE: Minimitter "Mercury" transmitter, coverage 10 to 80m., AM/CW/NBFM, 120 watts, price £25 or near offer.—Duce, G8DIE, 31 Oak Road, Grays, Essex, RM17-6JX. (Tel: Grays Thurrock 76201.)

SELLING: Virtually unused Eddystone 940 receiver, with plinth speaker, high-quality headphones and unused aerial, £120 or nearest offer. (Midlands area).—Box No. X003, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: AJH two-metre RF unit, QQV03-20, with crystals, mod. transformer (valve), circuitry, etc., tuned for two metres but unused, £6. Tavasu 160m. mobile whip complete, £3. Kodak Brownie standard 8 mm. projector, £7·50. New tapes: 7in. DP, £1; 5¾in. DP, 75p.; and 5in. LP, 50p.—Tibbert, 11 Darwin Road, Mickleover, Derby.

FOR SALE: Eddystone EC-10 Mk. II, brand new March 1971, offers over £60. (North Lancs.)—Box No. 5018, Short Wave Magazine Ltd., 55 Victoria Street, London, S.W.1. (Or ring Proudlove, Hest Bank 2929).

SELLING: FR-100B amateur-band receiver in immaculate condition, complete with matching speaker, aerial coax plug and manual, at £65 or near offer.—Bates. 20 Ashford Road, Wellesley Park, Wellington, Somerset.

OFFERING: Sommerkamp FT-DX150 transceiver and G-Whip, both in excellent condition, would separate, offers? — Box. No. 5019, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Mains transformers type 3104A, Douglas, MT1, output 117/A and 117/E. Variable 500 mmF two-gang, £2. Single 365 mmF condenser. HF coil, two PHF, LF choke type M101, Mullard EF41 and EL42, S-meter MR2P, two ADT140 transistors, 5in. 150-ohm Stentorian speaker, PM speaker 3-ohm, 7 x 4ins., also book "110 Transistor Projects for the Home Constructor."—Hughes, 11 Henley Road, Ludlow, Salop.

SELLING: R.209 Mk. II receiver. Signal Generator Type TE-20, 150 kHz to 260 MHz. 4MH-type two-metre Tx. Pye "Ranger" high-band, Tx working. Send s.a.e. for list.—Bowen, G3CGO, 31 The Crescent, Donnington, Telford, Shropshire.

WANTED: Heathkit DX-40U transmitter and VF-1U VFO, or cheap DX-100U Tx. Tyneside area, but have transport.—Box. No. 5020, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: To buy or hire, manual for Trio JR-60 receiver.—Cox, 10 Kings Road, Wilmslow, Cheshire.

SELLING: Complete KW-2000B station, as new, £200. Hill, G3PWL, QTHR, or ring Stanford-le-Hope (Essex), 2026.

QTH For Sale, at Thornton Cleveleys, Blackpool, detached bungalow with large garden, open view, near shops and school, L-shaped lounge and dining room, kitchen and three bedrooms (one used as shack with workshop attached), separate WC and bathroom, garage. Aerials include 8/8 beam for two metres, trap dipole, motor and mast 48ft. high. Carpets, electrical fittings, built-in furniture, Venetian blinds, all included in price £6,750 freehold.—Timmins, G3PUA, QTHR.

SELLING: German W.W.II field sets, of interest museum or collector. Also R.1147 Rx, coverage 180 to 220 MHz, £4. Receivers DST-100, R.1132A and R.107, suitable for spares or rebuild, £2 each. Wavemeter type W.1432, 160 to 260 MHz, £2.—Gates, 158 Robertson Street, Clapham, London, S.W.8.

FOR SALE: KW-2000B transceiver, used few hours only, working and fitted 6146B's, price £175. Also Anglican 1000-L linear amplifier with two spare 4CX250B's, £45.—Price, G3KDH, QTHR, or ring Tring 3505.

SALE: K.W. Vespa Mk. I with PSU, £65. KW-500 linear, 30. Eddystone 888A receiver with speaker and S-meter, £50. Will accept £138 for The Lot. All items in very good condition.—Walker, G3MGP, QTHR.

PRIVATE Collector seeks old battery radio sets or parts, pre-1925. Also arc or spark transmitters and parts, old telegraph equipment such as keys, sounders, relays, etc., particularly early Post Office or railway signalling types. Any automatic telegraph equipment, such as Teletype, Morse or Wheatstone, pre-1935. Please give description, approximate age and price.—Spence, 11 Brookfield Street, Cornholme, Todmorden, Lancs.

SALE: Geloso VFO with dial, £5·50. B & W phase-shift network, £1·50. Transistorised FM tuner (Japanese) with stereo decoder (no case), £9·50. —McHenry, G3NSM, 2A Park Town, Oxford. (Tel: 0865·56321.)

WANTED: Transistor Q-multiplier for receiver, 465 kHz IF, or suitable circuit diagram. For Sale "Beam Antenna Handbook" (American) by W. I. Orr, W6SAI.—Hughes, 11 Henley Road, Ludlow, Salop.

FOR SALE: Junker precision hand key, as new, advertised price £8·95, at £7. "Radio Communication Handbook," 4th Edn. (£3·15) at £2.—Box No. 5021, Short Wave Magazine. Ltd., 55 Victoria Street, London, S.W.1.

SELLING: Lafayette HA-600 communications receiver, in excellent condition, price £30. Codar CR-70A with PR-30 preselector, good condition, £15.—Kearns, 27 Oaklands, Chippenham, Wilts.

WANTED: Magnavox 363 Tape Deck, or similar, two or four track, in good condition, price and details, please.—Box. No. 5022, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SELLING: At £25 below list price, unused Trio JR-310, boxed, with speaker and headphones. Also CR-100 receiver, £10; BC-312, £12; Olympic AM/CW transmitter, £12; Send s.a.e. for list other gear. WANTED: Marine radiotelephone and echo sounder.—Cain, 18 Oaky Balks, Alnwick (2487), Northumberland.

SALE: Trio 9R-59DS receiver, unmarked, £30. WANTED: Eddystone EC-10 Mk. II and T.W. Communicator for two metres.—Day, 38 Woodstock Road, Begbroke, Oxford. (Tel: Kidlington 2215.).

MANUALS: For B.40, TCS, CR-150, RA-17 and GC-1U, £1·75. For SP-600JX, Collins J4, £2. For R.206, R.208, 75p. AR88LF, £1·25. Add postage. 120 others available.—Brooks, 5 Farrant House, Winstanley Road, London, S.W.11.

FOR SALE: Transistor "Rangers," dash and boot mounts, Tx on two metres, £10. "Ranger" low-band, less case, £6. Hudson radiotelephone, Tx on 4m., £5. BC-620F transceiver, £2. FET converters, 2m. and 4m., IF's 2 to 4, 4 to 6, 26 to 28 MHz, £9·50. Aerial pre-amps., £4. Carriage extra, s.a.e. enquiries.—Raybould, 16 Brookbank Road, Gornal Wood, Dudley, Worcs.

SELLING: Eddystone S.504 general-coverage receiver, £25. T.W.2 converter, IF 4·6 MHz, with matching PSU, £8. Buyer collects or carriage extra. Poulter, G3WHK, 279 Aragon Road, Morden, Surrey. (Tel: 01-337 0117.)

SALE: Trio TS-500 and PS-500, condition as new, £115. First nine volumes Newnes "Radio & TV Servicing," £6. Further details on request.—Deveau, GC3OBM, L'abri, Rouge Huis Avenue, St: Peter Port, Guernsey, C.I.

WANTED: UHF portable transistor receiver with coverage of approximately 420 to 470 MHz. For Sale: CR-100 receiver and speaker, in good condition, with manual, £17 or near offer, cash. Buyer collects.—Roberts, 244 City Way, Rochester, Kent.

SALE: Heathkit SB-301E receiver, with all filters, in mint condition, £140 or near offer. Eddystone 940 Rx, as new, £110 or offer.—Ring Cliffe, G8EQC, Yoxall 241 (evenings only) or Bloxwich 76641 (office hours).

RTTY: Teletype printing reperforator, 240v. AC/PSU, £13. Aquadyne RTY-1 transistor terminal unit, 850/425/175 Hz shift, £25. Also Admiralty frequency-shift monitor, £12.—Jones, G3IGG, QTHR, or ring 051-327 1409 (Cheshire).

SALE: KW-201 receiver, in good condition, with xtal calibrator and manual, £73, carriage paid. —Trinick, Rectory House, Skelton, Penrich, Cumberland.

FOR SALE: Two-metre transmitter, £6. Parabeam for 70 centimetres, £5. 4X150A, with chimney and base, £4. 4X250B, chimney and base, £5. QV04-7, 35p. 6CW4, 50p. QQV03-20A, £1·25. Xtals: 1-megacycle bar, 75p., 7 MHz, 75p., 71·025 MHz, 50p.; dual 1·8 MHz and 1·85 MHz in one small can, 50p.—Greenough, G8BEQ, 67 Hillary Road, Newton, Hyde, Cheshire.

SALE: Heath stereo tuner TFM-1, no cabinet, £10. Hamgear preselector with 160m. converter, £6. Two J-Beam two-metre halo's, 50p. Coax harness for two 2m. aerials, 50p.—Williams, 39 Clockhouse Way, Braintree, Essex, CM7-6RD.

EFFECTS of the late G3YNZ: KW-2000A, AC/PSU, Shure microphone, with trap dipole, balun and feeder, several spare 6146B's, gear overhauled by K. W. Electronics last Christmas, all-in at £150. M. & G. transceiver for 160-80-20m., 6146B with spare, overhauled, £45. Universal Z-match ATU, £7. K.W. SWR Bridge, £5. Crystal Calibrator No. 10, £4. Six volumes Electronic/Radio course, £3. Quantity radio magazines and books. Postage at cost. Send s.a.e. with enquiries.—Jolly, G3TYJ, Little Russell, Lytchett Minster, Poole, Dorset. (Tel: 020-122 2142.)

FOR SALE: KW-2000B with AC/PSU, only five months old and in immaculate condition, £198. Also Eddystone 840A receiver, excellent working order and good on SSB, price £32.—Ring Wyse, G3IWE, Warrington 64178.

SALE: Two "ex-surplus" B.44 VHF three-channel crystal-controlled AM transceivers, suitable for 12v. DC and in good working order—offers? Also PCR receiver for LW, MW and SW, with PSU, working—any offers?—Tracey, Northcourt, 2 Manewas Way, Newquay, Cornwall.

WANTED: R.C.A. AR-8516L, B.40D and high-band "Cambridge," must be in good condition. SELLING: Tx chassis for 4m. (Pye), complete with '3-20A PA, 6V6's modulator, etc., £15. LM-14 frequency meter, £25. One-megacycle bar, HC-6U type, £1·25. All items brand new. Carriage extra. (North-East area).—Box No. 5023, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Pre-War Hallicrafters "Sky Buddy" receiver, "Sky Chief" or "Sky Champion."—Litherland, G8CFB, 11 Birch Grove, Chippenham, Wiltshire.

OFFERING: Heathkit HW-17A, less than a year old, complete with mobile PSU, two microphones and manual, £65 or near offer. Blaupunkt MW car radio converter, coverage bands 13 to 90 metres, £6.—Musselle, 29 Corn Street, Witney (2414), Oxon.

SELLING: Creed 54 Printer with perforator attachment, four-row keyboard, £16. Another, less perforator, £12·50.—Wigg, G6JF, Yabbacombe Farm, Kingsbridge, South Devon. (Tel: Loddiswell 324.)

FOR SALE: Vespa Mk. II, in very good condition, recently serviced, £90. Heathkit HW-100 transceiver with 12v. PSU and speaker, factory checked, £125 or near offer.—Box No. 5024, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SELLING: Trio JR-500S amateur band communications receiver, coverage 10 to 80m., in excellent condition, price £53 or offer. Reason for selling, purchase of JR-310.—Whitaker, 21 St. Ronans Road, Harrogate (86186), Yorkshire.

SALE: K.W. Vanguard Tx, coverage 10 to 160 metres, in good condition, £30 or near offer. R.C.A. AR88LF receiver, tuning 75 to 550 kHz and 1·5 to 30 MHz, very good condition, £40.—Jesson, 181 Kings Acre Road, Hereford. (Tel: 0432-3237, evenings).

SALE: R.C.A. AR-8516L triple-conversion communications receiver, coverage 8 kHz to 30 MHz in eighteen 2-MHz bands, very little used from new and complete with manual, price £130.—Sturdy, 73 Rawcliffe Lane, York (27123.)

FOR SALE: New Trio 9R-59DS, with matching speaker, price £35 or near offer.—Hannah, 11 Lancaster Avenue, Skegness, Lincs.

SELLING: Hallicrafters HT-37 Tx, with accessories, £70. Star SR-600 Rx, £35.—Denman, 14 Willow Tree Close, Abingdon, Berks. (Week-ends only).

SELLING: R.209 receiver, AM/FM, price £12. Pye base-station VHF receiver, £3.—Watson, G3WMQ, QTHR, or ring 01-903 4363.

OFFERING: Heathkit RA-1 receiver with crystal calibrator, in mint condition, only a few hours' use, £37 or near offer.—Ring Sharpe, 01-651 1606 (Croydon).

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SALE: Eddystone Model 680X receiver (similar to 940), with speaker and headphones, in excellent condition, price £76 or offers? Buyer to test and collect. (South-West).—Box No. X004, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SELLING: CR-100 receiver, superb, realigned and revalved, as new, £17·50. Pye "Ranger," suitable for two metres, £3. Variac, mains adjuster, rated 10 amps, £5. Garex 3-10 transmitter, £2. Two-metre nuvistor converter, IF 4 to 6 MHz, £5. Minimitter 40/80m. Tx for mobile with Top Band "Command" Rx, complete /M installation, £5. Pye pocket-phone 70 cm. Tx, with data, £2·50. Type ZC1 Tx/Rx for 40-80-160m., as new, with 12v. PSU, £5. Receiver covering 2·0 to 30 MHz, ex-U.S. Air Force, FB job, price £8·50. Four-metre converter, 6AK5 RF, £2.—Pugh, G8BSR, 178 Compton Road, Wolverhampton (29201), Staffs.

WANTED: For National HRO receiver, coil packs for 3·5 to 7·3 and 7·0 to 14·4 MHz. Please quote condition and price.—Box. No. 5025, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: R.216 receiver, with AC/PSU, as-new condition, £75. Creed 7PN3 perforator, unused, £12·50. Reynolds, 5 Headland Way, Lingfield, Surrey.

WANTED: Pye F27AM, Cambridge, Bantams, Westminster, Motaphone. Also wanted, working and unmodified Walkie-Talkies on either 27 or 28·5 MHz.—Kates, G3PHS, QTHR, Caterham (Surrey) 46692.

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